Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among the Adolescent

Qiyu Zhou

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Doctor of Philosophy in Exercise and Sport Science
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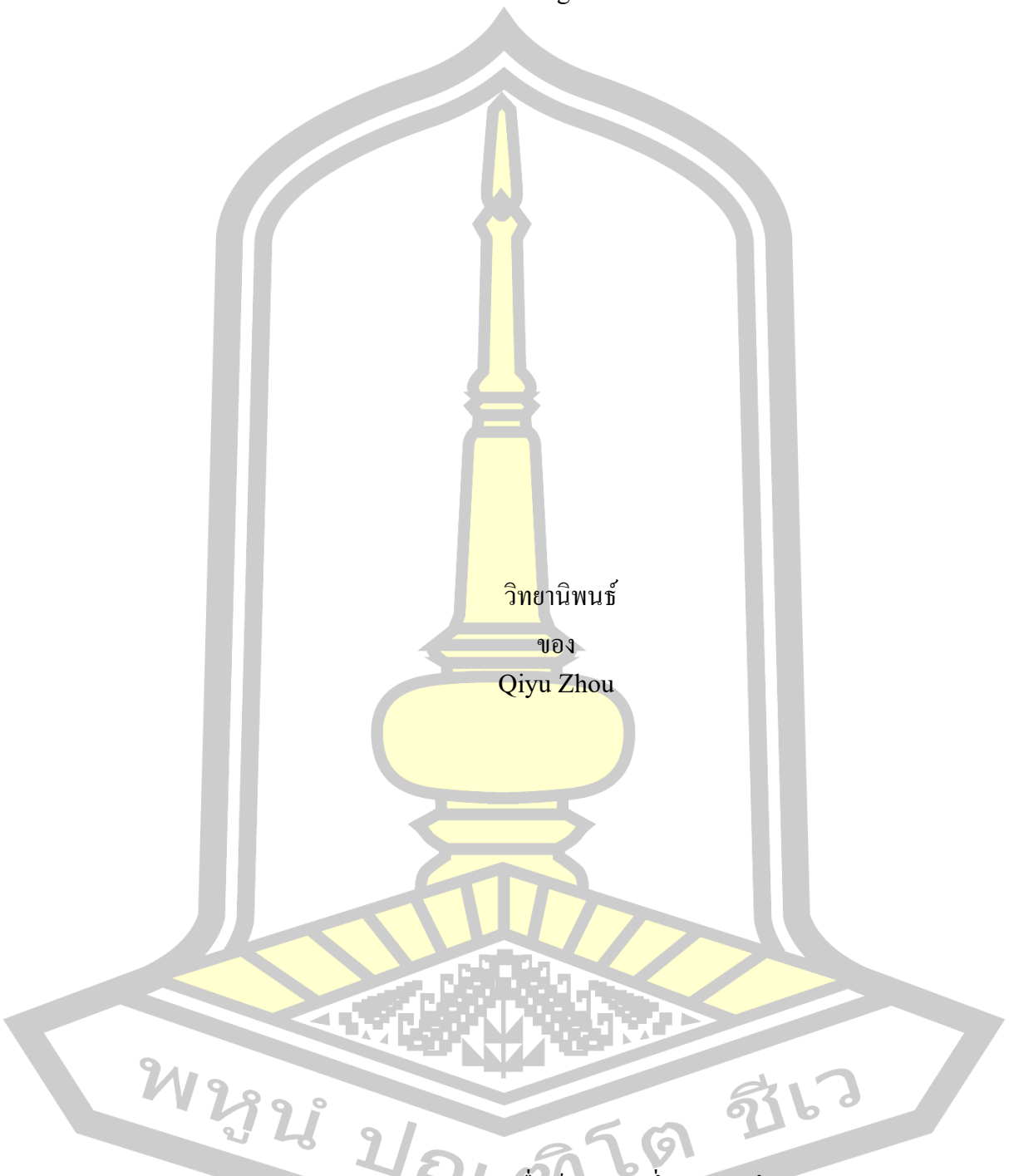

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ABSTRACT

This study examines the effects of an exercise program based on the Health Belief Model (HBM) on the physical exercise behavior of Chinese adolescents. The study has four main objectives: (1) To study the relationship and influence of health beliefs on the exercise behaviors of Chinese adolescents. (2) To develop a health care handbook for Chinese adolescents based on the Health Belief Mode. (3)To compare before and after of the control group and the experimental group of effects of health belief model with exercising program on physical exercise behaviors of the adolescence, and (4)To compare the effects of the health belief model with exercising program between the control and experimental groups on the exercise behavior of adolescents.

The population and sample consisted of Chinese adolescents aged 10–19 years. The research was conducted in three phases. In Phase 1, 3,000 Chinese adolescents were selected from eight cities in Guangdong Province using convenience sampling. In Phase 2, purposive sampling was used to select 326 Chinese adolescents from Zhanjiang City, which was part of the Phase 1 sample. In Phase 3, 160 Chinese adolescents were selected from the Phase 2 sample and were divided into two groups: the experimental group of 80 participants, who received an exercise program combining an Action Plan with the use of a Health Care Handbook, and the control group of 80 participants, who received an exercise program using only the Action Plan. Data were collected through questionnaires, interviews, and assessments, and analyzed using frequency, percentage, mean, standard deviation, correlation analysis, and effect analysis between health beliefs and exercise behavior through Pearson correlation and regression coefficients. Paired t-tests were used to analyze within-group changes, and independent t-tests were conducted to compare differences between the experimental and control groups.

The results indicated that Chinese adolescents' perceived risk had an overall mean at a moderate level ($\bar{X}$ = 2.95, S.D. = 0.64), and their perceived health behavior had an overall mean at a moderate level ($\bar{X}$ = 2.93, S.D. = 0.58). Health belief factors are significantly correlated with and influence exercise behavior, with a correlation coefficient of 0.458 (r = 0.458) and a significance level of 0.000 ($p \leq$

.001). Health belief factors have a significant influence on exercise behavior at the .000 level (p-value = 0.000), with a multiple regression coefficient of .805 (R = 0.805). These factors can predict 64.09% of the exercise behavior of Chinese adolescents. The effects of the HBM-based exercise program were as follows: (1) The program significantly promoted higher exercise behavior in the experimental group ($t = 11.83$, $p < 0.05$), while no significant changes were observed in the control group. (2) A comparison of exercise behavior before and after the intervention revealed that the experimental group showed significantly greater improvement than the control group. (3) The experimental group demonstrated significantly better post-intervention exercise behavior than the control group ($t = 5.66$, $p < 0.05$). and (4) A health care handbook based on the HBM was developed to guide and promote physical exercise among Chinese adolescents, providing practical strategies for implementation. These findings suggest that the HBM-based exercise program is highly effective in promoting exercise behavior in Chinese adolescents, and the developed handbook can serve as a valuable tool to support physical activity.

Keyword : Health Belief Model, Exercise behavior, Chinese adolescents, Physical fitness, Health care handbook

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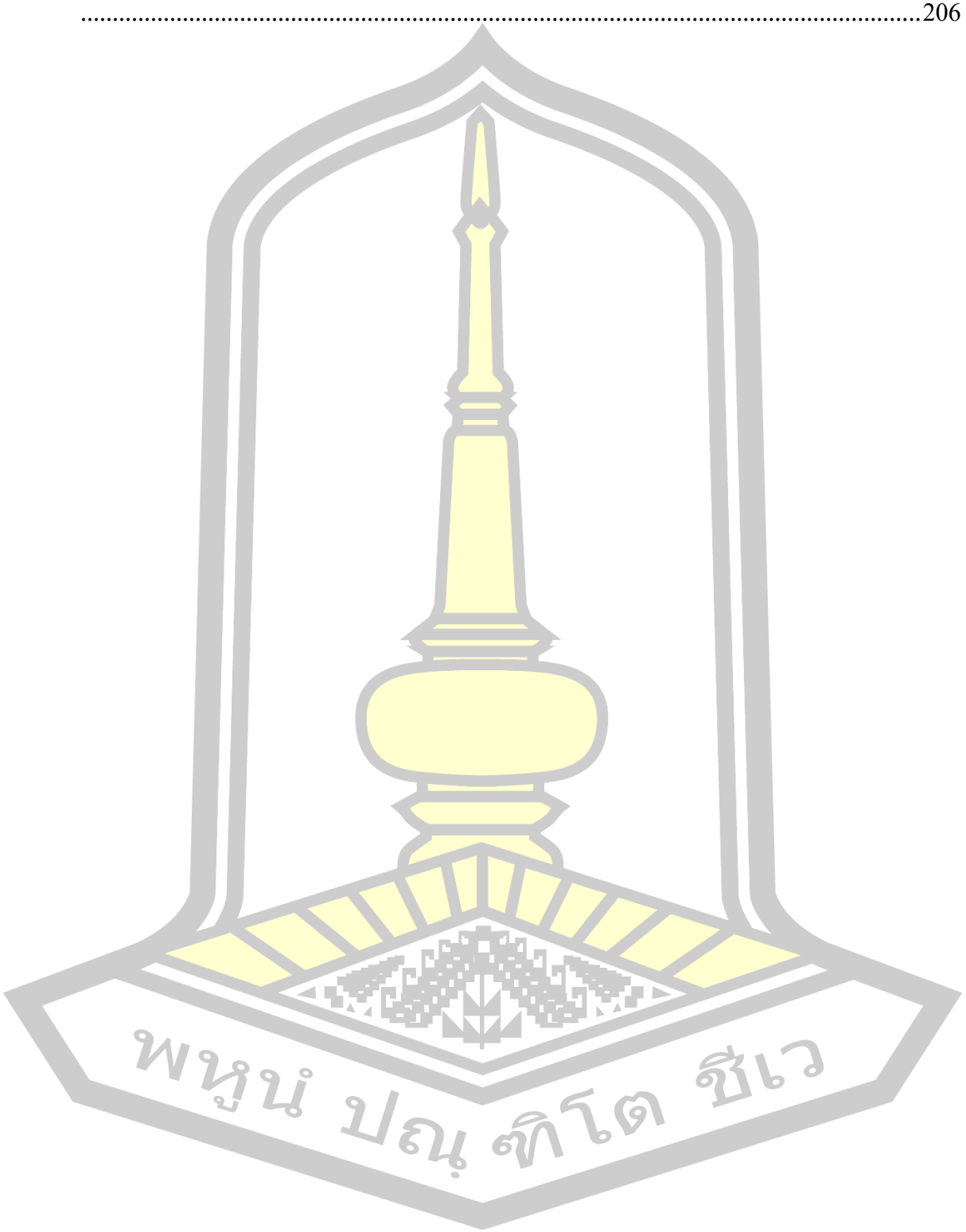

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CHAPTER I

INTRODUCTION

Background

At present, the health of adolescents is a major concern for governments and health organizations around the world. In China, the decline in adolescent physical health has been a pressing issue in recent years in China. The nation has experienced a fourfold increase in overweight and obesity rates among its youth population, coupled with low levels of physical activity among adolescents (Dong, 2020). Despite the release of numerous health policies over the past three decades, there are still significant gaps between the current health status of adolescents and the targets set in Healthy China 2030 (HC2030). The prevalence of obesity and poor vision has rapidly increased, and few adolescents meet the physical activity and fitness targets set in HC2030 (Chen et al, 2020). These challenges in promoting physical activity among Chinese school-aged children and adolescents have hindered the advancement of nationwide health initiatives (Li & Han, 2022). It is crucial to address these issues and develop culturally appropriate and effective physical activity interventions, health promotion strategies, and policy initiatives to improve the overall health of Chinese adolescents (Jun et al, 2023). Furthermore, according to the China Health Statistics Yearbook by the National Health Commission of the People's Republic of China (2020), the national standard rate of students' physical health standards was only 51.2%. Furthermore, a study on the prevalence of physical inactivity among adolescents in China by Wang et al. (2019) revealed that 81.0% of 11-17-year-olds in China were physically inactive, failing to meet the World Health Organization's (2019) recommendation of at least 60 minutes of moderate-to-vigorous physical activity per day. In response to this alarming problem, the State Council of the People's Republic of China (2019) issued the "Opinions of the State Council on the Implementation of the Healthy China Action 2019–2030," which laid out plans for primary and secondary school health promotion actions. Additionally, the General Office of the CPC Central Committee and the General Office of the State Council of the People's Republic of China (2020) released the "Opinions on Comprehensively

Strengthening and Improving School Physical Education in the New Era," emphasizing the critical importance of physical exercise for adolescents. These policies and guidelines represent a step in the right direction to combat the decline in adolescent physical health in China. However, a growing concern is emerging in Guangdong Province, China, where adolescents face a myriad of health issues. Notably, reflections from Chinese adolescents in Guangdong Province have revealed various health problems, including emotional and behavioral issues like peer problems, emotional problems, conduct problems, and hyperactivity, which partially mediate the association between sexual minority status and suicidal behavior among Chinese adolescents (Li et al, 2021). Suicidality is prevalent among Chinese adolescents, with 17.0% reporting suicidal ideation and 4.4% reporting suicide attempts in 2019 (Yan et al, 2020). Moreover, growth retardation, weight loss, and malnutrition are widespread among children and adolescents in Guangdong Province, with higher prevalence rates among girls and those residing in rural areas (Ji et al, 2019). Bullying victimization is also associated with anxiety and depressive symptoms, with coping styles playing a moderating role in these associations (Lai et al, 2023). These findings underscore the urgent need for preventive measures and interventions to address the mental and physical health issues faced by Chinese adolescents in Guangdong Province.

The decline in physical activity among Chinese adolescents is influenced by several factors. Psychosocial factors such as friends' support and norms, barriers to physical activity, autonomous motivation, and self-efficacy were found to be significant predictors of moderate to vigorous physical activity (Kim, 2023). Age, sex, socio-economic status, lack of social support from parents and friends, as well as individual attitudes and practices, were also identified as contributing factors to physical inactivity (Zhang et al, 2021). Additionally, the availability of physical activity resources and the perception of neighborhood safety were found to be important in promoting physical activity among Chinese adolescents (Ahmad et al, 2021). Screen-based sedentary behavior, such as high TV viewing time, was negatively correlated with physical fitness, while physical activity in leisure time and higher socio-economic status were positively associated with physical fitness (Dong et al, 2021). Academic stress was found to have a negative impact on physical

activity, sleep, anxiety, and depression among Chinese adolescents (Zhu et al, 2021). Moreover, according to the study by the National Health Commission of the People's Republic of China (2020), the average Chinese teenager now spends a staggering 9 hours and36 minutes per day using electronic devices. Additionally, the academic pressure that Chinese adolescents face is substantial. Many students are enrolled in cram schools and tutoring programs, leaving them with limited time for physical activity. On average, Chinese adolescents have an academic workload of 38 hours per week. The competitive academic environment in China can also make adolescents feel stressed and anxious, further discouraging them from exercising. Notably, 60% of Chinese adolescents reported feeling stressed about their studies. Furthermore, another significant factor contributing to the decline in physical activity is the lack of safe and accessible places to exercise. Many areas in China lack safe and accessible fitness facilities (Li, 2023, Song, 2022). Additionally, the lack of parental support for physical activity can hinder Chinese adolescents' engagement in physical exercise (Zhang et al, 2023). Some parents may not fully understand the importance of physical activity for their children, or they may lack the time or resources to actively support their children in being physically active. These are just some of the multifaceted factors that contribute to the decline in physical activity among Chinese adolescents. Recognizing and comprehending these elements is essential for developing effective interventions aimed at promoting physical activity in this demographic. To address this pressing issue effectively and encourage physical activity among Chinese adolescents, it is imperative to have a comprehensive understanding of these diverse factors. One valuable framework for approaching this challenge is the Health Belief Model (HBM), which in offers a structured and holistic approach to examining and addressing the various components that shape physical activity behavior among adolescents (Boskey & Snyder, 2023). The HBM is a comprehensive multi-theory model that integrates various psychological factors and processes to understand and address physical activity behavior among adolescents (Parker et al, 2019). The HBM considers social-cognitive, motivational, dual-phase, and dual-systems theories to provide a structured and holistic approach to examining the components that shape physical activity behavior (Burton et al, 2020). It takes into account factors such as self-efficacy, attitudes, social support, and environmental

influences (Chang & Liu, 2022). Several studies have shown that the HBM constructs, such as perceived benefits, perceived barriers, self-efficacy, and cues to action, are positively correlated with physical activity (Sheng et al, 2023, Kim et al, 2022, Wu et al, 2020). In a study conducted among Korean adolescents, the HBM constructs were identified as factors correlated with healthy pregnancy preparation behavior (HPPB), which includes engaging in physical exercise (Zarallo & Prodo, 2019). Another study developed a HBM Scale for Exercise (HBMS-E) and found that the scale was a valid and reliable instrument to assess health beliefs of exercise among Chinese residents (Luquis & Kensinger, 2019). Additionally, a study conducted among adolescent students in Extremadura, Spain, found that promoting healthy lifestyle habits related to the practice of physical exercise, based on the HBM, is necessary. Overall, the HBM has been shown to be effective in promoting physical exercise among adolescents by addressing their beliefs and perceptions related to exercise. By considering these factors, the HBM can inform the development of effective interventions and strategies to promote physical activity among adolescents. It recognizes the importance of addressing both positive and negative attitudes towards physical activity, as well as the influence of sociodemographic, lifestyle, and activity-related factors. Overall, the HBM provides a comprehensive framework for understanding and promoting physical activity behavior among adolescents, taking into account the various factors that influence their engagement in physical activity. So, applying the principles of the HBM, tailored strategies can be developed to mitigate the impact of environmental barriers, enhance parental support, and ultimately foster a more active and healthier lifestyle among Chinese adolescents.

Physical activity is a cornerstone of good health and overall well-being, particularly during the crucial developmental phase of adolescence. Engaging in regular physical activity not only promotes physical fitness but also supports emotional and cognitive development. As adolescents undergo rapid physical and psychological changes, maintaining a healthy lifestyle becomes pivotal in shaping their future health trajectories. The foundation of this study rests on recognizing the significance of adolescent physical activity within the context of China's evolving societal landscape. To address this multifaceted challenge comprehensively, this research draws inspiration from the HBM, a well-established framework in the field

of health behavior research. Recent studies have underscored the versatility of the HBM in various contexts. For instance, its effectiveness in controlling cancer risk behaviors among school-age children was explored, highlighting the model's relevance beyond traditional health settings (Elmwafie & Abdelaziz, 2022). In another study, the HBM was applied to assess the physical exercise behaviors of international students during the pandemic, demonstrating its adaptability in diverse demographic settings (Ma et al, 2023). Further, the HBM's role in mediating the relationship between physical activity and peer support was examined among Chinese college students, providing insights into the social dimensions of health behaviors (Sheng et al, 2023). Additionally, the model was utilized to predict COVID-19 preventive health behaviors among adolescents, showcasing its applicability in contemporary public health crises (Vasli et al 2022). Applying the principles of the Health Belief Model (HBM), in this study has four primary objectives: First, to examine the relationship and influence of health beliefs on the exercise behaviors of Chinese adolescents in Guangdong Province. Second, to develop a health care handbook for Chinese adolescents based on the Health Belief Model, aiming to provide practical advice and strategies to promote and maintain a physically active lifestyle. Third, to compare the pre- and post-effects of the Health Belief Model on exercise behaviors in both control and experimental groups, which include perceived risk, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy, to gain insights into the influence of these factors on adolescent exercise behaviors. Fourth, to compare the effects of the Health Belief Model on exercise behaviors between control and experimental groups among adolescents. These objectives form the core foundation of this research, aiming to understand the complex factors influencing adolescent exercise behaviors and to contribute to enhancing adolescent health and well-being in Guangdong Province and beyond.

Objectives of the Research

1. To study the relationship and influence of health beliefs on the exercise behaviors of Chinese adolescents.

2. To develop a health care handbook for Chinese adolescents based on the Health Belief Mode.

3. To compare before and after of the control group and the experimental group of effects of health belief model with exercising program on physical exercise behaviors of the adolescent.

4. To compare the effects of the health belief model with exercising program between the control and experimental groups on the exercise behavior of adolescents.

Research Questions

1. How do the variables in the Health Belief Model related to and influencing the exercise behaviors of Chinese adolescents?

2. What should a manual for promoting exercise behavior for Chinese adolescents based on an appropriate health belief model look like?

3. How can the Health Belief Model promote physical exercise among Chinese adolescents in Guangdong Province?

4. How can the Health Belief Model-based handbook be disseminated and integrated to influence adolescent physical exercise behaviors?

Hypothesis of the Research

Hypothesis 1 To study the relationship and influence of health beliefs on the exercise behaviors of Chinese adolescents.

Hypothesis 2 After used the health belief model with exercising program, the experimental group has better a health belief and exercise behavior.

Hypothesis 3 After applying the health belief model with exercising program, the control group showed no statistically significant difference in health beliefs and exercise behavior.

Hypothesis 4 After using the Health Belief Model with the exercise program, the experimental group showed better Exercise Behavior than the control group.

Scope of the Research Study

1. Population

The population for this study is Chinese adolescents residing in 8 cities in Guangdong Province, China, namely Tianhe District in Guangzhou City, Shatian Town in Dongguan City, Shunde District in Foshan City, Dong District in Zhongshan City, Chikan District in Zhanjiang City, Pingyuan County in Meizhou City, Xiangqiao District in Chaozhou City, and Wujiang District in Shaoguan City. This includes both male and female adolescents aged 10–19 years. The total estimated population within this group is approximately 723,098 individuals (National Bureau of Statistics, 2020, as cited in UNICEF China & UNFPA China, 2023).

2. Sample

Phase 1: The sample for this phase is Chinese adolescents residing in 8 cities in Guangdong Province, China, namely Tianhe District in Guangzhou City, Shatian Town in Dongguan City, Shunde District in Foshan City, Dong District in Zhongshan City, Chikan District in Zhanjiang City, Pingyuan County in Meizhou City, Xiangqiao District in Chaozhou City, and Wujiang District in Shaoguan City. This includes both male and female adolescents aged 10–19 years. The sample size required for study is 3,000 samples. The sampling method convenience sampling is employed to select participants for the study.

Phase 2: The sample for this phase is Chinese adolescents residing in Zhanjiang City, Guangdong Province, China. This includes both male and female adolescents aged 10–19 years. The sample size required for study is 326 samples. The sampling method purposive sampling is employed to select participants for the study.

Phase 3: The sample for this phase is Chinese adolescents residing in Zhanjiang City, Guangdong Province, China. This includes both male and female adolescents aged 10–19 years. The sample size required for study is 160 samples. The sampling method purposive sampling is employed to select participants for the study.

Scope of Research Content

1. Independent Variables

The independent variables for this study are program to change exercise behavior with Health Belief Model patterns.

2. Dependent Variables

The dependent variables for this study are behavioral health belief patterns and physical exercise behavior, which is explained as follows.

1. Behavioral health belief patterns are divided into 5 areas:

- Perceived Risk
- Perceived Severity
- Perceived Benefit
- Perceived Barriers
- Perceived Self-efficacy

2. Physical Exercise Behavior

Definitions of Terms

1. Health Belief Model

A theoretical framework used to understand health-related behaviors. In this study, the HBM's components (perceived risk, severity, benefits, barriers, and self-

efficacy) are assessed using a structured questionnaire, specifically designed to measure each component's influence on adolescents' exercise behaviors.

1.1 Perceived Risk

The individual's assessment of their vulnerability to health issues due to lack of physical activity. Measured via survey questions that ask participants to rate their perceived likelihood of experiencing health problems due to inactivity.

1.2 Perceived Severity

The degree to which an individual believes that a health problem (or lack of physical activity) is serious. This is quantified through survey items that assess adolescents' beliefs about the severity of health consequences of inactivity.

1.3 Perceived Benefits

The individual's belief in the efficacy of the advised action (e.g., exercise) to reduce risk or seriousness of impact. This can be evaluated through questions that gauge the adolescents' views on the positive outcomes of engaging in regular physical activity.

1.4 Perceived Barriers

The individual's evaluation of the obstacles in the way of adopting a new behavior (e.g., exercising). Measured by questions that identify factors that prevent or hinder adolescents from engaging in physical activity.

1.5 Perceived Self-efficacy

The individual's confidence in their ability to successfully perform an action (e.g., exercise). Assessed through survey items that ask adolescents to rate their confidence in being able to engage in regular physical activities.

2. Physical Exercise Behavior

Physical Exercise Behavior: The specific actions and reactions of an individual engaged in bodily activities that aim to enhance physical fitness and overall health and wellness. It includes any form of physical activity that contributes to the maintenance or improvement of health and fitness. In this study, physical exercise behavior are measured and monitored through a combination of activity logs, self-reported exercise frequency and duration, and observational techniques.

CHAPTER II

LITERATURE REVIEW

The purpose of this study is to develop the project to promote physical exercise and health care handbook for Chinese adolescents based on the Health Belief Model. This research includes a review of the following related literature:

- Concepts about Health Belief Model
- Concepts about Exercising Program
- Concepts about Physical Exercise Behaviors
- Concepts about Adolescent
- Related Research
- Research Conceptual Framework

Concepts about Health Belief Model

1. Importance of Health Belief Model

The Health Belief Model (HBM) is a psychological framework and a theoretical model developed to understand and explain the factors that influence individuals' decisions to engage in health-related behaviors. This model was first developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels, and it has since been widely used in the field of public health and health psychology. The HBM offers a comprehensive framework for understanding how adolescents' beliefs of advantages, obstacles, and signals to action impact their choices to participate in health-promoting activities such as physical exercise and sports. This model emphasizes the importance of perceived susceptibility, severity, advantages, obstacles, and signals in determining adolescents' attitudes about physical exercise, which in turn influences their health and well-being results. The principles of perceived vulnerability and severity are central to the HBM. Adolescents evaluate their vulnerability to health-related concerns including obesity and cardiovascular disease, as well as the perceived severity of these difficulties. Adolescents are more likely to participate in health-promoting actions if they perceive they are at risk and that the possible health implications are substantial. Perceiving the poor health effects linked with a sedentary lifestyle might inspire teenagers to actively engage in efforts to avoid such repercussions in the context of physical exercise and sports (Archer & Garcia, 2014). According to the HBM, people assess the perceived advantages of participating in health-promoting activities against the perceived hurdles. This implies that for teenagers, the expected benefits of physical activity and sports, such as enhanced physical fitness, mental well-being, and social contacts, must surpass the perceived hurdles. Time limits, a lack of access to facilities, and body image problems

are all examples of barriers. Effective health promotion techniques include increasing teenage understanding of the advantages while addressing and lowering obstacles.

Cues to action work as triggers, causing people to take action toward adopting health-promoting habits. Cues to action in the context of physical activity and sports might include media campaigns, educational initiatives, healthcare expert guidance, or personal experiences of friends or family members. These signals are critical in encouraging teenagers to make educated choices about participating in physical activities. Understanding the HBM's tenets has practical consequences for increasing physical activity and sports among teenagers. Adolescents' views of vulnerability, severity, advantages, and obstacles to health may be addressed by health promotion campaigns and educational activities (Eddolls et al, 2018). These interventions may convey information about the health hazards associated with physical inactivity while emphasizing the various benefits of participation. Furthermore, efforts that reduce obstacles, such as providing flexible exercise alternatives or access to sports facilities, may help people embrace active lives. The HBM provides useful insights into the cognitive processes that underpin teenagers' choices to participate in physical activity and sports (Ruiz de Zarate et al, 2023). Researchers and practitioners may create tailored treatments that successfully inspire teenagers to adopt and maintain active lifestyles by acknowledging the relevance of perceived susceptibility, severity, advantages, obstacles, and signals to action. Adolescents' attitudes about physical exercise are more likely to match with health-promoting behaviors as they grow more aware of the advantages and are equipped with tools to overcome obstacles, leading to greater overall well-being.

2. Elements of Health Belief Model

The HBM suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behavior or action will predict the likelihood the person will adopt the behavior. The HBM has 5 key constructs:

1. Perceived Risk: Perceived Risk, within the context of the HBM, represents an individual's subjective assessment of their susceptibility to a specific health issue or condition. It reflects their perception of the likelihood of experiencing the health problem based on their behavior, lifestyle, or other factors. The research illustrates socio-economic status, lack of social support, and academic stress were identified as key factors influencing Chinese adolescents' perception of risk regarding physical inactivity, aligning with this HBM concept by demonstrating how external factors shape adolescents' internal perceptions of their susceptibility to health issues due to inactivity (Zhang et al., 2021; Zhu et al., 2021). Perceived Risk is a fundamental concept within the HBM, a psychological framework that seeks to explain and predict health-related behaviors. At its core, Perceived Risk represents an individual's subjective assessment of their susceptibility to a specific health issue or condition. It reflects the perception of the likelihood of experiencing the health problem based on

various factors, including behavior, lifestyle, and personal circumstances. This essay explores the concept of Perceived Risk within the HBM, its determinants, and its profound influence on health behaviors and health promotion efforts. Perceived Risk is inherently subjective, and it varies from person to person. It hinges on an individual's unique experiences, knowledge, and beliefs. It is essential to recognize that Perceived Risk does not always align with objective measures of risk; rather, it mirrors an individual's interpretation of their vulnerability. This subjective nature of Perceived Risk underscores its significance in the context of health behavior (Archer & Garcia, 2014).

2. Perceived Severity: Perceived Severity, within the context of the HBM, represents an individual's perception of the seriousness or consequences of a particular health issue or condition. It reflects how the person evaluates the potential harm or impact that the health problem could have on their well-being. The research illustrates the HBM's Perceived Severity by showing how adolescents perceive the severity of inactivity in physical and psychological terms, especially considering the impact of academic stress on physical and mental health (Zhu et al., 2021). Perceived severity refers to a subjective assessment of the severity of a health problem and its potential consequences (Rosenstock, 1974). The more seriously one takes a given health problem, the more one tries to reduce its likelihood of occurrence. Conversely, an individual who underestimates the risk of a disease will engage in less healthy behavior. Perceived severity broadly includes beliefs about the disease itself as well as beliefs about its impact on the work and social roles relevant to the individual (Archer & Garcia, 2014). Perceived Severity represents an individual's perception of the seriousness or consequences of a particular health issue or condition. It reflects how the person evaluates the potential harm or impact that the health problem could have on their well-being. If someone perceives a health condition as severe and potentially life-altering, they are more likely to take it seriously and take preventive measures. For instance, if someone believes that contracting a specific infectious disease could lead to severe complications or death, they may be more inclined to get vaccinated (Eddolls et al, 2018).

3. Perceived Benefit: Perceived Benefit, within the context of the HBM, represents an individual's recognition of the advantages and positive outcomes associated with taking preventive actions or engaging in health-promoting behaviors. It reflects the perceived advantages of adopting a particular health behavior. The research illustrates aligns with this concept by promoting the benefits of physical activity for overall development, encompassing physical, emotional, and cognitive aspects, thereby highlighting the advantages of exercise for emotional and cognitive development (Eddolls et al., 2018). Perceived benefit refers to the assessed value or sense of efficacy that results from engaging in health-promoting behaviors to reduce disease risk. In contrast, perceived barriers refer to an individual's assessment of barriers to behavior change (Janz & Becker, 1984). Perceived barriers include cost,

perceived risk of inconvenience (e.g., side effects of a medical procedure), and discomfort associated with performing a specific behavior (e.g., pain or emotional upset). Perceived strengths and perceived barriers have opposite characteristics. When the perceived benefits of an action outweigh the perceived obstacles, actors are likely to make behavioral changes (Archer & Garcia, 2014). Perceived Benefit refers to an individual's recognition of the advantages and positive outcomes associated with taking preventive actions or engaging in health-promoting behaviors. It reflects the perceived advantages of adopting a particular health behavior. People are more likely to engage in a health behavior if they believe it will lead to positive outcomes. For example, if individuals understand that regular exercise can improve their physical fitness, mental well-being, and social interactions, they are more motivated to incorporate exercise into their routine (Eddolls et al, 2018).

4. Perceived Barriers: Perceived Barriers, within the context of the HBM, represents the obstacles, challenges, or hindrances that individuals perceive as barriers to taking preventive actions or engaging in health-promoting behaviors. These barriers can be practical, psychological, or social factors that deter individuals from adopting healthier behaviors. The research illustrates barriers such as the lack of safe exercise spaces and inadequate parental support were identified, resonating with the HBM's concept of Perceived Barriers by showing the range of challenges adolescents face in maintaining physical activity (Li, 2023; Song, 2022). Perceived Barriers, a critical component of the HBM, encompass the individual's subjective assessment of the obstacles and challenges that stand in the way of adopting health-promoting behaviors. These perceived barriers are instrumental in understanding why people may or may not engage in actions that promote their health and well-being. This essay delves into the concept of Perceived Barriers within the HBM, explores their determinants, and emphasizes their profound influence on health behaviors and strategies for overcoming them. Perceived Barriers represent the perceived costs, inconveniences, or difficulties associated with taking action to prevent or manage a health condition. These barriers can be physical, financial, psychological, or even social. They reflect the individual's assessment of the challenges they would encounter in attempting to change their behavior in favor of better health (Archer & Garcia, 2014).

5. Perceived Self-efficacy: Perceived Self-efficacy, within the context of the HBM, represents an individual's belief in their own ability to successfully perform a specific health-related behavior or take preventive actions. It reflects their confidence in their capacity to overcome challenges and obstacles to achieve a desired health outcome. The research illustrates creation of a health care handbook for Chinese adolescents, aimed at enhancing their confidence in engaging in physical activities, aligns with the HBM's Perceived Self-efficacy. It underscores the importance of self-belief in adopting and maintaining healthy behaviors (Ma et al., 2023). Perceived Self-Efficacy is a central concept in health psychology and behavior change theories.

Coined by renowned psychologist Albert Bandura, this concept plays a pivotal role in understanding how individuals' approach and engage in health-related behaviors. Perceived Self-Efficacy refers to an individual's belief in their ability to successfully perform a specific behavior or achieve a desired health-related outcome. This essay delves into the concept of Perceived Self-Efficacy, explores its determinants, its role in shaping health behaviors, and strategies to enhance it for more effective health promotion. At its core, Perceived Self-Efficacy is about self-belief and confidence. It represents an individual's assessment of their own competence to execute a particular task or behavior successfully. In the context of health, it reflects one's confidence in their ability to adopt and sustain health-promoting behaviors, overcome obstacles, and achieve desired health outcomes (Archer & Garcia, 2014).

In summary, the HBM posits that individuals make decisions about engaging in health-promoting behaviors based on their perceptions of their susceptibility to health issues, the severity of those issues, the benefits of acting, the barriers they face, and their confidence in their ability to make changes. Health promotion efforts can be tailored to address these perceptions and encourage individuals to adopt healthier behaviors. Understanding and addressing these constructs can lead to more effective strategies for improving public health and well-being.

3. Principles for using Health Belief Model

The HBM can be used to design short- term and long-term interventions. Implementing the HBM involves using its constructs and principles to design and execute health promotion and behavior change interventions. Here are the steps to implement the HBM effectively:

1. Identify the Health Issue: Begin by identifying the specific health issue or behavior you want to address. This could be anything from encouraging vaccination to promoting regular exercise.

2. Assess Perceptions: Conduct research or surveys to understand how the target population perceives the health issue. Assess their beliefs regarding susceptibility, severity, benefits, barriers, cues to action, and self-efficacy related to the behavior.

3. Develop Messages and Materials: Design health messages and educational materials that address the HBM constructs. Messages should inform people about the health threat, emphasize the seriousness, highlight the benefits of the recommended behavior, address barriers, and provide cues to action. Ensure that the materials are culturally appropriate and tailored to the audience.

4. Select Appropriate Channels: Choose the most effective channels to deliver your messages and materials. This might include social media, community workshops, healthcare settings, schools, or other relevant platforms.

5. Provide Self-Efficacy Support: Offer resources and support to help individuals feel confident in their ability to take the recommended actions. This might

involve offering practical guidance, skill-building workshops, or access to resources that make it easier to adopt the behavior.

6. Leverage Cues to Action: Use cues to action to remind and motivate individuals to take action. These cues can be in the form of reminders, prompts, or triggers that encourage people to engage in the desired behavior.

7. Evaluate and Adjust: Continuously monitor and evaluate the effectiveness of your intervention. Collect data on changes in beliefs, attitudes, and behaviors related to the health issue. Adjust your messages and strategies based on the feedback and data you collect to maximize the impact of your intervention.

8. Maintain Communication: Keep communication ongoing to reinforce the desired behavior and address any new concerns or barriers that may arise.

9. Collaborate with Stakeholders: Work with healthcare providers, community organizations, and other stakeholders to support and promote the behavior change intervention. Collaboration can help reach a broader audience and provide additional resources.

10. Sustain the Intervention: Consider the long-term sustainability of your intervention. Plan for how to maintain the behavior change efforts over time to ensure continued positive outcomes.

11. Celebrate Success: Recognize and celebrate successes along the way. Highlight individuals or communities that have successfully adopted the recommended behavior to inspire others.

12. Address Resistance and Misinformation: Be prepared to address resistance and counter misinformation. Some individuals may have beliefs or attitudes that conflict with the HBM constructs, and it's important to engage with them respectfully and provide accurate information.

Remember that the HBM is just one model among many for understanding and promoting health behavior change. Its effectiveness depends on the specific context and the target population, so adaptation and flexibility are key when implementing the model in practice (Rural Health Information Hub, 2018).

4. Limitations of Health Belief Model

The HBM is a useful framework for understanding and predicting health-related behaviors, but it has several limitations and criticisms:

1. Simplistic View: The HBM assumes that individuals are rational decision-makers who carefully weigh the pros and cons of a health-related action. In reality, people's decisions and behaviors are influenced by a complex interplay of social, emotional, cultural, and environmental factors.

2. Limited Emphasis on Social Factors: The model places relatively little emphasis on the role of social and environmental factors in shaping health behaviors. It doesn't adequately address issues like peer pressure, social norms, or structural barriers to behavior change.

3. Assumption of Complete Information: The HBM assumes that individuals have access to and process complete and accurate information about health risks and benefits. In reality, people may have limited access to information or may be exposed to misinformation.

4. Lack of Emotional and Psychological Factors: The HBM doesn't account for emotional and psychological factors, such as fear, anxiety, or motivation, which can play a significant role in health decision-making.

5. Overemphasis on Perceived Severity: The model places a strong emphasis on perceived severity, assuming that individuals will take action if they perceive a health threat as serious. However, people often downplay or deny the severity of health issues to reduce anxiety or cope with fear.

6. Inconsistencies in Self-Efficacy: While self-efficacy is an essential component of the HBM, it doesn't always align with real-world behavior. People may have high self-efficacy but still fail to take action due to other factors, such as external barriers.

7. Lack of Dynamic Nature: The HBM tends to view health behaviors as a linear process, assuming that individuals progress through stages from awareness to action. In reality, behavior change is often more complex and dynamic, with individuals moving back and forth between stages.

8. Cultural Variations: The model may not adequately account for cultural variations in health beliefs and behaviors. Cultural factors can significantly influence perceptions of health threats, benefits, and barriers.

9. Doesn't Address Habitual Behaviors: The HBM is better suited for understanding and predicting one-time or infrequent health-related decisions. It may not be as effective for explaining habitual behaviors where individuals may not consciously consider the HBM constructs.

10. Limited Predictive Power: While the HBM provides insights into health beliefs, it may have limited predictive power in some cases. People often engage in health behaviors for reasons that go beyond their beliefs, such as social pressure, convenience, or habit.

11. Lack of Consideration for External Factors: The model does not consider broader systemic and policy-level factors that can impact health behaviors, such as access to healthcare, socioeconomic status, and public health policies.

Despite these limitations, the HBM remains a valuable tool for understanding some aspects of health behavior. However, researchers and practitioners often combine it with other models and theories to develop a more comprehensive understanding of health-related behaviors and design more effective interventions (Wayne & La-Morte, 2022).

Concepts about Exercising Program

The Exercising Program is a plan that outlines the type, duration, frequency, and intensity of physical activity that a person will do to improve their fitness. It is important to have a well-designed exercising program in order to achieve the desired results and avoid injuries. The idea of sports health promotion provides a comprehensive framework that examines the complex relationships between participation in sports, physical well-being, and the wider notion of promoting health. This theoretical framework acknowledges the inherent capacity of sports to serve as a catalyst for comprehensive well-being and investigates approaches to optimize the beneficial effects of sports on people' physical and mental health (Frömel et al, 2020). The philosophy of sports health promotion emphasizes that involvement in sports goes beyond just physical activity, covering other dimensions of well-being, such as mental, emotional, and social components. The significance of sports is underscored in its ability to foster physical well-being, mitigate the occurrence of ailments, and augment the general standard of living. This theoretical perspective posits that sports serve as a dynamic platform whereby people may actively engage in activities that promote their own well-being. The core tenet of sports health promotion theory is on the notion that participation in sports have the capacity to augment several facets of well-being. In addition to the evident physiological benefits, such as greater cardiovascular well-being and muscular prowess, engagement in sports may provide a decrease in stress levels, an augmentation in mental fortitude, and a heightened sense of emotional contentment. Moreover, the sense of camaraderie cultivated in team sports or collective endeavors plays a significant role in enhancing social interconnectedness, hence exerting a favorable influence on individuals' mental and emotional welfare (Ho et al, 2017).

The notion of sports health promotion prioritizes the concept of empowerment through promoting active involvement. Through engagement in sports, people actively contribute to their pursuit of optimal health. The presence of agency in people cultivates a proactive stance towards their well-being and promotes the making of educated decisions about their lives. By establishing personal fitness objectives, tracking advancements, and attaining milestones, people develop a feeling of responsibility about their well-being. The importance of education in facilitating behavioral change is a crucial component within the framework of sports health promotion theory. Health education programs implemented in sports environments aim to provide participants with information about the significance of engaging in physical exercise, maintaining a nutritious diet, and understanding other pertinent health-related aspects. With this knowledge at their disposal, people are able to make informed choices that have a beneficial effect on their health-related behaviors. The hypothesis posits that the integration of health education into sports programs has the potential to facilitate enduring changes in individuals' lifestyles. The philosophy of sports health promotion recognizes the importance of community and social support

in promoting overall well-being. Participating in sports often entails interpersonal engagement with peers, coaches, and mentors, who provide support, mentorship, and a sense of camaraderie. These ties provide a network of support that may enhance people' motivation to maintain their health objectives and provide emotional support through difficult periods (Jackson et al, 2022). The idea of sports health promotion provides a comprehensive framework for understanding the substantial effects of sports activity on overall well-being. This idea places emphasis on the integration of physical, mental, emotional, and social well-being by considering athletics as a means to achieve holistic health development. Empowerment, health education, and community support are identified as crucial factors in harnessing the potential of sports for the promotion of health. By adopting the tenets of this theoretical framework, people and communities may effectively use the transforming potential of sports to enhance not just their physical fitness but also their holistic state of well-being.

Concepts about Physical Exercise Behaviors

Physical exercise is a fundamental aspect of a healthy lifestyle. Engaging in regular physical activity offers a plethora of physical and mental health benefits, ranging from improved cardiovascular health and enhanced muscle strength to reduced stress and anxiety. Despite these well-documented advantages, many individuals struggle to incorporate exercise into their daily routines. This article delves into the intricate world of physical exercise behaviors, exploring the factors that influence them, the motivation behind them, and the manifold benefits they offer.

Several factors play a pivotal role in determining an individual's engagement in physical exercise **(**National Collaborative on Childhood Obesity Research, 2016**)**:

1. Socioeconomic Status: Socioeconomic factors, such as income, education, and access to fitness facilities, can significantly impact an individual's exercise habits. People with higher incomes and better access to resources are more likely to engage in regular exercise.

2. Social Support: The presence of a supportive social network can serve as a strong motivator for exercise. Friends, family members, or workout partners can provide encouragement, accountability, and companionship during physical activities.

3. Environmental Factors: The physical environment plays a crucial role in exercise behavior. Access to parks, recreational areas, and safe spaces for physical activity can influence whether individuals choose to engage in exercise.

4. Psychological Factors: Personal beliefs, attitudes, and self-perceptions also affect exercise behavior. Individuals with positive self-esteem and body image are more likely to participate in physical activities without fear of judgment or criticism.

5. Time Constraints: Busy schedules, work commitments, and family responsibilities often limit the time available for exercise. Finding ways to integrate physical activity into one's daily routine can help overcome these barriers.

Motivation is a driving force behind exercise behaviors. Understanding what motivates individuals to engage in physical activity is essential for sustaining long-term commitment. Common motivators include:

1. Health and Well-being: Many people exercise to improve their physical health, manage chronic conditions, or prevent future health issues. The desire for a longer, healthier life serves as a strong motivator.

2. Weight Management: Weight loss or weight maintenance is a primary reason for exercise for many individuals. Achieving and maintaining a healthy body weight is a significant source of motivation.

3. Stress Reduction: Exercise is an effective stress reliever, as it triggers the release of endorphins, which are natural mood lifters. Reducing stress and anxiety is a powerful incentive for regular physical activity.

4. Social Connection: Engaging in group exercises or team sports can foster social connections, providing motivation through the enjoyment of shared activities.

5. Achievement and Goal Setting: Setting specific fitness goals and tracking progress can be highly motivating. Achieving milestones, such as running a certain distance or lifting a particular weight, can instill a sense of accomplishment.

The benefits of incorporating regular physical exercise into one's life are multifaceted and extend far beyond the physical realm (United States Department of Health and Human Services, 2023):

1. Improved Physical Health: Regular exercise reduces the risk of chronic diseases, such as heart disease, diabetes, and hypertension. It also enhances cardiovascular health, strengthens muscles and bones, and increases flexibility.

2. Mental Well-being: Physical activity is closely linked to mental health. It can alleviate symptoms of depression and anxiety, boost self-esteem, and improve cognitive function.

3. Weight Management: Exercise plays a crucial role in achieving and maintaining a healthy body weight. It helps burn calories and build lean muscle mass, contributing to long-term weight management.

4. Enhanced Quality of Life: Engaging in physical activities improves overall quality of life by increasing energy levels, promoting better sleep, and enhancing mood and self-confidence.

5. Longevity: Regular exercise has been associated with a longer lifespan. It supports healthy aging by reducing the risk of age-related illnesses and maintaining functional independence.

Understanding physical exercise behaviors is essential for promoting a healthier and more active society. By considering the factors that influence exercise, tapping into personal motivations, and recognizing the wide array of benefits, individuals can make informed choices that lead to a more active and fulfilling lifestyle. Whether for physical health, mental well-being, or a sense of accomplishment,

exercise offers something for everyone, making it a vital component of a balanced and prosperous life.

Concepts about Adolescent

The Adolescence is the transitional phase of growth and development between childhood and adulthood. It is a time of rapid physical, cognitive, and psychosocial changes. The World Health Organization (WHO) defines an adolescent as any person between the ages of 10 and 19. Adolescence is a critical and complex stage of human development that marks the transition from childhood to adulthood. It encompasses various physical, psychological, and social changes, making it a subject of immense interest and study in fields like psychology, sociology, and education (Cleveland Clinic, 2023).

1. Puberty: Puberty is a biological concept that signifies the onset of physical changes, including the development of secondary sexual characteristics such as breast development in girls and facial hair growth in boys. It typically occurs between the ages of 9 and 14 and is a significant marker of the beginning of adolescence.

2. Identity Formation: Adolescence is a period when individuals explore and develop their sense of identity. This process involves experimenting with various roles, values, and beliefs to establish a stable self-concept. Erik Erikson's theory of identity development highlights the importance of this stage in forging a strong sense of self.

3. Autonomy: Autonomy refers to the capacity for independent decision-making and self-governance. Adolescents strive to assert their independence from their parents or caregivers, making choices about their education, friendships, and life goals. This concept is central to the development of self-reliance and responsibility.

4. Risk and Resilience: Adolescents often engage in risky behaviors, such as substance abuse and reckless driving. The concept of risk and resilience examines the factors that contribute to both negative and positive outcomes during this period. Protective factors, like a supportive family and community, can enhance resilience and mitigate risks.

Jean Piaget's theory posits that cognitive development during adolescence involves the development of formal operational thinking. Adolescents become capable of abstract reasoning, hypothetical thinking, and problem-solving. This cognitive growth enables them to engage in more complex decision-making. Erik Erikson's theory suggests that adolescence is a critical stage for the development of identity. He proposed a series of psychosocial crises, with identity versus role confusion being the central challenge during this period. Successful resolution leads to a strong sense of self, while failure results in identity confusion. Lawrence Kohlberg's theory focuses on the development of moral reasoning during adolescence. He proposed that individuals progress through stages of moral development, from a focus on self-interest (pre-conventional) to adherence to societal norms and principles

(conventional) to a personal code of ethics (post-conventional). Attachment theory, developed by John Bowlby, emphasizes the importance of secure emotional bonds with caregivers during adolescence. These attachments serve as a foundation for healthy relationships and emotional well-being throughout life. Social identity theory, formulated by Henri Tajfel and John Turner, explores how adolescents develop their sense of identity within social groups. It highlights the significance of group membership and how it can influence behavior and self-concept during adolescence (UCLA Center for the Developing Adolescent, 2023).

Adolescence is a dynamic period characterized by profound physical, cognitive, and psychosocial changes. Understanding the concepts and theories related to adolescence is essential for parents, educators, and professionals working with adolescents. By recognizing the unique challenges and opportunities presented during this stage, we can better support young people as they navigate the path to adulthood and self-discovery. Adolescence is not a one-size-fits-all experience, and these concepts and theories provide a framework for appreciating its rich diversity and complexity.

Related Research

1. Domestic Research

Saghafi-Asl et al. (2020) studied the factors influencing weight management behavior among college students: an application of the Health Belief Model (HBM), with the objective to examine factors affecting the behavioral intention of weight management as well as assess the predictive power of the HBM for body mass index (BMI). This cross-sectional study was conducted among 336 female students recruited from dormitories of Tabriz University of Medical Sciences, using quota sampling technique. Data were collected by a structured questionnaire in seven parts (including perceived severity, perceived susceptibility, perceived benefit, perceived barrier, cue to action, self-efficacy in dieting and physical activity, and behavioral intention of weight management), based on the HBM. Structural equation modeling (SEM) was conducted to identify the relationship between HBM constructs and behavioral intention of weight management. Linear regression model was performed to test the ability of the HBM to predict students' BMIs. Results: Higher level of perceived threats (sum of perceived susceptibility and severity) (β=0.41, P<0.001), perceived benefits (β=0.19, P=0.009), self-efficacy in exercise (β=0.17, P=0.001), and self-efficacy in dieting (β=0.16, P=0.025) scales was significantly related to greater behavioral intention of weight management. Moreover, perceived threat mediated the relationships between perceived cue to action, perceived benefits, self-efficacy in exercise, and weight management practices. The fit indices of the SEM model seemed acceptable. The final regression model explained approximately 40% of variance in BMI (P<0.001). Additionally, perceived severity, barrier, and self-efficacy in dietary life were the significant variables to predict students' BMIs.

Shen et al. (2020) studied the effectiveness evaluation of Health Belief Model (HBM)-based health education intervention for patients with hypertension in community settings, with the objective to evaluate the effectiveness of HBM-based health education intervention in improving blood pressure control of patients with hypertension in community settings. Methods: From September 2016 to September 2017, 400 newly diagnosed patients with hypertension were recruited from 6 community healthcare centers with comparable population size and health services in the Shunyi District of Beijing. All community healthcare centers were randomly assigned to the intervention group (206 patients) and the control group (194 patients). Patients in the intervention group received 3 lectures (20-30 min for each) of HBM-based health education. Patients in the control group received usual care. The basic characteristics, health beliefs, and health literacy were collected, and blood pressure was measured before and after the intervention, respectively. The difference-in-difference model was used to analyze the change of blood pressure and the influencing factors between two groups before and after the intervention. Results: A total of 134 patients in the intervention group and 129 patients in the control group completed the study. After adjusting for the age, gender, family income, medical insurance, chronic diseases and family history, the score of perceived barriers was increased by 1.65 (P=0.016), and perceived seriousness was decreased by 0.73 (P=0.018). The systolic blood pressure of patients was decreased by 7.37 mmHg (1 mmHg=0.133 kPa, P=0.001) and diastolic blood pressure was decreased by 4.07 mmHg (P=0.014), respectively. The β (95%CI) values were -7.37 (-11.88, -2.86) and -4.07 (-7.30, -0.84). The perceived susceptibility and self-efficacy had a significant influence on the blood pressure of patients (P<0.05). Conclusion: HBM-based health education intervention could significantly improve the blood pressure control of patients with hypertension in the community settings.

Wu et al. (2020) studied the development and evaluation of the Health Belief Model (HBM) scale for exercise, with the objective to develop a HBM scale for exercise among Chinese residents to describe the relationships between health beliefs and exercise for promoting residents to adopt or maintain exercise programs. Methods Participants were from two projects, Project 1 with 3833 participants and Project 2 with 7319 participants. A pool of 21 items was developed based on a small-scale qualitative study about health beliefs of exercise and literature. Internal consistency and construct validity of the scale were evaluated with Cronbach's α coefficient, exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and second-order confirmatory factor analysis. Results A final version of 18 items loaded on six factors which could explain 60.30-% of variance was observed after EFA. The internal consistency of the final version with 18 items performed in Project 1 was acceptable (0.609). The reliability of the six subscales was good with Cronbach's α coefficient of 0.628, 0.713, 0.628, 0.801, 0.676 and 0.838 for perceived benefits, perceived objective barriers, perceived subjective barriers, self-efficacy, perceived

severity and cues to action, respectively. CFA and second-order CFA indicated a good fit to data. Conclusions The HBM Scale for Exercise (HBMS-E) is a valid and reliable instrument to assess health beliefs of exercise among residents in China. Understanding the health beliefs of exercise will help health professionals to develop effective interventions for health and evaluate the effectiveness.

Xiang et al. (2020) studied the modelling health belief predictors of oral health and dental anxiety among adolescents based on the Health Belief Model (HBM): a cross-sectional study, with the objective to investigate the relationship between health belief factors, oral health and dental anxiety based on the constructs of the HBM. 1207 Grade 2 students from 12 secondary schools in Hong Kong were randomly selected and measured for the decayed, missing and filled permanent teeth (DMFT) index. Data for oral health behaviors, HBM constructs and dental anxiety were collected using questionnaires. The hierarchical entry of explanatory variables into logistic regression models estimating prevalence odds ratios (POR) were analyzed and 95% confidence intervals (95% CI) for DMFT and dental anxiety were generated. Path analysis was used to evaluate the appropriateness of the HBM as predictors for oral health behaviors, DMFT and dental anxiety. Based on the full model analysis, individuals with higher perceived susceptibility of oral diseases (POR: 1.33, 95% CI: 1.14–1.56) or girls or whose mother received higher education level were likelier to have a DMFT≥1, while those with higher perceived severity (POR: 1.31, 95% CI: 1.09–1.57), flossing weekly, DMFT≥1 or higher general anxiety level statistically increases the possibility of dental anxiety. The results from path analysis indicated that stronger perceived susceptibility, greater severity of oral diseases, less performing of oral health behaviors and a higher score of DMFT were directly related to increased dental anxiety level. Other HBM variables, such as perceived susceptibility, self-efficacy beliefs, cues to action and perceived barriers, might influence dental anxiety through oral health behaviors and caries status. Clarifying the propositional structures of the HBM may help the future design of theory-based interventions in reducing dental anxiety and preventing dental caries.

Lui et al. (2021) studied the effect of Health Belief Model (HBM) education on increasing cognition and self-care Behaviour among elderly women with malignant Gynaecological Tumours in Fujian, China, with the objective to evaluated the effect of a HBM educational intervention on the self-perception of and complications related to disease in elderly Gynaecological malignancy patients. Methods. This randomized controlled trial was conducted at the Fujian Maternal and Child Health Hospital, China. A total of 301 women aged 60 years and older who were diagnosed with Gynaecological malignancies from January 2019 to August 2020 were recruited. Participants were randomly divided into the HBM education and basic nursing groups. The participants in the HBM education group received perioperative rehabilitation education based on the HBM, and the participants in the basic nursing group received routine basic nursing. Rehabilitation training compliance,

psychological resilience, psychological flexibility, self-efficacy, self-care ability, and lower extremity deep venous thrombosis (LEDVT) incidence were assessed before and after the intervention. Results. Thirty-three women were excluded based on the exclusion criteria, and 268 participants were eventually included and randomly divided into two groups: 134 participants in the HBM education group and 134 participants in the basic nursing group. Before HBM education, there were no significant differences in the mean scores of psychological resilience (50.43±3.29 vs. 50.55±2.29, =0.738), psychological flexibility (48.98±3.45 vs. 49.29±3.59, =0.465), self-efficacy (26.49±5.26 vs. 26.29±6.41, =0.781), or rehabilitation training compliance (28.4% vs. 27.8%, =0.922) between the two groups. After HBM education, the scores of training compliance (80.6% vs. 30.1%, < 0.001), psychological resilience (55.47±5.01 vs. 50.46±2.62, <0.001), psychological flexibility (56.53±4.51 vs. 49.13±3.62, < 0.001), self-efficacy (30.79±4.56 vs. 26.41±6.37, <0.001), self-care knowledge (43.36±7.60 vs. 34.05±6.99, <0.001), self-concept (29.57±5.67 vs. 20.11±3.86, <0.001), self-care responsibility (27.54±5.09 vs. 20.86±4.53, <0.001), and self-care skills (34.51±5.62 vs. 21.62±5.64, <0.001) were higher in the HBM education group than those in the basic nursing group. Additionally, the incidence of LEDVT was lower in the HBM group than that in the basic nursing group (2.2% vs. 8.3%, =0.027). Conclusion. This study indicated that perioperative HBM education can improve the cognition and self-care ability of elderly Gynaecological malignancy patients and reduce postoperative complications.

Niu et al. (2021) studied the health beliefs, trust in media sources, health literacy, and preventive behaviors among high-risk Chinese for covid-19, with the objective to examine the engagement in coronavirus-related preventive health behaviors among vulnerable populations in China and identify the potential determinants, including factors from the Health Belief Model (HBM), trust in different media sources, and health literacy. The study found that the engagement in coronavirus-related preventive behaviors among vulnerable populations in China was significantly associated with barriers, benefits, self-efficacy, trust in doctors' social media, and trust in TV for COVID-19-related information. Barriers, benefits, self-efficacy, trust in doctors' social media, and trust in TV were found to mediate the effects of health literacy on preventive behaviors. These findings provide directions for future health promotions and interventions targeting vulnerable populations in China to enhance their preventive behaviors.

Wan et al. (2021) studied the physical exercise and the prosocial behaviors of students in China, with the objective to examine the causal relationship between physical exercise and prosocial behavior of junior middle school students in China. To determine the effects of physical exercise on students' prosocial behaviors, with a focus on the benefits for females compared to males. Participation in physical exercise significantly increases students' prosocial behavior by more than 0.2 standard points, according to the results of the study. Regular participation in physical exercise

improved students' prosocial behavior by 0.2 standard points on average, as estimated using ordinary least squares regression. The effects of physical exercise on prosocial behavior were found to be significant even after controlling for various variables. The study also found that the effects of physical exercise on prosocial behavior were similar across different household registration samples, with slightly larger estimated coefficients in the household registration sample, although the difference was not significant.

Gong & Sheng (2022) studied the current health belief of exercise conditions of Chinese college students and ways of improvements: an analysis based on the Health Belief Model (HBM), with the objective to discuss the differences in the parameters of exercise health beliefs among college students of different genders, and assess the relationship between demographic factors and parameters of exercise health beliefs, and examine the relationship between exercise self-efficacy and internal components of exercise health beliefs. A total of 313 Chinese college students from the Sichuan University of Arts and Science completed the exercise health belief scale voluntarily under the tutor's explanation. The results showed that compared with female students, male students have higher perceived benefits and self-efficacy of exercise and lower perceived subjective and objective barriers. Monthly family income has a significant positive correlation with exercise self-efficacy and a negative correlation with perceived subjective barriers to exercise disorder. Exercise self-efficacy has a positively correlated with perceived benefits and perceived severity and a significant negative correlation with perceived subjective and objective barriers. From the structural equation model, we found that family income no longer significantly impacted exercise self-efficacy. Within the exercise health belief items, we found only that there was negative relationship between perceived subjective barriers and exercise self-efficacy. According to the study, our findings provide a new psychological angle for understanding the exercise condition of college students and the restraining factors and provide new insights into increasing exercise self-efficacy to lower the subjective barriers to exercise. Future studies will focus on evaluating the relationship between exercise health belief components and college Students' physical activity levels and exercise behaviors.

Xu et al. (2022) studied the associated factors on physical activity among childhood cancer survivors in mainland China: a qualitative exploration applied Health Belief Model (HBM), with the objective to explore the associated factors on the PA performance among CCS. From September to December 2020, the study used purposive sampling to recruit 35 families (88.9%) as sampling units among two hospitals in Hangzhou City, China. The data collection conducted two designs on semi-structured interviews with different roles under family structure–children (n=35) and parents (n=35)–respectively. The design of predetermined questions relied on the HBM as a thematic framework. The qualitative analysis applied codebook thematic analysis and used the deductive approach to finalize the main findings. The study only

presented preliminary conclusions from interviews with CCS, which resulted in four themes (changes in PA performance; perceptions on participating PA; cognitions of PA; impacts from others) with eight sub-themes. In particular, CCS replied diversity changes in PA, but most of them mentioned the inactive PA after diagnosis, especially the decline of moderate-to-vigorous PA (MVPA). As for the "perceptions of PA," almost all CCS had substantial perceived benefits about PA, specifically on their physical well-being. All children also expressed perceived barriers to PA, including the side effects of disease and treatment, fatigue, academic burden, changes in psychological status, and lack of companions. On the cognitions of PA, the CCS had limited realizations of regular PA and low self-efficacy on MVPA. Furthermore, CCS expressed their need for support from their parents, school teachers, and healthcare providers. But in reality, they received less support on PA from these important people.

Yu et al. (2022) studied the pregnancy activity levels and impediments in the era of covid-19 based on the Health Belief Model (HBM): a cross-sectional study, with the objective to elucidated the precise effect of each moderator variable on prenatal physical activity (PPA) by examining demographic factors, the PPA-related health belief level (HBL), and the current PPA level. The HBM in conjunction with the international prenatal physical activity questionnaire was used. The HBL in pregnant parous women (PPW) (3.42) was significantly higher than that in nonpregnant nulliparous women (NNW) (3.06). The PPA level in pregnant nulliparous women (PNW) (5.67 metabolic equivalent-hours per week (MET-h/week)) was lower than in the PPW (6.01 MET-h/week). All HBM dimensions (except for perceived barriers) were positively correlated with exercise expenditure in both PNW and PPW. According to the regression tree, participants in PNW aged≤23 years with annual household incomes >CNY 100,001–150,000 had the highest energy expenditure (10.75 MET-h/week), whereas participants in PPW with a perceived benefit score of >4 had the highest energy expenditure (10 MET-h/week). The results demonstrated that the HBL in all groups was acceptable, whereas the PPA level was lower than the recommended PA level. In both PPW and PNW, the HBL was most strongly correlated with exercise expenditure. There is an urgent need to organize public-interest courses to alleviate household expenditure, raise the HBL about PPA in pregnant and NNW, and ensure personal health in the context of COVID-19.

Sheng et al. (2023) studied the exercise Health Belief Model (HBM) mediates the relationship between physical activity and peer support among Chinese college students: a cross-sectional survey, with the objective to explored the influence of the exercise HBM and peer support on university students' physical activity PA and clarified the related mechanism. Three hundred and thirty-six healthy university students (aged 19.4±1.3 years, 166 male and 170 female) from Sichuan University of Arts and Science in China were evaluated by the peer support scale, the HBM scale for exercise, and the physical activity scale (short volume). The results showed that

the male students' exercise self-efficacy and PA were markedly higher than female university students. Peer support was positively correlated with perceived benefits, exercise self-efficacy, perceived severity, and cues to action, and was adversely associated with perceived objective and subjective barriers. PA was positively correlated with perceived benefits and exercise self-efficacy, and negatively correlated with perceived objective and subjective barriers. Among the components of the exercise HBM, only exercise self-efficacy was suitable for constructing a structural equation model (SEM) with peer support and PA. The analysis showed that the predictive effect of exercise self-efficacy on PA was more significant than peer support, and exercise self-efficacy played a critical intermediary role. It is worth noting that, in the grouping model, the effect of male college students' exercise self-efficacy on PA was greater than that of female students, and the model fit of male peer support was better than that of female students. Although the impact of peer support on PA was less than that of exercise self-efficacy and the direct effect of peer support was less than the indirect effect, the impact of peer support on the PA of female university students was higher than that of male university students. This study revealed the impact of exercise self-efficacy and peer support on university students' PA and suggested that exercise self-efficacy is the main path to promoting university students' PA, followed by peer support. Peer support could affect university students' PA not only through direct effects but also through indirect effects. This study also suggested that female university students' peer support has a higher impact on PA than male students. Therefore, when formulating physical exercise courses in the future, it is necessary to give more peer support to female university students to compensate for their low exercise self-efficacy.

2. International Research

Aradista et al **(**2020**)** studied the Hubungan Antara Health Belief Model (HBM) Dengan Perilaku Kepatuhan Kebijakan Pembatasan Sosial Berskala Besar (psbb) Selama Pandemi covid-19 pada emerging adult, with the objective to look at the relationship of community compliance towards Pembatasan Sosial Berskala Besar (PSBB) policy and HBM. The HBM can explain how individuals perceive a health behavior and whether they are willing to implement it. The sampling technique used were purposive sampling which got 159 respondents who were in the emerging adult period and were domiciled in the three most affected provinces of COVID-19: DKI Jakarta, West Java and East Java. This research uses spearman test. The results of the analysis with the Spearman correlation n=159 is HBM has positive significant relationship with compliance. The study found a positive and significant relationship between the HBM and compliance with the Pembatasan Sosial Berskala Besar (PSBB) policy during the COVID-19 pandemic among emerging adults in Indonesia. The analysis using the Spearman correlation test showed that the HBM had a positive and significant relationship with compliance to the PSBB policy. These findings suggest that individuals' perception of health behavior, as explained by the HBM,

influences their willingness to comply with the PSBB policy during the COVID-19 pandemic

Fathian-Dastgerdi et al (2021) studied the factors associated with preventive behaviors of COVID-19 among adolescents: applying the Health Belief Model (HBM), with the objective to explore the adolescents' perceptions of preventive behaviors to avoid COVID-19 disease based on the HBM Method This cross-sectional study was conducted on 797 adolescents (aged between 12 and 18 years old), who were 7^{th}–12^{th} -grade students of 24 randomly selected schools from 28th May to June 28, 2020 in Isfahan, Iran An online self-administered questionnaire was adapted to measure the adolescents' perceived threats, barriers, benefits, self-efficacy, and cues to action toward protective behaviors Results Findings indicated that the adolescents' mean age was 147 (SD=17) and 537% of them were female Regardless of gender difference, there was a significant positive correlation between the adolescents' protective behaviors and their self-efficacy (r=062, P Conclusion In the context of coronavirus disease pandemic in adolescents, the HBM could provide a useful framework for planners to develop educational programs Moreover, in such a context, strategies to promote self-efficacy in adolescents should be considered more carefully to help them improve their protective behaviors

Duarsa et al (2021) studied the Health Belief Model (HBM) concept on the prevention of coronavirus disease-**19** using path analysis in west Nusa Tenggara, Indonesia, with the objective to identify the determinants of COVID-19 preventive behavior among people in West Nusa Tenggara, Indonesia, using the HBM. Materials and Methods: This was a cross-sectional study conducted in West Nusa Tenggara Province, Indonesia. The study sample included 385 randomly selected individuals. The dependent variable was COVID-19 preventive behavior. The data were collected by a questionnaire and analyzed by path analysis using Stata Statistical Software version 13 for Windows 64 bit. The results showed that COVID-19 preventive behavior was directly affected by attitude, perceived susceptibility, perceived benefits, perceived barriers, and biological sex. The study found that biological sex, age, attitude, knowledge, perceived susceptibility, perceived benefits, perceived barriers, perceived severity, availability of health facility, and exposure to regulation were the independent variables that influenced COVID-19 prevention behavior. The study also highlighted the limitations of the research, including the online nature of data collection and the potential overestimation of results due to self-reported data.

Elmwafie & Abdelaziz (2022) studied the effect of Health Belief Model (HBM) for preventing and controlling cancer risk behaviors among school age children, with the objective to assess the effectiveness of the HBM for preventing and controlling cancer risk behaviors among school age children. Materials and Methods: A quasi-experimental study was performed on a purposive sample of 100 school age children was selected from two governmental schools affiliated to Beni-Suef city. The data gathering tools were two questionnaires including cancer knowledge

questionnaire and HBM constructs questionnaire which were used. It used to measure practices for preventing and controlling cancer risk behaviors. The Questionnaires were completed before, immediately, and three months later after the intervention. Results: The present study results indicated that immediately and three months later after the intervention, the knowledge of studied children improved significantly and the mean scores of the HBM constructs (Perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and preventive cancer risks behaviors were increased than pre the program (P<0.001). Conclusion: The findings of the present study confirmed the practicability and effectiveness of the HBM based educational program in enhancing children's lifestyle behaviors about preventing and controlling cancer risks. Hence, these models can act as a framework for designing and implementing educational interventions for the cancer prevention at schools. Recommendation: The importance should be given to these classes in schools, try to increase children's perception of cancer risks, explain the benefits of protective behavior.

Moradi et al (2022) studied the educational intervention program based on Health Belief Model (HBM) and neck pain prevention behaviors in school teachers in Tehran, with the objective to evaluate the effectiveness of an educational intervention program based on the HBM to increase awareness, perceived sensitivity, perceived severity, perceived benefits, and self-efficacy in adopting neck health-promoting behaviors in school teachers. Methods The present study was a quasi-experimental of the randomized clinical trial that was conducted for 6 months (December 2020 to July 2021). Participants where 146 junior high school teachers were selected from 26 schools through random sampling and divided into two groups of intervention and control. The data collection instrument was the self-design questionnaire and was completed in three points of time (before, immediately, and 3 months after the intervention). The data were analyzed by software version 24 SPSS. Results The results showed that awareness, perceived sensitivity, perceived severity, perceived benefits and barriers, and self-efficacy in adopting neck health-promoting behaviors in the intervention group increased in two points of time (immediately after the intervention and 3 months of follow-up) (P<0.05). Conclusion Designing and implementing an educational intervention based on HBM could affect in adopting neck health-promoting behaviors among teachers.

Nour & Baktash (2022) studied the efficacy of Health Belief Model (HBM) in improving exercise behaviors to prevent diabetes mellitus among Mosul university employees, with the objective to determine the efficacy model of Health belief-based health education in improving exercise behaviors among Mosul University employees to prevent Diabetes disease. This study used an experimental design by employing a randomized control approach. The study comprised 81 individuals selected by using a simple random sampling method from five colleges of Mosul University. The sample is divided into two groups: the experimental (41) subjects and the control group (40)

individuals. The data is gathered three times (T1, T2, and T3) by adopting the exercise HBM scale. The study revealed that the sample's mean age (SD) is 45.26 (SD=8.59) and most of the participants are male (59.3%) and have bachelor's degree certificates (40.7%). On the other hand, the study indicated a significant change in participants' perceived seriousness, F (2, 79) = 9.265, P<0.000, perceived benefits of exercise in preventing diabetes, F (2, 79) =7.868, P<0.001, perceived barrier F (2,79) =7.643, p=0.001. The Bonofonei test proved that the change in participants' beliefs is related to the experimental group. This study is clinically important because it shows the role of health education in enhancing some beliefs related to exercise and its role in Diabetes prevention.

Panahi et al **(**2022**)** studied the predictors of adoption of preventive behaviors of premenstrual syndrome based on Health Belief Model (HBM) among female teenagers, with the objective to determining the predictors of adoption of preventive behaviors of PMS using the HBM among female teenagers. Materials and Methods: This cross-sectional-analytical study was conducted among **240** pre-university girl students of Tehran, Iran in **2016.** The sampling was performed using multi-stage random sampling. The data collection tool was a demographic information, a valid and reliable questionnaire available including PMS preventive behaviors and all constructs of HBM. The data were collected and then entered into SPSS software version **16** and analyzed using Pearson correlation coefficient, multiple regression tests and descriptive statistics. Results: The participated students obtained **38.5%** of the score for the adoption of preventive behaviors of PMS. The three constructs of perceived barriers, perceived susceptibility and self-efficacy were predictors of adoption of preventive behaviors of PMS. Overall, these constructs were able to predict **32.6%** of the behavioral changes. Conclusion: According to the results of this study, in the design and implementation of educational interventions should emphasize the constructs of perceived susceptibility, perceived barriers and self-efficacy as the most important predictors of adoption of preventive behaviors of PMS among Female Teenagers.

Vasli et al **(**2022**)** studied the predictors of COVID-19 preventive health behaviors among adolescents: the role of Health Belief Model (HBM) and health literacy, with the objective to evaluate the predictive role of the HBM constructs and health literacy (HL) in shaping the coronavirus disease 2019 (COVID-19) preventive health behaviors (PHBs) among adolescents. This cross-sectional study was conducted with 503 adolescent girls and boys, randomly selected via cluster sampling. For this purpose, the data were collected online through four research tools, including the demographic-clinical characteristics information questionnaire, the COVID-19 PHB Scale based on HBM, and the Health Literacy Scale for COVID-19. The data analysis was then performed by regression analysis along with the structural equation modeling (SEM), considering the significance level of 0.05. The regression analysis results demonstrated that following the one-unit increase in the values of self-efficacy

and cues to action, the COVID-19 PHBs elevated by 0.063 and 0.078 units, respectively. In addition, the COVID-19 PHBs subsided by 0.018 with the rise in the value of perceived barriers (P<0.001). According to the path analysis, the direct path from the COVID-19-related HL to the COVID-19 PHBs (B=0.097, β=0.087, 95% confidence interval [CI]=0.005–0.189) was significant. Furthermore, the indirect path from the COVID-19-related HL to the COVID-19 PHBs through perceived susceptibility (B=0.017, β=0.015, 95% CI=0.001–0.032), perceived barriers (B=0.029, β=0.026, 95% CI=0.004–0.055), self-efficacy (B=0.094, β=0.084, 95% CI=0.031–0.156), and cues to action (B=0.153, β=0.137, 95% CI=0.092–0.215) was significant. In keeping with the study results, it is essential to take some effective measures to boost the HBM constructs and HL among adolescents to improve their PHBs during pandemics such as COVID-19.

Ma et al (2023) studied the using the Health Belief Model (HBM) to assess the physical exercise behaviors of international students in south Korea during the pandemic, with the objective to assess the physical exercise behaviors of international students in South Korea during the COVID-19 pandemic. International students have the special status of being isolated in a foreign country during a pandemic. As Korea is a worldwide leader in education, it is important to understand the physical exercise behaviors of international students during this pandemic to assess the need for additional policies and support. The HBM was used to score the physical exercise motivation and behaviors of international students in South Korea during the COVID-19 pandemic. In total, 315 valid questionnaires were obtained and analyzed for this study. The reliability and validity of the data were also assessed. For all variables, the values for combined reliability and the Cronbach's α were higher than 0.70. The following conclusions were drawn by comparing the differences between the measures. The results of the Kaiser-Meyer-Olkin and Bartlett tests were also higher than 0.70, confirming high reliability and validity. This study found a correlation between the health beliefs of international students and age, education, and accommodation. Consequently, international students with lower health belief scores should be encouraged to pay more attention to their personal health, participate in more physical exercise, strengthen their motivation to participate in physical exercise, and increase the frequency of their participation.

Research Conceptual Framework

This study, based on a review of literature related to the Health Belief Model, exercise programs, physical exercise behaviors, adolescents, and related literature, The synthesis of theoretical has led to the development of variables and a conceptual framework for research. The independent variables are program to change exercise behavior with Health Belief Model patterns. The dependent variable is Health Belief Model, divided into five aspects: Perceived Risk, Perceived Severity, Perceived

Benefit, Perceived Barriers, and Perceived Self-efficacy and Physical Exercise Behavior.

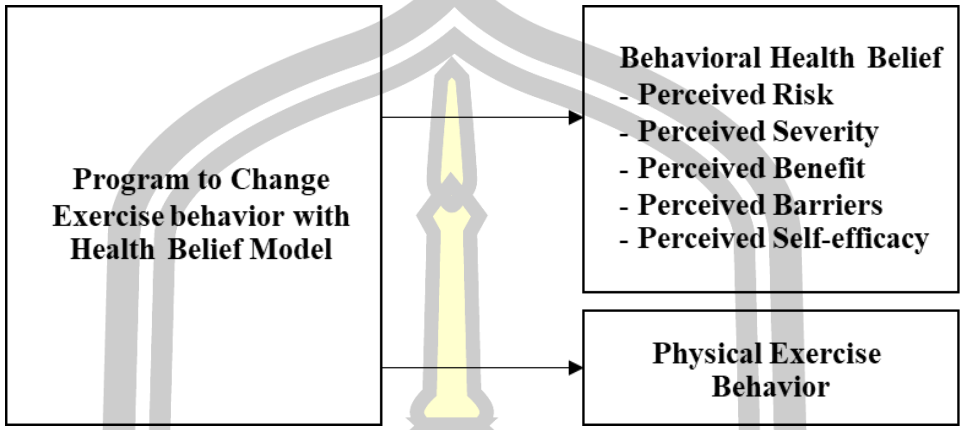


Figure 1 Research conceptual framework

CHAPTER III

RESEARCH METHODOLOGY

This research will follow a comprehensive research methodology consisting of three distinct phases, each designed to provide valuable insights into the potential impact of the Health Belief Model with an exercising program on adolescent physical exercise behaviors. The three phases are as follows:

- Research Design
- Phase 1: Compile Questionnaire
- Phase 2: Extensive Investigation
- Phase 3: Experimental Research
- Development of the Health Care Handbook
- Ethical Considerations
- Analysis of Data and Statistics

Research Design

This study includes investigation and experiment is designed to comprehensively investigate and experimentally evaluate the effectiveness of a Health Belief Model (HBM)-based intervention on physical exercise behaviors among Chinese adolescents in Guangdong Province. The study comprises three distinct phases, each contributing to a holistic understanding of the research objectives and research questions. In the first phase, data will be collected through structured questionnaires, employing both online and in-person methods, to capture a wide range of responses from the target population. Descriptive and inferential statistical analyses will be conducted to examine the relationships between HBM constructs and exercise behavior, and subgroup analyses will explore potential variations based on demographic variables. The second phase involves an extensive investigation through in-depth interviews and focus group discussions, providing qualitative insights to complement the quantitative findings. Thematic analysis will be employed to identify recurring themes and patterns in participants' perceptions and experiences. The third phase is the experimental research, where a 12-week HBM-based intervention will be implemented, and data will be collected before and after the intervention. Descriptive and inferential statistical analyses will assess changes in exercise behavior and HBM constructs, comparing the intervention and control groups. Qualitative findings from earlier phases will be integrated into the discussion to provide depth and context to the quantitative results. The synthesis of theoretical concepts has led to the development of a 12-week exercise program, as shown in Table 1

Table 1 The 12-week plan based on the health belief model applications:

Time	HBM Model Application	Action Details
Week 1	Perceived Risk	• Conduct seminars to educate about health risks associated with inactivity. • Prepare initial content outline for Health Care Handbook focusing on perceived risks of inactivity.
Week 2	Perceived Severity	• Host sessions with doctors discussing consequences of a sedentary lifestyle. • Draft sections on the severity of health issues due to lack of exercise for the Health Care Handbook.
Week 3	Perceived Benefit	• Organize a sports day to showcase the benefits of physical activities. • Compile a list of benefits of regular physical activity for inclusion in the Health Care Handbook.
Week 4	Perceived Barriers	• Identify barriers to exercise through surveys and group discussions. • Identify common barriers and start developing strategies to include in the Health Care Handbook.
Week 5	Perceived Self-efficacy	• Workshops to build confidence in maintaining exercise habits. • Design self-efficacy boosting activities and exercises for the Health Care Handbook.
Week 6	Perceived Risk	• Family events to highlight the impact of inactivity and associated risks. • Collect family feedback on perceived risks to refine the Health Care Handbook content.
Week 7	Perceived Severity	• Guest speakers share personal stories of health improvement through physical activity. • Integrate stories into the Health Care Handbook.
Week 8	Perceived Benefit	• Incentives for regular activity participation. • Incorporate incentive strategies into the Health Care Handbook to encourage

Time	HBM Model Application	Action Details
		consistent exercise.
Week 9	Perceived Barriers	• Support groups for adolescents to discuss challenges in exercising. • Establish a protocol for support group formation to be included in the Health Care Handbook.
Week 10	Perceived Self-efficacy	• Mentorship program to encourage exercise habits. • Develop a mentorship program framework for the Health Care Handbook.
Week 11	Review & Integration	• Review and integrate HBM into school programs based on feedback. • Survey sample groups to gather data on the effectiveness of the handbook materials and HBM application.
Week 12	Review & Integration	• Evaluate progress and strategize for the long-term integration of exercise behaviors. • Compile and store all collected data, finalize the Health Care Handbook, and prepare for dissemination.

Phase 1: Compile Questionnaire

1. Population and sample

The population for this study is Chinese adolescents residing in 8 cities in Guangdong Province, China, namely Tianhe District in Guangzhou City, Shatian Town in Dongguan City, Shunde District in Foshan City, Dong District in Zhongshan City, Chikan District in Zhanjiang City, Pingyuan County in Meizhou City, Xiangqiao District in Chaozhou City, and Wujiang District in Shaoguan City. This includes both male and female adolescents aged 10–19 years. The total estimated population within this group is approximately 723,098 individuals (National Bureau of Statistics, 2020, as cited in UNICEF China & UNFPA China, 2023).

2. Sample

The sample for this phase is Chinese adolescents residing in Guangdong Province, China. This includes both male and female adolescents aged 10–19 years. The sample size required for study is 3,000 samples. The sampling method convenience sampling is employed to select participants for the study.

In determining an appropriate sample size from this population, the researcher utilized Yamane's (1973) formula, a method acknowledged for its effectiveness in calculating sample sizes for large populations. The formula is articulated as:

$$n = \frac{N}{1 + N(e^2)}$$

Where n signifies the sample size, N is the total population, and e represents the margin of error, linked to the desired confidence level of the study.

The researcher opted for a 98% confidence level, corresponding to a margin of error of 2% (or 0.02 in decimal format). Implementing these values in Yamane's formula, the sample size calculation is as follows:

$$n = \frac{723{,}098}{1 + 723{,}098 \times (0.02^2)}$$

This calculation results in a sample size of approximately 2,500 samples. To accommodate potential non-responses and to ensure statistical robustness, the researcher decided to increase the sample size to 20%, 3,000 samples. This decision is aimed at guaranteeing that the study's findings are representative of the broader population, thereby enhancing the research's validity and reliability. The sample in Phase 1 is shown in Table 2.

Table 2 The population and sample in phase 1 compile questionnaire:

Area	Population	Sample
Tianhe District, Guangzhou City	221,148	375
Shatian Town, Dongguan City	19,134	375
Shunde District, Foshan City	286,165	375
Dong District, Zhongshan City	18,898	375
Chikan District, Zhanjiang City	51,488	375
Pingyuan County, Meizhou City	19,552	375
Xiangqiao District, Chaozhou City	62,625	375
Wujiang District, Shaoguan City	44,088	375
	723,098	**3,000**

Before the main data collection, a tryout will be conducted to test the questionnaire. The tryout will involve 10% of the main sample size (Fowler, 2013), which equals 300 samples. This step is crucial for refining the questionnaire and ensuring that the questions are clear and comprehensible to the target population.

3. Instrument

The instrument used in this phase is a structured questionnaire, designed in alignment with the constructs of the Health Belief Model (HBM), developed based on insights from a review of relevant concepts, theories, and research. This research tool is tailored to the research objectives and framework, divided into two main sections: Section 1 for general information and Section 2 for health beliefs, as follows:

1. General Information: This section includes questions related to the general characteristics of respondents, comprising 12 closed-ended questions.

2. Health Beliefs Questionnaire: This section contains questions on health beliefs, divided into five sub-sections, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy, based on the constructs of the Health Belief Model (HBM). This part includes 50 items using a 5-point Likert scale, with ratings as follows:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

3. Physical Exercise Behavior Questionnaire

This section assesses the physical exercise behaviors of Chinese youth in Guangdong Province, comprising 10 items on a 5-point Likert scale, with ratings as follows:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

The scores obtained from the responses are analyzed by calculating the mean values, which are then interpreted based on predefined ranges:

Mean score of **1.00-1.80** indicates Strongly Dissatisfied.
Mean score of **1.81-2.60** indicates Dissatisfied.
Mean score of **2.61-3.40** indicates Neutral.
Mean score of **3.41-4.20** indicates Satisfied.
Mean score of **4.21-5.00** indicates Strongly Satisfied.

Quality Assurance of the Questionnaire:

The content validity of the questionnaire was assessed by presenting it to five experts. They evaluated the accuracy of the content, the appropriateness of the

language used, and the alignment of each question with the research objectives using the Item-Objective Congruence (IOC) method. The scoring for IOC is as follows:

+1: The question is consistent with the research objectives.

-1: The question is not consistent with the research objectives.

0: Uncertain about the question's consistency with the research objectives.

The IOC score interpretation is as follows:

IOC ≥ **0.50:** The question is considered consistent with the research objectives.

IOC < **0.50:** The question is considered inconsistent with the research objectives.

The researcher calculated the IOC index for each question to determine its alignment with the research objectives. Questions with an IOC score between 0.5 and 1.0 were retained, while those with scores below 0.5 were either revised or removed.

Results of Content Validity Testing: The findings from the content validity testing are summarized in Table 3 (IOC scores of the questionnaire).

Table 3 Item objective congruence assessment of questionnaire content validity:

Item	IOC
Phase 1: Compile Questionnaire	**0.993**
Section 1 Perceived Risk	1.000
Section 2 Perceived Severity	0.980
Section 3 Perceived Benefit	1.000
Section 4 Perceived Barriers	1.000
Section 5 Perceived Self-efficacy	1.000
Section 6 Individual Behaviors	0.980

From Table 3, the compile questionnaire demonstrates high content validity, with an overall IOC score of 0.993. Most sections, such as perceived risk, benefit, barriers, and self-efficacy, scored 1.000, indicating excellent clarity and relevance. Section 6 on individual behaviors received a slightly lower score of 0.980, still indicating strong validity.

4. Reliability Testing: The reliability of the questionnaire was assessed through a try-out process. The questionnaire, refined and improved based on expert feedback, was tested using the Cronbach's Alpha Coefficient method. The reliability test resulted: $\alpha \geq 0.833$.

Table 4 Item objective congruence assessment of Cronbach's alpha reliability:

Item	Cronbach's Alpha
Phase 1 Compile Questionnaire	**0.833**
Section 1 Perceived Risk	0.834
Section 2 Perceived Severity	0.831
Section 3 Perceived Benefit	0.833
Section 4 Perceived Barriers	0.837
Section 5 Perceived Self-efficacy	0.829

From Table 4, the test of reliability to test the questionnaire with a sample of 300 sets to check the internal consistency of the questionnaire. which is an acceptable Cronbach's alpha coefficient. is greater than or equal to 0.7, which is used with questionnaires The overall data analysis result was 0.833, which is considered to be at a very good level, which means the questionnaire is reliable and can be studied with real samples.

4. Sampling Procedure

The sampling procedure for this phase is convenience sampling is employed to select participants for the study.

5. Data Collection Procedure

The data collection procedure for this phase entails the development of the questionnaire design, which will include the following sections:

1. Demographic Information: This section will collect information about the participants' age, gender, educational level, residential area, and any other relevant demographic variables.

2. HBM Constructs: This section will include items related to the HBM constructs:

- Perceived susceptibility: Participants will be asked about their perceptions of their vulnerability to health issues related to physical inactivity.
- Perceived severity: Participants will rate their perceptions of the seriousness of potential health problems resulting from a lack of physical exercise.
- Perceived benefits: Questions will assess the participants' beliefs about the advantages and positive outcomes associated with regular physical exercise.
- Perceived barriers: This section will explore the obstacles or hindrances that may deter adolescents from engaging in physical activity.
- Perceived self-efficacy: Participants will rate their confidence in their ability to overcome barriers and engage in physical exercise.

3. Exercise Behavior: This section will inquire about the participants' exercise routines, including the frequency, duration, and types of physical activities they engage in.

The data collection methods will be collected using a combination of electronic and in-person methods to reach a diverse range of respondents:

1. Online Surveys: A web-based survey platform will be utilized to distribute electronic questionnaires to a broad audience of Chinese adolescents in Guangdong Province. Participants can complete the survey at their convenience, and data will be collected securely.

2. In-Person Surveys: To ensure representation from individuals without access to digital resources, paper-based surveys will be administered at schools, community centers, or other accessible locations within the province. Trained data collectors will assist in the administration and collection of these surveys.

6. Data Analysis

The data analysis for this phase will encompass a series of steps aimed at scrutinizing the responses gathered through the questionnaire using the following process:

1. Data Cleaning: Before analysis, the quantitative data collected from the structured questionnaires will undergo a thorough cleaning process to identify and rectify any missing or erroneous data entries.

2. Descriptive Statistics: Descriptive statistics, including means, standard deviations, frequencies, and percentages, will be calculated to summarize demographic information, exercise behavior, and the HBM constructs (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy).

3. Inferential Statistics: Inferential statistics will be employed to explore relationships and associations between the HBM constructs and exercise behavior among Chinese adolescents in Guangdong Province. This will include:

- Correlation Analysis: Pearson correlation coefficients will be calculated to assess the strength and direction of relationships between the HBM constructs and exercise behavior. This will help determine whether perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy are significantly correlated with exercise behavior.
- Regression Analysis: Multiple regression analysis may be conducted to examine the predictive power of the HBM constructs in explaining exercise behavior. This analysis will help identify which of the HBM constructs are the strongest predictors of exercise behavior.

4. Subgroup Analysis: Subgroup analyses may be performed to explore potential differences in the relationships between HBM constructs and exercise behavior based on demographic variables such as age, gender, and educational level.

Phase 2: Extensive Investigation

1. Population and Sample

The population for this study is Chinese adolescents residing in Zhanjiang City, the total estimated population within this demographic is approximately 375 individuals from Phase 1.

The sample for this phase is Chinese adolescents residing in Zhanjiang City, Guangdong Province, China. This includes both male and female adolescents aged 10–19 years. The sample size required for study is 326 samples. The sampling method purposive sampling is employed to select participants for the study.

In determining an appropriate sample size from this population, the researcher utilized Yamane's (1973) formula, a method acknowledged for its effectiveness in calculating sample sizes for large populations. The formula is articulated as:

$$n = \frac{N}{1 + N(e^2)}$$

Where n signifies the sample size, N is the total population, and e represents the margin of error, linked to the desired confidence level of the study.

The researcher opted for a 98% confidence level, corresponding to a margin of error of 2% (or 0.02 in decimal format). Implementing these values in Yamane's formula, the sample size calculation is as follows:

$$n = \frac{375}{1 + 375 \times (0.02^2)}$$

This calculation results in a sample size of approximately 326 samples, reflecting the necessary population to achieve accurate results with the specified margin of error.

Table 5 The population and sample in phase 2 extensive investigation:

Area	Population	Aged	Sample
Chikan District, Zhanjiang City, Guangdong Province, China	375 individuals from Phase 1	10 years old	32
		11 years old	32
		12 years old	32
		13 years old	32
		14 years old	33
		15 years old	33
		16 years old	33
		17 years old	33
		18 years old	33
		19 years old	33
	375		**326**

From Table 5, A tryout will be conducted before the main data collection to test the interview guides and focus group discussion topics. The tryout will involve 10% of the main sample size (Fowler, 2013), which equals 33 samples. This step is

crucial for refining the qualitative research instruments and ensuring that they effectively elicit the necessary information from participants.

2. Instrument

The instrument for this phase is the in-depth interviews and focus group discussions. These methods will allow participants to share their perceptions, attitudes, and experiences related to the HBM and exercise among Chinese adolescents in Zhanjiang City, Guangdong Province.

The research instrument used in this study is a structured questionnaire, which is divided into the following sections:

1. General Information: This section contains 12 closed-ended questions with multiple-choice answers.

2. Core Content Sections: This part comprises five sub-sections that focus on the constructs of the Health Belief Model (HBM): perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy. Each sub-section uses a 5-point Likert scale for responses, which are rated as follows:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

The scores obtained from the responses are analyzed by calculating the mean values, which are then interpreted based on predefined ranges:

Mean score of 1.00-1.80 indicates Strongly Dissatisfied.
Mean score of 1.81-2.60 indicates Dissatisfied.
Mean score of 2.61-3.40 indicates Neutral.
Mean score of 3.41-4.20 indicates Satisfied.
Mean score of 4.21-5.00 indicates Strongly Satisfied.

Quality Assurance of the Questionnaire:

The content validity of the questionnaire was assessed by presenting it to five experts. They evaluated the accuracy of the content, the appropriateness of the language used, and the alignment of each question with the research objectives using the Item-Objective Congruence (IOC) method. The scoring for IOC is as follows:

+1: The question is consistent with the research objectives.
-1: The question is not consistent with the research objectives.
0: Uncertain about the question's consistency with the research objectives.

The IOC score interpretation is as follows:

IOC ≥ 0.50: The question is considered consistent with the research objectives.

IOC < 0.50: The question is considered inconsistent with the research objectives.

The researcher calculated the IOC index for each question to determine its alignment with the research objectives. Questions with an IOC score between 0.5 and 1.0 were retained, while those with scores below **0.5** were either revised or removed.

Results of Content Validity Testing: The findings from the content validity testing are summarized in Table 6 **(**IOC scores of the questionnaire).

Table 6 Item objective congruence assessment of questionnaire content validity:

Item	IOC
Phase 2: Extensive Investigation	**0.986**
Section 1 Perceived Risk	1.000
Section 2 Perceived Severity	1.000
Section 3 Perceived Benefit	1.000
Section 4 Perceived Barriers	0.880
Section 5 Perceived Self-efficacy	1.000
Section 6 Individual Behaviors	1.000

From Table 6, illustrates the Item Objective Congruence (IOC) assessment results for the questionnaire used in this study, organized by different phases and sections. Phase 2: Extensive Investigation received an overall IOC score of 0.986. While most sections scored 1.000, the section on perceived barriers scored 0.880, suggesting some need for refinement to better measure the intended construct.

Table 7 Item objective congruence assessment of Cronbach's alpha reliability:

Item	Cronbach's Alpha
Phase 2 Extensive Investigation	**0.832**
Section 1 Perceived Risk	0.799
Section 2 Perceived Severity	0.861
Section 3 Perceived Benefit	0.894
Section 4 Perceived Barriers	0.821
Section 5 Perceived Self-efficacy	0.806
Section 6 Individual Behaviors	0.812

From Table 7, the test of reliability to test the questionnaire with a sample of 33 sets to check the internal consistency of the questionnaire. which is an acceptable Cronbach's alpha coefficient. is greater than or equal to 0.7**,** which is used with

questionnaires The overall data analysis result was 0.832, which is considered to be at a very good level, which means the questionnaire is reliable and can be studied with real samples.

3. Sampling Procedure

The sampling procedure for this phase is purposive sampling is employed to select participants for the study.

4. Data Collection Procedure

The data collection procedure for this phase involves designing in-depth interviews, which will include semi-structured interviews and focus group discussions. The guides for these discussions have been meticulously crafted to foster open expression of participants' thoughts and feelings. The interview and discussion topics encompass:

1. Perceptions of physical exercise and its importance.
2. Attitudes toward health and well-being.
3. Experiences related to barriers and facilitators of physical exercise.
4. Perceptions of the HBM constructs and their influence on exercise behavior.
5. Suggestions for improving exercise promotion among Chinese adolescents.

The data collection methods will be collected through the following methods:

1. In-Depth Interviews: Researcher will conduct one-on-one interviews with selected participants, allowing them to provide detailed insights into their beliefs and experiences related to physical exercise and the HBM.

2. Focus Group Discussions: Participants will be organized into small focus groups to engage in facilitated discussions. These discussions will encourage group dynamics and the exchange of diverse perspectives on exercise and the HBM.

3. Audio Recordings: All in-depth interviews and focus group discussions will be audio-recorded to ensure accurate capture of participants' responses.

4. Field Notes: Researcher will take detailed field notes during interviews and focus group discussions to capture non-verbal cues, contextual information, and any additional insights

5. Data Analysis

The data analysis for this phase will involve a systematic approach to examining the information collected through the in-depth interviews and focus group discussions using the following process:

1. Transcription: The audio recordings of in-depth interviews and focus group discussions will be transcribed verbatim to create written transcripts for analysis.

2. Thematic Analysis: Thematic analysis will be employed to identify recurring themes, patterns, and insights from the qualitative data. This analysis involves the following steps:

- Data Familiarization: Researcher will become familiar with the data by reading and rereading the transcripts.
- Initial Coding: Initial codes will be generated to label and categorize segments of data that relate to specific themes or concepts.
- Theme Development: Codes will be grouped into broader themes based on their relevance and significance to the research questions.
- Data Mapping: Researcher will create visual representations (such as thematic maps or matrices) to organize and connect themes and subthemes.
- Interpretation: Themes will be interpreted to extract meaningful insights and conclusions related to the research objectives and questions.

3. Triangulation: Quantitative and qualitative findings will be compared and triangulated to provide a more comprehensive understanding of the effects of the HBM with an exercising program on exercise behaviors among Chinese adolescents. Triangulation will help validate and strengthen the study's overall conclusions.

4. Reporting: The results of the quantitative analysis will be presented using tables, charts, and statistical summaries. Qualitative findings will be reported using narrative descriptions and quotes from participants to illustrate key themes.

5. Integration: The quantitative and qualitative findings will be integrated in the discussion section of the research report to provide a holistic perspective on the research objectives and questions.

Phase 3: Experimental Research

1. Population and Sample

The population for this study is Chinese adolescents residing in Zhanjiang City, the total estimated population within this demographic is approximately 326 individuals from Phase 2

The determination of sample size can be done in various ways. This research will present the determination of sample size based on specific criteria. The sampling criteria are defined by using a criterion. In this case, knowing the exact population size beforehand and then use the criterion by specifying a percentage of the population. If the population size is in the hundreds, a sample group of at least 25% should be used or more (Ekakool, 2000).

The sample for this phase is Chinese adolescents residing in Zhanjiang City, Guangdong Province, China. This includes both male and female adolescents aged 10–19 years. The population from Phase 2 consists of 326 sample. The researcher used a criterion of 50%, resulting in a sample size of 163 sample. the total sample size for this study would be 160 samples. The sampling method purposive sampling is employed to select participants for the study. This calculation results in a sample size of approximately 80 samples per group. Given the design of the study involves comparing two groups. This sample size is chosen to ensure a robust detection of the

hypothesized effects, thereby enhancing the reliability and validity of the research findings.

Table 8 The population and sample in phase 3 extensive investigation:

Area	Population	Aged	Sample		Total
			Experimental Group	Control Group	
Chikan District, Zhanjiang City, Guangdong Province, China	326 individuals from Phase 2	10 years old	8	8	16
		11 years old	8	8	16
		12 years old	8	8	16
		13 years old	8	8	16
		14 years old	8	8	16
		15 years old	8	8	16
		16 years old	8	8	16
		17 years old	8	8	16
		18 years old	8	8	16
		19 years old	8	8	16
	326		**80**	**80**	**160**

From Table 8, Before the main experimental research, a tryout will be conducted to test the experimental design, the HBM questionnaire, and other research instruments. The tryout will involve 10% of the main sample size (Fowler, 2013), which equals 16 samples. This step is essential to ensure that the experimental procedures and instruments are functioning as intended and to make any necessary adjustments before the full-scale implementation.

2. Instrument

The instrument for this phase of the experimental research is composed of the following components:

1. HBM Questionnaire: A modified HBM questionnaire will be used to assess participants' baseline perceptions related to perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy regarding physical exercise.

2. Experimental Program: The experimental program itself, designed based on the principles of the HBM, will serve as an intervention instrument. It will include components aimed at enhancing participants' understanding of the benefits of physical exercise, reducing perceived barriers, and boosting self-efficacy.

3. Exercise Tracking and Monitoring Tools: Participants will be provided with tools or devices to track and monitor their exercise behaviors throughout the experimental period.

The research instrument used in this study is a structured questionnaire, which is divided into the following sections:

1. General Information: This section contains **12** closed-ended questions with multiple-choice answers.

2. Core Content Sections

This part comprises five sub-sections that focus on the constructs of the Health Belief Model (HBM): perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy. Each sub-section uses a **5**-point Likert scale for responses, which are rated as follows:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

The scores obtained from the responses are analyzed by calculating the mean values, which are then interpreted based on predefined ranges:

Mean score of **1.00-1.80** indicates Strongly Dissatisfied.
Mean score of **1.81-2.60** indicates Dissatisfied.
Mean score of **2.61-3.40** indicates Neutral.
Mean score of **3.41-4.20** indicates Satisfied.
Mean score of **4.21-5.00** indicates Strongly Satisfied.

Quality Assurance of the Questionnaire:

The content validity of the questionnaire was assessed by presenting it to five experts. They evaluated the accuracy of the content, the appropriateness of the language used, and the alignment of each question with the research objectives using the Item-Objective Congruence (IOC) method. The scoring for IOC is as follows:

+1: The question is consistent with the research objectives.
-1: The question is not consistent with the research objectives.
0: Uncertain about the question's consistency with the research objectives.

The IOC score interpretation is as follows:

IOC ≥ **0.50:** The question is considered consistent with the research objectives.

IOC < **0.50:** The question is considered inconsistent with the research objectives.

The researcher calculated the IOC index for each question to determine its alignment with the research objectives. Questions with an IOC score between 0.5 and 1.0 were retained, while those with scores below 0.5 were either revised or removed.

Results of Content Validity Testing: The findings from the content validity testing are summarized in Table 10 **(**IOC scores of the questionnaire).

Table 9 Item objective congruence assessment of questionnaire content validity:

Item	IOC
Phase 3: Experimental Research	**0.996**
Section 1 Perceived Risk	1.000
Section 2 Perceived Severity	1.000
Section 3 Perceived Benefit	1.000
Section 4 Perceived Barriers	1.000
Section 5 Perceived Self-efficacy	1.000
Section 6 Action Plan Evaluation	0.980

From Table 9, illustrates the Item Objective Congruence (IOC) assessment results for the questionnaire used in this study, organized by different phases and sections. Phase 3: Experimental Research achieved the highest overall IOC score of 0.996. All sections, except for the action plan evaluation, scored 1.000, reflecting highly precise and accurate measurement. The action plan evaluation received a score of 0.980, indicating minor ambiguities but overall strong content validity.

Table 10 Item objective congruence assessment of Cronbach's alpha reliability:

Item	Cronbach's Alpha
Phase 3 Experimental Research	**0.854**
Section 1 Perceived Risk	0.833
Section 2 Perceived Severity	0.886
Section 3 Perceived Benefit	0.864
Section 4 Perceived Barriers	0.857
Section 5 Perceived Self-efficacy	0.833
Section 6 Action Plan Evaluation	0.852

From Table 10, the test of reliability to test the questionnaire with a sample of 16 sets to check the internal consistency of the questionnaire. which is an acceptable Cronbach's alpha coefficient. is greater than or equal to 0.7, which is used with questionnaires The overall data analysis result was 0.854, which is considered to be at a very good level, which means the questionnaire is reliable and can be studied with real samples.

3. Sampling Procedure

The sampling procedure for this phase is purposive sampling is employed to select participants for the study. The selection of participants will be based on their willingness to participate, aiming to ensure a diverse representation of age, gender,

and other pertinent demographics within the target population. Informed consent will be acquired from both participants and, if applicable, their guardians in the case of individuals under 18 years of age.

4. Data Collection Procedure

The data collection procedure of 12-week experimental research phase investigating the impact of an HBM-based intervention on teenagers' exercise behavior. This phase entails the collection of data from participants both before and after the intervention to evaluate alterations in exercise behavior:

1. Participant Preparation:

- Participants who have been selected for the study will be contacted to confirm their participation in the 12-week intervention program.
- An initial meeting or orientation session will be scheduled to explain the study's objectives, the intervention program's structure, and the data collection process.
- Participants will be provided with informed consent forms for themselves and their parents or legal guardians (if under 18 years old) to review and sign.

2. Baseline Data Collection (Pre-Intervention)

- Prior to the start of the intervention, participants will complete a baseline assessment. This will include a questionnaire similar to the one used in the previous phases of the research, focusing on exercise behavior and the HBM constructs.
- Participants will be instructed to provide accurate and honest responses to the questionnaire.

3. Randomization and Group Assignment:

- After completing the baseline assessment, participants will be randomized into either the intervention group or the control group.
- Randomization will be conducted using a computer-generated randomization sequence to ensure equal distribution of participants between the two groups.

4. Intervention Implementation:

- The 12-week intervention program will commence for the participants in the intervention group.
- Participants in this group will attend weekly sessions, participate in motivational activities, and receive educational materials designed to promote exercise behavior.
- During the intervention, participants will be encouraged to set personal exercise goals and track their progress.

5. Control Group Monitoring:

- Participants in the control group will not receive any intervention during the 12-week period.
- Control group participants will be informed that they will have an opportunity to participate in a similar intervention after the study concludes.

6. Post-Intervention Data Collection (12 Weeks):

- After the 12-week intervention period, all participants (both intervention and control groups) will undergo a post-intervention assessment.
- This assessment will involve the same questionnaire used in the baseline assessment to measure exercise behavior and the HBM constructs.
- Participants will be instructed to provide accurate and honest responses, reflecting any changes in their exercise behavior and perceptions over the **12**-week period.

7. Data Submission: Participants will submit their completed questionnaires either electronically (if collected online) or in person (if collected through paper surveys) to the researcher.

5. Data Analysis

The data analysis for this phase will entail a systematic examination of the information gathered from the experimental research using the following process:

1. Data Cleaning:

- Raw data collected from the pre-intervention and post-intervention questionnaires will undergo thorough cleaning to identify and rectify any missing or erroneous data entries.
- Any inconsistencies or outliers will be addressed, ensuring the data's quality and accuracy.

2. Descriptive Statistics:

- Descriptive statistics will be calculated to summarize the characteristics of the study participants in both the intervention and control groups, including means, standard deviations, frequencies, and percentages.
- Descriptive statistics will also be computed to provide an overview of exercise behavior and the HBM constructs at baseline and post-intervention.

3. Inferential Statistics:

- Paired-samples t-tests will be conducted to assess within-group differences in exercise behavior and HBM construct scores from baseline to post-intervention for both the intervention and control groups.
- Independent-samples t-tests will be used to compare changes in exercise behavior and HBM construct scores between the intervention and control groups after the 12-week intervention period.
- Effect sizes Cohen's d will be calculated to determine the practical significance of any observed differences.
- Subgroup analyses will be performed to explore potential variations in the intervention's effects based on demographic variables such as age, gender, and baseline exercise levels.

4. Reporting:

- The results will be presented in a comprehensive report, including tables, figures, and statistical summaries to visualize and explain the changes in exercise behavior and HBM construct scores.
- Qualitative findings from the in-depth interviews and focus group discussions will be integrated into the discussion section to provide context and depth to the quantitative results.

5. Interpretation:

- The results will be interpreted to determine whether the HBM-based intervention had a significant impact on adolescent exercise behavior.
- Conclusions will be drawn regarding the effectiveness of the intervention in promoting physical activity among Chinese adolescents in Guangdong Province.
- Recommendations for future interventions and public health strategies will be provided based on the study's findings.

Development of the Health Care Handbook

The development of the Health Care Handbook for the experimental group in this research aimed to create a tool that promotes the modification of exercise behaviors among the target population, emphasizing the application of the principles of the Health Belief Model (HBM) in content creation. This Handbook was developed through a process of review and refinement. The development of the Health Care Handbook for Chinese adolescents in Guangdong Province is a crucial component of this research study, aimed at promoting physical exercise using the HBM as a guiding framework. This handbook will serve as a practical and accessible resource designed to facilitate the adoption and maintenance of a physically active lifestyle among adolescents. Here's a detailed overview of the process for developing the Health Care Handbook:

1. Needs Assessment

Before creating the handbook, it is essential to conduct a needs assessment to understand the specific challenges, barriers, and information gaps related to physical exercise among Chinese adolescents in Guangdong Province. This assessment may involve:

1. Reviewing existing literature and research findings on adolescent physical activity in the region.

2. Analyzing the data collected during the quantitative and qualitative stages of the study to identify key areas of concern and areas where the HBM can be applied effectively.

3. Gathering input from stakeholders, including adolescents, parents, educators, and healthcare professionals, to understand their perspectives on promoting physical exercise.

2. Content Development

Based on the needs assessment, the content of the Health Care Handbook will be carefully developed to address the identified challenges and gaps. The handbook's content will be aligned with the principles of the HBM, emphasizing key constructs such as perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy.

The handbook will include practical information and guidance on the following:

1. The Importance of Physical Exercise.
2. Strategies to Overcome Perceived Barriers to Physical Activity
3. Tips for enhancing perceived self-efficacy in engaging in regular exercise.
4. Information on local resources and opportunities for physical activity in Guangdong Province.
5. Suggestions for incorporating physical exercise into daily routines.
6. Guidance on setting realistic exercise goals and tracking progress.
7. Advice on creating a supportive and motivating environment, including parental involvement.
8. Information on the potential health consequences of a sedentary lifestyle.

The content will be developed in a clear, engaging, and culturally sensitive manner to resonate with the target audience of Chinese adolescents.

3. Visual Design

The visual design of the Health Care Handbook will be carefully considered to make the content visually appealing and accessible to adolescents. This may include the use of:

1. Engaging illustrations or graphics to explain key concepts and exercises.
2. Age-appropriate and culturally relevant images and visuals.
3. Clear and easy-to-read fonts and layout.
4. Color schemes that are visually appealing and conducive to learning.

The goal is to create a handbook that is visually engaging and encourages adolescents to explore its contents.

4. Language and Accessibility

1. The handbook will be developed in a language that is accessible and easy to understand for the target audience of Chinese adolescents. It will avoid jargon and complex terminology.
2. Consideration will be given to the diverse linguistic backgrounds and dialects within Guangdong Province to ensure inclusivity.
3. The handbook will also be designed to be accessible in both print and digital formats to cater to different preferences and accessibility needs.

5. Pilot Testing

1. Before finalizing the Health Care Handbook, a pilot testing phase will be conducted. A small sample of Chinese adolescents from the study population will be invited to review and provide feedback on the handbook.

2. Feedback from adolescents, parents, educators, and healthcare professionals will be collected to identify any areas for improvement in terms of content, clarity, and usability.

6. Revision and Finalization

1. Based on the feedback received during the pilot testing phase, revisions and refinements will be made to the handbook's content and design.

2. The final version of the Health Care Handbook will incorporate these improvements and be ready for dissemination.

7. Dissemination and Implementation

1. Once the handbook is finalized, it will be disseminated to Chinese adolescents in Guangdong Province through various channels, including schools, community centers, healthcare facilities, and digital platforms.

2. Workshops or educational sessions may be organized to introduce adolescents and their families to the handbook's content and how to use it effectively.

3. Efforts will be made to ensure wide accessibility and distribution to reach as many adolescents as possible.

8. Evaluation

1. The impact of the Health Care Handbook on promoting physical exercise among Chinese adolescents will be evaluated through follow-up assessments, surveys, or focus group discussions conducted after its dissemination.

2. Feedback and data on its effectiveness in influencing exercise behaviors and improving health outcomes will be collected and analyzed.

The development and dissemination of the Health Care Handbook represent a practical and actionable approach to addressing the decline in physical activity among Chinese adolescents in Guangdong Province. By applying the principles of the HBM and tailoring the content to the specific needs of this demographic, the handbook aims to empower adolescents to make informed choices about their health and well-being, ultimately contributing to a healthier future for this population.

Ethical Considerations

Ethical considerations are of paramount importance in conducting research involving human participants, especially when addressing sensitive topics such as health behaviors and well-being among adolescents. The following outlines the development of ethical considerations for this study on the effects of the HBM with

an exercising program on exercise behaviors among Chinese adolescents in Guangdong Province.

1. Informed Consent

1. Informed consent will be obtained from all participants or their legal guardians, in the case of minors. Participants will be provided with detailed information about the study's purpose, procedures, potential risks, benefits, and their rights as research subjects.

2. Consent forms will be written in a clear and understandable language. Participants will have the opportunity to ask questions and seek clarification before providing their consent.

3. For minors, both parental/guardian consent and assent from the adolescents themselves will be sought to ensure full understanding and voluntary participation.

2. Privacy and Confidentiality

1. Participants' privacy and confidentiality will be rigorously protected. All data collected will be anonymized, and no personally identifiable information will be disclosed in research reports or publications.

2. Data will be securely stored, with limited access to authorized research team members only.

3. Participant identities will be coded to ensure their anonymity during data analysis and reporting.

3. Voluntary Participation

1. Participation in the study will be entirely voluntary, and participants will have the right to withdraw at any time without consequences or negative repercussions.

2. Participants will be informed that their decision to participate or withdraw will not affect their access to services, education, or any other benefits.

4. Minimization of Harm

1. Steps will be taken to minimize any potential harm or discomfort to participants. This includes avoiding sensitive or distressing questions and ensuring that participation does not pose any physical or psychological risks.

2. Researcher will be sensitive to participants' emotional well-being during interviews and discussions, providing support if necessary.

5. Cultural Sensitivity

1. Cultural sensitivity will be maintained throughout the research process. Researcher will respect cultural norms and values specific to the Guangdong Province and the broader Chinese context.

2. Research materials and questions will be culturally appropriate, and participants' perspectives and beliefs will be respected.

6. Data Security

1. All data, whether collected electronically or on paper, will be securely stored and protected against unauthorized access.

2. Electronic data will be encrypted and stored on secure servers, and physical records will be stored in locked cabinets.

7. Beneficence

The research aims to benefit the well-being of Chinese adolescents by improving their physical activity behaviors and overall health. Any interventions or programs developed will prioritize the participants' best interests.

8. Reporting and Transparency

1. The research findings will be reported accurately and transparently, including both positive and negative results.

2. Any conflicts of interest or funding sources will be disclosed in research reports or publications.

9. Institutional Review

The study will seek approval from Ethics Committee to ensure compliance with ethical standards and guidelines.

10. Dissemination of Results

1. Research results will be disseminated through appropriate channels such as academic publications, conferences, and community outreach.

2. Participants will be informed about the outcomes of the research and how their participation contributed to the study's findings.

11. Continuous Monitoring

Throughout the research process, ethical considerations will be continuously monitored and reviewed to ensure that participants' rights and well-being are safeguarded.

By adhering to these ethical considerations, the researcher aims to conduct a study that is respectful, responsible, and beneficial to Chinese adolescents in Guangdong Province. These considerations will guide the entire research process, from data collection to reporting, with a focus on upholding the highest ethical standards.

The research study titled Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among Adolescents received approval for its

Human Research Ethics Application on February 7, 2024, with the ethics approval number 073-044/2024.

Analysis of Data and Statistics

This research project employs a combination of quantitative and qualitative research methods to investigate the effects of an HBM-based intervention on exercise behavior among Chinese adolescents in Guangdong Province. Here's an overview of the statistical analyses and data summaries for each phase:

1. Phase 1: Compilation of Questionnaires

Descriptive Statistics: Calculate means, standard deviations, frequencies, and percentages to summarize demographic information, exercise behavior, and HBM constructs (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy).

Inferential Statistics: Conduct correlation analysis (Pearson correlation coefficients) to assess the strength and direction of relationships between HBM constructs and exercise behavior. Perform regression analysis to determine which HBM constructs are the strongest predictors of exercise behavior.

Subgroup Analysis: Explore potential differences in the relationships between HBM constructs and exercise behavior based on demographic variables such as age, gender, and educational level.

2. Phase 2: Extensive Investigation

Qualitative Analysis: Conduct thematic analysis to identify recurring themes, patterns, and insights from in-depth interviews and focus group discussions. Triangulate qualitative findings with quantitative results to provide a comprehensive understanding of the research questions.

Reporting: Present qualitative findings using narrative descriptions and participant quotes to illustrate key themes.

3. Phase 3: Experimental Research

Descriptive Statistics: Calculate means, standard deviations, frequencies, and percentages to summarize characteristics of study participants, exercise behavior, and HBM constructs at baseline and post-intervention for both intervention and control groups.

Inferential Statistics: Conduct paired-samples t-tests to assess within-group differences in exercise behavior and HBM construct scores from baseline to post-intervention for both groups. Use independent-samples t-tests to compare changes in exercise behavior and HBM construct scores between the intervention and control groups after the 12-week intervention. Calculate effect sizes (Cohen's d) to determine the practical significance of observed differences.

Subgroup Analysis: Explore potential variations in the intervention's effects based on demographics.

Integration: Interpret and integrate qualitative findings into the discussion section to provide context and depth to the quantitative results.

Overall, this research project employs a rigorous data collection and analysis plan that combines quantitative statistical analyses, including correlation and regression, with qualitative thematic analysis to provide a comprehensive understanding of the impact of the HBM-based intervention on exercise behavior among Chinese adolescents. The mixed-methods approach enhances the validity and depth of the research findings .

CHAPTER IV

RESEARCH RESULTS

This chapter presents the findings of the research, following the comprehensive methodology outlined in Chapter III. The results are organized to provide a detailed analysis of the data collected across the three distinct phases of the study, each phase designed to evaluate the impact of the Health Belief Model (HBM) integrated with an exercising program on physical exercise behaviors among adolescents in Guangdong Province, China. The presentation of results is structured as follows:

- Phase 1: Compile Questionnaire
- Phase 2: Extensive Investigation
- Phase 3: Experimental Research
- Hypothesis of the Results

Phase 1: Compile Questionnaire

The population for this study is Chinese adolescents residing in 8 cities in Guangdong Province, China, namely Tianhe District in Guangzhou City, Shatian Town in Dongguan City, Shunde District in Foshan City, Dong District in Zhongshan City, Chikan District in Zhanjiang City, Pingyuan County in Meizhou City, Xiangqiao District in Chaozhou City, and Wujiang District in Shaoguan City. The total estimated population within this group is approximately 723,098 individuals (National Bureau of Statistics, 2020, as cited in UNICEF China & UNFPA China, 2023**).** The sample for this phase is Chinese adolescents residing in Guangdong Province, China. This includes both male and female adolescents aged 10–19 years. The sample size required for study is 3,000 samples. Results of the study are as follows:

1. Demographic Information

The analysis of personal characteristics data from a sample group of 3,000 people can be categorized into numbers and percentages according to the characteristics in each aspect as follows:

Table 11 The demographic information data of the sample group (n=3,000):

Demographic	Option	Frequency	Percentage
1. Area	- Tianhe District, Guangzhou City	375	12.50
	- Shatian Town, Dongguan City	375	12.50
	- Shunde District, Foshan City	375	12.50
	- Dong District, Zhongshan City	375	12.50
	- Chikan District, Zhanjiang City	375	12.50
	- Pingyuan County, Meizhou City	375	12.50
	- Xiangqiao District, Chaozhou City	375	12.50
	- Wujiang District, Shaoguan City	375	12.50
2. Gender	- Male	1,511	50.40
	- Female	1,489	49.60
3. Age	- 10 years old	300	10.00
	- 11 years old	300	10.00
	- 12 years old	300	10.00
	- 13 years old	300	10.00
	- 14 years old	300	10.00
	- 15 years old	300	10.00
	- 16 years old	300	10.00
	- 17 years old	300	10.00
	- 18 years old	300	10.00
	- 19 years old	300	10.00
4. Educational level	- Primary Education Certificate	900	30.00
	- Middle School Certificate	900	30.00
	- High School Certificate	900	30.00
	- University	300	10.00
5. Race/ Ethnicity	- Han Chinese	2,797	93.20
	- Zhuang	146	4.90
	- Yao	18	0.60
	- She	17	0.60
	- Man	9	0.30
	- Hui	5	0.20
	- Dong	8	0.30
6. Family Status	- Two-parent family	1,994	66.50
	- Single-parent family	796	26.50
	- Extended family	210	7.00
7. Family Income (monthly)	- RMB 3,000	24	0.80
	- RMB 3,001–6,000	51	1.70
	- RMB 6,001–10,000	528	17.60
	- RMB 10,001–30,000	1,425	47.50
	- RMB 30,001–50,000	501	16.70
	- RMB 50,001 and above	468	15.60
Total		**3,000**	**100**

From Table 11, the results of the study reveal the following: The sample consists of 3,000 Chinese adolescents residing in Guangdong Province, representing 100% of the study population. The majority of participants are from Zhongshan City, Foshan City, Shaoguan City, Guangzhou City, Zhanjiang City and Meizhou City. (375; 12.50% per city) The gender distribution is nearly equal, with 50.40% male (1,511 people) and 49.60% female (1,489 people). Each age group from 10 to 19 years is evenly represented at 10.00% per age group, or 300 individuals for each year. In terms of educational attainment, 30.00% of participants (900 people) have completed primary education (ages 10–12), 30.00% have completed lower secondary education (ages 13–15), 30.00% have finished upper secondary education (ages 16–18), and 10.00% (300 people) have higher education, such as vocational certificates or bachelor's degrees. Ethnic composition is dominated by Han ethnicity, which makes up 93.20% (2,797 people), followed by Zhuang (4.90%, 146 people), Yao (0.60%, 18 people), She (0.60%, 17 people), Manchu (0.30%, 9 people), Hui (0.20%, 5 people), and Dong (0.30%, 8 people). In terms of family structure, the majority of adolescents (66.50%, 1,994 people) come from two-parent households, 26.50% (796 people) come from single-parent households, and 7.00% (210 people) live in extended families. Family income distribution shows that 47.50% of families (1,425 people) earn between 10,001 and 30,000 yuan per month, 17.60% (528 people) earn between 6,001 and 10,000 yuan, and 16.70% (501 people) earn between 30,001 and 50,000 yuan. About 15.60% (468 people) have incomes exceeding 50,001 yuan, while a smaller proportion (1.70%, 51 people) earn between 3,001 and 6,000 yuan, and the fewest (0.80%, 24 people) earn below 3,000 yuan.

Table 12 The Demographic Information data of the sample group (n=3,000):

Demographic	Option	Frequency	Percentage
1. Factors influence the physical activity levels within your environment	- Cultural traditions	486	16.20
	- Access to facilities	505	16.80
	- Socioeconomic factors	489	16.30
	- Community support	505	16.80
	- Peer influence	505	16.80
	- Lack of representation in fitness media	510	17.00
2. Rate the availability of facilities and resources for physical activities in your community	- Excellent	750	25.00
	- Good	731	24.40
	- Fair	813	27.10
	- Poor	706	23.50
3. Experience limitations or challenges in participating in physical activities due to your health condition	- Never	603	20.10
	- Rarely	611	20.40
	- Occasionally	592	19.70
	- Frequently	574	19.10
	- Always	620	20.70
4. The main barriers you face in engaging in physical activities due to your health condition	- Pain or discomfort	278	9.20
	- Lack of energy	881	29.30
	- Fear of exacerbating the condition	426	14.20
	- Limited mobility	729	24.30
5. Think that participation in a structured exercising program, incorporating the Health Belief Model, would be more or less beneficial for adolescents with chronic health conditions compared to those without	- More beneficial	964	32.10
	- Equally beneficial	996	33.20
	- Less beneficial	1040	34.70
Total		**3,000**	**100**

From Table 12, the results of the study reveal the following: The most influential factor affecting exercise behavior is the lack of media coverage on fitness (17.00%, 510 people). Other notable factors include limited access to facilities and peer influence, each affecting 16.80% (505 people). Community support and socioeconomic status also play a role, affecting 16.30% (489 people) and 16.20% (486 people), respectively. Ratings for community fitness facilities were mostly average (27.10%, 813 people), with 25.00% (750 people) rating them as excellent, 24.40% (731 people) as good, and 23.50% (706 people) as poor. Regarding exercise frequency, 20.70% (620 people) report regular exercise, while 20.40% (611 people)

exercise occasionally, and 20.10% (603 people) never exercise. Others exercise sometimes (19.70%, 592 people) or frequently (19.10%, 574 people). The main health-related obstacle to exercise is lack of energy, affecting 29.30% (881 people), followed by limited mobility (24.30%, 729 people), fear of worsening symptoms (14.20%, 426 people), and pain or discomfort (9.20%, 278 people). When comparing the perceived effectiveness of structured exercise programs integrated with the Health Belief Model for adolescents with chronic illnesses to those without, 34.70% (1,040 people) believe the program is less beneficial, 33.20% (996 people) think it is equally beneficial, and 32.10% (964 people) consider it more beneficial.

2. Behavioral Health Belief

The analysis of behavioral health belief data from a sample group of 3,000 adolescents can be categorized into mean values, standard deviations, and their corresponding interpretations for each surveyed item as follows:

Table 13 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	2.94	0.39	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.51	0.12	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	3.01	0.42	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.50	0.12	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.92	0.43	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	2.96	0.40	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	3.01	0.41	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.98	0.38	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	2.99	0.40	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	3.01	0.43	Neutral
Total	**2.88**	**0.42**	**Neutral**

From Table 13, the results of the study in the Behavioral Health Belief Section 1: Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.88, S.D. = 0.42). The three items with the highest average ($\bar{X}$ = 3.01, S.D. = not specified) are: “To what extent do you believe that not exercising regularly puts you at risk for physical health issues?”, “How often do you think about the potential health risks of not engaging in physical exercise?”, and “How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?” The item with the lowest average is “How concerned are you about the potential negative consequences of not participating in physical exercise?” ($\bar{X}$ = 2.50, S.D. = 0.12), which falls under the “Fair” level.

Table 14 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	2.96	0.41	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	3.01	0.38	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	3.01	0.42	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	2.99	0.41	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.96	0.40	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	2.96	0.41	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	3.02	0.41	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	3.05	0.41	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	2.98	0.40	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	2.98	0.41	Neutral
Total	**2.99**	**0.43**	**Neutral**

From Table 14, the results of the study in Behavioral Health Belief Section 2: Perceived Severity indicate that the overall average is at a “Neutral” level ($\bar{X}$ = 2.99, S.D. = 0.43). The item with the highest average is “How often do you think about the

potential severity of the health problems that could result from not participating in regular physical exercise?" ($\bar{X}$ = 3.05, S.D. = 0.41), which is also at a "Neutral" level. The three items with the lowest averages are "How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?" ($\bar{X}$ = 2.96, S.D. = 0.41), "How much does the possibility of negative health consequences due to lack of physical exercise worry you?" ($\bar{X}$ = 2.96, S.D. = 0.40), and "To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?" ($\bar{X}$ = 2.96, S.D. = 0.41), all of which are at a "Neutral" level.

Table 15 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	3.00	0.41	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.49	0.12	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	3.01	0.42	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.50	0.12	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	2.96	0.42	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.02	0.41	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.97	0.41	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	3.03	0.39	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	2.99	0.41	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.94	0.40	Neutral
Total	**2.89**	**0.42**	**Neutral**

From Table 15, the results of the study in Section 3: Perceived Benefit indicate that the overall average is at a "Neutral" level ($\bar{X}$ = 2.89, S.D. = 0.42). The item with the highest average is "How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?" ($\bar{X}$ = 3.02, S.D. = 0.41), which is at a "Neutral" level. The item with the lowest average is "To what extent do you think engaging in regular physical exercise can improve your mental well-being?" ($\bar{X}$ = 2.49, S.D. = 0.12), falling under the "Fair" level.

Table 16 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.58	0.70	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.48	0.11	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	3.00	0.41	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	3.01	0.40	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.06	0.41	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.97	0.45	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	3.02	0.39	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	2.95	0.40	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	3.01	0.41	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	2.97	0.39	Neutral
Total	**3.00**	**0.44**	**Neutral**

From Table 16, the results of the study in Section 4: Perceived Barriers indicate that the overall average is at a “Neutral” level ($\bar{X}$ = 3.00, S.D. = 0.44). The item with the highest average is “What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)” ($\bar{X}$ = 3.58, S.D. = 0.70), which is at a “Good” level. The item with the lowest average is “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.48, S.D. = 0.11), which is at a “Fair” level.

Table 17 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.00	0.47	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	3.01	0.41	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	3.01	0.42	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.02	0.41	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.98	0.43	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.00	0.42	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.99	0.42	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.98	0.39	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.95	0.40	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.97	0.41	Neutral
Total	**2.99**	**0.44**	**Neutral**

From Table 17, the results of the study in Section 5: Perceived Self-efficacy indicate that the overall average is at a "Neutral" level ($\bar{X}$ = 2.99, S.D. = 0.44). The item with the highest average is "In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?" ($\bar{X}$ = 3.02, S.D. = 0.41), which is at a "Neutral" level. The item with the lowest average is "How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?" ($\bar{X}$ = 2.97, S.D. = 0.41), which is also at a "Neutral" level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 18 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.88	0.42	Neutral
Section 2: Perceived Severity	2.99	0.43	Neutral
Section 3: Perceived Benefit	2.89	0.42	Neutral
Section 4: Perceived Barriers	3.00	0.44	Neutral
Section 5: Perceived Self-efficacy	2.99	0.44	Neutral
Total	**2.95**	**0.43**	**Neutral**

From Table 18, The summary of Behavioral Health Belief. he results of the study in Section 1: Perceived Risk indicate that the overall average is at a "Neutral" level ($\bar{X}$ = 2.95, S.D. = 0.43). The item with the highest average is Section 4: Perceived Barriers ($\bar{X}$ = 3.00, S.D. = 0.44), which is at a "Neutral" level. The item with the lowest average is Section 1: Perceived Risk ($\bar{X}$ = 2.88, S.D. = 0.42), which is also at a "Neutral" level.

3. Physical Exercise Behavior

The analysis of Physical Exercise Behavior data from a sample group of **3,000** adolescents can be categorized into mean values, standard deviations, and their corresponding interpretations for each surveyed item as follows:

Table 19 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.06	0.40	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	3.00	0.41	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	3.00	0.42	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	2.99	0.42	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.54	0.12	Neutral
6. How well do you believe you can overcome	3.03	0.40	Neutral

Table 19 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
feelings of fatigue or tiredness to engage in physical exercise?			
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.49	0.12	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.99	0.40	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.04	0.41	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.94	0.41	Neutral
Total	**2.91**	**0.42**	**Neutral**

From the table 19, the overall physical exercise behavior of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.951, S.D. = 0.42). The analysis of individual items revealed that the item with the highest average score is "How confident are you that you can incorporate regular physical exercise into your daily routine?" ($\bar{X}$ = 3.06, S.D. = 0.42). The item with the second highest average score is "How confident are you in your ability to maintain a regular physical exercise routine over an extended period?" ($\bar{X}$ = 3.04, S.D. = 0.41). The third highest average score is for the item "How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?" ($\bar{X}$ = 3.03, S.D. = 0.40). The item with the lowest average score is "How confident are you in your ability to perform various types of physical exercises correctly?" ($\bar{X}$ = 2.49, S.D. = 0.41).

4. Detailed Analysis by City

After conducting an overall analysis of the **3,000** participants in Phase **1**, the researcher proceeded with a detailed analysis by city to gain deeper insights into the factors influencing exercise behaviors and health beliefs among adolescents in each area. Each city had an equal sample size of **375** participants, covering eight key cities in Guangdong Province: Tianhe in Guangzhou, Shatian in Dongguan, Shunde in Foshan, Dong in Zhongshan, Chikan in Zhanjiang, Pingyuan in Meizhou, Xiangqiao in Chaozhou, and Wujiang in Shaoguan. The analysis focused on two main aspects: behavioral health belief and physical exercise behavior. detailed as follows:

1. Tianhe District, Guangzhou City

- Behavioral Health Belief

The behavioral health beliefs of **375** adolescents from Tianhe District, Guangzhou City are summarized with mean values, standard deviations, and interpretations as follows:

Table 20 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	2.95	0.38	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.55	0.11	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	2.98	0.37	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.56	0.13	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.99	0.49	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	2.84	0.38	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	2.98	0.48	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	3.08	0.35	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	2.94	0.41	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	3.09	0.46	Neutral
Total	2.90	0.42	**Neutral**

From Table 20, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.90, S.D. = 0.42). The three items with the highest average are: “How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?” ($\bar{X}$ = 3.09, S.D. = 0.46), “7. To what extent do you think regular physical exercise can enhance your social life and relationships?” ($\bar{X}$ = 3.08, S.D. = 0.35), and “Do you believe that engaging in regular physical exercise can reduce the risk of health problems?” ($\bar{X}$ = 2.99, S.D. = 0.49). The item with the lowest average is “How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?” ($\bar{X}$ = 2.55, S.D. = 0.11), which falls under the “Fair” level.

Table 21 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	2.89	0.39	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	3.00	0.37	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	2.90	0.41	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	3.00	0.37	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.96	0.42	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	2.88	0.41	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	3.01	0.40	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	2.89	0.38	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	2.93	0.43	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	3.09	0.41	Neutral
Total	2.96	0.42	**Neutral**

From Table 21, the results of the study in the Behavioral Health Belief section on Perceived Severity indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.96, S.D. = 0.42). The three items with the highest average are: “To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?” ($\bar{X}$ = 3.09, S.D. = 0.41), “How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?” ($\bar{X}$ = 3.01, S.D. = 0.40), and “How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?” ($\bar{X}$ = 3.00, S.D. = 0.37). The item with the lowest average is “How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?” ($\bar{X}$ = 2.89, S.D. = 0.38), which remains at the “Neutral” level.

Table 22 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	3.07	0.39	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.54	0.09	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	3.00	0.36	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.42	0.12	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	3.01	0.41	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.10	0.42	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.95	0.37	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	3.09	0.37	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	2.95	0.41	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.94	0.36	Neutral
Total	**2.91**	**0.42**	**Neutral**

From Table 22, the results of the study in the Behavioral Health Belief section on Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.91, S.D. = 0.42). The three items with the highest average are: “How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?” ($\bar{X}$ = 3.09, S.D. = 0.37), “How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?” ($\bar{X}$ = 3.10, S.D. = 0.42), and “How much do you believe that regular physical exercise can positively impact your energy levels?” ($\bar{X}$ = 3.01, S.D. = 0.41). The item with the lowest average is “In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?” ($\bar{X}$ = 2.42, S.D. = 0.12), which falls under the “Fair” level.

Table 23 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.72	0.69	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.46	0.09	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	2.99	0.39	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	3.07	0.43	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.15	0.40	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.96	0.36	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	3.07	0.42	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	3.06	0.37	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	2.94	0.39	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	2.91	0.41	Neutral
Total	3.03	0.45	**Neutral**

From Table 23, the results of the study in the Behavioral Health Belief section on Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.03, S.D. = 0.45). The three items with the highest average are: “What are the main reasons that prevent you from engaging in regular physical exercise?” ($\bar{X}$ = 3.72, S.D. = 0.69), which is at the “Good” level, followed by “In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?” ($\bar{X}$ = 3.15, S.D. = 0.40), and “How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?” ($\bar{X}$ = 3.07, S.D. = 0.42). The item with the lowest average is “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.46, S.D. = 0.09), which falls under the “Fair” level.

Table 24 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	2.92	0.47	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.99	0.39	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	3.10	0.45	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	2.95	0.44	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.86	0.41	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.10	0.42	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.96	0.40	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.90	0.39	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.97	0.41	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.97	0.39	Neutral
Total	2.98	0.42	**Neutral**

From Table 24, the results of the study in the Behavioral Health Belief section on Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.98, S.D. = 0.42). The three items with the highest average are: “How confident are you that you can find time for physical exercise, even with a busy schedule?” ($\bar{X}$ = 3.10, S.D. = 0.45), “How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?” ($\bar{X}$ = 3.10, S.D. = 0.42), and “To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?” ($\bar{X}$ = 2.99, S.D. = 0.39). The item with the lowest average is “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\bar{X}$ = 2.86, S.D. = 0.41), which remains at the “Neutral” level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 25 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.90	0.42	Neutral
Section 2: Perceived Severity	2.96	0.42	Neutral
Section 3: Perceived Benefit	2.91	0.42	Neutral
Section 4: Perceived Barriers	3.03	0.45	Neutral
Section 5: Perceived Self-efficacy	2.98	0.42	Neutral
Total	2.96	0.42	**Neutral**

From the table 25, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.96, S.D. = 0.42). The analysis of individual items revealed that the item with the highest average score is “Section 4: Perceived Barriers” ($\bar{X}$ = 3.03, S.D. = 0.45). The item with the second highest average score is “Section 5: Perceived Self-efficacy” ($\bar{X}$ = 2.98, S.D. = 0.42). The third highest average score is for the item “Section 2: Perceived Severity” ($\bar{X}$ = 2.96, S.D. = 0.42), The item with the lowest average score is “Section 1: Perceived Risk” ($\bar{X}$ = 2.90, S.D. = 0.42).

- Physical Exercise Behavior

The physical exercise behaviors of 375 adolescents from Tianhe District, Guangzhou City are summarized with mean values, standard deviations, and interpretations as follows:

Table 26 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1.How confident are you that you can incorporate regular physical exercise into your daily routine?	2.97	0.37	Neutral
2.To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	3.01	0.38	Neutral
3.How confident are you that you can find time for physical exercise, even with a busy schedule?	2.98	0.39	Neutral
4.In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.03	0.46	Neutral
5.How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.56	0.15	Neutral
6.How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.03	0.36	Neutral
7.How confident are you in your ability to perform various types of physical exercises correctly?	2.45	0.12	Neutral
8.To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.95	0.40	Neutral
9.How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.03	0.41	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.89	0.32	Neutral
Total	2.89	0.42	**Neutral**

From the table 26, the overall Physical Exercise Behavior of Chinese Adolescents is at a Neutral level, ($\overline{X}$ = 2.89, S.D. = 0.42). The analysis of individual items revealed that the item with the highest average score is “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\overline{X}$ = 3.03, S.D. = 0.46). “How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?” ($\overline{X}$ = 3.03, S.D. = 0.36), and “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” = 3.03, S.D. = 0.41). The item with the second highest average score is “To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?” ($\overline{X}$ = 3.01, S.D. = 0.38), The third highest average score is for the item “How confident are you that you can find time for physical exercise, even with a busy schedule?” ($\overline{X}$ = 2.98, S.D. = 0.39), The item with the lowest average score is “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\overline{X}$ = 2.56, S.D. = 0.15).

2. Shatian Town, Dongguan City

- Behavioral Health Belief

The behavioral health beliefs of **375** adolescents from Shatian Town, Dongguan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 27 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	2.89	0.38	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.43	0.12	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	3.12	0.39	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.42	0.08	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.98	0.39	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	2.84	0.42	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	2.99	0.39	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.97	0.40	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	3.01	0.40	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	3.13	0.37	Neutral
Total	**2.88**	**0.41**	**Neutral**

From Table 27, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.88, S.D. = 0.41). The three items with the highest average are: “How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?” ($\bar{X}$ = 3.13, S.D. = 0.37), “To what extent do you believe that not exercising regularly puts you at risk for physical health issues?” ($\bar{X}$ = 3.12, S.D. = 0.39), and “Do you believe that engaging in regular physical exercise can reduce the risk of health problems?” ($\bar{X}$ = 2.98, S.D. = 0.39). The item with the lowest average is “How concerned are you about the potential negative consequences of not

participating in physical exercise?" ($\bar{X}$ = 2.42, S.D. = 0.08), which falls under the "Fair" level.

Table 28 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	2.93	0.44	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	3.02	0.38	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	2.99	0.42	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	2.95	0.36	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.97	0.39	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	2.95	0.48	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	2.95	0.45	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	2.98	0.45	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	2.89	0.40	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	2.90	0.37	Neutral
Total	**2.95**	**0.44**	**Neutral**

From Table 28, the results of the study in the Behavioral Health Belief section on Perceived Severity indicate that the overall average is at a "Neutral" level, with ($\bar{X}$ = 2.95, S.D. = 0.44). The three items with the highest averages are: "How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?" ($\bar{X}$ = 3.02, S.D. = 0.38), "In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?" ($\bar{X}$ = 2.99, S.D. = 0.42), and "How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?" ($\bar{X}$ = 2.98, S.D. = 0.45). The item with the lowest average is "How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?" ($\bar{X}$ = 2.89, S.D. = 0.40), which remains at the "Neutral" level.

Table 29 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	2.95	0.45	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.56	0.12	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	2.99	0.41	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.46	0.13	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	2.87	0.43	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.08	0.40	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	3.08	0.43	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	3.09	0.40	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	2.99	0.43	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.98	0.41	Neutral
Total	**2.90**	**0.44**	**Neutral**

From Table 29, the results of the study in the Behavioral Health Belief section on Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.90, S.D. = 0.44). The three items with the highest averages are: “How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?” ($\bar{X}$ = 3.09, S.D. = 0.40), “How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?” ($\bar{X}$ = 3.08, S.D. = 0.40), and “To what extent do you think regular physical exercise can enhance your social life and relationships?” ($\bar{X}$ = 3.08, S.D. = 0.43). The item with the lowest average is “In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?” ($\bar{X}$ = 2.46, S.D. = 0.13), which falls under the “Fair” level.

Table 30 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.61	0.72	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.51	0.11	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	2.99	0.41	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	3.09	0.39	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.07	0.45	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.99	0.37	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	2.97	0.42	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	2.96	0.47	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	2.89	0.39	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	2.95	0.41	Neutral
Total	**3.00**	**0.46**	**Neutral**

From Table 30, the results of the study in the Behavioral Health Belief section on Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.00, S.D. = 0.46). The three items with the highest averages are: “What are the main reasons that prevent you from engaging in regular physical exercise?” ($\bar{X}$ = 3.61, S.D. = 0.72), which is at the “Good” level, followed by “In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?” ($\bar{X}$ = 3.07, S.D. = 0.45) and “How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?” ($\bar{X}$ = 3.09, S.D. = 0.39). The item with the lowest average is “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.51, S.D. = 0.11), which falls under the “Fair” level.

Table 31 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	2.88	0.47	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	3.04	0.41	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	2.99	0.43	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.07	0.42	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	3.03	0.42	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	2.97	0.44	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.90	0.39	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	3.12	0.39	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.09	0.40	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.93	0.40	Neutral
Total	**3.00**	**0.48**	**Neutral**

From Table 31, the results of the study in the Behavioral Health Belief section on Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.00, S.D. = 0.48). The three items with the highest averages are: “To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?” ($\bar{X}$ = 3.12, S.D. = 0.39), “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” ($\bar{X}$ = 3.09, S.D. = 0.40), and “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\bar{X}$ = 3.07, S.D. = 0.42). The item with the lowest average is “How confident are you that you can incorporate regular physical exercise into your daily routine?” ($\bar{X}$ = 2.88, S.D. = 0.47), which remains at the “Neutral” level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 32 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.88	0.41	Neutral
Section 2: Perceived Severity	2.95	0.44	Neutral
Section 3: Perceived Benefit	2.90	0.44	Neutral
Section 4: Perceived Barriers	3.00	0.46	Neutral
Section 5: Perceived Self-efficacy	3.00	0.48	Neutral
Total	**2.95**	**0.45**	**Neutral**

From the table 32, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.95, S.D. = 0.45). The analysis of individual items revealed that the item with the highest average score is “Section 4: Perceived Barriers” ($\bar{X}$ = 3.00, S.D. = 0.46), and “Section 5: Perceived Self-efficacy” ($\bar{X}$ = 3.00, S.D. = 0.48). The item with the second highest average score is “Section 2: Perceived Severity” ($\bar{X}$ = 2.90, S.D. = 0.44). The third highest average score is for the item “Section 3: Perceived Benefit”. ($\bar{X}$ = 2.90, S.D. = 0.44). The item with the lowest average score is “Section 1: Perceived Risk” ($\bar{X}$ = 2.88, S.D. = 0.41).

- Physical Exercise Behavior

The physical exercise behaviors of **375** adolescents from Shatian Town, Dongguan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 33 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.09	0.43	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.98	0.41	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	2.97	0.45	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.07	0.42	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.56	0.12	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.03	0.47	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.41	0.10	Neutral
8.To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.92	0.42	Neutral
9.How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.15	0.41	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.93	0.41	Neutral
Total	2.91	0.43	**Neutral**

From the table 33, the overall Physical Exercise Behavior of Chinese adolescents is at a Neutral level, ($\overline{X}$ = 2.91, S.D. = 0.43). The analysis of individual items revealed that the item with the highest average score is “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” ($\overline{X}$ = 3.15, S.D. = 0.41). The item with the second highest average score is “How confident are you that you can incorporate regular physical exercise into your daily routine?” ($\overline{X}$ = 3.09, S.D. = 0.43). The third highest average score is for the item “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\overline{X}$ = 3.07, S.D. = 0.43). The item with the lowest average score is “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\overline{X}$ = 2.56, S.D. = 0.12).

3. Shunde District, Foshan City

- Behavioral Health Belief

The behavioral health beliefs of 375 adolescents from Shunde District, Foshan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 34 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	2.83	0.42	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.55	0.15	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	3.03	0.42	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.54	0.11	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.89	0.45	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	2.98	0.43	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	3.10	0.38	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	3.01	0.40	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	3.10	0.41	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	2.93	0.43	Neutral
Total	**2.90**	**0.42**	**Neutral**

From Table 34, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.90, S.D. = 0.42). The three items with the highest averages are: “How often do you think about the potential health risks of not engaging in physical exercise?” ($\bar{X}$ = 3.10, S.D. = 0.38), “To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?” ($\bar{X}$ = 3.10, S.D. = 0.41), and “To what extent do you believe that not exercising regularly puts you at risk for physical health issues?” ($\bar{X}$ = 3.03, S.D. = 0.42). The item with the lowest average is “How

concerned are you about the potential negative consequences of not participating in physical exercise?" ($\bar{X}$ = 2.54, S.D. = 0.11), which falls under the "Fair" level.

Table 35 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	2.95	0.40	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	2.98	0.32	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	3.16	0.41	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	2.99	0.40	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.87	0.42	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	2.92	0.40	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	2.98	0.43	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	3.04	0.40	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	2.86	0.40	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	3.02	0.40	Neutral
Total	**2.98**	**0.42**	**Neutral**

From Table 35, the results of the study in the Behavioral Health Belief section on Perceived Severity indicate that the overall average is at a "Neutral" level, with ($\bar{X}$ = 2.98, S.D. = 0.42). The three items with the highest averages are: "In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?" ($\bar{X}$ = 3.16, S.D. = 0.41), "To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?" ($\bar{X}$ = 3.02, S.D. = 0.40), and "How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?" ($\bar{X}$ = 3.04, S.D. = 0.40). The item with the lowest average is "How much does the possibility of negative health consequences due to lack of physical exercise worry you?" ($\bar{X}$ = 2.87, S.D. = 0.42), which also remains at the "Neutral" level.

Table 36 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	3.01	0.37	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.58	0.13	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	3.05	0.39	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.47	0.09	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	2.97	0.42	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.00	0.38	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.99	0.43	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	2.96	0.40	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	2.94	0.37	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.85	0.44	Neutral
Total	**2.88**	**0.41**	**Neutral**

From Table 36, the results of the study in the Behavioral Health Belief section on Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.88, S.D. = 0.41). The three items with the highest averages are: “How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?” ($\bar{X}$ = 3.05, S.D. = 0.39), “How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?” ($\bar{X}$ = 3.01, S.D. = 0.37), and “How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?” ($\bar{X}$ = 3.00, S.D. = 0.38). The item with the lowest average is “In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?” ($\bar{X}$ = 2.47, S.D. = 0.09), which falls under the “Fair” level.

Table 37 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.53	0.72	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.58	0.09	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	3.07	0.42	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	2.94	0.38	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.08	0.40	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.99	0.43	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	3.11	0.38	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	2.86	0.39	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	3.10	0.44	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	3.01	0.36	Neutral
Total	**3.03**	**0.45**	**Neutral**

From Table 37, the results of the study in the Behavioral Health Belief section on Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.03, S.D. = 0.45). The three items with the highest averages are: “How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?” ($\bar{X}$ = 3.11, S.D. = 0.38), “To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?” ($\bar{X}$ = 3.10, S.D. = 0.44), and “In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?” ($\bar{X}$ = 3.08, S.D. = 0.40). The item with the lowest average is “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.58, S.D. = 0.09), which falls under the “Fair” level.

Table 38 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.07	0.42	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.99	0.44	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	3.04	0.44	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.02	0.41	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.97	0.49	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.01	0.43	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.98	0.39	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.97	0.40	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.99	0.37	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.99	0.38	Neutral
Total	**3.00**	**0.43**	**Neutral**

From Table 38, the results of the study in the Behavioral Health Belief section on Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.00, S.D. = 0.43). The three items with the highest averages are: “How confident are you that you can incorporate regular physical exercise into your daily routine?” ($\bar{X}$ = 3.07, S.D. = 0.42), “How confident are you that you can find time for physical exercise, even with a busy schedule?” ($\bar{X}$ = 3.04, S.D. = 0.44), and “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\bar{X}$ = 3.02, S.D. = 0.41). The item with the lowest average is “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\bar{X}$ = 2.97, S.D. = 0.49), which remains at the “Neutral” level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 39 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.90	0.42	Neutral
Section 2: Perceived Severity	2.98	0.42	Neutral
Section 3: Perceived Benefit	2.88	0.41	Neutral
Section 4: Perceived Barriers	3.03	0.45	Neutral
Section 5: Perceived Self-efficacy	3.00	0.43	Neutral
Total	**2.96**	**0.43**	**Neutral**

From the table 39, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.96, S.D. = 0.43). The analysis of individual items revealed that the item with the highest average score is "Section 4: Perceived Barriers" ($\bar{X}$ = 3.03, S.D. = 0.45). The item with the second highest average score is "Section 5: Perceived Self-efficacy" ($\bar{X}$ = 3.00, S.D. = 0.43). The third highest average score is for the item "Section 2: Perceived Severity". ($\bar{X}$ = 3.98, S.D. = 0.42). The item with the lowest average score is "Section 3: Perceived Benefit" ($\bar{X}$ = 2.88, S.D. = 0.41).

- Physical Exercise Behavior

The physical exercise behaviors of **375** adolescents from Shunde District, Foshan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 40 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1.How confident are you that you can incorporate regular physical exercise into your daily routine?	3.08	0.37	Neutral
2.To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.97	0.36	Neutral
3.How confident are you that you can find time for physical exercise, even with a busy schedule?	2.91	0.42	Neutral
4.In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.13	0.38	Neutral
5.How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.52	0.14	Neutral
6.How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	2.89	0.40	Neutral
7.How confident are you in your ability to perform various types of physical exercises correctly?	2.55	0.12	Neutral
8.To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	3.05	0.38	Neutral
9.How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.09	0.44	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.77	0.42	Neutral
Total	**2.89**	**0.41**	**Neutral**

From the table 40, the overall Physical Exercise Behavior of Chinese Adolescents is at a Neutral level, ($\bar{X}$ = 2.89, S.D. = 0.41). The analysis of individual items revealed that the item with the highest average score is “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\bar{X}$ = 3.13, S.D. = 0.38). The item with the second highest average score is “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” ($\bar{X}$ = 3.09, S.D. = 0.44). The third highest average score is for the item “.How confident are you that you can incorporate regular physical exercise into your daily routine?”. ($\bar{X}$ = 3.08, S.D. = 0.37). The item with the lowest average score is “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\bar{X}$ = 2.52, S.D. = 0.14).

4. Dong District, Zhongshan City

- Behavioral Health Belief

The behavioral health beliefs of 375 adolescents from Dong District, Zhongshan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 41 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	3.04	0.38	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.45	0.14	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	2.89	0.47	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.46	0.09	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.97	0.45	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	2.88	0.39	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	2.96	0.42	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.99	0.35	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	3.02	0.37	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	3.00	0.44	Neutral
Total	**2.87**	**0.43**	**Neutral**

From Table 41, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.87, S.D. = 0.43). The three items with the highest averages are: “How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?” ($\bar{X}$ = 3.04, S.D. = 0.38), “To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?” ($\bar{X}$ = 3.02, S.D. = 0.37), and “How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?” ($\bar{X}$ = 3.00, S.D. = 0.44). The item with the lowest average is “How

would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?" ($\bar{X}$ = 2.45, S.D. = 0.14), which falls under the "Fair" level.

Table 42 Shown mean, standard deviation and meaning of Perceived Severity

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	3.02	0.39	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	3.09	0.40	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	2.98	0.38	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	3.13	0.40	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.95	0.42	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	3.02	0.42	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	3.05	0.38	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	3.17	0.44	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	2.94	0.42	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	2.94	0.39	Neutral
Total	**3.03**	**0.44**	**Neutral**

From Table 42, the results of the study in the Behavioral Health Belief section on Perceived Severity indicate that the overall average is at a "Neutral" level, with ($\bar{X}$ = 3.03, S.D. = 0.44). The three items with the highest averages are: "How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?" ($\bar{X}$ = 3.17, S.D. = 0.44), "How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?" ($\bar{X}$ = 3.13, S.D. = 0.40), and "How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?" ($\bar{X}$ = 3.05, S.D. = 0.38). The item with the lowest average is "How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?" ($\bar{X}$ = 2.94, S.D. = 0.42), which remains at the "Neutral" level.

Table 43 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	3.06	0.44	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.45	0.12	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	3.05	0.45	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.45	0.13	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	3.03	0.37	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.03	0.41	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.97	0.44	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	3.02	0.37	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	2.93	0.39	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.95	0.44	Neutral
Total	**2.89**	**0.42**	**Neutral**

From Table 43, the results of the study in the Behavioral Health Belief section on Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.89, S.D. = 0.42). The three items with the highest averages are: “How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?” ($\bar{X}$ = 3.06, S.D. = 0.44), “How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?” ($\bar{X}$ = 3.05, S.D. = 0.45), and “How much do you believe that regular physical exercise can positively impact your energy levels?” ($\bar{X}$ = 3.03, S.D. = 0.37). The items with the lowest averages are “To what extent do you think engaging in regular physical exercise can improve your mental well-being?” ($\bar{X}$ = 2.45, S.D. = 0.12) and “In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?” ($\bar{X}$ = 2.45, S.D. = 0.13), both of which fall under the “Fair” level.

Table 44 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.56	0.70	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.45	0.10	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	2.95	0.37	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	2.89	0.42	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.09	0.37	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.97	0.42	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	2.98	0.39	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	2.99	0.42	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	3.08	0.40	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	2.97	0.34	Neutral
Total	**2.99**	**0.43**	**Neutral**

From Table 44, the results of the study in the Behavioral Health Belief section on Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.99, S.D. = 0.43). The three items with the highest averages are: “What are the main reasons that prevent you from engaging in regular physical exercise?” ($\bar{X}$ = 3.56, S.D. = 0.70), which falls under the “Good” level, followed by “To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?” ($\bar{X}$ = 3.08, S.D. = 0.40) and “In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?” ($\bar{X}$ = 3.09, S.D. = 0.37). The item with the lowest average is “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.45, S.D. = 0.10), which falls under the “Fair” level.

Table 45 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	2.98	0.42	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.99	0.42	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	3.04	0.42	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.01	0.40	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	3.08	0.44	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.03	0.45	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	3.17	0.44	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	3.01	0.43	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.86	0.38	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	3.02	0.43	Neutral
Total	**3.02**	**0.44**	**Neutral**

From Table 45, the results of the study in the Behavioral Health Belief section on Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.02, S.D. = 0.44). The three items with the highest averages are: “How confident are you in your ability to perform various types of physical exercises correctly?” ($\bar{X}$ = 3.17, S.D. = 0.44), “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\bar{X}$ = 3.08, S.D. = 0.44), and “How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?” ($\bar{X}$ = 3.03, S.D. = 0.45). The item with the lowest average is “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” ($\bar{X}$ = 2.86, S.D. = 0.38), which remains at the “Neutral” level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 46 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.87	0.43	Neutral
Section 2: Perceived Severity	3.03	0.44	Neutral
Section 3: Perceived Benefit	2.89	0.42	Neutral
Section 4: Perceived Barriers	2.99	0.43	Neutral
Section 5: Perceived Self-efficacy	3.02	0.44	Neutral
Total	**2.96**	**0.43**	**Neutral**

From the table 46, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.96, S.D. = 0.43). The analysis of individual items revealed that the item with the highest average score is "Section 2: Perceived Severity" ($\bar{X}$ = 3.03, S.D. = 0.44). The item with the second highest average score is "Section 5: Perceived Self-efficacy" ($\bar{X}$ = 3.02, S.D. = 0.44). The third highest average score is for the item "Section 4: Perceived Barriers". ($\bar{X}$ = 2.99, S.D. = 0.43). The item with the lowest average score is "Section 1: Perceived Risk" ($\bar{X}$ = 2.87, S.D. = 0.43).

- Physical Exercise Behavior

The physical exercise behaviors of 375 adolescents from Dong District, Zhongshan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 47 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1.How confident are you that you can incorporate regular physical exercise into your daily routine?	3.03	0.39	Neutral
2.To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.95	0.42	Neutral
3.How confident are you that you can find time for physical exercise, even with a busy schedule?	3.07	0.41	Neutral
4.In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.03	0.38	Neutral
5.How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.50	0.13	Neutral
6.How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.04	0.43	Neutral
7.How confident are you in your ability to perform various types of physical exercises correctly?	2.51	0.11	Neutral
8.To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	3.04	0.41	Neutral
9.How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.01	0.43	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	3.02	0.45	Neutral
Total	**2.91**	**0.45**	**Neutral**

From the table 47, the overall Physical Exercise Behavior of Chinese Adolescents is at a Neutral level, ($\overline{X}$ = 2.91, S.D. = 0.45). The analysis of individual items revealed that the item with the highest average score is “How confident are you that you can find time for physical exercise, even with a busy schedule? ($\overline{X}$ = 3.07, S.D. = 0.91). The item with the second highest average score is “How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?” ($\overline{X}$ = 3.04, S.D. = 0.43), and “To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?” ($\overline{X}$ = 3.04, S.D. = 0.41). The third highest average score is for the item “.In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?”. ($\overline{X}$ = 3.03, S.D. = 0.39). The item with the lowest average score is “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise??” ($\overline{X}$ = 2.50, S.D. = 0.13).

5. Chikan District, Zhanjiang City

- Behavioral Health Belief

The behavioral health beliefs of 375 adolescents from Chikan District, Zhanjiang City are summarized with mean values, standard deviations, and interpretations as follows:

Table 48 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	3.09	0.40	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.86	0.39	Neutral
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	3.10	0.39	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	3.11	0.14	Neutral
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.56	0.08	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	3.05	0.39	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	2.51	0.13	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.99	0.43	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	2.86	0.47	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	2.87	0.40	Neutral
Total	**2.90**	**0.44**	**Neutral**

From Table 48, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.90, S.D. = 0.44). The three items with the highest averages are: “How concerned are you about the potential negative consequences of not participating in physical exercise?” ($\bar{X}$ = 3.11, S.D. = 0.14), “To what extent do you believe that not exercising regularly puts you at risk for physical health issues?” ($\bar{X}$ = 3.10, S.D. = 0.39), and “How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?” ($\bar{X}$ = 3.09, S.D. = 0.40). The item with the lowest average is “Do you believe that engaging in regular physical exercise

can reduce the risk of health problems?" ($\bar{X}$ = 2.56, S.D. = 0.08), which remains at the "Neutral" level.

Table 49 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	2.87	0.40	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	2.97	0.40	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	3.04	0.43	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	3.10	0.45	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.50	0.13	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	2.98	0.43	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	3.03	0.34	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	3.10	0.43	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	2.98	0.43	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	2.95	0.39	Neutral
Total	**2.96**	**0.43**	**Neutral**

From Table 49, the results of the study in the Behavioral Health Belief section on Perceived Severity indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.96, S.D. = 0.43). The three items with the highest averages are: “How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?” ($\bar{X}$ = 3.10, S.D. = 0.45), “How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?” ($\bar{X}$ = 3.10, S.D. = 0.43), and “How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?” ($\bar{X}$ = 3.03, S.D. = 0.34). The item with the lowest average is “How much does the possibility of negative health consequences due to lack of physical exercise worry you?” ($\bar{X}$ = 2.50, S.D. = 0.13), which also remains at the “Neutral” level.

Table 50 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	3.10	0.43	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.42	0.09	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	3.05	0.39	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.53	0.09	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	2.95	0.41	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.04	0.40	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.93	0.43	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	3.00	0.41	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	2.99	0.44	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.98	0.37	Neutral
Total	**2.90**	**0.42**	**Neutral**

From Table 50, the results of the study in the Behavioral Health Belief section on Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.90, S.D. = 0.42). The three items with the highest averages are: “How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?” ($\bar{X}$ = 3.10, S.D. = 0.43), “How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?” ($\bar{X}$ = 3.05, S.D. = 0.39), and “How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?” ($\bar{X}$ = 3.04, S.D. = 0.40). The items with the lowest averages are “To what extent do you think engaging in regular physical exercise can improve your mental well-being?” ($\bar{X}$ = 2.42, S.D. = 0.09) and “In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?” ($\bar{X}$ = 2.53, S.D. = 0.09), both of which fall under the “Fair” level.

Table 51 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.57	0.69	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.37	0.12	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	2.96	0.41	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	3.08	0.39	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.10	0.34	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.89	0.40	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	3.05	0.37	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	3.07	0.38	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	3.04	0.38	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	2.99	0.34	Neutral
Total	**3.01**	**0.43**	**Neutral**

From Table 51, the results of the study in the Behavioral Health Belief section on Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.01, S.D. = 0.43). The three items with the highest averages are: “What are the main reasons that prevent you from engaging in regular physical exercise?” ($\bar{X}$ = 3.57, S.D. = 0.69), which falls under the “Good” level, followed by “In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?” ($\bar{X}$ = 3.10, S.D. = 0.34) and “How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?” ($\bar{X}$ = 3.05, S.D. = 0.37). The item with the lowest average is “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.37, S.D. = 0.12), which falls under the “Fair” level.

Table 52 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.17	0.43	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.99	0.39	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	3.11	0.42	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.02	0.39	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.95	0.43	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.00	0.42	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.95	0.44	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.99	0.42	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.87	0.43	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.94	0.44	Neutral
Total	**3.00**	**0.46**	**Neutral**

From Table 52, the results of the study in the Behavioral Health Belief section on Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.00, S.D. = 0.46). The three items with the highest averages are: “How confident are you that you can incorporate regular physical exercise into your daily routine?” ($\bar{X}$ = 3.17, S.D. = 0.43), “How confident are you that you can find time for physical exercise, even with a busy schedule?” ($\bar{X}$ = 3.11, S.D. = 0.42), and “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\bar{X}$ = 3.02, S.D. = 0.39). The item with the lowest average is “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” ($\bar{X}$ = 2.87, S.D. = 0.43), which remains at the “Neutral” level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 53 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.90	0.44	Neutral
Section 2: Perceived Severity	2.96	0.43	Neutral
Section 3: Perceived Benefit	2.90	0.42	Neutral
Section 4: Perceived Barriers	3.01	0.43	Neutral
Section 5: Perceived Self-efficacy	3.00	0.46	Neutral
Total	2.95	0.21	**Neutral**

From the table 53, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.95, S.D. = 0.21). The analysis of individual items revealed that the item with the highest average score is "Section 5: Perceived Self-efficacy" ($\bar{X}$ = 3.00, S.D. = 0.46). The item with the second highest average score is "Section 4: Perceived Barriers" ($\bar{X}$ = 3.01, S.D. = 0.43). The third highest average score is for the item "Section 2: Perceived Severity". ($\bar{X}$ = 2.96, S.D. = 0.43). The item with the lowest average score is "Section 1: Perceived Risk" ($\bar{X}$ = 2.90, S.D. = 0.44), and ".Section 3: Perceived Benefit" ($\bar{X}$ = 2.90, S.D. = 0.42).

- Physical Exercise Behavior

The physical exercise behaviors of 375 adolescents from Chikan District, Zhanjiang City are summarized with mean values, standard deviations, and interpretations as follows:

Table 54 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1.How confident are you that you can incorporate regular physical exercise into your daily routine?	3.09	0.40	Neutral
2.To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.86	0.39	Neutral
3.How confident are you that you can find time for physical exercise, even with a busy schedule?	3.10	0.45	Neutral
4.In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.11	0.40	Neutral
5.How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.56	0.08	Neutral
6.How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.05	0.39	Neutral
7.How confident are you in your ability to perform various types of physical exercises correctly?	2.51	0.13	Neutral
8.To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.99	0.43	Neutral
9.How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.04	0.34	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	3.10	0.43	Neutral
Total	2.94	0.45	**Neutral**

From the table 54, the overall Physical Exercise Behavior of Chinese Adolescents is at a Neutral level, ($\overline{X}$ = 2.94, S.D. = 0.45). The analysis of individual items revealed that the item with the highest average score is “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\overline{X}$ = 3.11, S.D. = 0.40). The item with the second highest average score is “How confident are you that you can find time for physical exercise, even with a busy schedule?” ($\overline{X}$ = 3.10, S.D. = 0.45), and “How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?” ($\overline{X}$ = 3.10, S.D. = 0.43). The third highest average score is for the item “How confident are you that you can incorporate regular physical exercise into your daily routine?”. ($\overline{X}$ = 3.09, S.D. = 0.40). The item with the lowest average score is “How confident are you in your ability to perform various types of physical exercises correctly?” ($\overline{X}$ = 2.51, S.D. = 0.13).

6. Pingyuan County, Meizhou City

- Behavioral Health Belief

The behavioral health beliefs of 375 adolescents from Pingyuan County, Meizhou City are summarized with mean values, standard deviations, and interpretations as follows:

Table 55 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	2.91	0.42	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.46	0.10	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	2.98	0.37	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.57	0.12	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.96	0.48	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	2.83	0.32	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	2.97	0.38	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.93	0.42	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	2.95	0.38	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	2.98	0.39	Neutral
Total	**2.85**	**0.43**	**Neutral**

From Table 55, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.85, S.D. = 0.43). The three items with the highest averages are: “How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?” ($\bar{X}$ = 2.98, S.D. = 0.39), “How often do you think about the potential health risks of not engaging in physical exercise?” ($\bar{X}$ = 2.97, S.D. = 0.38), and “To what extent do you believe that not exercising regularly puts you at risk for physical health issues?” ($\bar{X}$ = 2.98, S.D. = 0.37). The item with the lowest average is “How would you rate your chances of developing health problems due to

lack of physical exercise compared to your peers?" ($\bar{X}$ = 2.46, S.D. = 0.10), which falls under the "Fair" level.

Table 56 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	2.96	0.42	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	3.09	0.37	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	3.06	0.38	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	2.97	0.42	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.99	0.38	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	3.03	0.41	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	2.94	0.42	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	3.06	0.43	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	3.-3	0.42	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	2.96	0.46	Neutral
Total	**3.01**	**0.44**	**Neutral**

From Table 56, the results of the study in the Behavioral Health Belief section on Perceived Severity indicate that the overall average is at a "Neutral" level, with ($\bar{X}$ = 3.01, S.D. = 0.44). The three items with the highest averages are: "How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?" ($\bar{X}$ = 3.09, S.D. = 0.37), "In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?" ($\bar{X}$ = 3.06, S.D. = 0.38), and "How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?" ($\bar{X}$ = 3.06, S.D. = 0.43). The item with the lowest average is "How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?" ($\bar{X}$ = 2.90, S.D. = 0.42), which remains at the "Neutral" level.

Table 57 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	2.90	0.42	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.49	0.12	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	3.13	0.44	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.46	0.15	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	2.89	0.42	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.01	0.42	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.98	0.38	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	3.05	0.37	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	2.93	0.38	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.90	0.42	Neutral
Total	**2.88**	**0.45**	**Neutral**

From Table 57, the results of the study in the Behavioral Health Belief section on Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.88, S.D. = 0.45). The three items with the highest averages are: “How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?” ($\bar{X}$ = 3.05, S.D. = 0.37), “How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?” ($\bar{X}$ = 3.01, S.D. = 0.42), and “How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?” ($\bar{X}$ = 3.13, S.D. = 0.44). The items with the lowest averages are “To what extent do you think engaging in regular physical exercise can improve your mental well-being?” ($\bar{X}$ = 2.49, S.D. = 0.12) and “In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?” ($\bar{X}$ = 2.46, S.D. = 0.15), both of which fall under the “Fair” level.

Table 58 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.41	0.68	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.50	0.13	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	3.00	0.42	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	3.08	0.43	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	2.97	0.40	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.98	0.40	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	2.90	0.42	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	2.88	0.36	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	2.87	0.41	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	2.84	0.37	Neutral
Total	**2.94**	**0.44**	**Neutral**

From Table 58, the results of the study in the Behavioral Health Belief section on Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.94, S.D. = 0.44). The item with the highest average is: “What are the main reasons that prevent you from engaging in regular physical exercise?” ($\bar{X}$ = 3.41, S.D. = 0.68), which falls under the “Good” level. Other items with relatively high averages include: “How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?” ($\bar{X}$ = 3.08, S.D. = 0.43) and “To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?” ($\bar{X}$ = 3.00, S.D. = 0.42). The item with the lowest average is: “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.50, S.D. = 0.13), which falls under the “Fair” level.

Table 59 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.02	0.37	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.98	0.43	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	2.93	0.42	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.09	0.40	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.98	0.41	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	2.97	0.37	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	3.01	0.45	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.93	0.41	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.97	0.42	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.92	0.38	Neutral
Total	**2.98**	**0.43**	**Neutral**

From Table 59, the results of the study in the Behavioral Health Belief section on Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.98, S.D. = 0.43). The three items with the highest averages are: “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\bar{X}$ = 3.09, S.D. = 0.40), “How confident are you that you can incorporate regular physical exercise into your daily routine?” ($\bar{X}$ = 3.02, S.D. = 0.37), and “How confident are you in your ability to perform various types of physical exercises correctly?” ($\bar{X}$ = 3.01, S.D. = 0.45). The item with the lowest average is: “How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?” ($\bar{X}$ = 2.92, S.D. = 0.38), which remains at the “Neutral” level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 60 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.85	0.43	Neutral
Section 2: Perceived Severity	3.01	0.44	Neutral
Section 3: Perceived Benefit	2.88	0.45	Neutral
Section 4: Perceived Barriers	2.94	0.44	Neutral
Section 5: Perceived Self-efficacy	2.98	0.43	Neutral
Total	**2.93**	**0.44**	**Neutral**

From the table 60, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.93, S.D. = 0.44). The analysis of individual items revealed that the item with the highest average score is "Section 2: Perceived Severity" ($\bar{X}$ = 3.01, S.D. = 0.44). The item with the second highest average score is "Section 5: Perceived Self-efficacy" ($\bar{X}$ = 2.98, S.D. = 0.43). The third highest average score is for the item "Section 4: Perceived Barriers". ($\bar{X}$ = 2.94, S.D. = 0.44). The item with the lowest average score is "Section 1: Perceived Risk" ($\bar{X}$ = 2.85, S.D. = 0.43).

- Physical Exercise Behavior

The physical exercise behaviors of 375 adolescents from Pingyuan County, Meizhou City are summarized with mean values, standard deviations, and interpretations as follows:

Table 61 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.09	0.39	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	3.04	0.39	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	3.14	0.42	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	2.93	0.39	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.59	0.12	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.07	0.39	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.47	0.11	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	3.12	0.38	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.03	0.46	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.97	0.41	Neutral
Total	**2.95**	**0.43**	**Neutral**

From the table 61, the overall Physical Exercise Behavior of Chinese Adolescents is at a Neutral level, ($\bar{X}$ = 2.95, S.D. = 0.43). The analysis of individual items revealed that the item with the highest average score is “How confident are you that you can find time for physical exercise, even with a busy schedule?” ($\bar{X}$ =3.14, S.D. = 0.42). The item with the second highest average score is “To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?” ($\bar{X}$ =3.12, S.D. = 0.38). The third highest average score is for the item “How confident are you that you can incorporate regular physical exercise into your daily routine?”. ($\bar{X}$ = 3.09, S.D. = 0.39). The item with the lowest average score is “How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?” ($\bar{X}$ = 3.07, S.D. = 0.39).

7. Xiangqiao District, Chaozhou City

- Behavioral Health Belief

The behavioral health beliefs of 375 adolescents from Xiangqiao District, Chaozhou City are summarized with mean values, standard deviations, and interpretations as follows:

Table 62 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	2.97	0.37	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.58	0.11	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	3.05	0.44	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.50	0.13	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.85	0.36	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	3.10	0.41	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	3.07	0.40	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	3.03	0.42	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	2.95	0.40	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	3.09	0.42	Neutral
Total	**2.92**	**0.40**	**Neutral**

From Table 62, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.92, S.D. = 0.40). The three items with the highest averages are: “How often do you think about the potential health risks of not engaging in physical exercise?” ($\bar{X}$ = 3.07, S.D. = 0.40), “How well do you think you understand the health risks associated with not participating in regular physical exercise?” ($\bar{X}$ = 3.10, S.D. = 0.41), and “How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?” ($\bar{X}$ = 3.09, S.D. = 0.42). The item with the lowest average is: “How concerned are you about the potential negative

consequences of not participating in physical exercise?" ($\bar{X}$ = 2.50, S.D. = 0.13), which falls under the "Fair" level.

Table 63 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	2.97	0.41	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	2.99	0.41	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	3.02	0.42	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	2.86	0.42	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	3.03	0.39	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	2.95	0.41	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	3.06	0.41	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	3.06	0.36	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	3.02	0.34	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	2.99	0.43	Neutral
Total	**3.00**	**0.41**	**Neutral**

From Table 63, the results of the study in the Behavioral Health Belief section on Perceived Severity indicate that the overall average is at a "Neutral" level, with ($\bar{X}$ = 3.00, S.D. = 0.41). The three items with the highest averages are: "How much does the possibility of negative health consequences due to lack of physical exercise worry you?" ($\bar{X}$ = 3.03, S.D. = 0.39), "How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?" ($\bar{X}$ = 3.06, S.D. = 0.41), and "How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?" ($\bar{X}$ = 3.06, S.D. = 0.36). The item with the lowest average is: "How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?" ($\bar{X}$ = 2.86, S.D. = 0.42), which remains at the "Neutral" level.

Table 64 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	2.99	0.43	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.47	0.11	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	2.85	0.45	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.56	0.13	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	3.08	0.47	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	3.00	0.41	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.84	0.44	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	2.97	0.38	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	3.00	0.43	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	2.95	0.36	Neutral
Total	**2.87**	**0.43**	**Neutral**

From Table 64, the results of the study in the Behavioral Health Belief section on Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.87, S.D. = 0.43). The item with the highest average is: “How much do you believe that regular physical exercise can positively impact your energy levels?” ($\bar{X}$ = 3.08, S.D. = 0.47), followed by: “How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?” ($\bar{X}$ = 3.00, S.D. = 0.41) and “How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?” ($\bar{X}$ = 3.00, S.D. = 0.43). The items with the lowest averages are: “To what extent do you think engaging in regular physical exercise can improve your mental well-being?” ($\bar{X}$ = 2.47, S.D. = 0.11) and “In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?” ($\bar{X}$ = 2.56, S.D. = 0.13), both of which fall under the “Fair” level.

Table 65 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.73	0.69	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.47	0.12	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	2.97	0.40	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	3.10	0.39	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.00	0.45	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.96	0.41	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	3.08	0.38	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	2.82	0.37	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	3.15	0.39	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	3.07	0.43	Neutral
Total	**3.04**	**0.42**	**Neutral**

From Table 65, the results of the study in the Behavioral Health Belief section on Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 3.04, S.D. = 0.42). The item with the highest average is: “What are the main reasons that prevent you from engaging in regular physical exercise?” ($\bar{X}$ = 3.73, S.D. = 0.69), which falls under the “Good” level. Other items with high averages include: “To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?” ($\bar{X}$ = 3.15, S.D. = 0.39) and “In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?” ($\bar{X}$ = 3.00, S.D. = 0.45). The item with the lowest average is: “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.47, S.D. = 0.12), which falls under the “Fair” level.

Table 66 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.00	0.46	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	3.17	0.37	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	2.94	0.37	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	2.93	0.44	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.99	0.38	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	2.96	0.37	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.96	0.41	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.96	0.33	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.87	0.42	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.93	0.40	Neutral
Total	**2.97**	**0.40**	**Neutral**

From Table 66, the results of the study in the Behavioral Health Belief section on Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.97, S.D. = 0.40). The highest scoring item is: “To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?” ($\bar{X}$ = 3.17, S.D. = 0.37). Other items with relatively high averages include: “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\bar{X}$ = 2.99, S.D. = 0.38) and “How confident are you that you can incorporate regular physical exercise into your daily routine?” ($\bar{X}$ = 3.00, S.D. = 0.46). The item with the lowest average is: “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” ($\bar{X}$ = 2.87, S.D. = 0.42), which remains at the “Neutral” level.

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 67 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.92	0.40	Neutral
Section 2: Perceived Severity	3.00	0.41	Neutral
Section 3: Perceived Benefit	2.87	0.43	Neutral
Section 4: Perceived Barriers	3.04	0.42	Neutral
Section 5: Perceived Self-efficacy	2.97	0.40	Neutral
Total	**2.96**	**0.41**	**Neutral**

From the table 67, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.96, S.D. = 0.41). The analysis of individual items revealed that the item with the highest average score is "Section 4: Perceived Barriers" ($\bar{X}$ = 3.04, S.D. = 0.42). The item with the second highest average score is "Section 2: Perceived Severity" ($\bar{X}$ = 3.00, S.D. = 0.41). The third highest average score is for the item "Section 5: Perceived Self-efficacy". ($\bar{X}$ = 2.97, S.D. = 0.40). The item with the lowest average score is "Section 3: Perceived Benefit" ($\bar{X}$ = 2.87, S.D. = 0.43).

- Physical Exercise Behavior

The physical exercise behaviors of 375 adolescents from Xiangqiao District, Chaozhou City are summarized with mean values, standard deviations, and interpretations as follows:

Table 68 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.04	0.41	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.97	0.46	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	2.98	0.40	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	2.97	0.39	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.56	0.07	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.04	0.38	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.443	0.10	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.91	0.42	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.98	0.42	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.93	0.38	Neutral
Total	**2.88**	**0.40**	**Neutral**

From the table 68, the overall perceived risk of Chinese Adolescents is at a Neutral level, ($\bar{X}$ = 2.88, S.D. = 0.42). The analysis of individual items revealed that the item with the highest average score is “How well do you think you understand the health risks associated with not participating in regular physical exercise?” ($\bar{X}$ =3.10, S.D. = 0.43). The item with the second highest average score is “To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?” ($\bar{X}$ =3.06, S.D. = 0.40). The third highest average score is for the item “How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?”. ($\bar{X}$ = 2.98, S.D. = 0.51). The item with the lowest average score is “How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?” ($\bar{X}$ = 2.52, S.D. = 0.12).

8. Wujiang District, Shaoguan City

- Behavioral Health Belief

The behavioral health beliefs of **375** adolescents from Wujiang District, Shaoguan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 69 Shown mean, standard deviation and meaning of perceived risk:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	2.91	0.40	Neutral
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	2.52	0.12	Fair
3. To what extent do you believe that not exercising regularly puts you at risk for physical health issues?	2.96	0.50	Neutral
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	2.54	0.18	Fair
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	2.83	0.40	Neutral
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	3.10	0.43	Neutral
7. How often do you think about the potential health risks of not engaging in physical exercise?	2.97	0.37	Neutral
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	2.95	0.37	Neutral
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	3.06	0.40	Neutral
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	2.98	0.51	Neutral
Total	**2.88**	**0.42**	**Neutral**

From Table 69, the results of the study in the Behavioral Health Belief section on Perceived Risk indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.88, S.D. = 0.42). The highest scoring item is: “How well do you think you understand the health risks associated with not participating in regular physical exercise?” ($\bar{X}$ = 3.10, S.D. = 0.43). Other items with relatively high averages include: “To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?” ($\bar{X}$ = 3.06, S.D. = 0.40) and “How often do you think about the potential health risks of not engaging in physical exercise?” ($\bar{X}$ = 2.97, S.D. = 0.37). The items with the lowest averages are: “How would you rate your

chances of developing health problems due to lack of physical exercise compared to your peers?" ($\bar{X}$ = 2.52, S.D. = 0.12) and "How concerned are you about the potential negative consequences of not participating in physical exercise?" ($\bar{X}$ = 2.54, S.D. = 0.18), both of which fall under the "Fair" level.

Table 70 Shown mean, standard deviation and meaning of Perceived Severity:

Question	$\bar{X}$	S.D.	Meaning
1. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	3.07	0.40	Neutral
2. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	2.94	0.39	Neutral
3. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	2.93	0.40	Neutral
4. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	3.02	0.41	Neutral
5. How much does the possibility of negative health consequences due to lack of physical exercise worry you?	2.98	0.40	Neutral
6. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	2.88	0.36	Neutral
7. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	3.17	0.38	Neutral
8. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	3.02	0.43	Neutral
9. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	3.02	0.42	Neutral
10. To what extent do you believe that participating in a structured exercise program can significantly reduce the severity of potential health problems?	2.99	0.42	Neutral
Total	**3.00**	**0.43**	**Neutral**

From Table 70, the results of the study in the Behavioral Health Belief Section 1: Perceived Severity indicate that the overall average is at a "Neutral" level, with ($\bar{X}$ = 3.00, S.D. = 0.43). The three items with the highest average ($\bar{X}$ = 3.17, S.D. = 0.38) are: "How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?", "How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?" ($\bar{X}$ = 3.02, S.D. = 0.43), and "How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?" ($\bar{X}$ = 3.02, S.D. = 0.41). The item with the lowest average is "To what extent do you believe that not engaging in regular physical

exercise can negatively impact your overall well-being?" ($\bar{X}$ = 2.88, S.D. = 0.36), which still falls under the "Neutral" level.

Table 71 Shown mean, standard deviation and meaning of Perceived Benefit:

Question	$\bar{X}$	S.D.	Meaning
1. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	2.92	0.38	Neutral
2. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	2.42	0.11	Fair
3. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	2.97	0.43	Neutral
4. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	2.63	0.10	Fair
5. How much do you believe that regular physical exercise can positively impact your energy levels?	2.89	0.45	Neutral
6. How likely is it, in your opinion, that participating in regular physical exercise can improve your academic performance?	2.91	0.43	Neutral
7. To what extent do you think regular physical exercise can enhance your social life and relationships?	3.03	0.44	Neutral
8. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	3.07	0.40	Neutral
9. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	3.15	0.40	Neutral
10. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	3.01	0.39	Neutral
Total	**2.90**	**0.41**	**Neutral**

From Table 71, the results of the study in the Behavioral Health Belief Section 2: Perceived Benefit indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.90, S.D. = 0.41). The three items with the highest average ($\bar{X}$ = 3.07, S.D. = 0.40) are: “How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?”, “How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?” ($\bar{X}$ = 3.15, S.D. = 0.40), and “To what extent do you think regular physical exercise can enhance your social life and relationships?” ($\bar{X}$ = 3.03, S.D. = 0.44). The item with the lowest average is “To what extent do you think engaging in regular physical exercise can improve your mental well-being?” ($\bar{X}$ = 2.42, S.D. = 0.11), which falls under the “Fair” level.

Table 72 Shown mean, standard deviation and meaning of Perceived Barriers:

Question	$\bar{X}$	S.D.	Meaning
1. What are the main reasons that prevent you from engaging in regular physical exercise? (Select all that apply)	3.48	0.71	Good
2. How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?	2.51	0.10	Fair
3. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	3.09	0.45	Neutral
4. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	2.85	0.37	Neutral
5. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	3.01	0.43	Neutral
6. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	2.98	0.41	Neutral
7. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	2.98	0.37	Neutral
8. How much do concerns about judgment or criticism from others act as barriers to your participation in physical exercise?	2.96	0.44	Neutral
9. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	3.00	0.43	Neutral
10. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	3.01	0.41	Neutral
Total	**2.99**	**0.47**	**Neutral**

From Table 72, the results of the study in the Behavioral Health Belief Section 3: Perceived Barriers indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.99, S.D. = 0.47). The item with the highest average is “What are the main reasons that prevent you from engaging in regular physical exercise?” ($\bar{X}$ = 3.48, S.D. = 0.71), which falls under the “Good” level. The three items with the next highest averages are: “In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?” ($\bar{X}$ = 3.01, S.D. = 0.43), “To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?” ($\bar{X}$ = 3.00, S.D. = 0.43), and “How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?” ($\bar{X}$ = 2.98, S.D. = 0.37), all of which are categorized as “Neutral.” The item with the lowest average is “How confident are you in your ability to overcome the barriers that prevent you from participating in regular physical exercise?” ($\bar{X}$ = 2.51, S.D. = 0.10), which falls under the “Fair” level.

Table 73 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	2.95	0.41	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	2.92	0.45	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	2.90	0.44	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.08	0.39	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.98	0.44	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	2.99	0.46	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	3.01	0.45	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	2.97	0.38	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	2.94	0.39	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	3.03	0.46	Neutral
Total	**2.98**	**0.47**	**Neutral**

From Table 73, the results of the study in the Behavioral Health Belief Section 4: Perceived Self-efficacy indicate that the overall average is at a “Neutral” level, with ($\bar{X}$ = 2.98, S.D. = 0.47). The three items with the highest averages are: “How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?” ($\bar{X}$ = 3.03, S.D. = 0.46), “How confident are you in your ability to perform various types of physical exercises correctly?” ($\bar{X}$ = 3.01, S.D. = 0.45), and “In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?” ($\bar{X}$ = 3.08, S.D. = 0.39). These items all fall under the “Neutral” category. The item with the lowest average is “To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?” ($\bar{X}$ = 2.92, S.D. = 0.45), also categorized as “Neutral.”

The summary of the data analysis results from the first phase: the study of Behavioral Health Belief is shown in the following table.

Table 74 The summary of Behavioral Health Belief:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.88	0.42	Neutral
Section 2: Perceived Severity	3.00	0.43	Neutral
Section 3: Perceived Benefit	2.90	0.41	Neutral
Section 4: Perceived Barriers	2.99	0.47	Neutral
Section 5: Perceived Self-efficacy	2.98	0.47	Neutral
Total	**2.95**	**0.44**	**Neutral**

From the table 74, the overall Behavioral Health Belief of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.95, S.D. = 0.44). The analysis of individual items revealed that the item with the highest average score is "Section 2: Perceived Severity" ($\bar{X}$ = 3.00, S.D. = 0.43). The item with the second highest average score is "Section 4: Perceived Barriers" ($\bar{X}$ = 2.99, S.D. = 0.47). The third highest average score is for the item "Section 5: Perceived Self-efficacy". ($\bar{X}$ = 2.98, S.D. = 0.47). The item with the lowest average score is "Section 1: Perceived Risk" ($\bar{X}$ = 2.88, S.D. = 0.42).

- Physical Exercise Behavior

The physical exercise behaviors of 375 adolescents from Wujiang District, Shaoguan City are summarized with mean values, standard deviations, and interpretations as follows:

Table 75 Physical Exercise Behavior of Chinese Adolescents:

Question	$\bar{X}$	S.D.	Meaning
1. How confident are you that you can incorporate regular physical exercise into your daily routine?	3.08	0.41	Neutral
2. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	3.03	0.37	Neutral
3. How confident are you that you can find time for physical exercise, even with a busy schedule?	2.89	0.40	Neutral
4. In your opinion, how capable are you of setting and achieving realistic physical exercise goals for yourself?	3.05	0.41	Neutral
5. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	2.48	0.10	Neutral
6. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	3.16	0.39	Neutral
7. How confident are you in your ability to perform various types of physical exercises correctly?	2.56	0.10	Neutral
8. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	3.02	0.34	Neutral
9. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	3.3	0.40	Neutral
10. How capable do you feel in overcoming any personal barriers that may arise and hinder your participation in physical exercise?	2.96	0.44	Neutral
Total	**2.93**	**0.44**	**Neutral**

From the table 75, the overall Physical Exercise Behavior of Chinese Adolescents is at a Neutral level, ($\bar{X}$ = 2.93, S.D. = 0.44). The analysis of individual items revealed that the item with the highest average score is “How confident are you in your ability to maintain a regular physical exercise routine over an extended period?” ($\bar{X}$ =3.30, S.D. = 0.40). The item with the second highest average score is “How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?” ($\bar{X}$ =3.16, S.D. = 0.39). The third highest average score is for the item “How confident are you that you can incorporate regular physical exercise into your daily routine?” ($\bar{X}$ =3.08, S.D. = 0.41). The item with the lowest average score is “How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?” ($\bar{X}$ = 2.48, S.D. = 0.10).

Next, the researcher analyzed the relationship between the constructs of the Health Belief Model (HBM) and the exercise behavior of adolescents in each city. Pearson correlation coefficients were used to present the connections between health beliefs and exercise behaviors in each area. The detailed results are as follows:

Table 76 Shows the Relationship between HBM Constructs and Exercise Behavior:

Area	Factor	$\bar{X}$	S.D.	r	p	Meaning
Tianhe District, Guangzhou	Perceived Risk	2.96	0.42	0.042	0.419	Not Related
	Physical Exercise Behavior	2.89	0.42			
Shatian Town, Dongguan	Perceived Risk	2.95	0.45	0.031	0.554	Not Related
	Physical Exercise Behavior	2.91	0.43			
Shunde District, Foshan	Perceived Risk	2.96	0.43	0.052	0.311	Not Related
	Physical Exercise Behavior	2.89	0.41			
Dong District, Zhongshan	Behavioral Health Belief	2.96	0.43	0.052	0.315	Not Related
	Exercise behavior	2.91	0.45			
Chikan District, Zhanjiang	Behavioral Health Belief	2.95	0.21	0.458	0.000**	Related
	Exercise behavior	2.94	0.45			
Pingyuan County, Meizhou	Behavioral Health Belief	2.93	0.44	0.054	0.299	Not Related
	Exercise behavior	2.95	0.43			
Xiangqiao District, Chaozhou	Behavioral Health Belief	2.96	0.41	0.032	0.536	Not Related
	Exercise behavior	2.88	0.40			
Wujiang District, Shaoguan	Behavioral Health Belief	2.95	0.44	0.033	0.519	Not Related
	Exercise behavior	2.93	0.44			
Total	**Behavioral Health Belief**	**2.88**	**0.42**	**0.552**	**0.011**	**Not Related**
	Exercise behavior	**2.91**	**0.42**			

Note: * indicates $p \leq .05$, representing a significant result, while ** indicates $p \leq .001$, representing a highly significant result.

From the table 76, An analysis of the relationship between the Health Belief Model and exercise behavior among Chinese adolescents, categorized by 8 cities, found that health beliefs were correlated with exercise behavior among Chinese adolescents in Zhanjiang City, with a correlation coefficient of 0.458 ($r = 0.458$) and a significance level of 0.000 ($p \leq .001$). However, the analysis of the relationship

between the Health Belief Model and exercise behavior in the other cities showed no significant correlation.

An analysis of the factors influencing exercise behavior among Chinese adolescents in Chikan District, Zhanjiang City. The analysis includes independent variables such as Perceived Risk, Perceived Severity, Perceived Benefit, Perceived Barriers, and Perceived Self-efficacy, with the dependent variable being the exercise behavior of Chinese adolescents. The results are presented in the following table:

Table 77 The summary of Regression Analysis:

Variables	b	SE_b	β	t	p
(Constant)	.541	.192		2.815	.005
Perceived Risk	.804	.032	.799	25.130	.000**
Perceived Severity	.017	.033	.017	.530	.597
Perceived Benefit	.002	.033	.001	.047	.963
Perceived Barriers	-.018	.032	-.017	-.559	.576
Perceived Self-efficacy	.022	.030	.023	.731	.465
Constant = .593; SE_{cst} = .269; R = .805; R^2 = .649; Adjusted R^2 = .644; F = 136.349; p = .000					

Note: * indicates $p \leq .05$, representing a significant result, while ** indicates $p \leq .001$, representing a highly significant result.

From the table 77, Perceived Risk, Perceived Severity, Perceived Benefit, Perceived Barriers, and Perceived Self-efficacy have a significant multiple correlation with the exercise behavior of Chinese adolescents at the .000 level (p-value = 0.000), with a multiple correlation coefficient of .805 (R = 0.805). These variables can predict 64.09% of the exercise behavior of Chinese adolescents, with a standard error of +.269. The remaining 35.91% is influenced by other variables. When considering the regression coefficients of the predictors, it was found that Perceived Risk is the strongest predictor of exercise behavior among Chinese adolescents, with significance at the .000 level (p = .000). The unstandardized and standardized regression coefficients (b, β) were .804 and .799, respectively. The predictive equation for exercise behavior in the form of raw scores is as follows:

Exercise behavior = .593 + .541 (Constant) + .804 Perceived Risk.

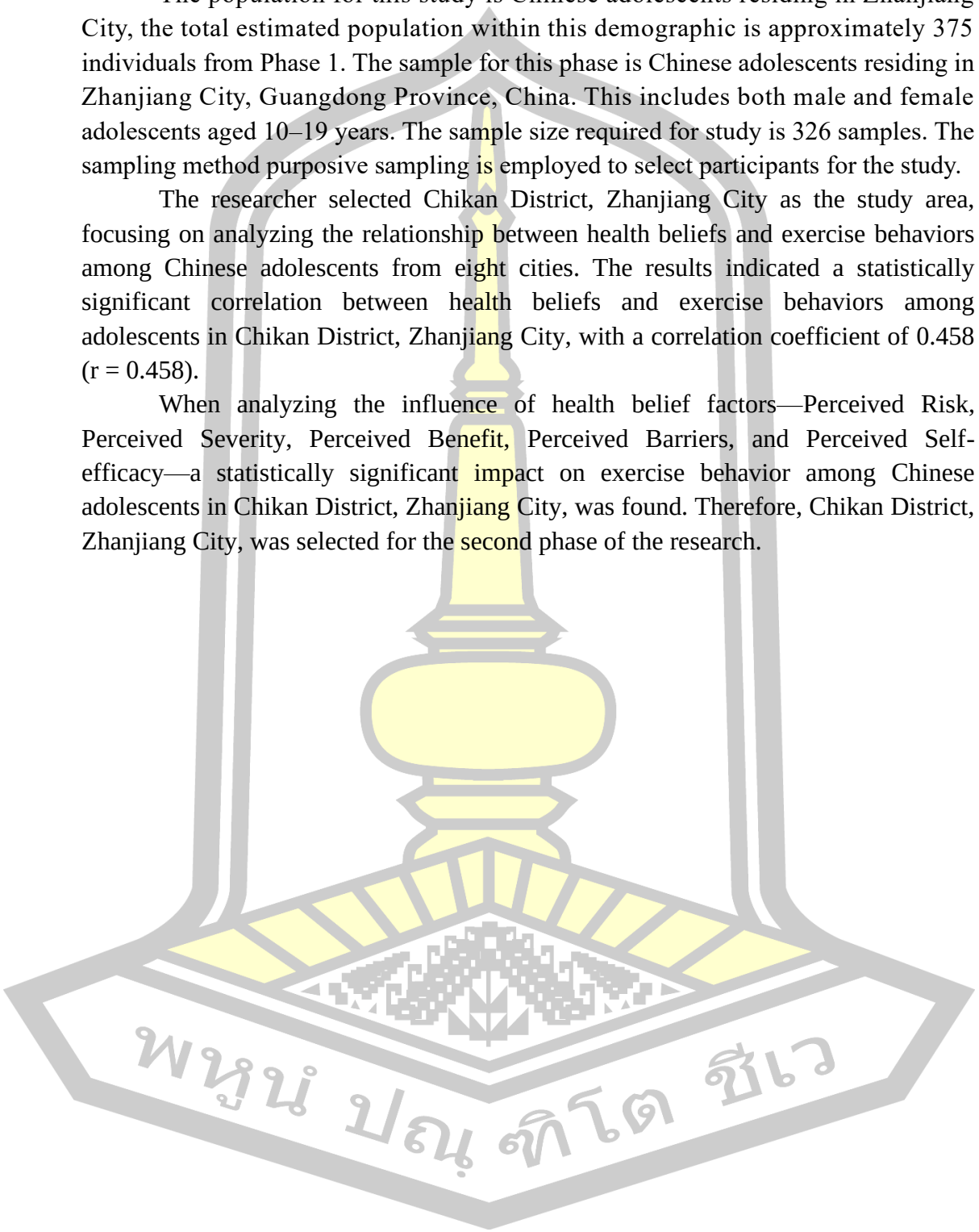
The Phase 1 study can be summarized that the results of the study Perceived Risk and physical exercise behavior of Chinese adolescents is at a Neutral level. And the analysis of the relationship between the Health Belief Model and exercise behavior among Chinese adolescents, categorized by 8 cities, found that health beliefs were correlated with exercise behavior among Chinese adolescents in Zhanjiang City, which will be the city used for conducting the Phase 2 of the research.

Phase 2: Extensive Investigation

The population for this study is Chinese adolescents residing in Zhanjiang City, the total estimated population within this demographic is approximately 375 individuals from Phase 1. The sample for this phase is Chinese adolescents residing in Zhanjiang City, Guangdong Province, China. This includes both male and female adolescents aged 10–19 years. The sample size required for study is 326 samples. The sampling method purposive sampling is employed to select participants for the study.

The researcher selected Chikan District, Zhanjiang City as the study area, focusing on analyzing the relationship between health beliefs and exercise behaviors among Chinese adolescents from eight cities. The results indicated a statistically significant correlation between health beliefs and exercise behaviors among adolescents in Chikan District, Zhanjiang City, with a correlation coefficient of 0.458 ($r = 0.458$).

When analyzing the influence of health belief factors—Perceived Risk, Perceived Severity, Perceived Benefit, Perceived Barriers, and Perceived Self-efficacy—a statistically significant impact on exercise behavior among Chinese adolescents in Chikan District, Zhanjiang City, was found. Therefore, Chikan District, Zhanjiang City, was selected for the second phase of the research.



1. Demographic Information

The analysis of personal characteristics data from a sample group of 326 people can be categorized into numbers and percentages according to the characteristics in each aspect as follows.

Table 78 The demographic information data of the sample group (n=326):

Demographic	Option	Frequency	Percentage
1. Gender	- Male	168	51.50
	- Female	158	48.50
3. Age	- 10 years old	32	9.80
	- 11 years old	32	9.80
	- 12 years old	32	9.80
	- 13 years old	32	9.80
	- 14 years old	33	10.12
	- 15 years old	33	10.12
	- 16 years old	33	10.12
	- 17 years old	33	10.12
	- 18 years old	33	10.12
	- 19 years old	33	10.12
4. Educational level	- Primary Education Certificate	96	29.40
	- Middle School Certificate	98	30.10
	- High School Certificate	99	30.40
	- University	33	10.10
5. Race/ Ethnicity	- Han Chinese	284	87.10
	- Zhuang	23	7.10
	- Yao	9	2.80
	- She	4	1.20
	- Man	2	0.60
	- Hui	1	0.30
	- Dong	3	0.90
6. Family Status	- Two-parent family	256	78.50
	- Single-parent family	49	15.00
	- Extended family	21	6.40
7. Family Income (monthly)	- RMB 3,000	22	6.70
	- RMB 3,001–6,000	23	7.10
	- RMB 6,001–10,000	35	10.70
	- RMB 10,001–30,000	40	12.30
	- RMB 30,001–50,000	173	53.10
	- RMB 50,001 and above	33	10.10
Total		**326**	**100**

From Table 78, the results of the study reveal the following: The gender distribution is nearly equal, with 51.50% male (168 people) and 48.50% female (158 people). Each age group from 10 to 13 years is evenly represented at 9.80% per age group, or 32 individuals for each year., and from 14to 19 years is evenly represented at 10.12% per age group, or 33 individuals for each year. In terms of educational attainment, 30.40% of participants (99 people) have completed High School 30.10% (98 people), and primary education 29.40% (96 people) and 10.10% (33 people) have higher education, such as vocational certificates or bachelor's degrees. Ethnic composition is dominated by Han ethnicity, which makes up 87.10% (284 people), followed by Zhuang 7.10%,(23 people), Yao 2.80%, (9 people), She 1.20% (4 people), Man 0.60%, (2people), Dong (0.90%, 3 people) and Hui 0.30%,(1 people), and In terms of family structure, the majority of adolescents 78.50% (256 people) come from two-parent households, 15.0% (49 people) come from single-parent households, and 6.40 % (21 people) live in extended families. Family income distribution shows that 53.10% (173) earn between 30,001 and 50,000 yuan., earn between 10,001 and 30,000 yuan per month, 12.30 % (40 people). 10.70 % of families (35 people) earn between 6,001 and 10,000 yuan, About 10.10 % (33 people) have incomes exceeding 50,001 yuan, earn between 3,001 and 6,000 yuan per month 7.10 % (23 people) and the fewest 6.70%, (22 people) earn below 3,000 yuan.

Table 79 The demographic information data of the sample group (n=326):

Demographic	Option	Frequency	Percentage
1. Factors influence the physical activity levels within your environment	- Cultural traditions	73	22.40
	- Access to facilities	48	14.70
	- Socioeconomic factors	57	17.50
	- Community support	57	17.50
	- Peer influence	49	15.00
	- Lack of representation in fitness media	42	12.90
2. Rate the availability of facilities and resources for physical activities in your community	- Excellent	84	25.80
	- Good	76	23.30
	- Fair	87	26.70
	- Poor	79	24.20
3. Experience limitations or challenges in participating in physical activities due to your health condition	- Never	68	20.90
	- Rarely	71	21.80
	- Occasionally	53	16.30
	- Frequently	60	18.40
	- Always	74	22.70
4. The main barriers you face in engaging in physical activities due to your health condition	- Pain or discomfort	59	18.10
	- Lack of energy	74	22.70
	- Fear of exacerbating the condition	56	17.20
	- Limited mobility	73	22.40
	- Lack of accessibility to suitable facilities	64	19.60
5. Think that participation in a structured exercising program, incorporating the Health Belief Model, would be more or less beneficial for adolescents with chronic health conditions compared to those without	- More beneficial	107	32.80
	- Equally beneficial	129	39.60
	- Less beneficial	90	27.60
Total		**326**	**100.00**

From Table 79, the results of the study reveal the following: The most influential factor affecting exercise behavior is Cultural traditions 22.40% (73 people)., and Socioeconomic factors and Community support 17.50%, (57 people). Other notable factors include peer influence, affecting 15.0 % (49 people). Lack of representation in fitness media 12.9% (42 people) and Access to facilities 12.9% (42 people) In terms of the readiness of facilities and resources for physical activity within community's support affecting 26.70% (87 people) and followed by those

rating them as excellent 25.80% (84 people), with 24.20% (79 people) rating them as poor, 24.40% and 23.50% (76 people) as poor. Regarding Always exercise 22.70% (74 people) while exercise frequency, 21.80% (71 people) report Never exercise, 20.90% (68 people). And frequently exercise 18.40% (60 people) Occasionally exercise. 16.30%, (53 people). The main health-related obstacle to exercise is lack of energy, affecting 22.70% (74 people), followed by limited mobility 22.40%, (73 people), Lack of accessibility to suitable facilities 19.60%, (64 people), and pain or discomfort 18.10%, (59people) and Fear of exacerbating the condition 117.20 %, (56 people). When comparing the perceived effectiveness of structured exercise programs integrated with the Health Belief Model for adolescents with chronic illnesses to those Equally beneficial, 39.60% (129 people) believe the program is More beneficial, 32.80% (107people) and think it is Less beneficial 27.60 % (90 people).

2. Behavioral Health Belief

The analysis of behavioral health belief data from a sample group of 326 adolescents can be categorized into mean values, standard deviations, and their corresponding interpretations for each surveyed item as follows:

Table 80 Shown mean, standard deviation and meaning of Perceived Risk:

Perceived Risk	$\bar{X}$	S.D.	Meaning
1. How often do you think about the potential health risks associated with not engaging in regular physical exercise?	2.86	0.45	Neutral
2. In the past month, how frequently have you considered the health risks of not participating in physical exercise?	3.01	0.42	Neutral
3. On a weekly basis, how frequently do you reflect on the potential consequences of a sedentary lifestyle on your health?	2.98	0.41	Neutral
4. How regularly do you discuss the health risks associated with insufficient physical activity with friends or family?	2.93	0.38	Neutral
5. In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?	2.99	0.36	Neutral
Total	**2.95**	**0.64**	**Neutral**

From Table 80, the results of the study in Section 2: Perceived Severity indicate that the overall average is at a "Neutral" level ($\bar{X}$ = 2.95, S.D. = 0.64). The item with the highest average is "In the past month, how frequently have you considered the health risks of not participating in physical exercise?" ($\bar{X}$ = 3.01, S.D. = 0.42), which is at a "Neutral" level. The items with the lowest averages are "In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?" ($\bar{X}$ = 2.99, S.D. = 0.36).

Table 81 Shown mean, standard deviation and meaning of Perceived Severity:

Perceived Severity	$\bar{X}$	S.D.	Meaning
1. How often do you think about the severity of potential health issues that could arise from not engaging in regular physical exercise?	2.94	0.37	Neutral
2. In the past month, how frequently have you considered the seriousness of health problems associated with a lack of physical activity?	3.00	0.46	Neutral
3. On a weekly basis, how frequently do you reflect on the possible severe consequences of a sedentary lifestyle on your health?	3.02	0.39	Neutral
4. How regularly do you discuss the severity of health risks associated with insufficient physical activity with friends or family?	3.09	0.45	Neutral
5. In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?	2.94	0.48	Neutral
Total	**2.99**	**0.67**	**Neutral**

From Table 81, the results of the study in Section 2: Perceived Severity indicate that the overall average is at a "Neutral" level ($\bar{X}$ = 2.99, S.D. = 0.67). The item with the highest average is "How regularly do you discuss the severity of health risks associated with insufficient physical activity with friends or family?" ($\bar{X}$ = 3.09, S.D. = 0.45), which is at a "Neutral" level. The items with the lowest averages are "How often do you think about the severity of potential health issues that could arise from not engaging in regular physical exercise?" and "In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?" ($\bar{X}$ = 2.94, S.D. = 0.48), both of which are at a Neutral level.

Table 82 Shown mean, standard deviation and meaning of Perceived Benefit:

Perceived Benefit	$\bar{X}$	S.D.	Meaning
1. How often do you believe that engaging in regular physical exercise can enhance your overall health and well-being?	2.91	0.37	Neutral
2. In the past month, how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?	2.49	0.39	Fair
3. On a weekly basis, how frequently do you reflect on the positive changes in your physical health that could result from regular physical exercise?	2.87	0.41	Neutral
4. How regularly do you discuss the benefits of physical activity with friends or family?	2.52	0.14	Fair
5. In the past six months, how often have you actively sought information about the benefits associated with regular exercise for your overall well-being?	3.04	0.41	Neutral
Total	**2.76**	**0.56**	**Neutral**

From Table 82, the results of the study in Section 3: Perceived Benefit indicate that the overall average is at a “Neutral” level ($\bar{X}$ = 2.76, S.D. = 0.56). The item with the highest average is “In the past six months, how often have you actively sought information about the benefits associated with regular exercise for your overall well-being?” ($\bar{X}$ = 3.04, S.D. = 0.41), which is at a “Neutral” level. The item with the lowest average is “In the past month, how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?” ($\bar{X}$ = 2.49, S.D. = 0.39), which is at a “Fair” level.

Table 83 Shown mean, standard deviation and meaning of Perceived Barriers:

Perceived Barriers	$\bar{X}$	S.D.	Meaning
1. How often do you perceive time constraints as a barrier to engaging in regular physical exercise?	3.12	0.39	Neutral
2. In the past month, how frequently have you faced a lack of motivation as a barrier to participating in physical exercise?	2.98	0.43	Neutral
3. On a weekly basis, how frequently do you encounter a lack of access to facilities as a barrier to engaging in physical activity?	2.99	0.38	Neutral
4. How regularly do you perceive health issues as a barrier to engaging in regular physical exercise?	2.95	0.34	Neutral
5. In the past six months, how often have you experienced other specific barriers (please specify) to participating in regular exercise?	3.06	0.42	Neutral
Total	**3.01**	**0.64**	**Neutral**

From Table 83, the results of the study in Section 4: Perceived Barriers indicate that the overall average is at a Neutral level ($\bar{X}$ = 3.01, S.D. = 0.64). The item with the highest average is “How often do you perceive time constraints as a barrier to engaging in regular physical exercise?” ($\bar{X}$ = 3.12, S.D. = 0.39), which is at a Neutral level. The item with the lowest average is “How regularly do you perceive health issues as a barrier to engaging in regular physical exercise?” ($\bar{X}$ = 2.95, S.D. = 0.34), which is at a Neutral level.

Table 84 Shown mean, standard deviation and meaning of Perceived Self-efficacy:

Perceived Self-efficacy	$\bar{X}$	S.D.	Meaning
1. How often do you feel confident in your ability to adhere to a regular exercise routine?	3.03	0.45	Neutral
2. In the past month, how frequently have you believed in your capability to overcome obstacles and challenges related to physical exercise?	3.02	0.45	Neutral
3. On a weekly basis, how frequently do you feel assured in your skills and capabilities to engage in physical activity, even when faced with difficulties?	2.99	0.38	Neutral
4. How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?	2.93	0.38	Neutral
5. In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?	3.13	0.40	Neutral
Total	**3.02**	**0.62**	**Neutral**

From Table 84, the results of the study in Section **5:** Perceived Self-efficacy indicate that the overall average is at a Neutral level ($\bar{X}$ = **3.02**, S.D. = **0.62).** The item with the highest average is "In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?" ($\bar{X}$ = **3.13**, S.D. = **0.40)**, which is at a Neutral level. The item with the lowest average is "How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?" ($\bar{X}$ = **2.93**, S.D. = **0.38)**, which is at a Neutral level.

The summary of the data analysis results from the study of Behavioral Health Belief: the second phase is shown in the following table.

Table 85 Summary of the results from the second phase of the study:

Question	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.88	0.42	Neutral
Section 3: Perceived Severity	2.99	0.67	Neutral
Section 3: Perceived Benefit	2.76	0.56	Neutral
Section 4: Perceived Barriers	3.01	0.64	Neutral
Section 5: Perceived Self-efficacy	3.02	0.62	Neutral
Total	**2.93**	**0.58**	**Neutral**

From Table 85, Summary of the results from the second phase of the study indicate that the overall average is at a Neutral level ($\bar{X}$ = 2.93, S.D. = **0.**58**).** The item with the highest average is Section 5: Perceived Self-efficacy ($\bar{X}$ = **3.**02, S.D. = **0.**62**)**, which is at a Neutral level. Following is Section 4: Perceived Barriers ($\bar{X}$ = **3.**01, S.D.

= **0.**64**)**, which is at a Neutral level. And a Section 3: Perceived Severity (**$\bar{X}$** = 2.99, S.D. = **0.**67**)**, Section 1: Perceived Risk (**$\bar{X}$** = 2.88, S.D. = **0.**42**)**,

3. Physical Exercise Behavior

In this phase, the study of Physical Exercise Behavior employed interviews form as the research tool. The researcher conducted the interviews based on the predetermined topics. The analysis of Physical Exercise Behavior data from a sample group for each topic are as follows:

1. Understanding Health Beliefs

Understanding Health Beliefs is perceptions and beliefs about engaging in regular physical exercise. An overview of the questions is summarized as follows: Most of the respondents considered exercise to be a stress reliever, a way to escape daily stress and recharge their mental batteries. It also helps me stay in shape and feel confident about my body. Perceive the importance of physical exercise for your overall health and well-being. Most of the sample believed that regular exercise was essential for maintaining physical and mental health. As the informant said:

"I believe exercise is crucial for long-term health. It strengthens the heart, improves circulation, and enhances overall well-being"

"In my opinion exercise reduces stress and improves my mood, an exercise routine has many benefits, both physically and mentally!"

"Exercise can improve my concentrate, memory, and classroom behavior, leading to better academic outcomes.

2. Perceived Risk and Severity

Perceived Risk and Severity is risks or health issues do you associate with not participating in regular physical exercise. An overview of the questions is summarized as follows: Most of the sample believed regular physical exercise is essential for maintaining both physical and mental health. You believe the consequences of a sedentary lifestyle are for adolescents like yourself. Most of the sample believed that regular exercise was not only for health, but also for discipline and endurance. As the informant said:

"I believe regular physical exercise is essential for maintaining both physical and mental health"

"Making exercise a daily routine can create a sense of achievement and improve self-discipline, which can translate into other areas of life."

"I believe that regular exercise has many benefits. Setting fitness goals and following a planned routine helps develop good habits and enhances the ability to cope with life's challenges."

3. Perceived Benefit

Perceived Benefit is thought are associated with engaging in regular physical exercise, especially for adolescents. An overview of the questions is summarized as follows: Most of the sample agreed that regular exercise is essential for maintaining mental and physical health. It also helps me stay in shape and feel confident about my body. You describe any positive changes you have experienced as a result of participating in physical exercise. Most respondents believe that exercise helps increase happiness and reduce anxiety levels. As the informant said:

"I see physical exercise as a stress reliever. It's my way of escaping from daily pressures and recharging my mind"

"Participating in team sports or group activities can help me develop social skills, build friendships, and learn about teamwork.

4. Perceived Barriers

Perceived Barriers is obstacles or challenges do you face in incorporating regular physical exercise into your routine. An overview of the questions is summarized as follows: Most of the participants agreed that exercise is not only about keeping fit, but also about building self-discipline and endurance. Typically overcome or address barriers that may hinder your engagement in physical exercise. Most of the sample believed that exercise helped to maintain body size and self-confidence. As the informant said:

"I think physical exercise helps me stay in shape and feel confident about my body."

"*I Think it can be hard to stay motivated, especially if the results aren't immediately visible or if exercise feels like a chore."*

"I feel unsure about how to start exercising or what types of activities are best for me but I try."

"I tell myself exercise is very beneficial. Both for health and fun, especially sports that are played in groups with friends.

5. Perceived Self-efficacy

Perceived Self-efficacy is you feel in your ability to initiate and maintain a regular physical exercise routine. An overview of the questions is summarized as follows: Most of the sample considered exercise to be essential for maintaining a healthy weight and preventing obesity. You provide examples of situations where you have demonstrated self-efficacy in relation to physical exercise. The majority of the sample believed that regular exercise was essential for maintaining physical and mental health. As the informant said:

"I believe physical activity is important for improving my concentration and academic performance"

"In my opinion exercise can boost my self-esteem and confidence, helping me feel more positive about myself.

6. Motivation and Goals

Motivation and Goals is motivating you to engage in physical exercise. Are there specific goals you set for yourself. An overview of the questions is summarized as follows: Most of the sample believed that regular exercise was not only for health, but also for discipline and endurance. stay motivated over time, especially when faced with competing priorities. Most respondents believe that exercise is essential for long-term health. It helps strengthen the heart, improves blood circulation, and improves overall well-being. In addition, regular exercise is also a way to strengthen the immune system. As the informant said:

"Regular exercise is a way to boost my immune system and keep illnesses at bay"

"In my opinion exercise can improves my mood and reduces symptoms of anxiety and depression. This can improve overall my emotional well-being"

7. Understanding Program Impact

Understanding Program Impact have participated in a structured exercise program, you think it has influenced your attitudes and behaviors toward physical exercise. An overview of the questions is summarized as follows: Most of the subjects thought that exercise would help them stay in shape and increase their body confidence. In your opinion, what role does a structured exercise program play in shaping the exercise behaviors of adolescents. The majority of the sample believed that regular exercise was a way to prevent disease and maintain good health. Knowledge and Education with the recommended guidelines for physical exercise among adolescents. Most of the sample believed that exercise made people happier and reduced anxiety levels. You think there is a need for more education or information about the benefits of physical exercise for adolescents. The majority of the sample believe that exercise helps to keep fit and increase self-confidence. As the informant said:

"I believe exercise is crucial for long-term health. It strengthens the heart, improves circulation, and enhances overall well-being."

"I think a regular exercise routine can instill lifelong healthy habits. and it encourages me to lead a more active lifestyle as I get older."

"In my opinion a structured program has a clear schedule. This helps teens develop consistent routines and make exercise more of a habit than just an occasional activity.

8. Knowledge and Education

Long-term Commitment is envisioned yourself continuing to engage in regular physical exercise in the long term. An overview of the questions is summarized as follows: Most of the samples agreed that exercise is essential for long-term health. It can strengthen the heart, improve blood circulation, and improve overall well-being. You think contribute to the sustained commitment of adolescents to physical exercise. Most of the sample believed that exercise made people happier and reduced anxiety levels. As the informant said:

"Engaging in regular physical exercise is a way to prevent diseases and keep my body fit"

"I think having a good body and good health leads me to a happy life. And it has a positive effect on the heart as well.

9. Social Influences

Social Influences is friends or peers influence your decisions regarding physical exercise. An overview of the questions is summarized as follows: Most of the sample considered exercise to be essential for maintaining a healthy weight and preventing obesity. In your social circle, how common is it for adolescents to engage in regular physical exercise. Most of the sample considered exercise to be essential for long-term health. It helps strengthen the heart, improves blood circulation, and increases overall well-being. In addition, exercise helps to keep fit and enhance self-confidence. As the informant said:

"I believe physical activity is important for improving my concentration and academic performance."

"Being able to participate in exercise programs and has activities with friends make a good relationships and teamwork, and encourages teens to have a healthy life in the future.

10. Long-term Commitment

Having friends, family, or peers who encourage and participate in exercise can enhance commitment. Social interactions can make workouts more enjoyable and create a sense of accountability. More over an engaging in a variety of activities can prevent boredom and keep adolescents interested in exercising. Trying new sports or fitness classes can make the experience more exciting.

Understanding the physical and mental health benefits of regular exercise can motivate adolescents to make it a priority in their lives. Education about healthy lifestyles can empower them to take charge of their fitness.

In conclusion is perceptions of physical exercise and its importance. Attitudes toward health and well-being. Experiences related to barriers and facilitators of physical exercise. Perceptions of the HBM constructs and their influence on exercise behavior. Suggestions for improving exercise promotion among Chinese adolescents

4. Health Care Handbook

Developing a Health care handbook for Chinese Adolescents in Guangdong Province Using the Health Belief Model to Promote Physical Activity. This project aims to create a health care guide for Chinese adolescents in Guangdong Province that encourages physical activity by using the Health Belief Model (HBM) as a framework. The goal is for adolescents to adopt and sustain an active lifestyle. The development process includes the following steps:

1. Needs Assessment

This step identifies the challenges, barriers, and information gaps related to adolescent physical activity in Guangdong Province. It includes a literature review and research on adolescent exercise habits, quantitative and qualitative data analysis to identify key issues, areas where HBM can be effectively applied, and gathering perspectives from stakeholders—adolescents, parents, teachers, and health experts—to understand views on promoting physical activity.

2. Content Development

The guide's content will align with HBM principles, emphasizing key components such as perceived risk, perceived severity, perceived benefits, perceived barriers, and self-efficacy. It will provide practical information on the importance of physical activity for adolescent health, methods to overcome exercise barriers, confidence-building tips, resources and exercise opportunities in Guangdong, strategies to incorporate physical activity into daily routines, realistic goal-setting, progress tracking, and guidance for creating a supportive and motivating environment. It will also address the health impacts of a sedentary lifestyle.

3. Visual Design

The guide will be designed to be visually engaging and accessible for adolescents. It will include illustrations or graphics, age- and culturally appropriate images and content, easy-to-read fonts, and an appealing color scheme suitable for learning.

4. Language and Accessibility

The guide will use simple and easily understandable language suitable for Chinese adolescents, avoiding technical jargon and complex terminology. It will also consider the linguistic diversity of Guangdong Province to ensure accessibility for various groups. The guide will be available in both print and digital formats to meet different needs.

5. Pilot Testing

A small group of Chinese adolescents from the study population will be invited to review and provide feedback on the guide. Input will also be gathered from

parents, teachers, and health professionals to identify areas for improvement in terms of content clarity and usability.

6. Revisions and Finalization

Based on feedback from the pilot phase, the guide's content and design will be refined to enhance its quality.

7. Dissemination and Implementation

The guide will be distributed to adolescents in Guangdong Province through channels such as schools, community centers, healthcare facilities, and digital platforms. Workshops or educational sessions may also be held to introduce the guide's contents to adolescents and their families.

8. Evaluation

Post-dissemination, the guide's effectiveness in promoting exercise behaviors and health outcomes will be assessed through follow-up surveys, focus groups, or interviews to collect feedback and evaluate its impact.

Health care handbook for Chinese adolescents in Guangdong province.This handbook is designed to help Chinese youth understand the importance of physical exercise and how it can improve their health and well-being. By following the guidelines and tips in this handbook, they can develop a healthy and active lifestyle that will benefit them both now and in the future:

1. The Importance of Physical Exercise

Exercise is body movement that helps to build or maintain strength and overall health. People exercise for various reasons, such as strengthening muscles and the cardiovascular system, developing athletic skills, losing or maintaining weight, and for enjoyment. Regular exercise boosts immunity and helps prevent diseases such as heart disease, cardiovascular disease, Type 2 diabetes, and obesity. Adolescence is a period of significant change in all aspects of life, including physical, emotional, and behavioral changes. Youth at this stage often dislike stillness and are curious to learn new things. However, today's technological advancements negatively impact healthy behaviors, such as excessive addiction to TV, games, and computers, as well as unhealthy eating habits. Therefore, youth should promote their health and physical development through appropriate exercise. Here are some ways to exercise that can be done.

- Exercise at least 60 minutes a day, 3-5 days a week, on a regular basis.
- Choose activities that improve your respiratory system and blood circulation, such as swimming, running, brisk walking, and cycling
- Choose activities to exercise various parts of your body, such as running, dancing, and sports like basketball or football.
- Choose sports or fitness activities that make you feel good, and establish the habit of loving your health, staying active, and playing sports.

2. Strategies to Overcome Perceived Barriers to Physical Activity

Many people face challenges when trying to incorporate regular physical activity into their lives. These barriers can be physical, psychological, or environmental. Understanding and addressing these barriers can help you develop a more consistent exercise routine.

3.Tips for Enhancing Perceived Self-Efficacy in Engaging in Regular Exercise

Self-efficacy refers to your belief in your ability to succeed in specific situations or accomplish a task. When it comes to physical activity, having high self-efficacy

means believing you can successfully engage in and maintain regular exercise. This confidence can help you overcome challenges and persist in your fitness goals.

4 . Information on Local Resources and Opportunities for Physical Activity in Guangdong Province Guangdong Province offers numerous opportunities for physical activity, from urban parks to community sports centers. Leveraging these resources can make it easier to incorporate exercise into your daily routine.

5. Suggestions for Incorporating Physical Exercise into Daily Routines Incorporating physical activity into your daily routine does not have to be complicated. Small changes can make a big difference in your overall fitness and well-being. Here are some practical suggestions to help you stay active every day. For starters, they often don't properly assess their physical condition, which makes them prone to accidents during exercise. Many people mistakenly believe that the more intense the exercise, the longer it will be effective, this is a misunderstanding. Safe exercise should start light and gradually increase in intensity and duration.

Simple Ways to Stay Active Every Day. Activities 1 Stretch the upper body:

1. Neck extensor muscle Place your hands on the back of your head with your hands crossed and your head lowered. Apply pressure gently. Feel a slight stretch in the back of your neck. Hold for 15-30 seconds, then rest and repeat 5-10 times.

2 . Neck rotator, Neck lateral flexor Grab the sides of your head with your hands, tilt your head to one side, and gently stretch with your hands (on the same side of your hand). You'll feel the muscles on the side of your neck tighten. Do this on both sides, holding the stretch for 15-30 seconds, then rest and repeat 5-10 times.

3. Subscapularis muscle Raise your arms above your head, bend your elbows, and touch the opposite shoulder. Use Your Hand to pull your elbows to the opposite side and feel the muscles near your shoulder blades stretch slightly. Repeat on both sides, hold for 15-30 seconds, then rest. Repeat 5-10 times.

4. Shoulder adductor, Retractor muscle Extend your arm to the opposite side, then bend your elbow with your other arm and stretch the opposite arm. Feel the muscles in your shoulders and back scapula tighten. Do both sides for 15-30 seconds, then rest and repeat 5-10 times.

5. Pectoral muscle Spread Your Arms out at an angle of about 90-120 degrees, palm against the wall, then lean forward and rotate your torso slightly, on both sides, for 15-30 seconds, then rest and repeat 5-10 times.

6. Extensor group of forearm muscle Keep your arm straight forward with your palm facing down, and then hold it with your other hand until you feel a stretch under your forearm. Do both sides for 15-30 seconds and repeat 5-10 times after the break.

7. Flexor group of forearm muscle Keep your arm straight forward with your palm facing down, and then hold it with your other hand until you feel a stretch under your forearm. Do both sides for 15-30 seconds and repeat 5-10 times after the break.

8. Abdominal & Upper body muscle Put your hands together, then stretch your arms straight and up to the limit. Stretch both sides of your body at the same time. Hold for 15-30 seconds, then rest and repeat 5-10 times.

A Guide to safe exercise. Choose the right equipment:

1. Choose shoes that are suitable for exercise. Choose shoes that are suitable for any kind of exercise, such as running shoes and special shoes for all kinds of sports, in order to reduce the possibility of accidents or injuries

2. Variety of sports, sports should choose a variety of ways to avoid excessive concentration on a single movement, and reduce the sense of movement boring. Exercise should include flexibility training, aerobic exercise, strength training and endurance training.

3. Warm-up exercises. Warm-up exercises help prepare the muscles, heart and blood vessels for exercise

4. Stretching: stretching is the slow stretching of a muscle so that it stretches and relaxes.

5. Take time to stretch, holding each stretch for 10-20 seconds until your muscles feel tight. Also, take slow, deep breaths to lower blood pressure and increase blood flow to the brain.

6. Drink plenty of water: drinking plenty of water can prevent dehydration and heat stroke. Drink a glass of water 15 minutes before exercise and every 20 minutes after exercise. Drink a glass of water every hour during exercise.

7. Body warm-up: at the end of exercise, should gradually reduce the intensity of exercise, about 10 minutes of warm-up, do not suddenly stop the exercise.

Guidance on Setting Realistic Exercise Goals and Tracking Progress. Setting exercise goals is crucial for maintaining motivation and achieving long-term fitness success. Realistic and well-planned goals can help you stay focused and make consistent progress.

SMART Goals for Physical Activity. SMART goal this is an effective goal setting principle, it is not random set goals, but through systematic thinking, and full of determination to achieve the goal. SMART is an acronym for an important part of goal setting, including.

S = Specific Please specify the sports you intend to do, such as running, walking, swimming, boxing, weight lifting, yoga or other activities.

M = Measurable Set a measurable amount of exercise, including intensity and time, such as 30 minutes of moderate-intensity running each day

A = Attainable Set realistic goals that are appropriate for you, such as people who have never exercised before. Set short-term, achievable goals, such as walking, if you haven't walked long before, start with 10 minutes and gradually increase to 30-50 minutes if you reach your goal time, until you reach the recommended 150 minutes per week.

T = Timely Set specific time goals, such as walking 30 minutes every Monday, Wednesday, and Saturday for 3 months. If the goal is reached after 3 months, set a new goal.

Setting short-term goals makes it easier to achieve them and motivates us to keep challenging harder goals. Because every time we set a new goal, we feel excited and challenged. But the goals we set should not be too easy or too difficult. Many times we feel like we're failing because we set goals too far away.

SMART Goal Setting can be useful not only for setting exercise goals, but also for adjusting to other healthy behaviors, such as diet planning or weight control. Setting good goals is key to achieving a healthy lifestyle and making health accessible.

The Phase 2 study can be summarized; the study of Behavioral Health Belief indicate that the overall average is at a Neutral level. physical exercise behavior of Chinese adolescents is perceptions of physical exercise and its importance. Attitudes toward health and well-being., and the Health Care Handbook for Chinese

Adolescents, resulting from this Phase 2, will be used in the experimental research conducted in Phase 3.

Phase 3: Experimental Research

In designing the intervention for this research, a 12-Week Action Plan was implemented. This program was designed based on the Health Belief Model (HBM) and applied to both the experimental and control groups, with differences in the type of intervention received by each group, as follows:

The Experimental Group received the 12-Week Action Plan, which included the use of a Health Care Handbook specifically developed for this intervention.

The Control Group received the same 12-Week Action Plan as the experimental group, but without the inclusion of the Health Care Handbook in the program.

Moreover, before proceeding each week, a meeting was held with the research assistants to clarify the objectives and plan, ensuring a shared understanding so that the implementation would follow the specified objectives in a unified direction

Before initiating the 12-week intervention program (12-Week Action Plan), designed based on the Health Belief Model (HBM), preliminary data were assessed from both the experimental and control groups to ensure that both groups were similar in terms of factors that could influence the study outcomes.

1. Demographic Information

The analysis of personal characteristics data from the experimental group of 80 people can be categorized into numbers and percentages according to the characteristics in each aspect as follows.

Table 86 The Demographic Information data of the experimental group (n=80):

Demographic	Option	Frequency	Percentage
1. Gender	- Male	42	52.50
	- Female	38	47.50
2. Age	- 10 years old	8	8.00
	- 11 years old	8	8.00
	- 12 years old	8	8.00
	- 13 years old	8	8.00
	- 14 years old	8	8.00
	- 15 years old	8	8.00
	- 16 years old	8	8.00
	- 17 years old	8	8.00
	- 18 years old	8	8.00
	- 19 years old	8	8.00
3. Educational level	- Primary Education Certificate	24	30.00
	- Middle School Certificate	24	30.00
	- High School Certificate	24	30.00
	- University	8	10.00
5. Race/ Ethnicity	- Han Chinese	48	60.00
	- Zhuang	13	16.30
	- Yao	8	10.00
	- She	4	5.00
	- Man	3	3.80
	- Hui	2	2.50
	- Dong	2	2.50
6. Family Status	- Two-parent family	61	76.30
	- Single-parent family	15	18.80
	- Extended family	4	5.00
7. Family Income (monthly)	- RMB 3,000	5	6.30
	- RMB 3,001–6,000	4	5.00
	- RMB 6,001–10,000	12	15.00
	- RMB 10,001–30,000	8	10.00
	- RMB 30,001–50,000	44	55.00
	- RMB 50,001 and above	7	8.80
Total		**80**	**100.00**

From Table 86, the sample group of Chinese adolescents consisted of 80 individuals, with 42 males (52.50%) and 38 females (47.50%). Each age group from 10 to 19 years is evenly represented at 8.00% per age group, or 8 individuals for each year. In terms of educational attainment, 72.00% of participants (72 people) have completed primary education (ages 10–12), 30.00% have completed Middle School education (ages 13–15), 30.00% have finished High School education (ages 16–18), and 10.00% (8 people) have higher education, such as vocational certificates or bachelor's degrees. Most of the participants were of Han ethnicity which makes up (60.00%, 48 people), followed by Zhuang ethnicity (16. 30%,13 individuals), Yao (10.00%, 8 people), She (5.00%, 4 people), Manchu (3.80 %, 3 people), Hui (2.50%, 2 people), and Dong (2.50%, 2 people). In terms of family structure, the majority of adolescents (76.30%, 61 people) come from two-parent households, 18.80% (15 people) come from single-parent households, and 5.00% (4people) live in extended families. Family income distribution shows that 55.00% of families (44 people) earn between 10,001 and 30,000 yuan per month, 17.60% (528 people) earn between 30,001-50,000 yuan, and 15.0% (12 people) earn between 6,001-10,000yuan. About 10.00% (8 people) have incomes 10,001–30,000 yuan, and 8.80 % (7 people) exceeding 50,001 yuan, while a smaller proportion (6.30%, 5 people) earn below 3,000 yuan, and the fewest (5.00%, 4 people) earn between 3,001 and 6,000 yuan.

Table 87 The Demographic Information data of the experimental group (n=80):

Demographic	Option	Frequency	Percentage
1. Factors influence the physical activity levels within your environment	- Cultural traditions	10	12.50
	- Access to facilities	16	20.0
	- Socioeconomic factors	19	23.8
	- Community support	19	23.8
	- Peer influence	8	10.0
	- Lack of representation in fitness media	8	10.0
2. Rate the availability of facilities and resources for physical activities in your community	- Excellent	17	21.3
	- Good	17	21.3
	- Fair	26	32.5
	- Poor	20	25.0
3. Experience limitations or challenges in participating in physical activities due to your health condition	- Never	21	26.3
	- Rarely	16	20.0
	- Occasionally	16	20.0
	- Frequently	6	7.5
	- Always	21	26.3
4. The main barriers you face in engaging in physical activities due to your health condition	- Pain or discomfort	18	22.5
	- Lack of energy	20	25.0
	- Fear of exacerbating the condition	13	16.3
	- Limited mobility	17	21.3
	- Lack of accessibility to suitable facilities	12	15.0
5. Think that participation in a structured exercising program, incorporating the Health Belief Model, would be more or less beneficial for adolescents with chronic health conditions compared to those without	- More beneficial	22	27.5
	- Equally beneficial	35	43.8
	- Less beneficial	23	28.8
Total		**80**	**100.00**

From Table 87, The most influential factor affecting exercise behavior are socioeconomic factors and Community support (23.38%, 19 people,), followed by Access to facilities (20.00%, 16 people,). Cultural traditions (12.50 %,10 people,), Peer influence and Lack of representation in fitness media (10.00%, 8 people,). In terms of the assessment of facilities and resources for physical activity in the community, most rated them as fair, (32.50%, 26 people,). followed by poor (25.00%, 20 people,). excellent and good (21.30%, 17 people,). Regarding challenges to

participating in physical activities due to health conditions, never exercise and Always are equal 26.30% (21 people). While Rarely and Occasionally are 20.00% (16 people) and Frequently 7.50% (6 people) The main health-related obstacle to exercise is lack of energy, affecting 25.00% (20 people), followed by pain or discomfort 22.50%). (18 people), limited mobility 21.30%, (17 people), Fear of exacerbating the condition 16.30% (13 people), and Lack of accessibility to suitable facilities 15.00% (12 people)

When comparing the perceived effectiveness of structured exercise programs integrated with the Health Belief Model for adolescents for adolescents with chronic health conditions compared to those without 43.80% (35 people) believe the program Equally beneficial believe the program is less beneficial, and think it is More beneficial 27.50 % (22 people).

The analysis of personal characteristics data from the Control group of 80 people can be categorized into numbers and percentages according to the characteristics in each aspect as follows.

Table 88 The Demographic Information data of the Control group (n=80):

Demographic	**Option**	**Frequency**	**Percentage**
1. Gender	- Male	36	45.00
	- Female	44	55.00
2. Age	- 10 years old	8	8.00
	- 11 years old	8	8.00
	- 12 years old	8	8.00
	- 13 years old	8	8.00
	- 14 years old	8	8.00
	- 15 years old	8	8.00
	- 16 years old	8	8.00
	- 17 years old	8	8.00
	- 18 years old	8	8.00
	- 19 years old	8	8.00
3. Educational level	- Primary Education Certificate	24	30.00
	- Middle School Certificate	24	30.00
	- High School Certificate	24	30.00
	- University	8	10.00
5. Race/ Ethnicity	- Han Chinese	48	60.00
	- Zhuang	12	15.00
	- Yao	7	8.80
	- She	5	6.30
	- Man	4	5.00
	- Hui	2	2.50
	- Dong	2	2.50
6. Family Status	- Two-parent family	63	78.80
	- Single-parent family	11	13.80
	- Extended family	6	7.50
7. Family Income (monthly)	- RMB 3,000	4	5.00
	- RMB 3,001–6,000	14	17.50
	- RMB 6,001–10,000	7	8.80
	- RMB 10,001–30,000	43	53.80
	- RMB 30,001–50,000	7	8.80
	- RMB 50,001 and above	4	5.00
Total		**80**	**100.00**

From Table 88, the sample group of Chinese adolescents consisted of 80 individuals, with 36 males (45.00%) and 44 females (55.00%). Each age group from 10 to 19 years is evenly represented at 8.00% per age group, or 8 individuals for each year. In terms of educational attainment, 72.00% of participants (72 people) have completed primary education (ages 10–12), 30.00% have completed Middle School education (ages 13–15), 30.00% have finished High School education (ages 16–18), and 10.00% (8 people) have higher education, such as vocational certificates or bachelor's degrees. Most of the participants were of Han ethnicity which makes up (60.00%, 48 people), followed by Zhuang ethnicity (15.00 %,12 individuals), Yao (8.80 %, 7 people), She (6.30%, 5 people), Man (5.00 %, 4 people), Hui (2.50%, 2 people), and Dong (2.50%, 2 people). In terms of family structure, the majority of adolescents (78.80%, 63 people) come from two-parent households, 13.80% (11 people) come from single-parent households, and 7.50 % (6 people) live in extended families. Family income distribution shows that 53.80% of families (43 people) earn between 10,001 and 30,000 yuan per month, 17.50% (14 people) earn between 3,001-6,000 yuan, and between 6,001-10,000yuan, 8.80 % (7 people). About 10.00% (8 people) have incomes 10,001–30,000 yuan, incomes 30,001–50,000 and 6,001–10,000 are equal 8.80 % (7 people), exceeding 50,001 yuan, and earn below 3,000 yuan, are the fewest 5.00% (4 people).

Table 89 The Demographic Information data of the experimental group (n=80):

Demographic	Option	Frequency	Percentage
1. Factors influence the physical activity levels within your environment	- Cultural traditions	11	13.80
	- Access to facilities	11	13.80
	- Socioeconomic factors	22	27.50
	- Community support	19	23.80
	- Peer influence	9	11.30
	- Lack of representation in fitness media	8	10.00
2. Rate the availability of facilities and resources for physical activities in your community	- Excellent	16	20.00
	- Good	17	21.30
	- Fair	23	28.80
	- Poor	24	30.00
3. Experience limitations or challenges in participating in physical activities due to your health condition	- Never	19	23.80
	- Rarely	15	18.80
	- Occasionally	18	22.50
	- Frequently	8	10.00
	- Always	20	25.00
4. The main barriers you face in engaging in physical activities due to your health condition	- Pain or discomfort	20	25.00
	- Lack of energy	17	21.30
	- Fear of exacerbating the condition	16	20.00
	- Limited mobility	15	18.80
	- Lack of accessibility to suitable facilities	12	15.00
5. Think that participation in a structured exercising program, incorporating the Health Belief Model, would be more or less beneficial for adolescents with chronic health conditions compared to those without	- More beneficial	25	31.30
	- Equally beneficial	29	36.30
	- Less beneficial	26	32.40
Total		**80**	**100.00**

From Table 89, The most influential factor affecting exercise behavior socioeconomic factors are 27.50% (22 people,), followed by Community support 23.80 %, (19 people,), Access to facilities and Cultural traditions are Equal 13.80 %, (11 people,). Peer influence is 11.30 %, (9 people,), and Lack of representation in fitness media 10.00%, (8 people,). In terms of the assessment of facilities and resources for physical activity in the community, most rated them as Poor 30.00%, (24 people,). followed by Fair 28.80%, (23 people,). Good is 21.30%, (17 people,).

And the fewest excellent 20.00%, (16 people). Regarding challenges to participating in physical activities due to health conditions, are Always 25.0 % (20 people). Never exercise 23.80% (19 people). Occasionally 22.5% (18 people) and rarely are 18.80 % (15 people). While Frequently 10.00% (8 people). The main health-related obstacle to exercise is pain or discomfort 25.00%, (20 people), lack of energy, affecting 15.00 % (12 people), followed by Fear of exacerbating the condition 20.00% (16 people), limited mobility 18.80%, (15 people), and Lack of accessibility to suitable facilities 15.00% (12 people). When comparing the perceived effectiveness of structured exercise programs integrated with the Health Belief Model for adolescents for adolescents with chronic health conditions compared to those is Equally beneficial 36.30 % (29 people)., believe the program is less beneficial, 32.40 % (26 people) and think it is More beneficial 31.30 % (25 people).

2. Behavioral Health Belief

The analysis of behavioral health belief data from a sample group of 80 adolescents. The experimental group can be categorized into mean values, standard deviations, and their corresponding interpretations for each surveyed item as follows:

Table 90 Shown mean, standard deviation and meaning before and after of Perceived Risk:

Perceived Risk	**Before**			**After**		
	$\bar{X}$	**S.D.**	**Meaning**	**$\bar{X}$**	**S.D.**	**Meaning**
1. How often do you think about the potential health risks associated with not engaging in regular physical exercise?	3.13	0.47	Neutral	3.55	0.48	Neutral
2. In the past month, how frequently have you considered the health risks of not participating in physical exercise?	2.95	0.39	Neutral	3.65	0.45	Neutral
3. On a weekly basis, how frequently do you reflect on the potential consequences of a sedentary lifestyle on your health?	2.98	0.56	Neutral	3.58	0.39	Neutral
4. How regularly do you discuss the health risks associated with insufficient physical activity with friends or family?	3.10	0.46	Neutral	3.56	0.36	Neutral
5. In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?	2.73	0.44	Neutral	3.42	0.47	Neutral
Total	**2.97**	**0.46**	**Neutral**	**3.55**	**0.43**	**Neutral**

From Table 90, the results of the Perceived Risk indicate that the overall average before the intervention is at a Neutral level ($\overline{X}$ = 2.97, S.D. = 0.46). The item with the highest average is “How often do you think about the potential health risks associated with not engaging in regular physical exercise?” ($\overline{X}$ = 3.13, S.D. = 0.47). which is at a Neutral level. The item with the lowest average is “In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?” ($\overline{X}$ = 2.73, S.D. = 0.34), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.55, S.D. = 0.43). The item with the highest average after the intervention is “In the past month, how frequently have you considered the health risks of not participating in physical exercise?” ($\bar{X}$ = 3.65, S.D. = 0.45), which is at a Neutral level. The item with the lowest average after the intervention is “In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?” ($\bar{X}$ = 3.42, S.D. = 0.47), which is also at a Neutral level.

Table 91 Shown mean, standard deviation and meaning before and after of Perceived Severity:

Perceived Severity	**Before**			**After**		
	$\overline{X}$	**S.D.**	**Meaning**	**$\overline{X}$**	**S.D.**	**Meaning**
1. How often do you think about the severity of potential health issues that could arise from not engaging in regular physical exercise?	2.95	0.45	Neutral	3.05	0.44	Neutral
2. In the past month, how frequently have you considered the seriousness of health problems associated with a lack of physical activity?	2.83	0.42	Neutral	3.00	0.48	Neutral
3. On a weekly basis, how frequently do you reflect on the possible severe consequences of a sedentary lifestyle on your health?	3.04	0.41	Neutral	3.23	0.42	Neutral
4. How regularly do you discuss the severity of health risks associated with insufficient physical activity with friends or family?	2.78	0.43	Neutral	2.91	0.46	Neutral
5. In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?	2.76	0.42	Neutral	2.83	0.42	Neutral
Total	**2.87**	**0.42**	**Neutral**	**3.12**	**0.56**	**Neutral**

From Table 91, the results of the study in Section 2: Perceived Severity indicate that the overall average before the intervention is at a Neutral level ($\overline{X}$ = 2.87, S.D. = 0.42). The item with the highest average is “On a weekly basis, how frequently do you reflect on the possible severe consequences of a sedentary lifestyle on your health?” ($\overline{X}$ = 3.04, S.D. = 0.47). which is at a Neutral level. The item with the lowest average is “In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?” ($\overline{X}$ = 2.76, S.D. = 0.42), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\overline{X}$ = 3.12, S.D. = 0.56). The item with the highest average after the intervention is “On a weekly basis, how frequently do you reflect on the possible severe consequences of a sedentary lifestyle on your health?” ($\overline{X}$ = 3.23, S.D. = 0.42), which remains at a Neutral level. The item with the lowest average after the intervention is “In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?” ($\overline{X}$ = 2.83, S.D. = 0.42), which is also at a Neutral level.

Table 92 Shown mean, standard deviation and meaning before and after of Perceived Benefit:

Perceived Benefit	**Before**			**After**		
	$\overline{X}$	**S.D.**	**Meaning**	**$\overline{X}$**	**S.D.**	**Meaning**
1. How often do you believe that engaging in regular physical exercise can enhance your overall health and well-being?	2.95	0.43	Neutral	3.46	0.39	Neutral
2. In the past month, how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?	2.68	0.38	Neutral	3.49	0.39	Neutral
3. On a weekly basis, how frequently do you reflect on the positive changes in your physical health that could result from regular physical exercise?	3.18	0.45	Neutral	3.35	0.47	Neutral
4. How regularly do you discuss the benefits of physical activity with friends or family?	2.96	0.56	Neutral	3.42	0.32	Neutral
5. In the past six months, how often have you actively sought information about the benefits associated with regular exercise for your overall well-being?	2.99	0.25	Neutral	3.52	0.41	Neutral
Total	**2.95**	**0.41**	**Neutral**	**3.45**	**0.56**	**Neutral**

From Table 92, the results of the study in Section 3: Perceived Benefit indicate that the overall average before the intervention is at a Neutral level ($\overline{X}$ = 2.95, S.D. = 0.41). The item with the highest average is "On a weekly basis, how frequently do you reflect on the positive changes in your physical health that could result from regular physical exercise?" ($\overline{X}$ = 3.18, S.D. = 0.45). which is at a Neutral level. The item with the lowest average is "In the past month, how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?" ($\overline{X}$ = 2.68, S.D. = 0.38), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\overline{X}$ = 3.45, S.D. = 0.56). The item with the highest average after the intervention is "In the past six months, how often have you actively sought information about the benefits associated with regular exercise for your overall well-being?" ($\overline{X}$ = 3.52, S.D. = 0.41), which remains at a Neutral level. The item with the lowest average after the intervention is "In the past six months, how often have you actively sought information about the benefits associated with regular exercise for your overall well-being?" ($\overline{X}$ = 2.85, S.D. = 0.41), which is also at a Neutral level.

Table 93 Shown mean, standard deviation and meaning before and after of Perceived Barriers:

Question	**Before**			**After**		
	$\overline{X}$	**S.D.**	**Meaning**	**$\overline{X}$**	**S.D.**	**Meaning**
1. How often do you perceive time constraints as a barrier to engaging in regular physical exercise?	2.93	0.35	Neutral	3.42	0.59	Neutral
2. In the past month, how frequently have you faced a lack of motivation as a barrier to participating in physical exercise?	2.90	0.39	Neutral	3.29	0.48	Neutral
3. On a weekly basis, how frequently do you encounter a lack of access to facilities as a barrier to engaging in physical activity?	2.98	0.55	Neutral	3.26	0.35	Neutral
4. How regularly do you perceive health issues as a barrier to engaging in regular physical exercise?	2.93	0.33	Neutral	3.13	0.44	Neutral
5. In the past six months, how often have you experienced other specific barriers (please specify) to participating in regular exercise?	2.89	0.44	Neutral	3.23	0.39	Neutral
Total	**2.93**	**0.41**	**Neutral**	**3.27**	**0.45**	**Neutral**

From Table 93, the results of the study in Section 4: Perceived Barriers indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.93, S.D. = 0.41). The item with the highest average is "On a weekly basis, how frequently do you encounter a lack of access to facilities as a barrier to engaging in physical activity?" ($\bar{X}$ =2.98, S.D. = 0.55). which is at a Neutral level. The item with the lowest average is "In the past six months, how often have you experienced other specific barriers (please specify) to participating in regular exercise?" ($\bar{X}$ = 2.89, S.D. = 0.44), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.27, S.D. = 0.45). The item with the highest average after the intervention is "How often do you perceive time constraints as a barrier to engaging in regular physical exercise?" ($\bar{X}$ = 3.42, S.D. = 0.59), which remains at a Neutral level. The item with the lowest average after the intervention is "How regularly do you perceive health issues as a barrier to engaging in regular physical exercise?" ($\bar{X}$ = 3.13, S.D. = 0.44), which is also at a Neutral level.

Table 94 Shown mean, standard deviation and meaning before and after of Perceived Self-efficacy:

Question	**Before**			**After**		
	$\bar{X}$	**S.D.**	**Meaning**	**$\bar{X}$**	**S.D.**	**Meaning**
1. How often do you feel confident in your ability to adhere to a regular exercise routine?	2.91	0.31	Neutral	3.14	0.44	Neutral
2. In the past month, how frequently have you believed in your capability to overcome obstacles and challenges related to physical exercise?	3.11	0.44	Neutral	3.35	0.38	Neutral
3. On a weekly basis, how frequently do you feel assured in your skills and capabilities to engage in physical activity, even when faced with difficulties?	3.01	0.51	Neutral	3.44	0.48	Neutral
4. How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?	2.90	0.37	Neutral	3.38	0.32	Neutral
5. In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?	3.18	0.41	Neutral	3.28	0.27	Neutral
Total	**3.02**	**0.49**	**Neutral**	**3.32**	**0.63**	**Neutral**

From Table 94, the results of the study in Section 5: Perceived Self-efficacy indicate that the overall average before the intervention is at a Neutral level ($\overline{X}$ = 3.02, S.D. = 0.49). The item with the highest average is “In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?” ($\overline{X}$ =3.18, S.D. = 0.41). which is at a Neutral level. The item with the lowest average is “How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?” ($\overline{X}$ = 2.90, S.D. = 0.37), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\overline{X}$ = 3.32, S.D. = 0.63). The item with the highest average after the intervention is “On a weekly basis, how frequently do you feel assured in your skills and capabilities to engage in physical activity, even when faced with difficulties?” ($\overline{X}$ = 3.44, S.D. = 0.48), which remains at a Neutral level. The item with the lowest average after the intervention is “How often do you feel confident in your ability to adhere to a regular exercise routine?” ($\overline{X}$ = 3.14, S.D. = 0.44), which is also at a Neutral level

The summary of the data analysis results from the study of the third phase Behavioral Health Belief: experimental group is shown in the following table.

Table 95 Summary of the results from the third phase, Behavioral Health Belief: experimental group:

Behavioral Health Belief	Before			After		
	$\overline{X}$	S.D.	Meaning	$\overline{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.97	0.46	Neutral	3.55	0.56	Neutral
Section 2: Perceived Severity	2.87	0.42	Neutral	3.12	0.63	Neutral
Section 3: Perceived Benefit	2.95	0.41	Neutral	3.45	0.56	Neutral
Section 4: Perceived Barriers	2.93	0.41	Neutral	3.27	0.63	Neutral
Section 5: Perceived Self-efficacy	3.32	0.57	Neutral	3.32	0.58	Neutral
Total	**2.95**	**0.45**	**Neutral**	**3.32**	**0.59**	**Neutral**

From Table 95, the Summary of the results from the third phase of the study behavioral health belief experimental 1 group indicate that the overall average before the intervention is at a Neutral level ($\overline{X}$ = 2.95, S.D. = 0.45). The item with the highest average is “Perceived Severity” ($\overline{X}$ =2.87, S.D. = 0.42). which is at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\overline{X}$ = 3.32, S.D. = 0.59). which is at a Neutral level. which is at a Neutral level. The item with the highest average after the intervention is “Perceived Risk” ($\overline{X}$ = 3.55, S.D. = 0.56), which remains at a Neutral level.

3. Physical Exercise Behavior

The analysis of Physical Exercise Behavior data from a sample group of 80 adolescents can be categorized into mean values, standard deviations, and their corresponding interpretations for each surveyed item as follows:

Table 96 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Risk):

Perceived Risk	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your perception of the risk of not engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	3.29	0.46	Neutral	3.33	0.46	Neutral
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has reduced your risk of facing negative health consequences in the future due to a lack of physical exercise?	2.98	0.36	Neutral	3.03	0.42	Neutral
3. How confident are you now in your ability to assess the potential risks associated with not participating in regular physical exercise?	3.76	0.39	Neutral	3.98	0.42	Neutral
4. In your opinion, what specific aspects of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the risks associated with a sedentary lifestyle?	2.82	0.41	Neutral	3.33	0.35	Neutral
5. How likely are you to share information about the health risks of a sedentary lifestyle with your friends or family after completing the 12-weeks plans based on the Health B7elief Model applications program?	2.65	0.37	Neutral	3.16	0.42	Neutral
6. To what extent do you think the pr10ogram materials and educational sessions effectively communicated the risks associated with not engaging in regular physical exercise?	3.00	0.45	Neutral	3.24	0.36	Neutral
7. Have there been any specific moments during the 12-week program	2.82	0.42	Neutral	3.16	0.36	Neutral

Table 96 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Risk):

Perceived Risk	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
that significantly influenced your perception of the risks associated with a lack of physical exercise? If so, please describe.						
8. How would you rate the role of peer support and group activities in shaping your understanding of the risks of a sedentary lifestyle during the program?	3.02	0.49	Neutral	3.24	0.59	Neutral
9. How has your perception of the seriousness of the consequences of not participating in regular physical exercise changed after completing the program?	3.08	0.37	Neutral	3.26	0.40	Neutral
10. In your own words, can you describe any new insights or realizations you gained about the risks associated with a lack of physical exercise as a result of participating in the 12-week program?	2.75	0.39	Neutral	3.13	0.34	Neutral
Total	**3.02**	**0.42**	**Neutral**	**3.29**	**0.40**	**Neutral**

From Table 96, the results of the study in Section 1: Perceived Risk indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 3.02, S.D. = 0.42). The item with the highest average is “How confident are you now in your ability to assess the potential risks associated with not participating in regular physical exercise?” ($\bar{X}$ =3.76, S.D. = 0.39). which is at a Neutral level. The item with the lowest average is “How likely are you to share information about the health risks of a sedentary lifestyle with your friends or family after completing the 12-weeks plan based on the Health Belief Model applications program?” ($\bar{X}$ = 2.65, S.D. = 0.37), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.29, S.D. = 0.40). The item with the highest average after the intervention is “How confident are you now in your ability to assess the potential risks associated with not participating in regular physical exercise?” ($\bar{X}$ = 3.98, S.D. = 0.42), which is at a Neutral level. The item with the lowest average after the intervention is “In your own words, can you describe any new insights or realizations you gained about the risks associated with a lack of physical exercise as a result of participating in the 12-week program?” ($\bar{X}$ = 3.13 S.D. = 0.34), which is also at a Neutral level.

Table 97 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Severity):

Perceived Severity	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your perception of the severity of the consequences of not participating in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	3.29	0.46	Neutral	3.36	0.50	Neutral
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has influenced your awareness of the potential serious consequences of a sedentary lifestyle?	2.98	0.36	Neutral	3.28	0.39	Neutral
3. How confident are you now in your ability to identify and understand the potential severe consequences of not engaging in regular physical exercise?	3.76	0.39	Neutral	3.98	0.36	Neutral
4. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the severity of the consequences associated with a lack of physical exercise?	2.82	0.41	Neutral	3.38	0.37	Neutral
5. How likely are you to share information about the serious consequences of a sedentary lifestyle with your friends or family after completing the 12-week program?	2.65	0.37	Neutral	3.01	0.46	Neutral
6. To what extent do you think the program materials and educational sessions effectively communicated the severity of the consequences associated with not engaging in regular physical exercise?	3.00	0.45	Neutral	3.28	0.36	Neutral
7. Have there been any specific moments during the 12-week	2.82	0.42	Neutral	3.19	0.38	Neutral

Table 97 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Severity):

Perceived Severity	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
program that significantly influenced your perception of the severity of the consequences associated with a lack of physical exercise? If so, please describe.?						
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the severity of the consequences associated with a lack of physical exercise? If so, please describe.?	2.82	0.42	Neutral	3.19	0.38	Neutral
8. How would you rate the role of peer support and group activities in shaping your understanding of the severity of the consequences of a sedentary lifestyle during the program?	3.02	0.49	Neutral	3.29	0.41	Neutral
9. How has your perception of the seriousness of the consequences of not participating in regular physical exercise changed after completing the program?	3.08	0.37	Neutral	3.27	0.48	Neutral
10. In your own words, can you describe any new insights or realizations you gained about the severity of the consequences associated with a lack of physical exercise as a result of participating in the 12-week program?	2.75	0.39	Neutral	3.16	0.37	Neutral
Total	**3.02**	**0.42**	**Neutral**	**3.32**	**0.47**	**Neutral**

From Table 97, the results of the study in Section 2: Perceived Severity indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 3.02, S.D. = 0.42). The item with the highest average is “How confident are you now in your ability to identify and understand the potential severe consequences of not engaging in regular physical exercise?” ($\bar{X}$ =3.76, S.D. = 0.39). which is at a Neutral level. The item with the lowest average is “How likely are you to share information about the health risks of a sedentary lifestyle with your friends or family after

completing the 12-weeks 6plan based on the Health Belief Model applications program?" ($\bar{X}$ = 2.65, S.D. = 0.37), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.32, S.D. = 0.47). The item with the highest average after the intervention is "How confident are you now in your ability to identify and understand the potential severe consequences of not engaging in regular physical exercise?" ($\bar{X}$ = 3.98, S.D. = 0.36), which remains at a Neutral level. The item with the lowest average after the intervention is "In your own words, can you describe any new insights or realizations you gained about the severity of the consequences associated with a lack of physical exercise as a result of participating in the 12-week program?" ($\bar{X}$ = 3.16, S.D. = 0.37), which is also at a Neutral level.

Table 98 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Benefit):

Perceived Benefit	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your perception of the benefits of engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	3.05	0.44	Neutral	3.20	0.42	Neutral
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has positively influenced your understanding of the potential benefits of regular physical exercise?	2.74	0.49	Neutral	3.26	0.44	Neutral
3. How confident are you now in your ability to identify and articulate the benefits of regular physical exercise?	2.95	0.45	Neutral	3.24	0.38	Neutral
4. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the benefits associated with engaging in regular physical exercise?	2.89	0.46	Neutral	3.25	0.47	Neutral
5. How likely are you to share information about the benefits of regular physical exercise with your friends or family after completing the 12-week program?	2.91	0.33	Neutral	3.16	0.26	Neutral

Table 98 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Benefit):

Perceived Benefit	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
6. To what extent do you think the program materials and educational sessions effectively communicated the benefits associated with engaging in regular physical exercise?	3.19	0.56	Neutral	3.29	0.54	Neutral
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the benefits associated with engaging in regular physical exercise? If so, please describe.?	2.89	0.37	Neutral	3.15	0.44	Neutral
8. How would you rate the role of peer support and group activities in shaping your understanding of the benefits of engaging in regular physical exercise during the program?	2.98	0.38	Neutral	3.20	0.39	Neutral
9. How has your perception of the benefits of engaging in regular physical exercise changed after completing the program?	2.96	0.36	Neutral	3.18	0.43	Neutral
10. In your own words, can you describe any new insights or realizations you gained about the benefits of engaging in regular physical exercise as a result of participating in the 12-week program?	3.04	0.40	Neutral	3.23	0.45	Neutral
Total	**2.96**	**0.42**	**Neutral**	**3.22**	**0.47**	**Neutral**

From Table 98 the results of the study in Section 3: Perceived Benefit indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =2.96, S.D. = 0.42). The item with the highest average is “To what extent do you think the program materials and educational sessions effectively communicated the benefits associated with engaging in regular physical exercise?” ($\bar{X}$ =3.19, S.D. = 0.56). which is at a Neutral level. The item with the lowest average is “To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has positively influenced your understanding of the potential benefits of regular physical exercise?” ($\bar{X}$ = 2.74, S.D. = 0.49), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.22, S.D. = 0.47). The item with the highest average after the intervention is “To what

extent do you think the program materials and educational sessions effectively communicated the benefits associated with engaging in regular physical exercise?" ($\overline{X}$ = 3.29, S.D. = 0.54), which remains at a Neutral level. The item with the lowest average after the intervention is "Have there been any specific moments during the 12-week program that significantly influenced your perception of the benefits associated with engaging in regular physical exercise? If so, please describe.?" ($\overline{X}$ = 3.15, S.D. = 0.44), which is also at a Neutral level.

Table 99 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Barriers):

Perceived Barriers	Before			After		
	$\overline{X}$	S.D.	Meaning	$\overline{X}$	S.D.	Meaning
1. How has your perception of the barriers or obstacles to engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	3.13	0.41	Neutral	3.23	0.34	Neutral
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has helped you overcome or address the barriers that previously hindered your engagement in physical exercise?	2.83	0.57	Neutral	3.16	0.41	Neutral
3. How confident are you now in your ability to identify and overcome barriers to engaging in regular physical exercise?	2.89	0.42	Neutral	3.25	0.43	Neutral
4. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the barriers associated with engaging in regular physical exercise?	3.01	0.41	Neutral	3.21	0.33	Neutral
5. How likely are you to share information about overcoming barriers to physical exercise with your friends or family after completing the 12-week program?	2.96	0.43	Neutral	3.18	0.45	Neutral
6. To what extent do you think the program materials and educational sessions effectively addressed and	2.73	0.46	Neutral	3.13	0.40	Neutral

Table 99 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Barriers):

Perceived Barriers	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
provided strategies for overcoming barriers to engaging in regular physical exercise?						
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the barriers associated with engaging in regular physical exercise? If so, please describe.	3.05	0.44	Neutral	3.11	0.44	Neutral
8. How would you rate the role of peer support and group activities in helping you overcome barriers to engaging in regular physical exercise during the program?	3.08	0.34	Neutral	3.18	0.40	Neutral
9. How has your perception of the barriers to engaging in regular physical exercise changed after completing the program?	2.29	0.38	Neutral	2.94	0.48	Neutral
10. In your own words, can you describe any new insights or strategies you gained about overcoming barriers to engaging in regular physical exercise as a result of participating in the 12-week program?	2.84	0.35	Neutral	3.18	0.34	Neutral
Total	**2.88**	**0.42**	**Neutral**	**3.06**	**0.41**	**Neutral**

From Table 99, the results of the study in Section 5: Perceived Self-efficacy indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =2.88, S.D. = 0.42). The item with the highest average is “How has your perception of the barriers or obstacles to engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?” ($\bar{X}$ =3.13, S.D. = 0.41). which is at a Neutral level. The item with the lowest average is “How has your perception of the barriers to engaging in regular physical exercise changed after completing the program?” ($\bar{X}$ = 2.29, S.D. = 0.38), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ =.3.06, S.D. = 0.41). The item with the highest average after the intervention is “How confident are you now in your ability to overcome challenges or setbacks related to

engaging in regular physical exercise?" ($\overline{X}$ = 3.29, S.D. = 0.34), which remains at a Neutral level. The item with the lowest average after the intervention is "9.How has your perception of the barriers to engaging in regular physical exercise changed after completing the program?" ($\overline{X}$ = 2.94, S.D. = 0.48), which is also at a Neutral level.

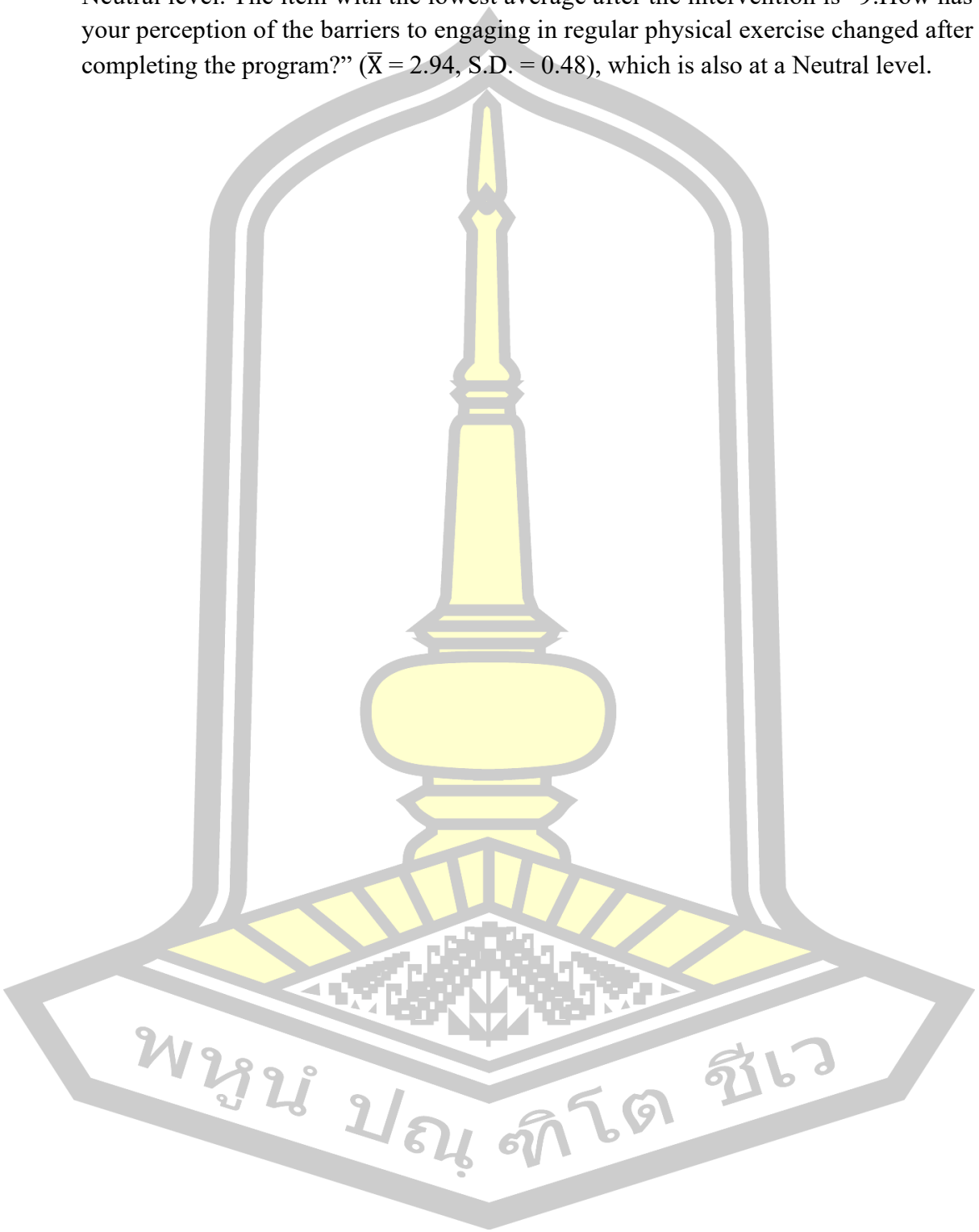


Table 100 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Self-efficacy):

Perceived Self-efficacy	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your confidence in your ability to engage in regular physical exercise changed since participating in the the 12-weeks plan based on the Health Belief Model applications program?	2.94	0.47	Neutral	3.28	0.47	Neutral
2. To what extent do you believe that participating in the the 12-weeks plan based on the Health Belief Model applications program has improved your overall confidence in maintaining a regular physical exercise routine?	2.99	0.48	Neutral	3.19	0.34	Neutral
3. How confident are you now in your ability to overcome challenges or setbacks related to engaging in regular physical exercise?	3.29	0.34	Neutral	3.36	0.25	Neutral
4. In your opinion, what specific elements of the the 12-weeks plan based on the Health Belief Model applications program contributed to boosting your confidence and self-efficacy in maintaining a regular physical exercise routine?	3.10	0.49	Neutral	3.25	0.45	Neutral
5. How likely are you to share information about building and maintaining self-efficacy for physical exercise with your friends or family after completing the 12-week program?	3.13	0.36	Neutral	3.58	0.37	Neutral
6. To what extent do you think the program materials and educational sessions effectively supported the development of self-efficacy for engaging in regular physical exercise?	3.06	0.43	Neutral	3.26	0.52	Neutral
7. Have there been any specific moments during the 12-week program that significantly influenced your confidence and self-efficacy in maintaining a regular physical exercise routine? If so, please describe.	2.79	0.51	Neutral	3.19	0.39	Neutral
8. How would you rate the role of peer support and group activities in building	3.05	0.44	Neutral	3.26	0.42	Neutral

Table 100 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Self-efficacy):

Perceived Self-efficacy	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
your confidence and self-efficacy for engaging in regular physical exercise during the program?						
9. How has your confidence in your ability to maintain a regular physical exercise routine changed after completing the program?	2.83	0.43	Neutral	3.16	0.35	Neutral
10. In your own words, can you describe any new insights or strategies you gained about building and maintaining self-efficacy for engaging in regular physical exercise as a result of participating in the 12-week program?	2.69	0.33	Neutral	3.21	0.42	Neutral
Total	**2.98**	**0.45**		**3.27**	**0.48**	**Neutral**

From Table 100, the results of the study in Section 1: Perceived Risk for the control group indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =2.98, S.D. = 0.45). The item with the highest average is "How confident are you now in your ability to overcome challenges or setbacks related to engaging in regular physical exercise?" ($\bar{X}$ =3.29, S.D. = 0.34). which is at a Neutral level. The item with the lowest average is "In your own words, can you describe any new insights or strategies you gained about building and maintaining self-efficacy for engaging in regular physical exercise as a result of participating in the 12-week program?" ($\bar{X}$ = 2.69, S.D. = 0.33), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.27, S.D. = 0.48). The item with the highest average after the intervention is "How likely are you to share information about building and maintaining self-efficacy for physical exercise with your friends or family after completing the 12-week program?" ($\bar{X}$ = 3.58, S.D. = 0.37), which remains at a Neutral level. The item with the lowest average after the intervention is "How has your confidence in your ability to maintain a regular physical exercise routine changed after completing the program?" ($\bar{X}$ = 3.16, S.D. = 0.35), which is also at a Neutral level.

The summary of the data analysis results from the study of Physical Exercise Behavior; experimental group is shown in the following table.

Table 101 Summary of the results of Physical Exercise Behavior: experimental group:

Physical Exercise Behavior	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	3.02	0.42	Neutral	3.29	0.40	Neutral
Section 2: Perceived Severity	3.02	0.42	Neutral	3.32	0.47	Neutral
Section 3: Perceived Benefit	2.96	0.42	Neutral	3.22	0.47	Neutral
Section 4: Perceived Barriers	2.88	0.42	Neutral	3.06	0.41	Neutral
Section 5: Perceived Self-efficacy	2.98	0.45	Neutral	3.27	0.48	Neutral
Total	**2.97**	**0.42**	**Neutral**	**3.25**	**0.44**	**Neutral**

From Table 101, the Summary of the results from the third phase of the study Physical Exercise Behavior indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.97, S.D. = 0.42). The item with the highest average is “Perceived Risk” and “Perceived Severity” ($\bar{X}$ = 3.02, S.D. = 0.42). which is at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.25, S.D. = 0.44). The item with the highest average after the intervention is “Perceived Risk” ($\bar{X}$ = 3.29, S.D. = 0.40), which remains at a Neutral level.

The analysis of behavioral health belief data from a sample group of 80 adolescents. The Control group can be categorized into mean values, standard deviations, and their corresponding interpretations for each surveyed item as follows:

Table 102 Shown mean, standard deviation and meaning before and after of Behavioral: Health Belief (Perceived Risk)

Perceived Risk	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How often do you think about the potential health risks associated with not engaging in regular physical exercise?	3.26	0.45	Neutral	3.25	0.47	Neutral
2. In the past month, how frequently have you considered the health risks of not participating in physical exercise?	2.98	0.35	Neutral	3.63	0.39	Neutral
3. On a weekly basis, how frequently do you reflect on the potential consequences of a sedentary lifestyle on your health?	2.98	0.49	Neutral	3.10	0.56	Neutral
4. How regularly do you discuss the health risks associated with insufficient physical activity with friends or family?	3.12	0.39	Neutral	3.19	0.46	Neutral
5. In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?	2.75	0.37	Neutral	2.85	0.44	Neutral
Total	3.02	0.41	Neutral	3.20	0.46	Neutral

From Table 102, the results of the study in Section 2: Perceived Severity indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =3.02, S.D. = 0.41). The item with the highest average is How often do you think about the potential health risks associated with not engaging in regular physical exercise? . ($\bar{X}$ = 3.26, S.D. = 0.45), The item with the lowest average is “In the past month, how frequently have you considered the health risks of not participating in physical exercise?” ($\bar{X}$ =2.75, S.D. = 0.37). which is at a Neutral level which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level. ($\bar{X}$ =3.20, S.D. = 0.46). The item with the highest average after the intervention is “In the past month, how frequently have you considered the health risks of not participating in physical exercise?” ($\bar{X}$ = 3.63, S.D. = 0.39), which remains at a Neutral level. The item with the lowest average after the intervention is “In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?” ($\bar{X}$ = 2.85, S.D. = 0.44), which is also at a Neutral level.

Table 103 Shown mean, standard deviation and meaning before and after of Behavioral Health Belief (Perceived Severity):

Perceived Severity	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How often do you think about the severity of potential health issues that could arise from not engaging in regular physical exercise?	2.96	0.47	Neutral	2.99	0.44	Neutral
2. In the past month, how frequently have you considered the seriousness of health problems associated with a lack of physical activity?	2.85	0.43	Neutral	2.90	0.48	Neutral
3. On a weekly basis, how frequently do you reflect on the possible severe consequences of a sedentary lifestyle on your health?	3.08	0.33	Neutral	3.13	0.43	Neutral
4. How regularly do you discuss the severity of health risks associated with insufficient physical activity with friends or family?	2.79	0.42	Neutral	2.83	0.46	Neutral
5. In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?	2.75	0.85	Neutral	2.78	0.82	Neutral
Total	**2.91**	**0.50**	**Neutral**	**2.93**	**0.63**	**Neutral**

From Table 103, the results of the study in Section 3: Perceived Benefit indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =2.91, S.D. = 0.50). The item with the highest average is "On a weekly basis, how frequently do you reflect on the possible severe consequences of a sedentary lifestyle on your health?" ($\bar{X}$ =3.08, S.D. = 0.33). which is at a Neutral level. The item with the lowest average is "In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?" ($\bar{X}$ = 2.75, S.D. = 0.85), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 2.93, S.D. = 0.63). The item with the highest average after the intervention is "On a weekly basis, how frequently do you reflect on the positive changes in your physical health that could result from regular physical exercise?" ($\bar{X}$ = 3.13, S.D. = 0.43), which remains at a Neutral level. The item with the lowest average after the intervention is "In the past month, how frequently have you considered the potential benefits of

participating in a consistent exercise program for your health?" ($\bar{X}$ = 2.78, S.D. = 0.63), which is also at a Neutral level.

Table 104 Shown mean, standard deviation and meaning before and after of Behavioral Health Belief (Perceived Benefit):

Perceived Benefit	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How often do you believe that engaging in regular physical exercise can enhance your overall health and well-being?	2.94	0.39	Neutral	3.05	0.43	Neutral
2. In the past month, how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?	2.69	0.39	Neutral	2.76	0.38	Neutral
3. On a weekly basis, how frequently do you reflect on the positive changes in your physical health that could result from regular physical exercise?	3.18	0.47	Neutral	3.35	0.45	Neutral
4. How regularly do you discuss the benefits of physical activity with friends or family?	2.98	0.32	Neutral	3.12	0.56	Neutral
5. In the past six months, how often have you actively sought information about the benefits associated with regular exercise for your overall well-being?	2.97	0.41	Neutral	3.03	0.25	Neutral
Total	**2.95**	**0.39**	**Neutral**	**3.06**	**0.60**	**Neutral**

From Table 104, the results of the study in Section 4: Perceived Barriers indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =3.04, S.D. = **0.**39**).** The item with the highest average is "On a weekly basis, how frequently do you reflect on the positive changes in your physical health that could result from regular physical exercise?" ($\bar{X}$ =3.18, S.D. = **0.**47**).** which is at a Neutral level. The item with the lowest average is "In the past month, how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?" ($\bar{X}$ = **2.**69, S.D. = 0.29**),** which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level. The item with the highest average after the intervention is "On a weekly basis, how frequently do you encounter a lack of access to facilities as a barrier to engaging in physical activity?" ($\bar{X}$ = 335, S.D. = 0.45), which remains at a Neutral level. The item with the

lowest average after the intervention is “In the past month, how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?” ($\bar{X}$ = 2.76, S.D. = 0.38), which is also at a Neutral level.

Table 105 Shown mean, standard deviation and meaning before and after of Behavioral Health Belief (Perceived Barriers):

Perceived Barriers	**Before**			**After**		
	$\bar{X}$	**S.D.**	**Meaning**	**$\bar{X}$**	**S.D.**	**Meaning**
1. How often do you perceive time constraints as a barrier to engaging in regular physical exercise?	2.94	0.51	Neutral	3.14	0.35	Neutral
2. In the past month, how frequently have you faced a lack of motivation as a barrier to participating in physical exercise?	2.92	0.48	Neutral	3.10	0.39	Neutral
3. On a weekly basis, how frequently do you encounter a lack of access to facilities as a barrier to engaging in physical activity?	2.98	0.35	Neutral	3.03	0.55	Neutral
4. How regularly do you perceive health issues as a barrier to engaging in regular physical exercise?	2.93	0.44	Neutral	2.98	0.33	Neutral
5. In the past six months, how often have you experienced other specific barriers (please specify) to participating in regular exercise?	2.89	0.39	Neutral	2.95	0.44	Neutral
Total	**2.93**	**0.43**	**Neutral**	**3.06**	**0.65**	**Neutral**

From Table 105, the results of the study Section 4: Perceived Barriers indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =2.93, S.D. = **0**.43**).** The item with the highest average is “How often do you perceive time constraints as a barrier to engaging in regular physical exercise?” ($\bar{X}$ =2.94, S.D. = 0.51**).** which is at a Neutral level. The item with the lowest average is “In the past six months, how often have you experienced other specific barriers (please specify) to participating in regular exercise” ($\bar{X}$ = **2**.89, S.D. = **0**.39**)**, which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level. ($\bar{X}$ =3.06, S.D. = 0.65**).** The item with the highest average after the intervention is “How often do you perceive time constraints as a barrier to engaging in regular physical exercise?” ($\bar{X}$ = 3.14, S.D. = 0.35), which remains at a Neutral level. The item with the lowest average after the intervention is “How regularly do you perceive health

issues as a barrier to engaging in regular physical exercise?" ($\bar{X}$ = 2.98, S.D. = 0.33), which is also at a Neutral level.

Table 106 Shown mean, standard deviation and meaning before and after of Behavioral Health Belief (Perceived Self-efficacy):

Perceived Self-efficacy	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How often do you feel confident in your ability to adhere to a regular exercise routine?	2.93	0.44	Neutral	3.04	0.34	Neutral
2. In the past month, how frequently have you believed in your capability to overcome obstacles and challenges related to physical exercise?	3.14	0.38	Neutral	3.19	0.44	Neutral
3. On a weekly basis, how frequently do you feel assured in your skills and capabilities to engage in physical activity, even when faced with difficulties?	3.06	0.41	Neutral	3.14	0.51	Neutral
4. How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?	2.93	0.32	Neutral	3.02	0.37	Neutral
5. In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?	3.19	0.27	Neutral	3.28	0.41	Neutral
Total	**3.05**	**0.36**	**Neutral**	**3.13**	**0.57**	**Neutral**

From Table 106, the results of the study in Section 5: Perceived Self-efficacy indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =3.05, S.D. = 0.36). The item with the highest average is "In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?" ($\bar{X}$ =3.28, S.D. = 0.41). which is at a Neutral level. The item with the lowest average is "How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?" ($\bar{X}$ = 2.93, S.D. = 0.32), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level. ($\bar{X}$ = 3.13, S.D. = 0.57), The item with the highest average after the intervention is "In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?" ($\bar{X}$ = 3.28, S.D. = 0.41), which remains at a Neutral level. The item with the lowest average after

the intervention is “How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?” ($\bar{X}$ = 2.90, S.D. = 0.37), which is also at a Neutral level.

Summary of the results from the third phase of the Control group Behavioral Health Belief.

Table 107 Summary of the results from the third phase of the Control group Behavioral Health Belief:

Behavioral Health Belief	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	3.12	0.67	Neutral	3.04	0.41	Neutral
Section 2: Perceived Severity	2.91	0.63	Neutral	3.00	0.50	Neutral
Section 3: Perceived Benefit	2.95	0.60	Neutral	3.05	0.39	Neutral
Section 4: Perceived Barriers	2.93	0.65	Neutral	3.02	0.43	Neutral
Section 5: Perceived Self-efficacy	3.09	0.57	Neutral	3.16	0.36	Neutral
Total	**3.00**	**0.62**	**Neutral**	**3.07**	**0.41**	**Neutral**

From Table 107, Summary of the results from the third phase Behavioral Health Belief indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 3.00, S.D. = 0.62). The item with the highest average after the intervention is “Perceived Risk” ($\bar{X}$ = 3.12, S.D. = 0.67), which remains at a Neutral level. After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.07, S.D. = **0.**41**).** The item with the highest average is “Perceived Self-efficacy” ($\bar{X}$ =3.07, S.D. = **0.**41**).** which is at a Neutral level.

2. Physical Exercise Behavior

The analysis of behavioral health belief data from a sample group of 80 adolescents. The control group can be categorized into mean values, standard deviations, and their corresponding interpretations for each surveyed item as follows:

Table 108 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Risk):

Perceived Risk	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your perception of the risk of not engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	2.76	0.43	Neutral	3.19	0.46	Neutral

Table 108 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Risk):

Perceived Risk	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has reduced your risk of facing negative health consequences in the future due to a lack of physical exercise?	2.83	0.32	Neutral	2.89	0.36	Neutral
3. How confident are you now in your ability to assess the potential risks associated with not participating in regular physical exercise?	2.72	0.35	Neutral	2.93	0.39	Neutral
4. In your opinion, what specific aspects of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the risks associated with a sedentary lifestyle?	3.00	0.37	Neutral	3.10	0.41	Neutral
5. How likely are you to share information about the health risks of a sedentary lifestyle with your friends or family after completing the 12-weeks 6plan based on the Health B7elief Model applications program?	2.93	0.375	Neutral	2.90	0.37	Neutral
6. To what extent do you think the pr10ogram materials and educational sessions effectively communicated the risks associated with not engaging in regular physical exercise?	2.96	0.43	Neutral	2.91	0.45	Neutral
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the risks associated with a lack of physical exercise? If so, please describe.	2.85	0.40	Neutral	3.01	0.42	Neutral
8. How would you rate the role of peer support and group activities in shaping your understanding of the risks of a sedentary lifestyle during the program?	3.02	0.43	Neutral	3.19	0.40	Neutral
9. How has your perception of the seriousness of the consequences of not	2.96	0.35	Neutral	2.81	0.37	Neutral

Table 108 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Risk):

Perceived Risk	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
participating in regular physical exercise changed after completing the program?						
10. In your own words, can you describe any new insights or realizations you gained about the risks associated with a lack of physical exercise as a result of participating in the 12-week program?	2.83	0.43	Neutral	2.97	0.39	Neutral
Total	**2.88**	**0.38**	**Neutral**	**2.99**	**0.45**	**Neutral**

From Table 108, the results of the study in Section 1: Perceived Risk indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =288, S.D. = 0.38). The item with the highest average is "How would you rate the role of peer support and group activities in shaping your understanding of the risks of a sedentary lifestyle during the program?" ($\bar{X}$ =3.02, S.D. = 0.43). which is at a Neutral level. The item with the lowest average is "How confident are you now in your ability to assess the potential risks associated with not participating in regular physical exercise?" ($\bar{X}$ = 2.72, S.D. = 0.37), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 2.99, S.D. = 0.45). The item with the highest average after the intervention is ".How likely are you to share information about the health risks of a sedentary lifestyle with your friends or family after completing the 12-weeks 6plan based on the Health Belief Model applications program?" ($\bar{X}$ = 2.90, S.D. = 0.37), which remains at a Neutral level. The item with the lowest average after the intervention is "To what extent do you think the pr10ogram materials and educational sessions effectively communicated the risks associated with not engaging in regular physical exercise?" ($\bar{X}$ = 2.96, S.D. = 0.43), which also remains at a Neutral level.

Table 109 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Severity):

Perceived Severity	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your perception of the severity of the consequences of not participating in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	2.84	0.55	Neutral	3.23	0.51	Neutral
2. To what extent do you believe that	2.91	0.43	Neutral	2.91	0.46	Neutral

Table 109 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Severity):

Perceived Severity	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
participating in the 12-weeks plan based on the Health Belief Model applications program has influenced your awareness of the potential serious consequences of a sedentary lifestyle?						
3. How confident are you now in your ability to identify and understand the potential severe consequences of not engaging in regular physical exercise?	2.81	0.50	Neutral	2.95	0.52	Neutral
4. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the severity of the consequences associated with a lack of physical exercise?	3.12	0.32	Neutral	3.13	0.39	Neutral
5. How likely are you to share information about the serious consequences of a sedentary lifestyle with your friends or family after completing the 12-week program?	2.95	0.35	Neutral	2.93	0.37	Neutral
6. To what extent do you think the program materials and educational sessions effectively communicated the severity of the consequences associated with not engaging in regular physical exercise?	2.99	0.37	Neutral	2.94	0.35	Neutral
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the severity of the consequences associated with a lack of physical exercise? If so, please describe.?	2.89	0.45	Neutral	3.03	0.40	Neutral
8. How would you rate the role of peer support and group activities in shaping your understanding of the severity of the consequences of a sedentary lifestyle during the program?	3.08	0.40	Neutral	3.21	0.42	Neutral
9. How has your perception of the seriousness of the consequences of not participating in regular physical	2.99	0.40	Neutral	2.85	0.44	Neutral

Table 109 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Severity):

Perceived Severity	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
exercise changed after completing the program?						
10. In your own words, can you describe any new insights or realizations you gained about the severity of the consequences associated with a lack of physical exercise as a result of participating in the 12-week program?	2.90	0.35	Neutral	2.99	0.39	Neutral
Total	**2.94**	**0.41**	**Neutral**	**3.01**	**0.47**	**Neutral**

From Table 109, the results of the study in Section 2: Perceived Severity indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ =2.94, S.D. = 0.41). The item with the highest average is "In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the severity of the consequences associated with a lack of physical exercise? ($\bar{X}$ =3.12, S.D. = 0.32). The item with the lowest average is "How confident are you now in your ability to identify and understand the potential severe consequences of not engaging in regular physical exercise?" ($\bar{X}$ = 2.81, S.D. = 0.50), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.01, S.D. = 0.47). The item with the highest average after the intervention is "How has your perception of the severity of the consequences of not participating in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?" ($\bar{X}$ = 3.23, S.D. = 0.51), which is at a Neutral level. The item with the lowest average after the intervention is "How has your perception of the seriousness of the consequences of not participating in regular physical exercise changed after completing the program?" ($\bar{X}$ = 2.85, S.D. = 0.44), which is also at a Neutral level.

Table 110 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Benefit):

Perceived Benefit	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
	3.01	0.47	Neutral	3.03	0.44	Neutral
1. How has your perception of the benefits of engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	3.11	0.47	Neutral	3.03	0.44	Neutral
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has positively influenced your understanding of the potential benefits of regular physical exercise?	2.81	0.43	Neutral	2.74	0.49	Neutral
3. How confident are you now in your ability to identify and articulate the benefits of regular physical exercise?	2.86	0.41	Neutral	2.95	0.45	Neutral
4. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the benefits associated with engaging in regular physical exercise?	2.99	0.48	Neutral	2.89	0.46	Neutral
5. How likely are you to share information about the benefits of regular physical exercise with your friends or family after completing the 12-week program?	2.94	0.35	Neutral	2.91	0.33	Neutral
6. To what extent do you think the program materials and educational sessions effectively communicated the benefits associated with engaging in regular physical exercise?	2.70	0.52	Neutral	3.19	0.56	Neutral
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the benefits associated with engaging in regular physical exercise? If so, please describe.?	3.01	0.32	Neutral	2.89	0.37	Neutral
8. How would you rate the role of peer support and group activities in shaping	3.05	0.35	Neutral	2.98	0.38	Neutral

Table 110 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Benefit):

Perceived Benefit	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
your understanding of the benefits of engaging in regular physical exercise during the program?						
9. How has your perception of the benefits of engaging in regular physical exercise changed after completing the program?	3.27	0.32	Neutral	2.96	0.36	Neutral
10. In your own words, can you describe any new insights or realizations you gained about the benefits of engaging in regular physical exercise as a result of participating in the 12-week program?	2.82	0.39	Neutral	3.04	0.40	Neutral
Total	**2.95**	**0.40**	**Neutral**	**2.96**	**0.42**	**Neutral**

From Table 110, the results of the study in Section 3: Perceived Benefit indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.95, S.D. = 0.40). The item with the highest average is “To what extent do you think the program materials and educational sessions effectively communicated the benefits associated with engaging in regular physical exercise?” ($\bar{X}$ = 3.19, S.D. = 0.56), which is at a Neutral level. The item with the lowest average after the intervention is “To what extent do you think the program materials and educational sessions effectively communicated the benefits associated with engaging in regular physical exercise?” ($\bar{X}$ = 2.70, S.D. = 0.5), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 2.96, S.D. = 0.42). The item with the highest average after the intervention is “In your own words, can you describe any new insights or realizations you gained about the benefits of engaging in regular physical exercise as a result of participating in the 12-week program??” ($\bar{X}$ = 3.04, S.D. = 0.40), which is at a Neutral level. The item with the lowest average after the intervention is “To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has positively influenced your understanding of the potential benefits of regular physical exercise?” ($\bar{X}$ = 2.74, S.D. = 0.49), which is also at a Neutral level.

Table 111 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Barriers):

Perceived Barriers	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your perception of the barriers or obstacles to engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	3.01	0.46	Neutral	3.13	0.41	Neutral
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has helped you overcome or address the barriers that previously hindered your engagement in physical exercise?	2.71	0.57	Neutral	2.83	0.55	Neutral
3. How confident are you now in your ability to identify and overcome barriers to engaging in regular physical exercise?	2.93	0.45	Neutral	2.89	0.42	Neutral
4. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the barriers associated with engaging in regular physical exercise?	2.85	0.43	Neutral	3.01	0.41	Neutral
5. How likely are you to share information about overcoming barriers to physical exercise with your friends or family after completing the 12-week program?	2.89	0.48	Neutral	2.96	0.43	Neutral
6. To what extent do you think the program materials and educational sessions effectively addressed and provided strategies for overcoming barriers to engaging in regular physical exercise?	3.17	0.48	Neutral	2.73	0.46	Neutral
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the barriers associated with engaging in regular physical exercise? If so, please describe.	2.86	0.41	Neutral	3.05	0.44	Neutral
8. How would you rate the role of peer	2.97	0.32	Neutral	3.08	0.34	Neutral

Table 111 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Barriers):

Perceived Barriers	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
support and group activities in helping you overcome barriers to engaging in regular physical exercise during the program?						
9. How has your perception of the barriers to engaging in regular physical exercise changed after completing the program?	2.96	0.35	Neutral	3.29	0.38	Neutral
10. In your own words, can you describe any new insights or strategies you gained about overcoming barriers to engaging in regular physical exercise as a result of participating in the 12-week program?	3.01	0.31	Neutral	2.84	0.35	Neutral
Total	**2.93**	**0.42**	**Neutral**	**2.98**	**0.47**	**Neutral**

From Table 111, the results of the study in Section 4: Perceived Barriers indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.93, S.D. = 0.42). The item with the highest average is “To what extent do you think the program materials and educational sessions effectively addressed and provided strategies for overcoming barriers to engaging in regular physical exercise?” ($\bar{X}$ = 3.17, S.D. = 0.48), which is at a Neutral level. The item with the lowest average is “To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has helped you overcome or address the barriers that previously hindered your engagement in physical exercise?” ($\bar{X}$ = 2.71, S.D. = 0.57), which is also at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 2.98, S.D. = 0.47). The item with the highest average after the intervention is “How has your perception of the barriers to engaging in regular physical exercise changed after completing the program?” ($\bar{X}$ = 3.29, S.D. = 0.38), which is at a Neutral level. The item with the lowest average after the intervention is “In your own words, can you describe any new insights or strategies you gained about overcoming barriers to engaging in regular physical exercise as a result of participating in the 12-week program?” ($\bar{X}$ = 2.96, S.D. = 0.43), which is also at a Neutral level.

Table 112 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Self-efficacy):

Perceived Self-efficacy	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
1. How has your perception of the barriers or obstacles to engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	3.13	0.46	Neutral	3.15	0.41	Neutral
2. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has helped you overcome or address the barriers that previously hindered your engagement in physical exercise?	3.15	0.57	Neutral	3.14	0.55	Neutral
3. How confident are you now in your ability to identify and overcome barriers to engaging in regular physical exercise?	2.83	0.45	Neutral	2.87	0.42	Neutral
4. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the barriers associated with engaging in regular physical exercise?	2.88	0.43	Neutral	2.95	0.41	Neutral
5. How likely are you to share information about overcoming barriers to physical exercise with your friends or family after completing the 12-week program?	3.01	0.48	Neutral	2.98	0.43	Neutral
6. To what extent do you think the program materials and educational sessions effectively addressed and provided strategies for overcoming barriers to engaging in regular physical exercise?	2.95	0.48	Neutral	2.92	0.46	Neutral
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the barriers associated with engaging in regular physical	2.73	0.41	Neutral	2.89	0.44	Neutral

Table 112 Shown mean, standard deviation and meaning before and after of Physical Exercise Behavior (Perceived Self-efficacy):

Perceived Self-efficacy	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
exercise? If so, please describe.						
8. How would you rate the role of peer support and group activities in helping you overcome barriers to engaging in regular physical exercise during the program?	3.06	0.32	Neutral	3.02	0.34	Neutral
9. How has your perception of the barriers to engaging in regular physical exercise changed after completing the program?	3.10	0.35	Neutral	3.07	0.38	Neutral
10. In your own words, can you describe any new insights or strategies you gained about overcoming barriers to engaging in regular physical exercise as a result of participating in the 12-week program?	3.29	0.31	Neutral	3.07	0.35	Neutral
Total	**2.98**	**0.42**	**Neutral**	**2.99**	**0.47**	**Neutral**

From Table 112, the results of the study in Section 5: Perceived Self-efficacy indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.98, S.D. = 0.42). The item with the highest average after the intervention is “In your own words, can you describe any new insights or strategies you gained about overcoming barriers to engaging in regular physical exercise as a result of participating in the 12-week program?” ($\bar{X}$ = 3.29, S.D. = 0.31), which remains at a Good level. The item with the lowest average after the intervention is “Have there been any specific moments during the 12-week program that significantly influenced your perception of the barriers associated with engaging in regular physical exercise? If so, please describe.” ($\bar{X}$ = 2.73, S.D. = 0.40), which also remains at a Neutral level.

After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 2.99, S.D. = 0.47). The item with the highest average after the intervention is “How has your perception of the barriers or obstacles to engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?” ($\bar{X}$ = 3.15, S.D. = 0.41), which remains at a Good level. The item with the lowest average after the intervention is “How confident are you now in your ability to identify and overcome barriers to engaging in regular physical exercise?” ($\bar{X}$ = 2.87, S.D. = 0.42), which also remains at a Neutral level.

Summary of the results from the third phase of the Control group Physical Exercise Behavior

Table 113 Summary of the results from the third phase of the Control group Physical Exercise Behavior:

Physical Exercise Behavior	Before			After		
	$\bar{X}$	S.D.	Meaning	$\bar{X}$	S.D.	Meaning
Section 1: Perceived Risk	2.88	0.38	Neutral	2.99	0.45	Neutral
Section 2: Perceived Severity	2.94	0.41	Neutral	3.01	0.47	Neutral
Section 3: Perceived Benefit	2.95	0.40	Neutral	2.96	0.42	Neutral
Section 4: Perceived Barriers	2.93	0.42	Neutral	2.98	0.47	Neutral
Section 5: Perceived Self-efficacy	2.98	0.38	Neutral	2.99	0.48	Neutral
Total	**2.94**	**0.39**	**Neutral**	**2.98**	**0.45**	**Neutral**

From Table 113, Summary of the results from the third phase of the control group Physical Exercise Behavior indicate that the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.94, S.D. = 0.39). The item with the highest average after the intervention is "Perceived Self-efficacy" ($\bar{X}$ = 2.98, S.D. = 0.38), which remains at a Neutral level. After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 2.98, S.D. = **0.**45**).** The item with the highest average is "Perceived Severity" ($\bar{X}$ =3.01, S.D. = **0.**47**).** which is at a Neutral level.

4. Program to change exercise behavior with Health Belief Model

Participants from both groups in the program - namely, the Experimental Group, which received the 12-Week Action Plan along with a Health Care Handbook developed specifically for this intervention, and the Control Group, which received the same 12-Week Action Plan without the Health Care Handbook - evaluated key aspects of the program. These aspects included the clarity of educational sessions, engagement during group activities, and the ability to address perceived barriers to exercise. The evaluations were conducted using a 5-point Likert scale, where participants expressed their level of satisfaction with the program components, as follows

Control group

The results of the satisfaction analysis regarding program to change exercise behavior with Health Belief Model among the control group after implementing the program are summarized in the following table.

Table 114 Analysis of the program to change exercise behavior with Health Belief Model - Control group:

Evaluation Item	$\bar{X}$	S.D.	Meaning
1. Effectiveness of Educational Sessions: The educational sessions effectively communicated the principles of the Health Belief Model.	3.31	0.45	Neutral
2. Relevance of Practical Exercise Sessions: The practical exercise sessions were relevant and practical in applying the Health Belief Model concepts.	3.09	0.39	Neutral
3. Clarity of Program Materials: The program materials were clear and easy to understand.	3.03	0.41	Neutral
4. Engagement Level during Peer Support and Group Activities: Peer support and group activities enhanced my engagement in the program.	2.98	0.38	Neutral
5. Consistency with Health Belief Model Concepts: The program content was consistent with the principles of the Health Belief Model.	2.86	0.40	Neutral
6. Effectiveness in Conveying Perceived Risk: The program effectively conveyed the risks associated with a lack of physical exercise.	3.12	0.41	Neutral
7. Success in Conveying Perceived Severity: The program successfully conveyed the severity of consequences related to a sedentary lifestyle.	3.08	0.40	Neutral
8. Effectiveness in Communicating Perceived Benefits: The program effectively communicated the benefits of engaging in regular physical exercise.	3.11	0.50	Neutral
9. Addressing Perceived Barriers: The program effectively addressed and provided strategies to overcome barriers to physical exercise.	3.14	0.38	Neutral
10. Enhancing Perceived Self-efficacy: The program enhanced my confidence and self-efficacy in maintaining a regular exercise routine.	3.03	0.36	Neutral
Total	3.07	0.43	Neutral

From the table 114, the results of the Control group indicated a high level of satisfaction with program to change exercise behavior with Health Belief Model. The overall average score was ($\bar{X}$ = 3.07, S.D. = 0.43). The highest score was for “Effectiveness of Educational Sessions: The educational sessions effectively communicated the principles of the Health Belief Model " ($\bar{X}$ = 3.31, S.D. = 0.45), followed by "Addressing Perceived Barriers: The program effectively addressed and provided strategies to overcome barriers to physical exercise" ($\bar{X}$ = 3.14, S.D. = 0.38). Additionally, the score for " Engagement Level during Peer Support and Group

Activities: Peer support and group activities enhanced my engagement in the program." was ($\bar{X}$ = 2.86, S.D. = 0.40),

Experimental Group

The results of the satisfaction analysis regarding of the program to change exercise behavior with Health Belief Model among the experimental group after implementing the program are summarized in the following table.

Table 115 Analysis of the program to change exercise behavior with Health Belief Model - Experimental Group:

Evaluation Item	$\bar{X}$	S.D.	Meaning
1. Effectiveness of Educational Sessions: The educational sessions effectively communicated the principles of the Health Belief Model.	4.00	0.83	Good
2. Relevance of Practical Exercise Sessions: The practical exercise sessions were relevant and practical in applying the Health Belief Model concepts.	4.00	0.85	Good
3. Clarity of Program Materials: The program materials were clear and easy to understand.	3.83	0.79	Good
4. Engagement Level during Peer Support and Group Activities: Peer support and group activities enhanced my engagement in the program.	3.93	0.84	Good
5. Consistency with Health Belief Model Concepts: The program content was consistent with the principles of the Health Belief Model.	4.03	0.83	Good
6. Effectiveness in Conveying Perceived Risk: The program effectively conveyed the risks associated with a lack of physical exercise.	4.12	0.84	Good
7. Success in Conveying Perceived Severity: The program successfully conveyed the severity of consequences related to a sedentary lifestyle.	3.98	0.82	Good
8. Effectiveness in Communicating Perceived Benefits: The program effectively communicated the benefits of engaging in regular physical exercise.	3.89	0.81	Good
9. Addressing Perceived Barriers: The program effectively addressed and provided strategies to overcome barriers to physical exercise.	3.91	0.84	Good
10. Enhancing Perceived Self-efficacy: The program enhanced my confidence and self-efficacy in maintaining a regular exercise routine.	4.13	0.79	Good
Total	**3.98**	**0.24**	Good

The results of the experimental group show a good level of satisfaction with the 12-week action plan based on the Health Belief Model (HBM), with an overall mean score ($\bar{X}$ = 3.98, S.D. = 0.24). The highest score was found for "Enhancing Perceived Self-efficacy: The program enhanced my confidence and self-efficacy in maintaining a regular exercise routine" ($\bar{X}$ = 4.13, S.D. = 0.79), followed by "Consistency with Health Belief Model Concepts: The program content was consistent with the principles of the Health Belief Model" ($\bar{X}$ = 4.03, S.D. = 0.83), "Effectiveness of Educational Sessions: The educational sessions effectively communicated the principles of the Health Belief Model" ($\bar{X}$ = 4.00, S.D. = 0.83), and "Relevance of Practical Exercise Sessions: The practical exercise sessions were relevant and practical in applying the Health Belief Model concepts" ($\bar{X}$ = 4.00, S.D. = 0.85)

Hypothesis of the Results

The objective of this research was to evaluate the impact of the Health Belief Model (HBM)-based exercising program on the physical exercise behaviors of Chinese adolescents. Four key hypotheses were tested to assess whether the HBM-based intervention would lead to improved exercise behaviors in the experimental group, and whether the changes in the experimental group would be significantly better than those in the control group. A paired t-test was used to compare exercise behavior within groups, and an independent t-test was used to compare the experimental and compare groups.

Hypothesis 1 To study the relationship and influence of health beliefs on the exercise behaviors of Chinese adolescents.

The following table presents the results of the paired t-tests for pre- and post-intervention exercise behavior controls within the experimental groups

1. Behavioral Health Belief

Experimental Groups

The results of the comparative analysis of the mean Behavioral Health Belief before and after the implementation of the health promotion program for the experimental group are shown in the following table.

Table 116 Paired t-test Results of Behavioral Health Beliefs Between Pre-Intervention and Post-Intervention for the Experimental Group:

Test	Group	Pre-Intervention ($\bar{X}$)	Post-Intervention ($\bar{X}$)	t	p
Section 1: Perceived Risk Paired t-test (H1)	Experimental Group	2.97	3.55	9.93	.001**
Section 2: Perceived Severity Paired t-test (H1)	Experimental Group	2.87	3.12	6.00	.004*
Section 3: Perceived Benefit Paired t-test (H1)	Experimental Group	2.95	3.44	4.86	.008*
Section 4: Perceived Barriers Paired t-test (H1)	Experimental Group	2.93	3.27	6.93	.002*
Section 5: Perceived Self-efficacy Paired t-test (H1)	Experimental Group	3.02	3.32	4.24	.013
Total		**2.95**	**3.32**	**15.48**	**.000****

Note: * indicates $p \leq .05$, representing a significant result, while ** indicates $p \leq .001$, representing a highly significant result.

From Table 116, the paired t-test results indicate a significant improvement in the mean scores of Behavioral Health Beliefs following the implementation of the Health Belief Model-based intervention for the experimental group. The pre-intervention mean score ($\bar{X}$ = 2.95) increased to 3.32 post-intervention, resulting in a t-value of 15.48 ($p < .001$), demonstrating a highly significant change. Each construct, including Perceived Risk ($t = 9.93$, $p = .001$), Perceived Severity ($t = 6.00$, $p = .004$), Perceived Benefit ($t = 4.86$, $p = .008$), Perceived Barriers ($t = 6.93$, $p = .002$), and Perceived Self-efficacy ($t = 4.24$, $p = .013$), showed statistically significant increases, indicating the effectiveness of the intervention in improving health beliefs related to exercise behavior within the experimental group.

2. Physical Exercise Behavior
Experimental Groups

The results of the comparative analysis of the mean exercise behavior before and after the implementation of the health promotion program for the experimental group are shown in the following table.

Table 117 Paired t-test Results of Physical Exercise Behavior Between Pre-Intervention
and Post-Intervention for the Experimental Group:

Test	**Group**	**Pre-Intervention ($\bar{X}$)**	**Post-Intervention ($\bar{X}$)**	**t**	**p**
Section 1: Perceived Risk Paired t-test (H**1**)	Experimental Group	3.02	3.29	5.13	.001**
Section 2: Perceived Severity Paired t-test (H**1**)	Experimental Group	3.02	3.32	7.17	.000**
Section 3: Perceived Benefit Paired t-test (H**1**)	Experimental Group	2.96	3.22	6.89	.000**
Section 4: Perceived Barriers Paired t-test (H**1**)	Experimental Group	2.88	3.06	4.89	.001**
Section 5: Perceived Self-efficacy Paired t-test (H**1**)	Experimental Group	2.98	3.27	6.33	.000**
Total		**2.97**	**3.25**	**11.83**	**.000****

Note: * indicates $p \leq .05$, representing a significant result, while ** indicates $p \leq .001$, representing a highly significant result.

From Table 117, the paired t-test results show a statistically significant improvement in Physical Exercise Behavior after the implementation of the Health Belief Model-based intervention for the experimental group. The overall pre-intervention mean score **($\bar{X}$ =** 2.97) increased to **3.25** post-intervention, resulting in a t-value of 11.83 **(**$p < .001$**)**, indicating a highly significant change. Each construct, including Perceived Risk (t = 5.13, p = **.**001**)**, Perceived Severity (t = 7.17**,** p = .000**)**, Perceived Benefit (t = 6.89, p = .000)**,** Perceived Barriers (t = 4.89, p = **.**001**)**, and Perceived Self-efficacy (t = 6.33, p = .000)**,** showed significant improvements, confirming the effectiveness of the intervention in enhancing participants' exercise

behaviors and promoting positive changes in physical activity within the experimental group.

Hypothesis 2 After used the health belief model with exercising program, the experimental group has better a health belief and exercise behavior.

The following table 118 and table 119, present the results of the paired t-tests for pre- and post-intervention Behavioral Health Belief within the experimental and control groups

3. Behavioral Health Belief

Control group

Hypothesis 2. After using the health belief model with exercising program, the control group had no differences in a health belief and exercise behavior.

The following table presents the results of the paired t-tests for pre- and post-intervention Behavioral Health Belief within control groups

Table 118 Paired t-test Results of Behavioral Health Beliefs Between Pre-Intervention and Post-Intervention for the Control Group:

Test	**Group**	**Pre-Intervention ($\bar{X}$)**	**Post-Intervention ($\bar{X}$)**	**t**	**p**
Section 1: Perceived Risk Paired t-test (H2)	Control Group	3.12	3.04	0.87	0.432
Section 2: Perceived Severity Paired t-test (H2)	Control Group	2.91	3.00	2.37	0.077
Section 3: Perceived Benefit Paired t-test (H2)	Control Group	2.95	3.05	0.89	0.420
Section 4: Perceived Barriers Paired t-test (H2)	Control Group	2.93	3.02	1.15	0.316
Section 5: Perceived Self-efficacy Paired t-test (H2)	Control Group	3.09	3.16	2.58	0.061
Total		**3.00**	**3.07**	**2.13**	**0.101**

Note: * indicates $p \leq .05$, representing a significant result, while ** indicates $p \leq .001$, representing a highly significant result.

From the table 118, the paired t-test results indicate that there were no statistically significant changes in Behavioral Health Beliefs for the control group between the pre-intervention **($\bar{X}$ =** 3.00**)** and post-intervention ($\bar{X}$ = 3.07**)** phases, yielding a t-value of 2.13 and a p-value of .101**.** Each construct, including Perceived Risk (t = 0.87, p = .432**)**, Perceived Severity (t = 2.37**,** p **= .**077**),** Perceived Benefit (t = 0.89, p = .420**)**, Perceived Barriers (t = 1.15, p = .316**)**, and Perceived Self-efficacy

(t = 2.58, p = .061**)**, showed no significant differences, suggesting that the intervention did not have a measurable impact on the control group's health beliefs related to exercise behavior.

4. Physical Exercise Behavior

Control group

Table 119 Paired t-test Results of Physical Exercise Behavior Between Pre-Intervention and Post-Intervention for the Control Group:

Test	Group	Pre-Intervention ($\bar{X}$)	Post-Intervention ($\bar{X}$)	t	p
Section 1: Perceived Risk Paired t-test (H2**)**	Control Group	2.88	2.99	2.04	.072
Section 2: Perceived Severity Paired t-test (H2**)**	Control Group	2.94	3.01	1.49	.169
Section 3: Perceived Benefit Paired t-test (H2**)**	Control Group	2.95	2.96	0.03	.978
Section 4: Perceived Barriers Paired t-test (H2**)**	Control Group	2.93	2.98	0.66	.527
Section 5: Perceived Self-efficacy Paired t-test (H2**)**	Control Group	2.98	2.99	0.06	.953
Total		**2.94**	**2.98**	**2.01**	.076

Note: * indicates p ≤ .05, representing a significant result, while ** indicates p ≤ .001, representing a highly significant result.

From the table 119, the paired t-test results for the control group show no statistically significant differences in Physical Exercise Behavior between the pre-intervention **($\bar{X}$ = 2.94)** and post-intervention **($\bar{X}$ = 2.98)** phases, resulting in a t-value of 2.01 and a p-value of .076**.** Each construct, including Perceived Risk (t = 2.04, p = .072**)**, Perceived Severity (t = 1.49, p = .169**)**, Perceived Benefit (t = 0.03, p = .98**7)**, Perceived Barriers (t = 0.66, p = **.5** 27**)**, and Perceived Self-efficacy (t = 0.06, p = .95**3**), also showed no significant changes, indicating that the intervention did not produce a measurable effect on the control group's exercise behaviors or related perceptions.

Hypothesis 3 After applying the health belief model with exercising program, the control group showed no statistically significant difference in health beliefs and exercise behavior.

The following table 120 and table 121, presents the results of the Independent t-test for comparing the health beliefs regarding exercise after using the health promotion program in the experimental and control groups, as well as the independent t-test results comparing health beliefs after the program between the experimental and control groups.

Table 120 Independent t-test Results Comparing Behavioral Health Beliefs Between the Experimental Group and Control Group:

Test	Group	Sample	Post-Intervention ($\bar{X}$)	df	t	p
Section 1: Perceived Risk						
Independent t-test (H3)	Experimental Group	80	3.55	4.69	2.64	.049*
	Control Group	80	3.24			
Section 2: Perceived Severity						
Independent t-test (H3)	Experimental Group	80	3.00	7.96	0.88	.404
	Control Group	80	2.92			
Section 3: Perceived Benefit						
Independent t-test (H3)	Experimental Group	80	3.45	4.77	3.89	.013*
	Control Group	80	3.06			
Section 4: Perceived Barriers						
Independent t-test (H3)	Experimental Group	80	3.26	7.47	3.86	.005*
	Control Group	80	3.04			
Section 5: Perceived Self-efficacy						
Independent t-test (H3)	Experimental Group	80	3.32	7.96	2.61	.031*
	Control Group	80	3.13			
Total						
Independent t-test (H3)	Experimental Group	80	3.32	7.32	6.35	.000**
	Control Group	80	3.08			

Note: * indicates $p \leq .05$, representing a significant result, while ** indicates $p \leq .001$, representing a highly significant result.

From Table 120, the independent t-test results reveal significant differences in Behavioral Health Beliefs between the experimental group and the control group after the intervention. The total post-intervention mean score of the experimental group ($\bar{X}$ = 3.32) was significantly higher than that of the control group ($\bar{X}$ = 3.08), with a t-value of 6.35 and a p-value of .000, indicating a highly significant difference. Specific constructs such as Perceived Risk (t = 2.64, p = .049), Perceived Benefit (t = 3.89, p = .013), Perceived Barriers (t = 3.86, p = .005), and Perceived Self-efficacy (t = 2.61, p = .031) also showed statistically significant differences, suggesting that the intervention was effective in enhancing the experimental group's health beliefs. However, Perceived Severity (t = 0.88, p = .404) did not show a significant difference between the two groups, indicating that this construct was not significantly impacted by the intervention.

Table 121 Independent t-test Results Comparing Physical Exercise Behavior Between the Experimental Group and Control Group:

Test	Group	Sample	Post-Intervention ($\bar{X}$)	df	t	p
Section 1: Perceived Risk						
Independent t-test (H3)	Experimental Group	80	3.29	13.25	3.21	.007*
	Control Group	80	2.99			
Section 2: Perceived Severity						
Independent t-test (H3)	Experimental Group	80	3.32	13.42	3.34	.005*
	Control Group	80	3.07			
Section 3: Perceived Benefit						
Independent t-test (H3)	Experimental Group	80	3.22	11.62	6.45	.000**
	Control Group	80	2.96			
Section 4: Perceived Barriers						
Independent t-test (H3)	Experimental Group	80	3.16	13.62	2.97	.010*
	Control Group	80	2.98			
Section 5: Perceived Self-efficacy						
Independent t-test (H3)	Experimental Group	80	3.27	16.43	6.08	.000**
	Control Group	80	2.98			
Total						
Independent t-test (H3)	Experimental Group	80	**3.25**	**16.68**	**5.66**	.000**
	Control Group	80	**2.98**			

Note: * indicates $p \leq .05$, representing a significant result, while ** indicates $p \leq .001$, representing a highly significant result.

From the table 121, the independent t-test results reveal significant differences in Physical Exercise Behavior between the experimental group and the control group after the intervention. The total post-intervention mean score of the experimental group ($\bar{X} = 3.25$) was significantly higher than that of the control group ($\bar{X} = 2.98$), with a t-value of 5.66 and a p-value of .000, indicating a highly significant difference. Specific constructs, including Perceived Risk ($t = 3.21$, $p = .007$), Perceived Severity ($t = 3.34$, $p = .005$), Perceived Benefit ($t = 6.45$, $p = .000$), Perceived Barriers ($t = 2.97$, $p = .010$), and Perceived Self-efficacy ($t = 6.08$, $p = .000$), showed statistically significant differences between the groups, suggesting that the intervention was effective in enhancing exercise behaviors and related perceptions in the experimental group as compared to the control group.

In this study, the intervention using Program to change exercise behavior with Health Belief Model based on the 12-Week Action Plan designed and the use of a Health Care Handbook in the experimental group demonstrated effectiveness in promoting exercise behaviors among adolescents compared to the control group that did not receive the Handbook. The results from the intervention indicated that the experimental group showed greater changes in exercise behavior and positive perceptions than the control group, which did not receive the same form of intervention.

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

Research Findings

The Research of "The Study of Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among the Adolescent" The objective of the research aim to (1) To study the relationship and influence of health beliefs on the exercise behaviors of Chinese adolescents. (2) To develop a health care handbook for Chinese adolescents based on the Health Belief Mode. (3) To compare before and after of the control group and the experimental group of effects of health belief model with exercising program on physical exercise behaviors of the adolescence. and (4) To compare the effects of the health belief model with exercising program between the control and experimental groups on the exercise behavior of adolescents. This study includes investigation and experiment is designed to comprehensively investigate and experimentally evaluate the effectiveness of a Health Belief Model (HBM)-based intervention on physical exercise behaviors among Chinese adolescents in Guangdong Province. The study comprises three distinct phases, each contributing to a holistic understanding of the research objectives and research questions.

In the first phase, data will be collected through structured questionnaires, employing both online and in-person methods: The sample for this phase is Chinese adolescents residing in 8 cities in Guangdong Province, the sample size required for study is 3,000 samples. This includes both male and female adolescents aged 10–19 years. The instrument for this phase is the structured questionnaires designed to align with the constructs of the HBM (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy) and assess self-reported exercise behaviors

The second phase involves an extensive investigation through in-depth interviews and focus group discussions. The sample size required for study is 326 samples. The sampling method purposive sampling is employed to select participants for the study. The instrument for this phase is the in-depth interviews and focus group discussions. These methods will allow participants to share their perceptions, attitudes, and experiences related to the HBM and exercise.

The third phase is the experimental research, where a 12-week HBM-based intervention will be implemented, and data will be collected before and after the intervention. The sample for this phase is 160 samples. The sampling method purposive sampling is employed to select participants for the study. The instrument for this phase is (1) HBM questionnaire related to perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy regarding

physical exercise. (2) Experimental Program and (3) Exercise Tracking and Monitoring Tools.

The Research Results as follow:

The Summary of the results from the First Phase

Compile Questionnaire the results of the study Perceived Risk indicate that the overall average is at a "Neutral" level ($\bar{X}$ = 2.95, S.D. = 0.64). The item with the highest average is "In the past month, how frequently have you considered the health risks of not participating in physical exercise?" ($\bar{X}$ = 3.01, S.D. = 0.42), which is at a "Neutral" level. The item with the lowest average is "How regularly do you discuss the health risks associated with insufficient physical activity with friends or family?" ($\bar{X}$ = 2.93, S.D. = 0.38), which is also at a "Neutral" level. The overall physical exercise behavior of Chinese adolescents is at a Neutral level, ($\bar{X}$ = 2.951, S.D. = 0.42). The analysis of individual items revealed that the item with the highest average score is "How confident are you that you can incorporate regular physical exercise into your daily routine?" ($\bar{X}$ = 3.06, S.D. = 0.42). The item with the lowest average score is "How confident are you in your ability to perform various types of physical exercises correctly?" ($\bar{X}$ = 2.49, S.D. = 0.41).

Analysis of the Relationship between Health Belief Factors and Exercise Behavior by City

The Pearson correlation coefficient was used to assess the strength and direction of the relationship between health belief factors, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and perceived self-efficacy, and exercise behavior among Chinese adolescents. Additionally, multiple regression analysis was conducted to examine the predictive power of these health belief factors in explaining exercise behavior among Chinese adolescents across eight cities.

An analysis of the relationship between the Health Belief Model and exercise behavior among Chinese adolescents, categorized by 8 cities, found that health beliefs were correlated with exercise behavior among Chinese adolescents in Zhanjiang City, with a correlation coefficient of 0.458 ($r = 0.458$) and a significance level of 0.000 ($sig < .05$). However, the analysis of the relationship between the Health Belief Model and exercise behavior in the other cities showed no significant correlation.

An analysis of the factors influencing exercise behavior among Chinese adolescents in Chikan District, Zhanjiang City.

The analysis results indicate that Perceived Risk, Perceived Severity, Perceived Benefit, Perceived Barriers, and Perceived Self-efficacy have a significant multiple correlation with the exercise behavior of Chinese adolescents at the .000

level (p-value = 0.000), with a multiple correlation coefficient of .805 (R = 0.805). These variables can predict 64.09% of the exercise behavior of Chinese adolescents, with a standard error of ±.269. The remaining 35.91% is influenced by other variables. When considering the regression coefficients of the predictors, it was found that Perceived Risk is the strongest predictor of exercise behavior among Chinese adolescents, with significance at the .000 level (p-value = .000). The unstandardized and standardized regression coefficients (b, β) were .804 and .799, respectively.

The Summary of the results from the second phase

Behavioral Health Belief the study indicate that the overall average is at a Neutral level ($\bar{X}$ = 2.93, S.D. = **0.**58**).** The item with the highest average is Section 5: Perceived Self-efficacy ($\bar{X}$ = **3.**02, S.D. = **0.**62**)**, which is at a Neutral level.

In conclusion physical exercise behavior of Chinese adolescents is perceptions of physical exercise and its importance. Attitudes toward health and well-being. Experiences related to barriers and facilitators of physical exercise. Perceptions of the HBM constructs and their influence on exercise behavior. Suggestions for improving exercise promotion among Chinese adolescents

Developing a Health care handbook for Chinese Adolescents in Guangdong Province Using the Health Belief Model to Promote Physical Activity

A Health care handbook for Chinese Adolescents aims to encourages physical activity by using the Health Belief Model (HBM). The goal is for adolescents to adopt and sustain an active lifestyle. The development process of the handbook is divided into 8 steps: (1) Needs Assessment (2) Content Development. (3) Visual Design (4) Language and Accessibility (5) Pilot Testing (6) Revisions and Finalization (7) Dissemination and Implementation and (8) Evaluation

By following the guidelines and tips in this handbook, adolescents can develop a healthy and active lifestyle that will benefit them both now and in the future.

The content included in the handbook consists of

1. The Importance of Physical Exercise

2. Strategies to Overcome Perceived Barriers to Physical Activity

3. Tips for Enhancing Perceived Self-Efficacy in Engaging in Regular Exercise

4. Information on Local Resources and Opportunities for Physical Activity in Guangdong Province

5. Suggestions for Incorporating Physical Exercise into Daily Routines

Guidance on Setting Realistic Exercise Goals and Tracking Progress

SMART Goals for Physical Activity

The Summary of the results from the third phase:

1. Behavioral health belief

Experimental group: the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.95, S.D. = 0.45). The item with the highest average is "Perceived Severity" ($\bar{X}$ =2.87, S.D. = 0.42). which is at a Neutral level. After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.32, S.D. = 0.59). The item with the highest average after the intervention is "Perceived Risk" ($\bar{X}$ = 3.55, S.D. = 0.56), which remains at a Neutral level.

Control group: the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.97, S.D. = 0.62). The item with the highest average after the intervention is "Perceived Severity" ($\bar{X}$ = 3.00, S.D. = 0.63), which remains at a Neutral level. After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.04, S.D. = **0.**41**).** The item with the highest average is **"**Perceived Risk" ($\bar{X}$ =3.12, S.D. = **0.**41**).** which is at a Neutral level.

2. Physical Exercise Behavior

Experimental group: the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.97, S.D. = **0.**42**).** The item with the highest average is "Perceived Risk" and "Perceived Severity" ($\bar{X}$ = 3.02, S.D. = 0.42). which is at a Neutral level. After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 3.25, S.D. = 0.44). The item with the highest average after the intervention is "Perceived Risk" ($\bar{X}$ = 3.29, S.D. = 0.40), which remains at a Neutral level.

Control group: the overall average before the intervention is at a Neutral level ($\bar{X}$ = 2.94, S.D. = 0.39). The item with the highest average after the intervention is "Perceived Self-efficacy" ($\bar{X}$ = 2.98, S.D. = 0.38), which remains at a Neutral level. After the intervention, the overall average remains at a Neutral level ($\bar{X}$ = 2.98, S.D. = **0.**4The item with the highest average is Perceived Severity" ($\bar{X}$ =3.01, S.D. = **0.**47**).** which is at a Neutral level.

3. Program to change exercise behavior with Health Belief Model

By using the program 12-week action plan based on the Health Belief Model (HBM), and a Health Care Handbook, Experimental group show a good level of satisfaction, with an overall mean score ($\bar{X}$ = 3.98, S.D. = 0.24). The highest score was found for "Enhancing Perceived Self-efficacy: The program enhanced my confidence and self-efficacy in maintaining a regular exercise routine" ($\bar{X}$ = 4.13, S.D. = 0.79)

Control Group, using only the program 12-week action plan, indicated a high level of satisfaction, The overall average score was ($\bar{X}$ = 3.07, S.D. = 0.43). The highest score was for "Effectiveness of Educational Sessions: The educational sessions effectively communicated the principles of the Health Belief Model" ($\bar{X}$ = 3.31, S.D. = 0.45)

4. Hypothesis

Hypothesis 1 To study the relationship and influence of health beliefs on the exercise behaviors of Chinese **adolescents.**

An analysis of the relationship between the Health Belief Model and exercise behavior among Chinese adolescents, categorized by 8 cities, found that health beliefs were correlated with exercise behavior among Chinese adolescents in Zhanjiang City, with a correlation coefficient of 0.458 (r = 0.458) and a significance level of 0.000 (sig < .05).

When analyzing the influence of health belief factors, found that these factors significantly influence the exercise behaviors of Chinese youth in Chikan District, Zhanjiang City, with statistical significance at the .000 level (p-value = .000). The unstandardized and standardized regression coefficients (b, β) were .804 and .799, respectively.

Hypothesis 2 After used the health belief model with exercising program, the experimental group had better a health belief and exercise behavior.

Behavioral Health Belief: The results of the t-test for the mean Behavioral Health Belief were used to test the difference between the pre-test and post-test means after applying the Health Belief Model-based program to the experimental group. The paired t-test results indicate a significant improvement in the mean scores of Behavioral Health Beliefs following the implementation of the Health Belief Model-based intervention for the experimental group. The pre-intervention mean score **($\overline{X}$ = 2.95)** increased to **3.32** post-intervention, resulting in a t-value of **15.48 (**p < **.001)**, demonstrating a highly significant change., indicating the effectiveness of the intervention in improving health beliefs related to exercise behavior within the experimental group.

Exercise Behavior: the paired t-test results show a statistically significant improvement in Physical Exercise Behavior after the implementation of the Health Belief Model-based intervention for the experimental group. The overall pre-intervention mean score ($\overline{X}$ = **2.97)** increased to **3.25** post-intervention, resulting in a t-value of **11.83 (**p < **.001)**, indicating a highly significant change., confirming the effectiveness of the intervention in enhancing participants' exercise behaviors and promoting positive changes in physical activity within the experimental group.

Hypothesis 3 After applying the health belief model with exercising program, the control group the control group showed no statistically significant difference in health beliefs and exercise behavior.

Behavioral Health Belief: the paired t-test results indicate that there were no statistically significant changes in Behavioral Health Beliefs for the control group between the pre-intervention ($\overline{X}$ = **3.00)** and post-intervention ($\overline{X}$ = **3.07)** phases, yielding a t-value of **2.13** and a p-value of .**10**1., suggesting that the intervention did not have a measurable impact on the control group's health beliefs related to exercise behavior.

Exercise Behavior: the paired t-test results for the control group show no statistically significant differences in Physical Exercise Behavior between the pre-intervention (**$\bar{X}$ = 2.94)** and post-intervention (**$\bar{X}$ = 2.98)** phases, resulting in a t-value of **2.01** and a p-value of .**0**76**.** Each construct, indicating that the intervention did not produce a measurable effect on the control group's exercise behaviors or related perceptions.

Hypothesis 4 After using the Health Belief Model with the exercise program, the experimental group showed better Exercise Behavior than the control group.

The independent t-test results reveal significant differences in Behavioral Health Beliefs between the experimental group and the control group after the intervention. The total post-intervention mean score of the experimental group ($\bar{X}$ = 3.32) was significantly higher than that of the control group ($\bar{X}$ = 3.08), with a t-value of 6.35 and a p-value of .000, indicating a highly significant difference. Specific constructs such as Perceived Risk (t = 2.64, p = .049), Perceived Benefit (t = 3.89, p = .013), Perceived Barriers (t = 3.86, p = .005), and Perceived Self-efficacy (t = 2.61, p = .031) also showed statistically significant differences, suggesting that the intervention was effective in enhancing the experimental group's health beliefs.

The independent t-test results reveal significant differences in Physical Exercise Behavior between the experimental group and the control group after the intervention. The total post-intervention mean score of the experimental group ($\bar{X}$ = 3.25) was significantly higher than that of the control group ($\bar{X}$ = 2.98), with a t-value of 5.66 and a p-value of .000, indicating a highly significant difference. Specific constructs, including Perceived Risk (t = 3.21, p = .007), Perceived Severity (t = 3.34, p = .005), Perceived Benefit (t = 6.45, p = .000), Perceived Barriers (t = 2.97, p = .010), and Perceived Self-efficacy (t = 6.08, p = .000), showed statistically significant differences between the groups, suggesting that the intervention was effective in enhancing exercise behaviors and related perceptions in the experimental group as compared to the control group.

Discussion and Conclusion

Section 1: Discussion of Results

1. Perceived Susceptibility and Its Relation to Physical Activity Behavior

The results of this study show a weak positive correlation between perceived susceptibility and adolescents' physical activity behavior. This suggests that although adolescents may recognize the potential negative impact of a sedentary lifestyle on their health, this awareness is insufficient to significantly drive changes in their physical activity behavior. According to the Health Belief Model (HBM), perceived susceptibility refers to an individual's assessment of their risk of experiencing a negative health outcome. In theory, this should motivate behavioral change. However,

our findings are consistent with previous research suggesting that adolescents tend to downplay long-term health risks in favor of immediate concerns, particularly in the context of physical activity (Wilson, 2010; Smith & Lee, 2012). Specifically, adolescents often feel invincible due to their strong recovery abilities, which may lead them to underestimate the risks associated with a sedentary lifestyle. This aligns with studies that suggest adolescents are generally less concerned about health risks that do not pose immediate on sequences (Brown et al., 2015). Therefore, simply increasing awareness of long-term health risks may have limited impact on encouraging physical activity among adolescents. Future interventions should consider combining perceived susceptibility with other elements of the HBM, such as perceived benefits and self-efficacy, to design more effective health education programs (Jones & Harris, 2017).

2. The Role of Perceived Benefits in Promoting Physical Activity

Another important finding of this study is the significant positive impact of perceived benefits on adolescents' physical activity behavior. This indicates that when adolescents clearly understand the direct advantages of engaging in physical exercise, such as improved fitness, better appearance, and increased social interaction, they are more likely to participate in and sustain these activities. Perceived benefits, as defined in the HBM, refer to an individual's belief in the efficacy of a recommended action to reduce the risk or seriousness of a health issue (Rosenstock, 1974).

In this study, adolescents emphasized the short-term, tangible benefits of physical activity. Qualitative interviews further confirmed that many participants cited physical fitness and social opportunities as primary motivators for their engagement in sports. This is consistent with findings from similar studies, which show that appearance improvement and social interaction are key drivers of physical activity among adolescents (Thompson et al., 2014). Therefore, it is crucial for future interventions to highlight both the short- and long-term benefits of physical activity in a manner that resonates with adolescent values. Educational and media campaigns, school programs, and social media platforms should promote these benefits to encourage higher participation rates (Anderson et al., 2018).

3. Perceived Barriers and Their Negative Impact on Physical Activity

Perceived barriers were identified as the strongest negative predictor of physical activity behavior in this study. Adolescents reported several obstacles to engaging in physical activity, including a lack of time, academic pressure, and limited access to facilities. According to the Health Belief Model (HBM), perceived barriers refer to an individual's assessment of the obstacles that hinder the adoption of healthy behaviors (Janz & Becker, 1984). The stronger the perceived barriers, the less likely an individual is to engage in the behavior.

Qualitative data from interviews revealed that adolescents face significant time constraints due to the dual pressures of schoolwork and family obligations. In highly competitive academic environments, such as those in China, adolescents often prioritize academic success over physical health. Similar findings have been reported in the literature, highlighting that perceived barrier—such as time constraints, lack of facilities, and insufficient support from parents and teachers—are significant deterrents to physical activity among youth (Davies et al., 2016).

Future interventions should focus on reducing perceived barriers by creating more flexible opportunities for physical activity, such as incorporating exercise into school curricula or providing access to facilities during non-school hours. Community and family support could also play a vital role in helping adolescents overcome these barriers and increase their participation in physical activity (Williams & Green, 2019).

4. The Critical Role of Self-Efficacy in Physical Activity

This study found that self-efficacy was a key factor influencing adolescents' engagement in physical activity. Self-efficacy, a core construct of the Health Belief Model (HBM), refers to an individual's belief in their ability to successfully perform a specific behavior (Bandura, 1977). Adolescents with higher self-efficacy were more likely to engage in and maintain physical activity, a finding consistent with numerous studies in the field (Schwarzer & Luszczynska, 2005; Dishman et al., 2017).

During the intervention, the experimental group demonstrated significantly improved self-efficacy through goal setting and progressively challenging physical activities. This improvement highlights the importance of designing interventions that focus on enhancing self-efficacy. Bandura's self-efficacy theory posits that individuals are more likely to succeed when they believe they can overcome challenges (Bandura, 1997). This theory was validated in our study, where increased self-efficacy led to higher levels of physical activity.

To design effective interventions, educators and policymakers should consider incorporating gradual goal-setting strategies, encouraging adolescents to take on challenges they can successfully achieve. Positive reinforcement from teachers and parents, along with frequent feedback on progress, can further enhance adolescents' self-efficacy and commitment to physical activity (Biddle & Asare, 2011).

5. Discussion of Overall Intervention Effectiveness

The 12-week intervention implemented in this study demonstrated the effectiveness of HBM-based strategies in improving adolescents' physical activity participation. The experimental group showed significant improvements in perceived benefits and self-efficacy, while perceived barriers decreased, indicating that the intervention successfully addressed key factors influencing physical activity. These results are consistent with existing research that supports the effectiveness of theory-driven interventions in behavior change (Sallis et al., 2016).

The control group, by contrast, did not show significant changes, further confirming the efficacy of the intervention. These findings suggest that HBM-based interventions can effectively promote physical activity among adolescents, particularly when they target multiple constructs of the model. Future studies should explore the application of similar interventions across diverse populations and settings to determine the generalizability of these results (Michie et al., 2011).

6. Practical Implications of the Results

The findings of this study have important practical implications for educators, policymakers, and health professionals. First, it is essential to focus on reducing perceived barriers and enhancing self-efficacy among adolescents to increase their physical activity participation. Studies have shown that reducing perceived barriers, especially time constraints and lack of resources, can significantly enhance the likelihood of adolescents engaging in physical activity (Lee et al., 2017).

Additionally, future interventions should emphasize the personal and social benefits of physical activity, which are particularly motivating for adolescents. Schools, communities, and families must work together to create an environment that supports regular physical activity. For example, schools could allocate more time for physical education, while families could encourage adolescents by setting an example and providing opportunities for exercise (Simons-Morton et al., 2016). By integrating these strategies into comprehensive intervention programs, stakeholders can effectively promote healthier lifestyles among adolescents and address the growing concerns related to sedentary behavior and poor physical health.

In conclusion, this study highlights the importance of a multi-faceted approach based on the Health Belief Model to promote physical activity among adolescents. By addressing perceived benefits, barriers, and self-efficacy, targeted interventions can lead to meaningful and sustained behavior change. Further research is needed to explore the long-term impact of these interventions and to determine their applicability in various cultural and demographic contexts.

Section 2: Study Limitations

Despite the valuable insights gained from this study regarding the factors influencing adolescents' physical activity behavior, several limitations should be acknowledged. These limitations may affect the interpretation and generalizability of the results, while also providing directions for future research improvements.

1. Sample Size and Representativeness

Although this study included a sample of 3,000 adolescents from Guangdong Province, which is relatively large for research on adolescent physical activity, the geographical concentration and sampling method limit the generalizability of the results. As noted in Chapter 4, the data primarily came from eight cities in Guangdong (e.g., Guangzhou, Dongguan, and Foshan), all of which are economically developed

areas with abundant educational resources and well-equipped school sports facilities. These factors likely positively influenced adolescents' frequency and methods of physical activity. As a result, the findings may not fully reflect the situation of adolescents in other regions of China, particularly in rural areas with lower economic development and fewer sports resources, where adolescent physical activity patterns may differ significantly.

Moreover, this study used convenience sampling, which, while logistically convenient, may lead to a lack of representativeness. Convenience sampling does not ensure that all groups of adolescents have an equal opportunity to participate, and some adolescents from specific socioeconomic backgrounds may be underrepresented in the sample. Future studies should consider employing more randomized and representative sampling methods, such as stratified random sampling, to ensure that adolescents from diverse socioeconomic and regional backgrounds are adequately represented, thereby improving the external validity of the results. This aligns with Janesick (2004), who emphasizes that random sampling better ensures the generalizability and representativeness of study samples.

2. Limitations of Cross-Sectional Study Design

This study utilized a cross-sectional design, which involves collecting data at a single point in time through surveys on adolescents' physical activity behaviors and Health Belief Model (HBM)-related variables. While this design effectively captures adolescent behavior and cognition at a specific moment, it limits the ability to establish causal relationships between variables.

As discussed in Chapter 4, while significant correlations were observed between perceived benefits, self-efficacy, and physical activity behaviors, it is not possible to determine from cross-sectional data whether these factors directly caused changes in physical activity. For example, while adolescents with higher self-efficacy were more likely to engage in physical activity, it remains unclear whether self-efficacy promoted the behavior or whether engaging in physical activity enhanced their self-efficacy. Thus, cross-sectional study designs have inherent limitations in inferring causality.

Cook and Campbell (1979) emphasized that cross-sectional designs cannot account for the temporal dimension, making it difficult for researchers to draw conclusions about cause and effect. Future research can address this limitation by adopting a longitudinal study design. Longitudinal studies, which collect data from the same group of participants over multiple time points, can more effectively track changes in adolescent physical activity and the dynamic relationships between influencing factors. This approach will help researchers better understand how various factors in the Health Belief Model impact adolescents' physical activity behaviors over time and establish clearer causal relationships.

3. Limitations of Self-Reported Data

The data for this study were primarily collected through self-report questionnaires, where adolescents reported their physical activity behaviors, perceived barriers, perceived benefits, and other relevant variables. Although self-reporting is a convenient method that allows for the collection of large amounts of information, it introduces certain biases, particularly social desirability bias and recall bias.

Social desirability bias occurs when respondents provide answers that align more closely with socially acceptable norms or expectations rather than their actual behaviors. For example, adolescents may exaggerate the frequency of their physical activity to portray themselves as leading a healthier lifestyle. This issue is commonly observed in self-report data research, and Podsakoff et al. (2003) noted that social desirability bias often leads to systematic errors in behavioral data.

Additionally, recall bias presents another challenge for self-reported data. Adolescents may find it difficult to accurately recall the frequency and duration of their physical activity over a specific period, leading to inaccuracies in the data. To reduce self-reporting bias in future research, it is recommended to use more objective measurement methods. For instance, wearable devices such as accelerometers can be used to track adolescents' actual physical activity, improving the precision and reliability of the data. Troiano et al. (2008) suggested that using devices like accelerometers in behavioral studies can significantly enhance the accuracy of physical activity data.

4. Short Duration of Intervention

According to the experimental results in Chapter 4, the 12-week intervention period was sufficient to observe short-term behavior changes, but it may not fully capture long-term changes in physical activity. Long-term behavior change in adolescents typically requires extended intervention periods, and the effects of short-term interventions may diminish over time. Therefore, the findings of this study primarily reflect the short-term impacts of the intervention, and it is unclear how sustainable these effects are.

Bauman et al. (2012) pointed out that behavior change in physical activity often requires interventions lasting six months or more to achieve lasting effects. Future research should consider extending the duration of the intervention and conducting follow-up studies to track adolescents' behavior changes after the intervention ends. This would provide a more comprehensive assessment of the intervention's long-term effectiveness.

5. Impact of Cultural and Environmental Factors

The participants in this study were primarily from urban areas in Guangdong Province, China, which means the findings may be influenced by specific cultural and environmental factors. Adolescents in China face significant academic pressure,

which likely affects their willingness and ability to engage in physical activity. The negative correlation between academic pressure and physical activity observed in this study may not hold in other cultural contexts, where adolescents face different environmental challenges and opportunities for physical activity.

In Western countries, for example, adolescents often have more extracurricular time and opportunities for physical activity, and academic pressure may play a smaller role. Sallis et al. (1992) found that adolescent physical activity behaviors are influenced by multiple factors, including environment, society, and family, which can vary significantly across different countries and cultural settings. Therefore, future studies should investigate adolescent physical activity behaviors in diverse cultural contexts to determine how cultural differences affect the applicability of the Health Belief Model. Cross-cultural comparative studies will provide valuable insights for designing more globally adaptable interventions.

6. Limitations of the Health Belief Model

While the Health Belief Model offers a useful framework for understanding factors that influence adolescents' physical activity behavior, it does not capture all potential motivations behind behavior. The determinants of physical activity behavior may include social, emotional, and economic factors, whereas the HBM focuses primarily on individual cognition and beliefs. For example, this study did not fully account for external factors such as peer influence, family support, or school policies, all of which may play significant roles in adolescents' physical activity.

Ajzen (1991) proposed the Theory of Planned Behavior, which emphasizes the role of subjective norms and behavioral intentions in behavior change, factors that are not fully addressed in the HBM. Future research could incorporate other behavioral theories, such as Social Cognitive Theory or the Theory of Planned Behavior, to provide a more comprehensive explanation of the multifaceted influences on adolescent physical activity behavior. By combining these theories, researchers can design more holistic interventions that address cognitive, social, emotional, and environmental aspects of adolescent physical activity.

Section 3: Practical Applications of the Study

Based on the results discussed in Chapter 4, several practical applications can be derived to promote physical activity among adolescents using the Health Belief Model (HBM). These applications can guide future intervention designs, health education programs, and public health strategies aimed at enhancing adolescent participation in physical activity. The following are detailed suggestions for applying the study findings in real-world settings, with each point expanded to provide richer content.

1. Integration into School Curriculums

Schools play a critical role in promoting physical activity among adolescents, as they are where most adolescents spend a significant amount of their time. The findings from this study indicate that school-based interventions can have a substantial impact on adolescents' physical activity behaviors. By incorporating key elements of the Health Belief Model—such as perceived benefits and self-efficacy—into both physical education (PE) classes and health education, schools can significantly increase students' motivation to engage in physical activity.

Schools should not only offer traditional PE classes but also integrate health education that helps students understand the multidimensional benefits of physical activity, such as improved physical fitness, mental health, and social skills. To further enhance perceived benefits, schools can introduce a wider variety of sports activities. For example, offering elective physical activities that allow students to choose sports they are interested in can increase engagement and motivation. Chapter 4 showed that adolescents are more likely to participate in physical activities when they experience the social and collaborative benefits of exercise, so schools should also organize team sports and group activities that promote teamwork and social interaction.

Additionally, schools can set up health challenges or fitness goals to enhance self-efficacy. By setting progressively more challenging goals and providing feedback and positive reinforcement, schools can help students build confidence in their physical abilities. Since self-efficacy was found to significantly influence adolescents' participation in physical activity in Chapter 4, this strategy could be instrumental in encouraging sustained engagement in exercise. Schools should use a variety of methods, such as awarding certificates or rewards for achieving fitness milestones, to boost students' sense of accomplishment and further motivate them to continue participating in physical activities.

2. Parental and Community Support

Parental and community involvement play crucial roles in supporting adolescents' physical activity behaviors. Chapter 4 revealed that perceived barriers, such as time constraints and a lack of facilities, are major factors that limit adolescent participation in sports. Parents and communities can provide crucial support in helping adolescents overcome these barriers by creating more opportunities for exercise and fostering a supportive environment at home and in the community.

Parents can participate in physical activities with their children or encourage them to be active by setting a good example. Research shows that when parents are actively involved in their children's physical activities, adolescents are more likely to maintain healthy exercise habits. Additionally, parents should help their children manage their time effectively, balancing academic responsibilities with physical exercise. Since academic pressure was identified as a significant perceived barrier in Chapter 4, parents can encourage their children to recognize the benefits of exercise

for stress relief and academic performance, thereby reducing the perception that there is not enough time for physical activity.

Communities also have a role to play by providing safe and accessible spaces for physical activity. Offering public sports facilities, such as basketball courts, soccer fields, and fitness equipment, can help address the lack of access to physical spaces. Communities can further support adolescent physical activity by organizing regular sports events, competitions, and fitness classes that are inclusive of both youth and families. These activities not only encourage adolescents to participate but also strengthen social bonds within the community. Chapter 4 demonstrated that social support and group participation significantly enhance adolescents' likelihood of engaging in physical activity, so these community-based events are an effective way to foster a culture of physical fitness.

Additionally, communities should focus on health education campaigns that raise awareness about the importance of regular physical activity. By hosting educational workshops and distributing informational materials to families, communities can enhance both parental and adolescent understanding of the long-term benefits of exercise, leading to more consistent participation in physical activity.

3. Tailored Interventions for Individual Differences

The findings in Chapter 4 highlight that adolescents' physical activity behaviors and the components of the Health Belief Model that influence these behaviors vary based on individual factors such as gender, age, and socioeconomic background. As a result, interventions should be tailored to address these individual differences to effectively meet the needs of various groups.

For younger adolescents or those with low self-efficacy, interventions should focus on gradually building confidence and motivation. Programs can introduce simple, achievable fitness goals that allow adolescents to experience early success in their physical activity efforts. As outlined in the Health Belief Model, self-efficacy is a key determinant of behavior, and Chapter 4 confirmed that increasing adolescents' belief in their ability to succeed in physical activity leads to higher participation. Schools and communities should offer beginner-level physical activity programs or tiered challenges that help adolescents progressively improve their physical fitness while providing positive reinforcement at each step.

Gender differences should also be considered when designing interventions. Chapter 4 revealed that boys and girls may have different motivations and preferences for physical activity. For example, boys may be more attracted to competitive and strength-based activities such as football or basketball, while girls may prefer non-competitive, cooperative activities such as yoga or dance. Therefore, interventions should provide diverse options that cater to these preferences to increase participation across genders. Offering a range of physical activities ensures that both boys and girls

have the opportunity to engage in sports they enjoy, thus improving the overall effectiveness of the intervention.

Socioeconomic disparities also need to be addressed in physical activity interventions. Adolescents from lower-income families may lack access to necessary sports equipment or organized activities, which can further increase perceived barriers to exercise. Schools and community organizations should consider offering free or low-cost sports programs and providing equipment to ensure that all adolescents, regardless of their economic background, can participate in physical activity. Policymakers should also work to reduce these disparities by implementing policies that support physical education and extracurricular sports programs in underserved areas. Chapter 4 pointed out that perceived barriers are a significant deterrent to physical activity, so reducing these obstacles through targeted support is essential for promoting more widespread engagement in physical activity.

In conclusion, by designing interventions that account for individual differences among adolescents, such as age, gender, and socioeconomic status, the overall effectiveness of the programs can be greatly improved. These customized strategies will ensure that adolescents from diverse backgrounds are given the appropriate support and resources to engage in regular physical activity, leading to better health outcomes.

Section 4: Future Research Directions

Based on the results and limitations of this study, future research can expand and deepen in several areas to enhance the understanding of adolescent physical activity behaviors and their influencing factors. Below are detailed recommendations for future research, with each point expanded to provide richer content, ensuring the authenticity and academic rigor of the discussion.

1. Expanding Sample Scope and Diversity

Although this study had a relatively large sample size, it was primarily concentrated in urban areas of Guangdong Province, which may limit the generalizability of the results. Future research should expand the sample scope nationwide, particularly to include adolescents from different geographic regions, cultural backgrounds, and socioeconomic levels. For example, adolescents in rural or less economically developed regions of China may face different social, economic, and cultural environments that significantly affect their physical activity behaviors and responses to the Health Belief Model (HBM).

By including more diverse adolescent populations, researchers can better understand the regional and cultural differences in physical activity participation. Adolescents in economically developed coastal cities may have more resources and facilities to support their physical activity, while those in rural areas may face a lack of facilities or parental emphasis on academic performance over physical activity. This difference reflects the varying degrees of support from families and schools for

physical activities, with urban adolescents often receiving more encouragement from parents and teachers, while rural adolescents may be discouraged due to the focus on academic achievements.

Furthermore, future research should consider including adolescents from different cultural backgrounds. For example, immigrant adolescents may face unique social pressures and behavioral patterns during their cultural adaptation process, which may influence their participation in physical activity. Therefore, expanding the study both nationwide and globally to examine cross-cultural differences in adolescent physical activity behaviors will provide broader and more representative findings, allowing interventions to be applied across different cultural and social groups.

2. Using Longitudinal Research Designs

This study utilized a cross-sectional design, which effectively captured the relationships between adolescent physical activity behaviors and related factors at a specific point in time, but it could not reveal causality. Therefore, future research should adopt longitudinal designs, with multiple waves of data collection to track long-term changes in physical activity behaviors. For example, by following the same group of individuals over time, researchers can evaluate how elements of the HBM—such as perceived benefits, perceived barriers, and self-efficacy—affect their physical activity behaviors as they age.

Longitudinal research also helps understand the long-term effects of interventions. By conducting follow-up studies after the completion of an intervention, researchers can assess whether the intervention has lasting effects. For instance, do participants maintain their improved physical activity behaviors months or years after the intervention, or do they revert to their pre-intervention levels? This type of research is crucial for understanding how physical activity habits are formed and for designing long-term intervention strategies to ensure the persistence of positive behavior changes.

Biddle and Asare (2011) highlighted that longitudinal designs are essential for revealing the stage-based characteristics of health behavior changes. This approach is particularly useful for evaluating how adolescent physical activity behaviors change as they transition from adolescence to adulthood, as factors such as life pressures, time management, and environmental support may undergo significant shifts. Therefore, longitudinal research can not only deepen our understanding of the dynamic changes in adolescent physical activity but also provide a basis for future intervention designs that more effectively promote long-term behavior changes.

3. Integrating Broader Behavioral Models

While the Health Belief Model (HBM) provided a useful framework for understanding adolescent physical activity behaviors, relying solely on this model

may not fully explain all influencing factors. HBM primarily focuses on cognitive factors such as perceived risks, perceived benefits, and self-efficacy, but adolescent physical activity behaviors may also be influenced by social, environmental, and emotional factors. Therefore, future research should attempt to integrate other behavioral theories, such as Social Cognitive Theory (SCT) and the Theory of Planned Behavior (TPB), to offer a more comprehensive explanatory framework.

Social Cognitive Theory emphasizes observational learning, social support, and environmental influences on individual behavior. For example, Bandura (1986) found that adolescents form behavioral habits not only through their own experiences but also by observing the behaviors and outcomes of others. This suggests that peers and family may play a more critical role in shaping adolescent physical activity behaviors than cognitive beliefs alone. Therefore, future research could incorporate SCT to explore how adolescents form exercise habits through peer interactions and family support.

Similarly, the Theory of Planned Behavior (Ajzen, 1991) highlights the importance of behavioral intentions and subjective norms in determining behavior. For adolescents, social and cultural norms—such as peer influence, family expectations, and school sports policies—can significantly affect their intentions to participate in physical activity. By integrating TPB, future research could systematically understand how adolescents form intentions to engage in physical activity and explore how changing subjective norms can influence their behaviors. Therefore, integrating multiple behavioral models not only broadens our understanding of adolescent physical activity but also provides a more comprehensive theoretical foundation for future intervention designs. For example, combining the dual influences of self-efficacy and social support, future interventions could more effectively stimulate adolescents' motivation to participate in physical activity and offer strategies for sustaining long-term behavior changes.

4. Using Objective Measurement Tools

This study primarily relied on self-reported data from adolescents, which can introduce biases such as social desirability and recall bias. For example, adolescents may exaggerate their physical activity frequency or duration to conform to social expectations, or they may not accurately recall their physical activity levels over the past period. Therefore, future research should make greater use of objective measurement tools to enhance the accuracy and reliability of data.

Wearable fitness devices (such as accelerometers, heart rate monitors, and smartwatches) can provide researchers with precise data on physical activity. These devices can record adolescents' actual activity levels, intensity, and duration in real time, eliminating the subjective biases inherent in self-reporting. By combining objective activity data with subjective survey responses, researchers can better

understand the differences between adolescents' actual physical behaviors and their perceptions. For instance, some adolescents may believe they are getting sufficient exercise, but objective data may reveal that their activity levels are inadequate. These differences can inform future intervention designs, allowing for more personalized interventions based on each adolescent's specific needs.

Moreover, incorporating biological markers (such as heart rate, body fat percentage, and blood pressure) can further assess the direct impact of physical activity on adolescent health. These data can reflect not only the immediate effects of physical activity but also provide scientific evidence of long-term health outcomes. For example, by tracking changes in adolescents' biological markers over time, researchers can evaluate the specific impact of different intensities and frequencies of exercise on cardiovascular health, weight management, and mental health, offering a more comprehensive reference for designing physical activity interventions.

5. Cross-Cultural and Social Environment Comparative Studies

Culture and social environment play a significant role in shaping adolescent physical activity behaviors. Adolescents from different countries, regions, and cultural backgrounds may face varying opportunities, social norms, and family support for physical activity. Therefore, future research can conduct cross-cultural comparative studies to explore how different cultural contexts influence adolescent physical activity behaviors. For example, adolescents in Western countries often have more extracurricular time and sports facilities, while in some Asian countries, such as China, academic pressure may lead to lower physical activity participation.

Additionally, family and societal attitudes toward physical activity vary across cultures. In some cultures, families may prioritize academic success over physical activity, while in others, sports may be seen as an essential part of personal development. Cross-cultural comparative studies can help researchers understand how these cultural differences affect adolescents' physical activity behaviors.

For example, Sallis et al. (1999) found that cultural differences in adolescent physical activity participation significantly impacted the effectiveness of interventions. Therefore, future research can explore how to design more culturally adaptive interventions in different contexts. For instance, in cultures where academic pressure is high, researchers could design short, high-intensity physical activities that help adolescents maintain good exercise habits without compromising their academic performance.

6. Exploring the Use of Digital Technologies

With the rapid development of digital technologies, future research can explore how emerging digital tools (such as mobile apps, online fitness platforms, and virtual reality) can promote adolescent physical activity behaviors. Digital technologies offer the potential for personalized, real-time feedback and remote

support, especially for adolescents who may be restricted by time or location from participating in traditional physical education programs.

For example, research could design mobile apps for adolescents that help them set fitness goals, track daily physical activity, and provide visual feedback to enhance self-efficacy. Virtual reality technology could also provide adolescents with more immersive exercise experiences, making physical activity more enjoyable and interactive. Additionally, online fitness platforms offer adolescents the opportunity to engage in physical activity with others, even if they cannot physically attend group activities. These platforms can also provide social support, encouraging adolescents to share their progress and motivate each other within online communities.

Researchers can also explore how social media platforms can be leveraged to promote adolescent physical activity. By organizing online fitness challenges, adolescents can share their exercise achievements on social media and form positive social support networks through peer interaction. Studies have shown that positive interactions within social networks can enhance adolescents' motivation and persistence in physical activity. Therefore, the use of digital technologies presents extensive possibilities for future interventions, allowing adolescents to participate in physical activity more flexibly and personalized.

In summary, future research should expand and innovate in areas such as sample scope, research design, theoretical integration, measurement tools, cultural controls, and digital technology applications. By combining multidisciplinary perspectives and emerging technologies, future research can provide more comprehensive and effective solutions for health interventions targeting adolescents worldwide.

Section 5: Conclusion

This study, based on the Health Belief Model (HBM), explored the key factors influencing adolescent physical activity behaviors and designed interventions to evaluate the impact of these factors. The study not only revealed the role of perceived barriers, perceived benefits, and self-efficacy in adolescent physical activity behaviors but also demonstrated the effectiveness of HBM-based interventions in promoting physical activity among adolescents. The following are the key conclusions from the study.

1. Summary of Key Findings

Through a survey of 3,000 adolescents from Guangdong Province, this study highlighted several critical factors influencing their physical activity behaviors:

• Negative Impact of Perceived Barriers: The results show that perceived barriers, such as academic pressure, lack of time, and insufficient access to exercise facilities, are the most significant factors hindering adolescent participation in physical activity. Many adolescents cited a heavy academic workload and limited time

as the main reasons for their low engagement in physical activity. This finding aligns with existing literature, emphasizing the importance of overcoming these barriers to increase adolescent physical activity.

• Positive Influence of Perceived Benefits: Adolescents' perceived benefits of physical activity, such as improved fitness, enhanced social interactions, and better mental health, have a significant positive impact on their participation in exercise. The study showed that when adolescents are aware of the benefits of physical activity for their health and quality of life, they are more likely to engage in it. This finding supports the theoretical assumptions of HBM, highlighting the role of perceived benefits in motivating adolescents to be physically active.

•The Importance of Self-Efficacy: Self-efficacy was found to be a key determinant of adolescent physical activity behavior. Adolescents with higher self-efficacy were more likely to consistently participate in physical activity. By enhancing self-efficacy through interventions, adolescent participation in physical activity significantly increased. This validates the application of self-efficacy theory in interventions aimed at improving physical activity behavior.

2. Effectiveness of the Intervention

The 12-week intervention experiment confirmed the effectiveness of HBM-based interventions in promoting adolescent physical activity behaviors. The adolescents in the intervention group significantly increased their frequency of physical activity, reduced perceived barriers, and experienced improvements in self-efficacy and perceived benefits. In contrast, the control group showed no significant changes during the same period, further validating the effectiveness of the intervention.

These results demonstrate that interventions designed using the HBM, particularly those focused on enhancing self-efficacy, can significantly boost adolescent engagement in daily physical activity. Therefore, extending this type of intervention to other regions and cultural contexts holds considerable practical value.

3. Practical Implications

The findings of this study offer critical insights for education policy and health interventions. First, policymakers and educators should take measures to reduce adolescents' perceived barriers to physical activity, particularly in contexts with high academic pressure. Providing appropriate time management strategies and better access to exercise facilities can help adolescents overcome these barriers. Schools should strengthen their physical education programs, increasing adolescent interest and motivation in physical activity.

Additionally, families and communities need to place more emphasis on promoting physical activity. Parents can encourage and accompany their children in physical activities to enhance participation, while communities should improve sports

facilities, especially in economically underdeveloped areas, to provide more opportunities for adolescents to engage in exercise.

4. Limitations of the Study

Despite the valuable insights gained from this study, some limitations need to be addressed. First, the sample was concentrated in urban areas of Guangdong Province, limiting the generalizability of the findings. Future studies should expand to include adolescents from different regions and cultural backgrounds to enhance the applicability of the results.

Second, the cross-sectional design of this study does not allow for causal inferences between variables. Future research should adopt longitudinal designs to track changes in adolescent physical activity behaviors over time and further verify the causal relationships between these factors.

5. Future Research Directions

Future studies can improve and expand in the following areas:

1. Diversity and Expansion of the Sample: Future studies should broaden the scope to include adolescents from more regions and various cultural and socioeconomic backgrounds to increase the generalizability and representativeness of the findings.

2. Longitudinal Research Designs: Future research should adopt longitudinal designs to track the long-term effects of interventions and assess the lasting impact of interventions on adolescent physical activity behaviors.

3. Incorporation of Multiple Behavioral Models: In addition to the Health Belief Model, future research could integrate other behavioral models, such as Social Cognitive Theory (SCT) and the Theory of Planned Behavior (TPB), to offer a more comprehensive explanation of the multidimensional factors influencing adolescent physical activity.

4. Use of Objective Data Measurement Tools: Future studies should make more use of wearable devices and other objective measurement tools to improve data accuracy and reduce biases from self-reports.

5. Cross-Cultural Research: Comparative studies across different cultural and social contexts should be conducted to explore the influence of cultural differences on adolescent physical activity behaviors and to design interventions that are culturally adaptive.

Conclusion

This study, using the Health Belief Model, systematically explored the factors influencing adolescent physical activity behaviors and designed effective interventions. The findings provide theoretical support for future research and practical guidance for policymakers and educators. Future studies should further

expand the sample scope, adopt more complex research designs, and incorporate multiple behavioral models to offer more comprehensive and effective solutions for promoting adolescent physical activity and healthy behaviors worldwide.

Recommendations

1. Academic Recommendations

1) There should be a development of curricula that incorporate the Health Belief Model and exercise programs to enhance knowledge and skills among adolescents for fostering healthier behaviors.

2) Training should be provided for teachers and trainers in educational institutions to understand the Health Belief Model and its application in promoting exercise behaviors among adolescents in educational settings.

2. Policy Recommendations

1) Budget and resources should be allocated to promote exercise programs in schools and communities, especially in areas at risk for health issues.

2) Collaboration between the education sector, public health, and communities should be encouraged to create projects and activities that sustainably support exercise for adolescents.

3. Recommendations for further research

1) Further research should be conducted among diverse populations, such as different genders, ages, or regions, to analyze the impact of the Health Belief Model in various contexts.

2) Long-term research should be undertaken to follow the impacts of using the Health Belief Model in conjunction with exercise programs to continuously assess changes in exercise behaviors among adolescents

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APPENDIX

APPENDIX A
ITEM OBJECTIVE CONGRUENCE RESULTS

FACULTY OF EDUCATION
MAHASARAKHAM UNIVERSITY

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Center for International Affairs

MHESRI No. 0605.5 (2) / CL722 Date: February 20, 2024

To: **Dr. Bo Wen**
Professor, Hanshan Normal University, CHINA
Dr. Haiou Chen
Professor, Guangdong Medical University, CHINA
Dr. Qi Deng
Professor, Guangdong Ocean University, CHINA
Dr. Tieer Zuo
Professor, Guangdong Business and Technology University, CHINA
Dr. Yongbo Guo
Professor, Guangzhou College of Commerce, CHINA,

Subject: Thesis Reviewer Invitation

Our student, **Mr. Qiyu Zhou, student ID 64010564022,** majoring in the Ph. D. Exercise and Sports Science program is currently undertaking a research project titled **"Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among the Adolescent "** under the guidance of Asst. Prof. Napatsawan Thanaphonganan.

To ensure the successful execution and the highest quality of this research project, we are seeking your valuable expertise and experience. Therefore, I am sending a formal invitation to you to serve as a reviewer for the research instrument designed for this thesis project.

Your participation in this academic endeavor is highly valued and appreciated. Should you require any further information or have questions regarding this invitation, please do not hesitate to contact us by email.

Yours sincerely,

(Assoc. Prof. Chowwalit Chookhampaeng)
Dean, Faculty of Education,
Mahasarakham University

APPENDIX B
HUMAN RESEARCH ETHICS APPLICATION

MAHASARAKHAM UNIVERSITY ETHICS COMMITTEE FOR
RESEARCH INVOLVING HUMAN SUBJECTS

Certificate of Approval

Approval number: 073-044/2024

Title : Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among the Adolescent.

Principal Investigator : Qiyu Zhou
Responsible Department : Faculty of Education
Research site : Guangdong Province, China

Review Method : Expedited Review

Date of Manufacture : 7 February 2024 **expire :** 6 February 2025

This research application has been reviewed and approved by the Ethics Committee for Research Involving Human Subjects, Mahasarakham University, Thailand. Approval is dependent on local ethical approval having been received. Any subsequent changes to the consent form must be re-submitted to the Committee.

Ratree S.
(Asst. Prof. Ratree Sawangjit)
Chairman

Approval is granted subject to the following conditions: (see back of this Certificate)

APPENDIX C
ITEM OBJECTIVE CONGRUENCE RESULTS

ITEM OBJECTIVE CONGRUENCE
Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among the Adolescent

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Dear Expert,

As a Ph.D. student in Exercise and Sport Science at Mahasarakham University for the academic year 2023, I, Qiyu Zhou, under the advisor of Asst. Prof. Dr. Napatsawan Thanaphonganan, I am conducting a comprehensive study on the exercise habits of adolescents in Guangdong Province, China, entitled "Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among the Adolescent," has the following objectives:

1. To study effects of health belief model with exercising program on physical exercise behaviors of the adolescent.
2. To compare before and after of the control group and the experimental group of effects of health belief model with exercising program on physical exercise behaviors of the adolesce.
3. To compare the effects of the health belief model with exercising program between the control and experimental groups on the exercise behavior of adolescents.
4. To develop a health care handbook for Chinese adolescents based on the Health Belief Mode.

This study includes investigation and experiment is designed to comprehensively investigate and experimentally evaluate the effectiveness of a Health Belief Model (HBM)-based intervention on physical exercise behaviors among 3,000 Chinese adolescents in Guangdong Province. The study comprises three distinct phases, each contributing to a holistic understanding of the research objectives and research questions. In the first phase, data will be collected through structured questionnaires, employing both online and in-person methods, to capture a wide range of responses from the target population. Descriptive and inferential statistical analyses will be conducted to examine the relationships between HBM constructs and exercise behavior, and subgroup analyses will explore potential variations based on demographic variables. The second phase involves an extensive investigation through in-depth interviews and focus group discussions, providing qualitative insights to complement the quantitative findings. Thematic analysis will be employed to identify recurring themes and patterns in participants' perceptions and experiences. The third

phase is the experimental research, where a 12-week HBM-based intervention will be implemented, and data will be collected before and after the intervention. Descriptive and inferential statistical analyses will assess changes in exercise behavior and HBM constructs, comparing the intervention and control groups. Qualitative findings from earlier phases will be integrated into the discussion to provide depth and context to the quantitative results.

Your insights and recommendations will be invaluable in refining the research design and ensuring that the objectives are met effectively and efficiently. Thank you for your expertise and contribution to this academic endeavor.

Sincerely,

Qiyu Zhou
Mahasarakham University

ITEM OBJECTIVE CONGRUENCE

Effects of Health Belief Model with Exercising Program on Physical Exercise Behaviors Among the Adolescent

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Explanation: Please take a moment to meticulously examine the enclosed form and share your insights. Your suggestions for enhancement would be invaluable to this research. The scale for evaluation is as follows:

+1 : indicates that the question is consistent with the research objectives.

0 : indicates uncertainty about whether the question is consistent with the research objectives.

-1 : indicates that the question is inconsistent with the research objectives.

Action Plan: 12-week

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Week 1: Perceived Risk								
1. Content: Does the discussion on health risks of inactivity (obesity, heart disease, type 2 diabetes, mental health) align with the objective of creating awareness about the risks of physical inactivity?	+1	+1	+1	+1	0	4	0.8	The content of the questions should be improved.
2. Purpose: Does creating initial awareness about serious health risks effectively contribute to the overall goal of promoting physical activity among adolescents?	+1	+1	+1	+1	+1	5	1.0	
3. Time: Are the	+1	+1	0	+1	+1	4	0.8	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
scheduled seminars (two 2-hour sessions) adequate in duration and timing to effectively communicate the health risks of inactivity?								
4. Instrument: Do the PowerPoint presentations, brochures, and draft Health Care Handbook effectively aid in educating participants about the health risks of inactivity?	+1	0	+1	+1	+1	4	0.8	The content of the questions should be improved
5. Activity Form: Does the format of interactive seminars with Q&A sessions encourage active participation and engagement, aligning with the objective of raising awareness?	0	+1	+1	+1	+1	4	0.8	The content of the questions should be improved
6. Intervention Process: Does the involvement of health professionals (e.g., cardiologist, dietician) and real-life case studies effectively illustrate the impact of inactivity on health?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
7. Benefits of the Event: Are the expected outcomes (improved understanding, increased motivation) in line with the objective of promoting more active behaviors to mitigate health risks?	+1	+1	+1	+1	+1	5	1.0	
8. Practicality: Are the accessibility of the seminars (in-person and live streaming) and the provision of materials in various formats practical for reaching a wide range of participants?	+1	+1	+1	+1	+1	5	1.0	
9. Evaluate: Do the pre-seminar and post-seminar surveys, along with a follow-up, effectively measure changes in participants' understanding, attitudes, and behaviors related to health risks of inactivity?	+1	+1	+1	+1	+1	5	1.0	
Week 2: Perceived Severity								
10. Content: Does the detailed exploration	+1	+1	0	+1	0	3	0.6	Should adjust the

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
of severe health conditions caused by inactivity align with the objective of enhancing understanding of the serious consequences of a sedentary lifestyle?								content of the questions
11. Purpose: Does emphasizing the life-threatening health consequences effectively contribute to the overall goal of motivating participants to engage in regular physical activity?	+1	+1	+1	+1	+1	5	1.0	
12. Time: Is a single comprehensive session of 3 hours appropriate for thoroughly discussing the grave consequences of a sedentary lifestyle?	0	+1	+1	+1	+1	4	0.8	The content of the questions should be improved
13. Instrument: Do the presentations, interactive models, and sections of the Health Care Handbook effectively educate participants about the disease processes linked to inactivity?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
14. Activity Form: Does the format of interactive sessions with expert talks, patient stories, and visual aids encourage active participation and engagement, aligning with the objective of deepening understanding of health risks?	+1	+1	0	+1	+1	4	0.8	The content of the questions should be improved
15. Intervention Process: Do presentations and discussions by specialists, along with personal stories from patients, effectively illustrate the severe health risks of inactivity?	+1	+1	+1	+1	+1	5	1.0	
16. Benefits of the Event: Are the expected outcomes (deeper understanding of health risks, motivation for lifestyle changes) in line with the objective of encouraging increased physical activity to avoid health risks?	+1	+1	0	+1	+1	4	0.8	The content of the questions should be improved
17. Practicality: Are the	+1	+1	0	+1	+1	4	0.8	The content

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
session's accessibility options (in-person and live streaming) and the provision of digital materials practical for reaching a wide audience?								of the questions should be improved
18. Evaluate: Do the pre-session and post-session surveys, along with a two-week follow-up, effectively measure changes in participants' understanding, attitudes, and behaviors related to the severity of health risks due to inactivity?	+1	+1	0	+1	+1	4	0.8	The content of the questions should be improved
Week 3: Perceived Benefit								
19. Content: Does presenting and demonstrating the various physical, mental, and emotional benefits of regular exercise align with the objective of showcasing the rewards of physical activity?	+1	+1	+1	+1	0	4	0.8	Should adjust the content of the questions
20. Purpose: Does highlighting the positive outcomes of	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
physical activity effectively contribute to the overall goal of reinforcing active lifestyles for improved health and wellbeing?								
21. Time: Is a full-day sports event an appropriate format and duration to effectively demonstrate the benefits of physical activity?	+1	+1	+1	+1	+1	5	1.0	
22. Instrument: Do the activity stations, informational booths, and the Health Care Handbook sections effectively provide information on the benefits of physical activity?	+1	+1	+1	+1	+1	5	1.0	
23. Activity Form: Does the variety of physical activities and informational booths encourage active participation and engagement, aligning with the objective of experiencing the benefits of physical activity?	+1	+1	+1	+1	+1	5	1.0	
24. Intervention	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Process: Does hands-on participation in various activities, facilitated by instructors and trainers, effectively engage participants in experiencing the benefits of exercise?								
25. Benefits of the Event: Are the expected outcomes (enjoyment of physical activities, increased motivation for regular exercise) in line with the objective of fostering a positive attitude towards physical activity?	+1	+1	+1	+1	+1	5	1.0	
26. Practicality: Are the event's accessibility for all age groups and fitness levels and the availability of materials in various formats practical for reaching a diverse audience?	0	+1	+1	+1	+1	4	0.8	The content of the questions should be improved
27. Evaluate: Do the pre-event survey, post-event feedback, and a follow-up survey effectively measure changes in participants'	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
engagement in physical activity and understanding of its benefits?								
Week 4: Perceived Barriers								
28. Content: Does the identification and discussion of common barriers to regular exercise align with the objective of understanding obstacles to maintaining regular physical activity?	+1	+1	+1	+1	0	4	0.8	The content of the questions should be improved
29. Purpose: Does focusing on overcoming barriers effectively contribute to the overall goal of enabling participants to maintain regular physical activity?	+1	+1	+1	+1	+1	5	1.0	
30. Time: Is a week-long activity duration with a focus group discussion in the middle of the week suitable for thoroughly addressing and strategizing around barriers to physical activity?	+1	+1	+1	+1	+1	5	1.0	
31. Instrument: Do the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
online surveys, focus group sessions, and Health Care Handbook sections effectively aid in identifying and discussing common barriers?								
32. Activity Form: Does the combination of online surveys and group discussions encourage diverse participation and engagement, aligning with the objective of gathering a wide range of perspectives on barriers to physical activity?	+1	+1	+1	+1	+1	5	1.0	
33. Intervention Process: Does the method of analyzing survey data and interactive group discussions led by a facilitator effectively engage participants in identifying and brainstorming solutions to their barriers?	+1	+1	+1	+1	+1	5	1.0	
34. Benefits of the Event: Are the expected outcomes (identification of	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
barriers, laying the groundwork for overcoming them) in line with the objective of helping participants overcome their obstacles to regular exercise?								
35. Practicality: Are the event's flexible participation options (online surveys, in-person or virtual focus groups) and the availability of both digital and printed materials practical for reaching a diverse audience?	+1	+1	+1	+1	+1	5	1.0	
36. Evaluate: Do the pre-event survey, post-discussion feedback, and a follow-up survey effectively measure changes in participants' perceptions of barriers and their management of these barriers?	+1	+1	+1	+1	+1	5	1.0	
Week 5: Perceived Self-efficacy								
37. Content: Does the focus on strategies for developing and maintaining regular	+1	+1	+1	+1	0	4	0.8	Should adjust the content of the

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
exercise habits align with the objective of building confidence in exercise habits?								questions
38. Purpose: Does boosting participants' confidence and overcoming psychological barriers effectively contribute to the overall goal of encouraging regular physical activity?	+1	+1	+1	+1	+1	5	1.0	
39. Time: Are two workshops spread across the week adequate in duration and timing to effectively build participants' self-efficacy in exercise?	+1	+1	+1	+1	+1	5	1.0	
40. Instrument: Do the workshop materials, personal goal-setting sheets, and Health Care Handbook sections effectively aid in enhancing self-efficacy in exercise?	+1	+1	+1	+1	+1	5	1.0	
41. Activity Form: Does the interactive workshop format with presentations, group activities, and individual exercises encourage active	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
participation and engagement, aligning with the objective of building confidence?								
42. Intervention Process: Does the method of guided activities led by fitness and psychology experts effectively engage participants in building self-efficacy and overcoming mental barriers?	+1	+1	+1	+1	+1	5	1.0	
43. Benefits of the Event: Are the expected outcomes (improved self-confidence, development of personal exercise plans) in line with the objective of establishing a foundation for sustained physical activity?	+1	+1	+1	+1	+1	5	1.0	
44. Practicality: Are the workshops' inclusiveness for all fitness levels and the options for in-person and virtual attendance practical for reaching a diverse audience?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
45. Evaluate: Do the pre-workshop assessment, post-workshop feedback, and a follow-up survey effectively measure changes in participants' self-efficacy and exercise habits?	+1	+1	+1	+1	+1	5	1.0	
Week 6: Perceived Risk								
46. Content: Does discussing the impact of a sedentary lifestyle on both individual and family health align with the objective of highlighting the risks of chronic diseases and the importance of setting a healthy example for children?	+1	+1	+1	+1	0	4	0.8	The content of the questions should be improved
47. Purpose: Does emphasizing family habits on individual health behaviors effectively contribute to the overall goal of encouraging family-wide participation in physical activity?	+1	+1	+1	+1	+1	5	1.0	
48. Time: Is a family-oriented event planned for the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
weekend, with activities spanning **10** AM to **4** PM on Saturday, appropriate to address the topic adequately?								
49. Instrument: Do the interactive family activities, informational booths, and Health Care Handbook sections effectively provide information tailored to family health?	+1	+1	+1	+1	+1	5	1.0	
50. Activity Form: Does the format of family-friendly activities and workshops encourage active participation and engagement from participants of all ages, aligning with the objective of engaging entire families?	+1	+1	+1	+1	+1	5	1.0	
51. Intervention Process: Does the method of facilitated activities and discussions highlight the role of the family in promoting a healthy lifestyle effectively?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
52. Benefits of the Event: Are the expected outcomes (increased awareness among families, strengthening of family bonds) in line with the objective of promoting a collective approach to health?	+1	+1	+1	+1	+1	5	1.0	
53. Practicality: Are the event's inclusive design for families and the provision of handouts and resources for various ages and abilities practical for engaging a diverse audience?	+1	+1	+1	+1	+1	5	1.0	
54. Evaluate: Do the pre-event survey, post-event feedback, and a follow-up survey effectively measure changes in family activity patterns and attitudes towards health risks related to inactivity?	+1	+1	+1	+1	+1	5	1.0	
Week 7: Perceived Severity								
55. Content: Does sharing inspiring stories from individuals who	+1	+1	+1	+1	0	4	0.8	The content of the questions should be

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
improved their health through physical activity align with the objective of illustrating the severe health conditions that can be overcome through active lifestyles?								improved
56. Purpose: Does providing relatable and motivational examples effectively contribute to the overall goal of illustrating how active lifestyles can lead to substantial health improvements?	+1	+1	+1	+1	+1	5	1.0	
57. Time: Is a 4-hour storytelling and interactive session appropriate in duration and timing to effectively convey the message and engage participants?	+1	+1	+1	+1	+1	5	1.0	
58. Do guest speaker presentations, video testimonials, and the Health Care Handbook sections effectively aid in sharing personal success stories?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
59. Activity Form: Does the mix of storytelling and interactive audience participation encourage active engagement, aligning with the objective of providing inspirational examples?	+1	+1	+1	+1	+1	5	1.0	
60. Intervention Process: Does the method of presentations by individuals who have improved their health followed by discussions effectively engage participants in understanding the benefits of physical activity?	+1	+1	+1	+1	+1	5	1.0	
61. Benefits of the Event: Are the expected outcomes (inspiration from real-life stories, enhanced belief in health improvement) in line with the objective of promoting an active lifestyle for health benefits?	+1	+1	+1	+1	+1	5	1.0	
62. Practicality: Are the session's	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
accessibility options (in-person and live streaming) and the availability of digital materials practical for reaching a wide audience?								
63. Evaluate: Do the pre-session survey, post-session feedback, and a follow-up survey effectively measure changes in participants' beliefs about the impact of physical activity and their own physical activity levels?	+1	+1	+1	+1	+1	5	1.0	
Week 8: Perceived Benefit								
64. Content: Does introducing an incentive program to motivate regular participation in physical activities align with the objective of showcasing various rewards and recognitions for consistent effort?	+1	+1	+1	0	0	4	0.8	The content of the questions should be improved
65. Purpose: Does the introduction of a system of rewards effectively contribute to the overall goal of	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
encouraging ongoing engagement in physical activities?								
66. Time: Is the ongoing incentive program throughout the week suitable for allowing participants to engage in activities and log their progress at any time?	+1	+1	+1	+1	+1	5	1.0	
67. Instrument: Do activity tracking tools, the reward system outline, and the Health Care Handbook sections effectively aid in explaining the benefits of consistent physical activity?	+1	+1	+1	+1	+1	5	1.0	
68. Activity Form: Does the reward-based system, where participants log activities and earn points, encourage active participation and engagement in physical activities?	+1	+1	+1	+1	+1	5	1.0	
69. Intervention Process: Does the implementation of a point-based system effectively motivate regular physical	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
activity and reward consistent participation?								
70. Benefits of the Event: Are the expected outcomes (increased motivation and engagement in regular activities) in line with the objective of establishing a habit of regular physical activity through positive reinforcement?	+1	+1	+1	0	+1	4	0.8	The content of the questions should be improved
71. Practicality: Is the incentive program's design, with its accessibility to all participants and a variety of activities and reward options, practical for engaging a diverse audience?	+1	+1	+1	+1	+1	5	1.0	
72. Evaluate: Do the program participation tracking, participant feedback, and a follow-up survey effectively measure the level of engagement, effectiveness of the reward system, and its impact on	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
participants' activity levels and motivation?								
Week 9: Perceived Barriers								
73. Content: Does the focus on understanding and overcoming exercise barriers specific to adolescents, like peer pressure and balancing school, align with the objective of addressing adolescent exercise challenges?	+1	+1	+1	+1	0	4	0.8	Should adjust the content of the questions
74. Purpose: Does creating a supportive environment for discussion and problem-solving effectively contribute to the overall goal of helping adolescents maintain regular physical activity?	0	+1	+1	+1	+1	4	0.8	The content of the questions should be improved
75. Time: Are weekly support group meetings, lasting 1 hour each Wednesday evening, appropriate for adequately addressing and discussing these challenges?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
76. Instrument: Do support group guidelines, discussion topics, and Health Care Handbook sections effectively aid in addressing adolescent-specific barriers?	+1	+1	+1	+1	+1	5	1.0	
77. Activity Form: Does the format of peer-led support groups with guided discussions encourage active participation and engagement among adolescents?	+1	+1	+1	+1	+1	5	1.0	
78. Intervention Process: Does the method of facilitated peer discussions focusing on shared challenges and collaborative problem-solving effectively engage adolescents?	+1	+1	+1	+1	+1	5	1.0	
79. Benefits of the Event: Are the expected outcomes (enhanced understanding of barriers, development of strategies to overcome them) in line with the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
objective of empowering adolescents to manage their physical health?								
80. Practicality: Are the support groups' design, both in-person and virtual, and the provision of digital and physical resources practical for engaging adolescents?	+1	+1	+1	+1	+1	5	1.0	
81. Evaluate: Do the group feedback, effectiveness assessment, and a follow-up survey effectively measure the impact of the support groups in addressing challenges and fostering ongoing participation in physical activities?	+1	+1	+1	+1	+1	5	1.0	
Week 10: Perceived Self-efficacy								
82. Content: Does establishing a mentorship program to provide guidance and motivation for exercise habits align with the objective of building exercise habits through support and	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
mentorship?								
83. Purpose: Does offering personalized support and encouragement effectively contribute to the overall goal of helping participants maintain consistent exercise routines?	+1	+1	+1	+1	+1	5	1.0	
84. Time: Is the ongoing schedule of mentor-mentee meetings, with flexible timing, appropriate for providing effective mentorship and support?	+1	+1	+1	+1	+1	5	1.0	
85. Instrument: Do the mentorship program framework, progress tracking tools, and Health Care Handbook sections effectively support the mentoring process in physical activity?	+1	+1	+1	+1	+1	5	1.0	
86. Activity Form: Does the format of one-on-one and group mentorship meetings, both in-person and virtual, encourage active participation and engagement in the mentorship process?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
87. Intervention Process: Does the method of personalized guidance and regular check-ins from mentors effectively engage participants and foster progress in physical activity goals?	+1	+1	+1	+1	+1	5	1.0	
88. Benefits of the Event: Are the expected outcomes (improved ability and confidence in maintaining exercise routines, supportive community) in line with the objective of establishing sustainable exercise habits?	+1	+1	+1	+1	+1	5	1.0	
89. Practicality: Is the mentorship program's design, accommodating diverse schedules and needs with flexible meeting options, practical for engaging a diverse audience?	+1	+1	+1	+1	+1	5	1.0	
90. Evaluate: Do the mentor and mentee feedback, progress assessment, and a follow-up survey effectively measure	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
the impact of the mentorship relationship on participants' exercise habits and overall self-efficacy?								
Week 11: Review & Integration								
91. Content: Does analyzing the effectiveness of the Health Belief Model implementation and exploring integration into school programs align with the objective of sustainable health education?	+1	+1	+1	+1	0	4	0.8	Should adjust the content of the questions
92. Purpose: Does reviewing the impact of activities and strategizing on curriculum integration effectively contribute to the overall goal of enhancing school health education?	+1	+1	+1	+1	+1	5	1.0	
93. Time: Is a week-long process for review and planning, with various sessions throughout the week, suitable for a	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
comprehensive evaluation and integration planning?								
94. Instrument: Do feedback surveys, program integration plans, and Health Care Handbook sections effectively support the review and integration process?	+1	+1	+1	+1	+1	5	1.0	
95. Activity Form: Does the format of meetings with educators and health professionals, combined with surveys among students, encourage thorough feedback collection and collaborative planning?	+1	+1	+1	+1	+1	5	1.0	
96. Intervention Process: Does the method of collecting and analyzing stakeholder feedback, including from students, educators, and health professionals, effectively engage all parties in the integration process?	+1	+1	+1	0	+1	4	0.8	Should adjust the content of the questions
97. Benefits of the Event: Are the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
expected outcomes (tailored approaches for health education, sustainable practices) in line with the objective of establishing effective health education in schools?								
98. Practicality: Is engaging various stakeholders in the education sector and providing digital and physical resources practical for ensuring wide representation and effective integration?	+1	0	+1	+1	+1	4	0.8	Should adjust the content of the questions
99. Evaluate: Do feedback analysis, integration success evaluation, and ongoing monitoring effectively measure the effectiveness of HBM integration and its impact on student health behaviors?	+1	0	+1	+1	+1	4	0.8	The content of the questions should be improved
Week 12: Review & Integration								
100. Content: Does emphasizing long-term commitment to health and integration of	+1	+1	+1	+1	0	4	0.8	Should adjust the content of the questions

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
healthy habits into daily life align with the objective of sustaining health consciousness beyond the program?								
101. Purpose: Does encouraging ongoing prioritization of health and maintenance of developed habits effectively contribute to the overall goal of long-term health commitment?	+1	+1	+1	+1	+1	5	1.0	
102. Time: Is a closing ceremony and reflection session, scheduled for a Sunday afternoon, appropriate for concluding the program and encouraging future commitment?	+1	+1	+1	+1	+1	5	1.0	
103. Instrument: Do the closing ceremony agenda, reflection materials, and Health Care Handbook sections effectively support the objective of long-term health guidance?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
104. Activity Form: Does the format of a closing ceremony followed by a reflection session encourage participants to share experiences and commitments, fostering a sense of community and future focus?	+1	+1	+1	+1	+1	5	1.0	
105. Intervention Process: Does the facilitated reflection session, where participants discuss achievements and future commitments, effectively engage participants in setting personal health goals?	+1	+1	+1	+1	+1	5	1.0	
106. Benefits of the Event: Are the expected outcomes (sense of accomplishment, clear understanding of health priorities, long-term commitment) in line with the objective of fostering a culture of health consciousness?	+1	+1	+1	+1	+1	5	1.0	
107. Practicality: Is the accessibility of the closing ceremony	0	+1	+1	+1	+1	4	0.8	The content of the questions

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
for all participants, with options for in-person and virtual attendance, practical for engaging a wide audience?								should be improved
108. Evaluate: Do post-event feedback collection and occasional check-ins over the next year effectively measure the long-term impact of the program on participants' health habits and motivation?	+1	+1	+1	+1	+1	5	1.0	

Phase 1: Compile Questionnaire

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Section 1: Perceived Risk								
1. How likely do you think it is that you will experience negative health outcomes if you do not engage in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
2. How would you rate your chances of developing health problems due to lack of physical exercise compared to your peers?	+1	+1	+1	+1	+1	5	1.0	
3. To what extent do you believe that not	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
exercising regularly puts you at risk for physical health issues?								
4. How concerned are you about the potential negative consequences of not participating in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
5. Do you believe that engaging in regular physical exercise can reduce the risk of health problems?	+1	+1	+1	+1	+1	5	1.0	
6. How well do you think you understand the health risks associated with not participating in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
7. How often do you think about the potential health risks of not engaging in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
8. 7. To what extent do you think regular physical exercise can enhance your social life and relationships?	+1	+1	+1	+1	+1	5	1.0	
9. To what extent do you believe that your age group is vulnerable to the negative consequences of a sedentary lifestyle?	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
10. How likely do you think it is that participating in a structured exercise program can significantly reduce your risk of health problems?	+1	+1	+1	+1	+1	5	1.0	
Section 2: Perceived Severity								
11. How serious do you believe the consequences of not engaging in regular physical exercise are for your overall health?	+1	+1	+1	+1	+1	5	1.0	
12. How concerned are you about the potential negative health consequences of not participating in physical exercise regularly?	+1	+1	+1	+1	+1	5	1.0	
13. In your opinion, how severe are the health problems that could result from not engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
14. How likely do you think it is that not participating in regular physical exercise could lead to serious health issues in the future?	+1	+1	+1	+1	+1	5.0	1.0	
15. How much does the possibility of negative	+1	+1	+1	+1	+1	5.0	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
health consequences due to lack of physical exercise worry you?								
16. To what extent do you believe that not engaging in regular physical exercise can negatively impact your overall well-being?	+1	+1	+1	+1	+1	5	1.0	
17. How well do you think you understand the potential severity of the health problems associated with a lack of physical exercise?	+1	+1	+1	+1	+1	5	1.0	
18. How often do you think about the potential severity of the health problems that could result from not participating in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
19. How confident are you in your ability to assess the severity of the health risks associated with not engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
20. To what extent do you believe that participating in a structured exercise program can significantly reduce	+1	0	+1	+1	+1	4	0.8	Should adjust the content of the questions

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
the severity of potential health problems?								
Section 3: Perceived Benefit								
21. How likely do you believe that engaging in regular physical exercise can enhance your overall physical health?	+1	+1	+1	+1	+1	5	1.0	
22. To what extent do you think engaging in regular physical exercise can improve your mental well-being?	+1	+1	+1	+1	+1	5	1.0	
23. How convinced are you that participating in a structured exercise program can contribute to your overall fitness level?	+1	+1	+1	+1	+1	5	1.0	
24. In your opinion, how beneficial is engaging in regular physical exercise for preventing health issues?	+1	+1	+1	+1	+1	5	1.0	
25. How much do you believe that regular physical exercise can positively impact your energy levels?	+1	0	+1	+1	+1	4	0.8	The content of the questions should be improved
26. How likely is it, in your opinion, that participating in regular physical exercise can improve	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
your academic performance?								
27. To what extent do you think regular physical exercise can enhance your social life and relationships?	+1	+1	+1	+1	+1	5	1.0	
28. How confident are you that engaging in regular physical exercise can contribute to your long-term health and well-being?	+1	+1	+1	+1	+1	5	1.0	
29. How much do you believe that participating in a structured exercise program can positively impact your self-esteem and body image?	+1	+1	+1	+1	+1	5	1.0	
30. How likely do you think it is that engaging in regular physical exercise can enhance your overall quality of life?	+1	+1	+1	+1	+1	5	1.0	
Section 4: Perceived Barriers								
31. What are the main reasons that prevent you from engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
32. How confident are you in your ability to overcome the barriers that prevent you from	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
participating in regular physical exercise?								
33. To what extent do you believe that your daily schedule and commitments hinder your ability to engage in physical exercise regularly?	+1	+1	+1	+1	+1	5	1.0	
34. How much do concerns about your physical appearance or body image act as barriers to your participation in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
35. In your opinion, how challenging is it to access facilities or spaces for physical exercise in your community?	+1	+1	+1	+1	+1	5	1.0	
36. How much do peer influences, such as friends not participating in physical exercise, act as barriers for you?	+1	+1	+1	+1	+1	5	1.0	
37. How likely are academic commitments (e.g., homework, exams) to prevent you from engaging in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
38. How much do concerns about judgment or criticism	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
from others act as barriers to your participation in physical exercise?								
39. To what extent do financial constraints or lack of resources hinder your ability to engage in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
40. How confident are you in your ability to find creative solutions to overcome the barriers that prevent you from participating in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
Section 5: Perceived Self-efficacy		+1						
41. How confident are you that you can incorporate regular physical exercise into your daily routine?	+1	0	+1	+1	+1	4	0.8	Should adjust the content of the questions
42. To what extent do you believe that you can overcome obstacles and challenges to engage in physical exercise regularly?	+1	+1	+1	+1	+1	5	1.0	
43. How confident are you that you can find time for physical exercise, even with a busy schedule?	+1	+1	+1	+1	+1	5	1.0	
44. In your opinion, how capable are you of	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
setting and achieving realistic physical exercise goals for yourself?								
45. How confident are you in your ability to resist peer pressure or external influences that may discourage you from engaging in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
46. How well do you believe you can overcome feelings of fatigue or tiredness to engage in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
47. How confident are you in your ability to perform various types of physical exercises correctly?	+1	+1	+1	+1	+1	5	1.0	
48. To what extent do you believe that you can find enjoyable and satisfying ways to engage in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
49. How confident are you in your ability to maintain a regular physical exercise routine over an extended period?	+1	+1	+1	+1	+1	5	1.0	
50. How capable do you feel in overcoming any personal barriers that may arise and hinder your	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
participation in physical exercise?								
Section 6: Individual Behaviors								
51. On average, how many days per week do you engage in moderate to vigorous physical exercise for at least 30 minutes?	+1	+1	+1	+1	+1	5	1.0	
52. How would you rate your current level of physical activity compared to your peers?	+1	0	+1	+1	+1	4	0.8	Should adjust the content of the questions
53. What types of physical activities do you enjoy or find interesting?	+1	+1	+1	+1	+1	5	1.0	
54. How do you typically perceive the benefits of physical exercise in your life?	+1	+1	+1	+1	+1	5	1.0	
55. What time of day do you find most suitable for engaging in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
56. How do you usually overcome challenges or obstacles to engage in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
57. How do you stay motivated to maintain a regular physical exercise routine?	+1	+1	+1	+1	+1	5	1.0	
58. How knowledgeable do you feel about the recommended	+1	+1	+1	+1	+1	5	1.0	

Question	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
guidelines for physical exercise for adolescents?								
59. To what extent do you believe that engaging in regular physical exercise is a personal responsibility for maintaining good health?	+1	0	+1	+1	+1	4	0.8	
60. How likely are you to continue engaging in regular physical exercise after the completion of a structured exercise program?	+1	+1	+1	+1	+1	5	1.0	

Phase 2: Extensive Investigation

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Section 1: Perceived Risk								
1. How often do you think about the potential health risks associated with not engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
2. In the past month, how frequently have you considered the health risks of not participating in	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
physical exercise?								
3. On a weekly basis, how frequently do you reflect on the potential consequences of a sedentary lifestyle on your health?	+1	+1	+1	+1	+1	5	1.0	
4. How regularly do you discuss the health risks associated with insufficient physical activity with friends or family?	+1	+1	+1	+1	+1	5	1.0	
5. In the past six months, how often have you actively sought information about the health risks linked to a lack of regular exercise?	+1	+1	+1	+1	+1	5	1.0	
Section 2: Perceived Severity								
6. How often do you think about the severity of potential health issues that could arise from not engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
7. In the past month, how frequently have you considered the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
seriousness of health problems associated with a lack of physical activity?								
8. On a weekly basis, how frequently do you reflect on the possible severe consequences of a sedentary lifestyle on your health?	+1	+1	+1	+1	+1	5	1.0	
9. How regularly do you discuss the severity of health risks associated with insufficient physical activity with friends or family?	+1	+1	+1	+1	+1	5	1.0	
10. In the past six months, how often have you actively sought information about the severity of health risks linked to a lack of regular exercise?	+1	+1	+1	+1	+1	5	1.0	
Section 3: Perceived Benefit								
11. How often do you believe that engaging in regular physical exercise can enhance your overall health and well-being?	+1	+1	+1	+1	+1	5	1.0	
12. In the past month,	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
how frequently have you considered the potential benefits of participating in a consistent exercise program for your health?								
13. On a weekly basis, how frequently do you reflect on the positive changes in your physical health that could result from regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
14. How regularly do you discuss the benefits of physical activity with friends or family?	+1	+1	+1	+1	+1	5	1.0	
15. In the past six months, how often have you actively sought information about the benefits associated with regular exercise for your overall well-being?	+1	+1	+1	+1	+1	5	1.0	
Section 4: Perceived Barriers								
16. How often do you perceive time constraints as a barrier to engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
17. In the past month, how frequently have you faced a lack of motivation as a barrier to participating in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
18. On a weekly basis, how frequently do you encounter a lack of access to facilities as a barrier to engaging in physical activity?	+1	+1	+1	+1	+1	5	1.0	
19. How regularly do you perceive health issues as a barrier to engaging in regular physical exercise?	+1	+1	0	+1	+1	4	0.8	The content of the questions should be improved
20. In the past six months, how often have you experienced other specific barriers (please specify) to participating in regular exercise?	+1	+1	+1	+1	+1	5	1.0	
Section 5: Perceived Self-efficacy								
21. How often do you feel confident in your ability to adhere to a regular exercise routine?	+1	+1	+1	+1	+1	5	1.0	
22. In the past month, how frequently	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
have you believed in your capability to overcome obstacles and challenges related to physical exercise?								
23. On a weekly basis, how frequently do you feel assured in your skills and capabilities to engage in physical activity, even when faced with difficulties?	+1	+1	+1	+1	+1	5	1.0	
24. How regularly do you discuss your confidence in maintaining a regular exercise routine with friends or family?	+1	+1	+1	+1	+1	5	1.0	
25. In the past six months, how often have you actively sought information or support to enhance your confidence in maintaining a consistent exercise program?	+1	+1	+1	+1	+1	5	1.0	
Section 6: Individual Behaviors								
26. Can you share your perceptions and beliefs about	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
engaging in regular physical exercise?								
27. How do you perceive the importance of physical exercise for your overall health and well-being?	+1	+1	+1	+1	+1	5	1.0	
28. In your opinion, what risks or health issues do you associate with not participating in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
29. How severe do you believe the consequences of a sedentary lifestyle are for adolescents like yourself?	+1	+1	+1	+1	+1	5	1.0	
30. What benefits do you think are associated with engaging in regular physical exercise, especially for adolescents?	+1	+1	+1	+1	+1	5	1.0	
31. Can you describe any positive changes you have experienced as a result of participating in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
32. What obstacles or challenges do you	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
face in incorporating regular physical exercise into your routine?								
33. How do you typically overcome or address barriers that may hinder your engagement in physical exercise?	+1	+1	+1	+1	+1	5	1.0	
34. How confident do you feel in your ability to initiate and maintain a regular physical exercise routine?	+1	+1	+1	+1	+1	5	1.0	
35. Can you provide examples of situations where you have demonstrated self-efficacy in relation to physical exercise?	+1	+1	+1	+1	+1	5	1.0	
36. What motivates you to engage in physical exercise? Are there specific goals you set for yourself?	+1	+1	+1	+1	+1	5	1.0	
37. How do you stay motivated over time, especially when faced with competing priorities?	+1	+1	+1	+1	+1	5	1.0	
38. If you have	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
participated in a structured exercise program, how do you think it has influenced your attitudes and behaviors toward physical exercise?								
39. In your opinion, what role does a structured exercise program play in shaping the exercise behaviors of adolescents?	+1	+1	+1	+1	+1	5	1.0	
40. How familiar are you with the recommended guidelines for physical exercise among adolescents?	+1	+1	+1	+1	+1	5	1.0	
41. Do you think there is a need for more education or information about the benefits of physical exercise for adolescents?	+1	+1	+1	+1	+1	5	1.0	
42. How do your friends or peers influence your decisions regarding physical exercise?	+1	+1	+1	+1	+1	5	1.0	
43. In your social circle, how common is it for adolescents to	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
engage in regular physical exercise?								
44. Looking ahead, how likely do you envision yourself continuing to engage in regular physical exercise in the long term?	+1	+1	+1	+1	+1	5	1.0	
45. What factors do you think contribute to the sustained commitment of adolescents to physical exercise?	+1	+1	+1	+1	+1	5	1.0	

Phase 3: Experimental Research

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Section 1: Perceived Risk								
1. How has your perception of the risk of not engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	+1	+1	+1	+1	+1	5	1.0	
2. To what extent do you believe that participating in	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
the 12-weeks plan based on the Health Belief Model applications program has reduced your risk of facing negative health consequences in the future due to a lack of physical exercise?								
3. How confident are you now in your ability to assess the potential risks associated with not participating in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
4. In your opinion, what specific aspects of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the risks associated with a sedentary lifestyle?	+1	+1	+1	+1	+1	5	1.0	
5. How likely are you to share	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
information about the health risks of a sedentary lifestyle with your friends or family after completing the 12-weeks plan based on the Health Belief Model applications program?								
6. To what extent do you think the program materials and educational sessions effectively communicated the risks associated with not engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
7. Have there been any specific moments during the 12-week program that significantly influenced your perception of the risks associated with a lack of physical exercise?	+1	+1	+1	+1	+1	5	1.0	
8. How would you rate the role of peer support and group activities in	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
shaping your understanding of the risks of a sedentary lifestyle during the program?								
9. How has your perception of the seriousness of the consequences of not participating in regular physical exercise changed after completing the program?	+1	+1	+1	+1	+1	5	1.0	
10. In your own words, can you describe any new insights or realizations you gained about the risks associated with a lack of physical exercise as a result of participating in the 12-week program?	+1	+1	+1	+1	+1	5	1.0	
Section 2: Perceived Severity								
11. How has your perception of the severity of the consequences of not participating in regular physical exercise	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
changed since participating in the 12-weeks plan based on the Health Belief Model applications program?								
12. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has influenced your awareness of the potential serious consequences of a sedentary lifestyle?	+1	+1	+1	+1	+1	5	1.0	
13. How confident are you now in your ability to identify and understand the potential severe consequences of not engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
14. In your opinion, what specific elements of the 12-weeks plan based on the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Health Belief Model applications program contributed to altering your perception of the severity of the consequences associated with a lack of physical exercise?								
15. How likely are you to share information about the serious consequences of a sedentary lifestyle with your friends or family after completing the 12-week program?	+1	+1	+1	+1	+1	5	1.0	
16. To what extent do you think the program materials and educational sessions effectively communicated the severity of the consequences associated with not engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
17. Have there been any specific	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
moments during the 12-week program that significantly influenced your perception of the severity of the consequences associated with a lack of physical exercise?								
18. How would you rate the role of peer support and group activities in shaping your understanding of the severity of the consequences of a sedentary lifestyle during the program?	+1	+1	+1	+1	+1	5	1.0	
19. How has your perception of the seriousness of the consequences of not participating in regular physical exercise changed after completing the program?	+1	+1	+1	+1	+1	5	1.0	
20. In your own words, can you describe any new insights or realizations you gained about the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
severity of the consequences associated with a lack of physical exercise as a result of participating in the 12-week program?								
Section 3: Perceived Benefit								
21. How has your perception of the benefits of engaging in regular physical exercise changed since participating in the 12-weeks plan based on the Health Belief Model applications program?	+1	+1	+1	+1	+1	5	1.0	
22. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has positively influenced your understanding of the potential benefits of regular	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
physical exercise?								
23. How confident are you now in your ability to identify and articulate the benefits of regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
24. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the benefits associated with engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
25. How likely are you to share information about the benefits of regular physical exercise with your friends or family after completing the 12-week program?	+1	+1	+1	+1	+1	5	1.0	
26. To what extent do you think the program materials	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
and educational sessions effectively communicated the benefits associated with engaging in regular physical exercise?								
27. Have there been any specific moments during the 12-week program that significantly influenced your perception of the benefits associated with engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
28. How would you rate the role of peer support and group activities in shaping your understanding of the benefits of engaging in regular physical exercise during the program?	+1	+1	+1	+1	+1	5	1.0	
29. How has your perception of the benefits of engaging in regular physical	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
exercise changed after completing the program?								
30. In your own words, can you describe any new insights or realizations you gained about the benefits of engaging in regular physical exercise as a result of participating in the 12-week program?	+1	+1	+1	+1	+1	5	1.0	
Section 4: Perceived Barriers								
31. How has your perception of the barriers or obstacles to engaging in regular physical exercise changed since participating in the the 12-weeks plan based on the Health Belief Model applications program?	+1	+1	+1	+1	+1	5	1.0	
32. To what extent do you believe that participating in the 12-weeks plan based on the	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Health Belief Model applications program has helped you overcome or address the barriers that previously hindered your engagement in physical exercise?								
33. How confident are you now in your ability to identify and overcome barriers to engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
34. In your opinion, what specific elements of the the 12-weeks plan based on the Health Belief Model applications program contributed to altering your perception of the barriers associated with engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
35. How likely are you to share	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
information about overcoming barriers to physical exercise with your friends or family after completing the 12-week program?								
36. To what extent do you think the program materials and educational sessions effectively addressed and provided strategies for overcoming barriers to engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
37. Have there been any specific moments during the 12-week program that significantly influenced your perception of the barriers associated with engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
38. How would you rate the role of peer support and	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
group activities in helping you overcome barriers to engaging in regular physical exercise during the program?								
39. How has your perception of the barriers to engaging in regular physical exercise changed after completing the program?	+1	+1	+1	+1	+1	5	1.0	
40. In your own words, can you describe any new insights or strategies you gained about overcoming barriers to engaging in regular physical exercise as a result of participating in the 12-week program?	+1	+1	+1	+1	+1	5	1.0	
Section 5: Perceived Self-efficacy								
41. How has your confidence in your ability to engage in regular physical exercise changed since	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
participating in the 12-weeks plan based on the Health Belief Model applications program?								
42. To what extent do you believe that participating in the 12-weeks plan based on the Health Belief Model applications program has improved your overall confidence in maintaining a regular physical exercise routine?	+1	+1	+1	+1	+1	5	1.0	
43. How confident are you now in your ability to overcome challenges or setbacks related to engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
44. In your opinion, what specific elements of the 12-weeks plan based on the Health Belief Model applications	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
program contributed to boosting your confidence and self-efficacy in maintaining a regular physical exercise routine?								
45. How likely are you to share information about building and maintaining self-efficacy for physical exercise with your friends or family after completing the 12-week program?	+1	+1	+1	+1	+1	5	1.0	
46. To what extent do you think the program materials and educational sessions effectively supported the development of self-efficacy for engaging in regular physical exercise?	+1	+1	+1	+1	+1	5	1.0	
47. Have there been any specific moments during the 12-week program that significantly	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
influenced your confidence and self-efficacy in maintaining a regular physical exercise routine?								
48. How would you rate the role of peer support and group activities in building your confidence and self-efficacy for engaging in regular physical exercise during the program?	+1	+1	+1	+1	+1	5	1.0	
49. How has your confidence in your ability to maintain a regular physical exercise routine changed after completing the program?	+1	+1	+1	+1	+1	5	1.0	
50. In your own words, can you describe any new insights or strategies you gained about building and maintaining self-efficacy for engaging in regular physical exercise as a result of	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
participating in the 12-week program?								
Section 6: Action Plan Evaluation								
51. The educational sessions effectively communicated the principles of the Health Belief Model.	+1	+1	+1	+1	+1	5	1.0	
52. The practical exercise sessions were relevant and practical in applying the Health Belief Model concepts.	+1	+1	+1	+1	+1	5	1.0	
53. The program materials were clear and easy to understand.	+1	+1	+1	+1	+1	5	1.0	
54. Peer support and group activities enhanced my engagement in the program.	+1	+1	+1	+1	+1	5	1.0	
55. The program content was consistent with the principles of the Health Belief Model.	+1	+1	+1	+1	+1	5	1.0	
56. The program effectively conveyed the risks associated	+1	+1	+1	+1	+1	5	1.0	

Questions	Response					Total Score	IOC	Comment
	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
with a lack of physical exercise.								
57. The program successfully conveyed the severity of consequences related to a sedentary lifestyle.	+1	+1	+1	+1	+1	5	1.0	
58. The program effectively communicated the benefits of engaging in regular physical exercise.	+1	+1	+1	+1	+1	5	1.0	
59. The program effectively addressed and provided strategies to overcome barriers to physical exercise.	0	+1	+1	+1	+1	5	1.0	
60. The program enhanced my confidence and self-efficacy in maintaining a regular exercise routine.	+1	+1	+1	+1	+1	5	1.0	

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APPENDIX D
HEALTH CARE HANDBOOK

HEALTH CARE HANDBOOK FOR CHINESE ADOLESCENTS IN GUANGDONG PROVINCE

Introduction

Welcome to the Health Care Handbook!

One reason why 10-to 19-year-olds are getting less active these days is that they spend too much time on electronic media such as mobile phones, tablets, computers and TV. Sitting for long periods of time leads to a lack of exercise and physical activity, and poor eating habits, such as snacking and sugary drinks, lead to poor mental and physical health and may slow all aspects of development. This handbook is designed to help you understand the importance of physical exercise and how it can improve your health and well-being. By following the guidelines and tips in this handbook, you can develop a healthy and active lifestyle that will benefit you now and in the future.

1. The Importance of Physical Exercise

Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health and wellness. It is performed for various reasons, including strengthening muscles and the cardiovascular system, honing athletic skills, weight loss or maintenance, and for enjoyment. Frequent and regular physical exercise boosts the immune system and helps prevent diseases such as heart disease, cardiovascular disease, Type **2** diabetes, and obesity.

"Adolescence" is a period of great change in all aspects of life, including physical, emotional and behavioural changes. Teenagers at this stage dislike stillness, are curious and eager to learn new things. Today, the development of new technology has a negative impact on children's healthy behaviors, such as excessive addiction to TV, games and computers, and unhealthy eating habits, such as a preference for snacks, but lack of exercise and proper exercise. These factors lead to uneven growth of children, which affects their physical and mental health, can not be healthy growth. Women tend to have a more pronounced physique, while men tend to have stronger muscles. Therefore, young people should promote their health and physical development through appropriate exercise. Here are some possible ways to do exercise:

- Exercise at least 60 minutes a day, 3-5 days a week, on a regular basis.
- Choose activities that improve your respiratory system and blood circulation, such as swimming, running, brisk walking, and cycling

- Choose activities to exercise various parts of your body, such as running, dancing, and sports like basketball or football.
- Choose sports or fitness activities that make you feel good, and establish the habit of loving your health, staying active, and playing sports.

Keeping healthy requires us to take care of ourselves. Apart from diet, fresh air and mental relaxation, exercise is essential to health, but we often make excuses, such as not having time or place. In fact, it only takes 30 minutes a day to have a positive impact on the heart and lungs, and it doesn't require a lot of space or expensive equipment, just walking. The best way is to walk fast or jog. If the village environment is inconvenient or unsafe, you can choose to ride a stationary bicycle or walk on a treadmill, while listening to the news or watching television. We must make sports a part of our daily life.

Improves Physical Health

Regular exercise strengthens the heart and improves circulation, reducing the risk of heart disease. Cardiovascular disease, including heart disease and stroke, is the leading cause of death. Moderate-intensity exercise for at least **150** minutes a week can help reduce the risk of these diseases. In addition, regular exercise can lower blood pressure, raise good CHOLESTEROL levels, and lower blood CHOLESTEROL and TRIGLYCERIDE levels, this in turn reduces the risk of cardiovascular disease, stroke, paralysis and hemiplegia.

Engaging in weight-bearing exercises helps build strong bones and muscles, reducing the risk of osteoporosis. To strengthen the bones, joints and muscles of the elderly, the protection of bones, joints and muscles is essential. Exercise helps maintain bones, joints, and muscles, and helps build muscle mass, which is important for teens ages 10 to 19 because it helps increase the efficiency of daily activities, and reduce the risk of injuries from falls, such as hip fractures. People who don't exercise are more likely to have a hip fracture than those who do, the study found.

Physical activity enhances the immune system, making you less prone to illnesses. To help prevent allergies and strengthen the immune system, moderate intensity exercise can not only effectively improve the body's metabolic rate, but also can strengthen the body's immune system, this means your body is better able to fight off the pathogens that cause colds and other illnesses.

Supports Mental Well-Being

Exercise reduces levels of the body's stress hormones, such as adrenaline and cortisol. In addition, it can help reduce the risk of dementia. Because exercise can promote nerve cells to connect with each other, and improve the production of hormones to help relax stress. In addition, it can reduce the risk of depression, anxiety disorders, and help improve sleep, make the body feel refreshed, reduce stress. Because the brain releases endorphins during exercise, the hormone is similar to morphine, which makes people feel happy.

Physical activity stimulates the production of endorphins, chemicals in the brain that act as natural painkillers and mood elevators. When you exercise, your body releases Endorphins, a natural painkiller that is good for you. It also makes your

muscles and tendons stronger. In addition, continued activity can help relieve some chronic conditions, such as Arthritis

Regular exercise has been shown to improve memory, concentration, and overall brain function. Helps improve brain function, which occurs after moderate to high-intensity exercise, improves thinking or cognitive ability at ages **10** to **19**, reduces anxiety, and helps improve thinking, learning, and decision-making.

Promotes Overall Well-Being

Regular physical activity can improve your muscle strength and boost your endurance, giving you more energy. In addition, it helps build muscle strength and improves endurance. Exercise delivers oxygen and nutrients to tissues and helps improve the efficiency of the cardiovascular system. When your heart and lungs function well, you feel more energized and better able to cope with daily tasks.

Exercise can help you fall asleep faster and deepen your sleep. Helps you sleep better and helps you sleep better. In addition, regular exercise boosts the brain's production of fatigue-relieving chemicals like noradrenaline and dopamine, which make you feel more alive, and serotonin, which makes you feel better.

Participating in group exercises can help you meet new people and make friends, improving your social well-being. This can make you feel happy, increase opportunities for relaxation, enjoy outdoor activities or other activities, and allow you to spend time with family or friends. So whether it's taking a dance class, hiking, or joining a soccer team, choose activities that you enjoy doing regularly, or choose activities with friends to promote children's sports. Parents should take care of and support children by reducing screen time and long hours of sleep. In addition, sports-promoting activities such as playing music, dancing and other activities for children to enjoy and exercise should be created. Parents play an important role in promoting and supporting children's sports activities by choosing appropriate activities, developing skills and allowing children to enjoy them, to ensure that the children can continue to participate actively in these activities. By setting appropriate and safe exercise guidelines for children, parents can help their children develop healthy bodies and prepare them for future skills. Therefore, attention to children's sports at school age will have a lasting positive impact on their physical and psychological development, enabling them to fully enjoy a healthy and efficient life in their daily lives. Finally, encouraging children to exercise is not only good for their physical and mental health, but also an important factor in helping children develop the skills they need in their future lives, examples include emotional control, cooperative learning with others, and social communication.

2. Strategies to Overcome Perceived Barriers to Physical Activity

Many people face challenges when trying to incorporate regular physical activity into their lives. These barriers can be physical, psychological, or environmental. Understanding and addressing these barriers can help you develop a more consistent exercise routine.

Common Barriers and How to Overcome Them

Lack of Time

Plan your day to include short, frequent exercise sessions. For example, a **10**-minute walk three times a day is easier to fit into a busy schedule. It is not recommended to exercise immediately after waking up. It is recommended that you do not start exercising until at least one hour after waking up. It is also not recommended to exercise before bedtime. You should stop exercising three hours before bedtime. When you find the right time to exercise, write it on your calendar and do it as planned.

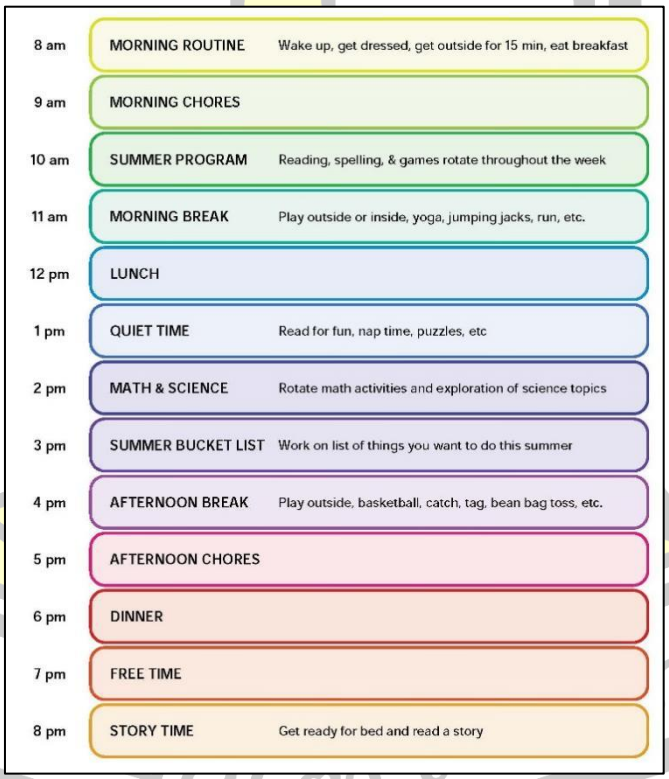

Figure 2 Exercise schedule for children
Source: scholarwithin**,2024**

Adolescence is a time where we begin to explore and assert our independence. Teenagers do not need as rigorous of a schedule as young children do, but they still benefit from routine and structure. Walk or bike to school, take the stairs instead of

the elevator, or do household chores with added intensity. Integrate short exercise breaks into your study schedule to improve concentration and reduce stress.

- Before going to school, encourage physical activity on the way to and from school. You can turn activities in your daily life into exercise, such as getting up, standing, walking, doing housework or other activities that require physical activity, such as walking, running, riding a bike to school.
- Encourage and support at least **10** minutes of physical activity before class, and arrange some gymnastics and exercise to increase physical activity before entering the classroom, for example, the movement of stretching neck muscles, stretching arm muscles, stretching shoulder muscles, stretching thigh muscles and so on.
- Break time. Sitting and reading for a long time between classes can cause muscle soreness. It is recommended to do physical activities for about 5-10 minutes, such as getting up, walking, changing posture, moving various parts of the body and stretching muscles to relieve fatigue.
- Take a lunch break. After lunch, it is recommended that you take about **20** minutes to relax and do some physical activities that interest you.

Planning activities for the weekend helps to improve the quality of life and is a cornerstone of happiness, not only for the sake of being together, but also more importantly, to participate in family activities and spend time together. This not only helps to improve family relations, but also lays the foundation for all aspects of children's development. The proposed schedule is as follows:

9:00 - 10:00 am

• Wake Up, Get Ready, Eat breakfast

10:00 - 12:00 pm

• Homework

- Create workspace. Have your teen pick a spot where they can work uninterrupted. Have them organize and/or decorate it in a way that they feel will help them be productive and motivated. (Ex. Use a special notebook or colored pens that make note-taking and writing more fun.)

12:00 - 1:00 pm

• Lunch and Clean Up

- Have your teen make a meal for the family
- Wash hands before and after eating
- Bring dishes to sink, load dishes into dishwasher or help dry dishes

1:00 - 2:30 pm

• Quiet Time - Read

- Do a puzzle
- Journal
- Listen to music/podcast/audiobook

-Meditate or do mindfulness exercises

- Color/draw/paint
- Take a nap

2:30 - 4:30 pm

• Get Active

- If it's nice outside, go for a run/walk, ride a bike, set up an obstacle course
- If your teen is involved in sports, have them practice what they can at home (Ex. If your child plays basketball, have them practice dribbling and ball-handling skills. If your teen plays baseball/softball, have them practice their swing, strengthen their arm through catch, roll ground balls/throw pop-flys in yard)
- On a rainy day, pull up home workout videos on YouTube (e.g., yoga, interval training, dance videos, etc.)

4:30 - 6:30 pm

• Electronic Time

- Play on iPad/tablet/computer/phone
- Use social media
- Watch TV/movie

6:30 - 7:30 pm

• Dinner and Clean Up

- Wash hands before and after eating
- Bring dishes to sink, load dishes into dishwasher or help dry dishes
- Allow your teen to help with meal prep a few times a week. If they have an interest in cooking, allow them to prepare a meal for the family.

7:30 - 9:00 pm

• Wind-Down Time

- Take a shower/bath (use bath bombs, listen to music)
- At-home spa treatments like face masks, paint nails, etc.
- Put on pajamas, brush teeth, wash face

9:00 - 10:00 pm

• Bedtime Routines

- Read - Light candles
- Listen to music
- Journal
- Meditate or do mindfulness exercises

• Sleep

Limited Access to Facilities

Use online resources for home workouts that require little to no equipment. During the covid-19 epidemic, many areas were under lockdown and most people worked from home due to restricted outdoor activities. In addition to daily life such as eating, working and studying, home-based exercise has also become a new trend, and

“云健身” the term “Cloud Fitness” has become a hot word in China for more than two months. Many Chinese people follow fitness bloggers and learn their moves.

One of the most popular fitness bloggers in China is called 刘畊 He is himself a Taiwanese actor, singer and composer who has moved to Shanghai. He also likes to exercise regularly, which allows him to develop another specialty. In 2022, he transformed himself into an online fitness instructor, live-streaming home dance workouts. Every time, his family will participate, for example, his wife often join the live broadcast exercise together. Thanks to the relaxed and pleasant fitness atmosphere at home, easy access to the audience and the general public, easy to learn fitness movements, dynamic music and his professional knowledge of fitness, he quickly became popular. He now has more than 62 million account trackers in the Chinese version of Douyin. Millions of viewers watched every live broadcast. During the covid-19 pandemic of the past three years, many gyms were forced to switch on and off, in line with government closures imposed at different times. Many people are afraid to go to the gym for fear of infection because they have to take off their masks and exercise with strangers in enclosed spaces. Therefore, home fitness is currently one of the best options. China’s anti-epidemic measures have forced the closure of 30% to 50% of the country’s gyms by 2020(some may be temporary, some may be permanent). In fact, cloud fitness has been growing rapidly since 2020. At the time, the International Olympic Committee hosted online sports events that attracted 5,000 Olympians and invited 243 million people from more than 50 countries to participate in online fitness activities. According to the data, the number of sports and fitness-related videos on short video platforms increased by 134% in 2021 compared to the previous year, the average number of fans of fitness bloggers increased by 208% compared to the previous year, and live streaming revenues increased by 141% compared to the previous year. Long-term home, reduced exercise, leading to the weight gain of most people, looking for at home exercise is not boring method, seems to be the best choice for Chinese people. Some Chinese fitness coaches, affected by the closure of gyms, have turned into fitness bloggers, teaching online. Some of the best-educated and most attractive fitness bloggers have seen their fan base grow by 30 million in 10 days, a number that is almost comparable to Chinese celebrities.

From this trend can be seen that the Chinese people pay more and more attention to health, but also more and more attention to sports. The membership fee of an offline gym was a limiting factor. A good gym had a good and clean environment. Moreover, they would hire a high-paid personal trainer. Not everyone could afford it. For example, the cost of hiring a personal trainer for a course can range from a few thousand to tens of thousands of dollars. Therefore, online fitness is a better choice, it can reach all groups, men and women of all ages, but also can become a new family activities. The sports lifestyle in China is changing, with more and more people exercising seriously at home and more fitness bloggers offering a variety of exercises for people to track. Exercise can not only enhance physical fitness, but also make

people feel relaxed and happy during the blockade. Many people with exercise self-discipline lose weight during isolation at home!

Figure 3 ‘Keep’ China’s hottest fitness app
Source: Keep official website**,2022**

There are many fitness blog tracking platforms or online fitness course platforms in China. The most popular platform is “Keep App”, which has been popular for some time, it is now the largest online fitness platform in China and the world. The platform offers free and paid fitness video lessons, sells a wide range of modern fitness equipment, offers weight loss advice and diet advice, and sells weight loss foods ‘App Keep’ The founder of this application is Mr. Whang Ning（王宁）Born in 1990, he hit 90kg in his senior year of college and began to set weight-loss goals in a scientific way, losing 25kg in just a few months. Wang Ning shared his weight loss tips on social media, attracting many netizens and asking him for advice. He started his own business, developing a fitness and weight-loss app with a personal trainer and creating the Keep app. Over the past three years, the Keep application has been a huge success, coinciding with the COVID-19 outbreak. In 2021, the Keep app had 34.4 million monthly active users, with 75% of those under 30 years of age on average, indicating that the app’s user base is indeed young. In addition, 52.2% of users live in first-and second-tier cities. There is still huge room for development of fitness industry in China, especially during and after the COVID-19 epidemic, people of all ages pay more attention to health and fitness. In 2021,300 million people will participate in regular fitness activities in China. It is estimated that 420 million people will participate in regular 2026 activities, and 45.5 percent of them will do so online. Chinese spending on fitness will also continue to rise. At present, the average annual fitness expenditure per person in first-tier cities is about 2,500 yuan, or about 12,500 baht. Of course, the outbreak and popularity of home fitness, but also brought the

fitness area between the internet celebrities and online competition. There are more advantages and conveniences to working out online, such as the Keep app, in which well-known coaches broadcast live at specific times and viewers or fans wait at home to work out together, which also brings fun and motivation. Some Chinese find it fun to follow their favorite coach's instructions without getting bored, and they are eager to pay attention to the coach every day and exercise on air. According to 2021 data from the General Administration of sport of China, 30 percent of people over the age of 20 who do not exercise say they have no time, and 10.8 percent say they have no place to go to the gym and can not afford a gym card. Therefore, online fitness can solve these sports barriers, because it is a home-based fitness method, free time, and save money. Therefore, the Chinese government will fully support online fitness in the near future.

Even if you can't go out for exercise, you can easily order fitness equipment on the Internet and deliver it to your door. Dumbbells, yoga mats, exercise balls, Cross Trainer and other cardio equipment have become popular items on websites. In addition to the attention paid to fitness equipment, apps such as Keep are also playing an important role for health-loving Chinese. The app provides exercise advice, monitors exercise habits and serves as a social platform for users to share knowledge with each other. In addition, it provides nutritional guidance and delivery of sports equipment to the government. These services make it easy for the Chinese to do all their sports at home and are popular with the Chinese.

Millennials are an important driver of China's fitness industry, used to tracking KOLs through apps like Weibo, have a steady income and are willing to pay for what they want, even if the price is high. Not only do they use fitness services, but they also like yoga, especially Chinese women, who are also keen on CrossFit. China's health market is booming, especially with modern health and fitness apps that are well-established in terms of services and equipment. If companies can capture Millennials' preferences, they will be able to compete in a healthy market for millennials. Tracking your progress after a workout is a great way to Living Up yourself. There are a lot of tools for tracking progress, simple ones like using a motion tracking App or a motion tracker, or keeping track of the number of miles and times per day, and keeping track of that data on a computer and making it into a chart or chart, present yourself in the most familiar way.

Take advantage of local parks, community centers, and recreational areas. Choose a well-ventilated place that is not too hot and has sufficient space and distance for exercise, such as a sports ground, a community health centre, a park or other suitable location. For group sports, keep a proper distance. If you feel unwell or have any discomfort during the exercise, you should self-assess whether you should stop or whether it is safe to continue the exercise, and you should lower the intensity of the exercise to ensure safety. In addition, the surrounding personnel should be informed about the physical abnormalities in order to obtain timely assistance.

Low Motivation

Set specific, achievable goals and track your progress. Small milestones can keep you motivated. Goals are important, as are setting goals that are challenging and achievable. Because if the goal is too far away, you may lose motivation. To be sure, achieving goals can be difficult, but it is a necessary motivator. It's a good idea to set goals to keep your body healthy. be clear about what you want to achieve and when you want to do it. For example, lose 3 kg in 2 months, lower cholesterol below 200 in 6 months, increase muscle mass by 3% in 2 months, etc. Or, reward yourself for achieving your goals. Rewards can be a great motivator, especially if they are related to your exercise activity, such as a new pair of running shoes, or buy new music to add to your workout playlist.

Choose physical activities that you enjoy, whether it's dancing, swimming, or playing a sport or find the right exercise

- Running. We can run anywhere. The basic requirement is that you have the right pair of running shoes to get started. This is different from other types of exercise, which usually require the purchase of a lot of equipment and the payment to use the gym, playground and other venues. In addition, it can help restore muscle, especially for those who have too much body fat and little muscle. Running helps burn fat and turn it into muscle, which helps us get in shape, stay in shape, look good in clothes, and feel more confident.

Figure 4 Walk-Run
Source: depositphotos,**2024**

- Cycling is a kind of aerobic exercise, suitable for all ages, men and women, can be many people riding together, you can also ride alone. The cost is not much, but it can be a lot, depending on the individual's financial ability. But pay attention to safety, because accidents can happen and cause injury. Cycling

strengthens the heart and muscles, helps build memory cells in the brain and prevents dementia. It also improves blood circulation and lowers blood pressure and body fat.

Figure 5 Ride a bike
Source: depositphotos**,2024**

- Many people may think that indoor climbing is both scary and a sport designed for the strong, but it's not as scary as you might think because of the safety pads and the help of a coach. Beginners need not worry. Indoor climbing can vary from easy to moderate to difficult, and there are coaches who teach the basics of climbing and how to fall safely to avoid injury. Climbing requires flexibility, agility, and muscle strength to pull yourself to the end of the route, and involves your arms, legs, and even your back and shoulders. It's a great way to exercise your muscles and sweat. In addition, climbing can burn up to 900 kilocalories an hour.

Figure 6 Rock climbing
Source: depositphotos**,2024**

- Hiking is easy to get close to and doesn't cost a lot of money. Hikers of all ages can find challenging and suitable trails to explore. Getting out in the fresh air and feeling the warmth of the sun can help to banish the negative thoughts that swirl around in our minds, whether it's disappointment, guilt, shame, regret, insecurity, can be temporarily relieved when hiking.

Figure 7 Hiking activities
Source: istockphoto**,2024**

- Swimming is a low-impact exercise, less wear and tear on the body than other sports, and will not sweat like aerobic exercise, so the body sticky. Swimming uses all body muscles, from head to foot, limbs to toes. Moving your body in water reduces the impact force because the water supports your body and reduces the impact force on your joints. In addition to reducing impact, swimming has other benefits, such as increased heart rate, stress relief, cooling, and increased concentration.

Figure 8 Swimming
Source: istockphoto**,20**19

- Aerobic exercise is to move the body along with the rhythm of music, so that the muscles continue to work, help tighten the muscles, to avoid gravity or premature aging and loose. In addition to the above benefits, there are many other benefits, such as improving blood circulation, improving respiratory function, relieving stress and so on.

Figure 9 Aerobic exercise
Source: happymom**,20**19

Figure 10 Badminton
Source: cri online**,20**18

Figure 11 Yoga
Source: happymom**,20**19

- “Sports” is one of many activities that help children learn high-quality social skills, enjoy their childhood, understand themselves, understand others, and adapt well to society. Participating in sports with peers is another test for children to socialize. Children can practice social interaction, be close to new friends, and meet all kinds of people, build trust in terms of age, personality, preferences, and so on, and become their “Close friends” in the future. Team sports help children learn how to express new ideas, listen to teammates, and try to solve problems to achieve goals, such as systematically passing the ball around and positioning to gain a competitive advantage. Children can try out different roles through the roles they play in sports. Working out with friends

allows them to practice fitting in with their group and deepening their acceptance of each other.

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Figure 12 Football & Basketball
Source: soccerdigestweb,2022

Safety Concerns

Select well-lit, populated areas for outdoor activities and always inform someone of your whereabouts. In order to ensure safety, and let the people around the accident know the abnormal condition of the body, in order to get help in a timely manner.

Figure 13 The park
Source: istockphoto,2024

Use appropriate equipment and attire to prevent injuries. Appropriate clothing should be chosen according to the type of sports

Sportswear

Running is an exercise that heats the body and encourages sweat to drain from the skin. Because needs the long time movement, therefore should choose the good breathability running clothing, is not easy to absorb sweat. The material should be fast-drying because it will make our running more comfortable and we won't feel sweaty and heavy clothes because it will not only make us feel uncomfortable but also make us feel more tired than usual. If our running clothes dry quickly and don't absorb sweat easily, they will help control body temperature and prevent overheating. Suitable for running should be t-shirt and shorts, or pants running pants, according to personal preferences. If it is pants, choose tight, fit style will make you more confident.

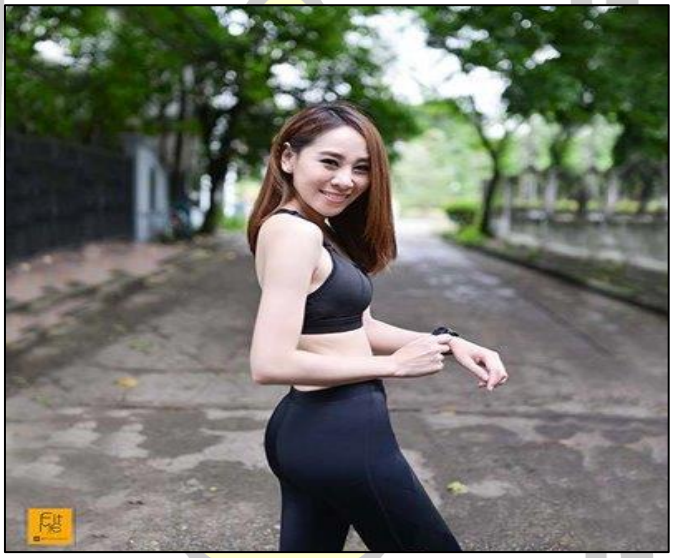

Figure 14 Running clothes
Source: lnwonline**,2020**

Yoga clothing yoga exercises usually need constant stretching, so choose yoga clothing should pay attention to high-elastic, tight, fit fabric, in order to facilitate the stretching of various postures, and fully stretch the muscles. In addition, we can also clearly see their actions in the mirror posture, to confirm whether the movement is correct. Fabric should choose a good style of sweat absorption, sportswear can choose vest, sleeveless shirt, halter top, sports shirt with bra, or wearing a sports bra alone. If not sure, you can choose a long sports bra to increase the flexibility of the movement. Trousers should be fitted, fitted and not baggy.

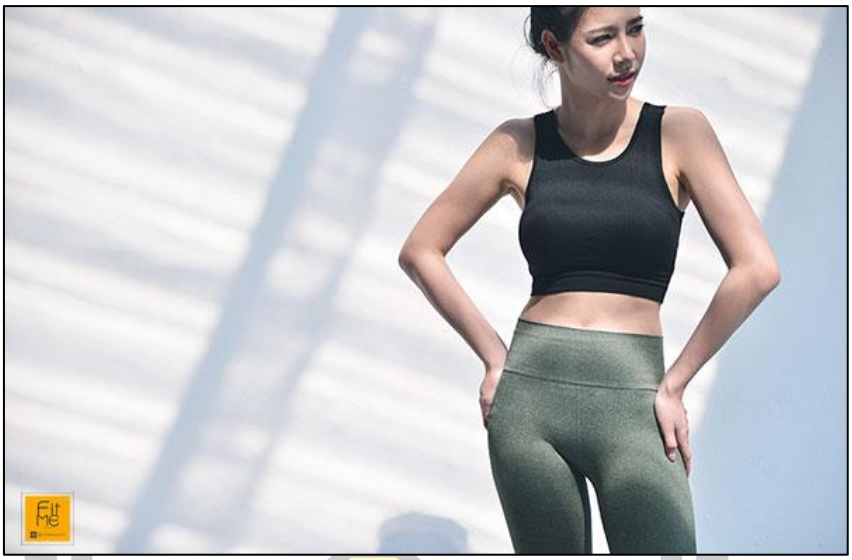

Figure 15 Yoga clothing
Source: mrgonline,2020

Bicycle sportswear generally using thin breathable, soft and comfortable, elastic, fast-drying, no sweat and odor material. Suitable for bicycle sportswear fabric is **100%** polyester or polyester blend. **100%** polyester is soft to the touch. The materials of polyester fibers may vary according to the weaving method, such as round, rice grain, eye shape, Dot, big dot, square, hexagon, etc., but it's actually all polyester. The style of cycling clothes depends on your lifestyle. Some people like sports-style cycling clothes, some people like bright colors, some people like plain colors, some people are brand-oriented considerations. Therefore, in addition to the style of the bicycle tracksuit, the following factors also need to be considered:

• Cycling Gear should have one or more back pockets for water bottles and other necessities. Generally, 1-3 pockets are appropriate.

• Reflective strips should be attached to the torso to provide a reflective effect and make riding in low light conditions safer.

Short-sleeved shirts are good for humid tropical climates, but when the sun is shining, putting on a sleeve can help.

Long-sleeved shirts are good for cold weather

• short-sleeved tops should have silicone or elastic on the cuffs to prevent the cuffs from slipping, but people with thick or muscular arms generally do not wear clothing with silicone or elastic.

The collar of the shirt should be made of silicone or elastic material to prevent the collar from falling off.

Figure 16 Bicycle sportswear
Source: mrgonline,2020

Swimsuit you must wear a bathing suit when you swim. Other clothing may cause the pH of the swimming pool imbalance, so that the water quality is not up to standard. In addition, bacteria on clothing can enter the swimming pool, causing the growth of bacteria. Because the clothes may be contaminated with dust and bacteria. In water, the skin becomes more sensitive and prone to irritation. Wearing the right bathing suit can protect the skin from direct contact with chlorine.

Figure 17 Swimsuit
Source: mrgonline,2020

Sportswear or sportswear must be suitable for the sport when performing sports, because wearing sportswear suitable for the sport can improve sports performance and be more flexible. Especially for sports that require continuous exercise, the reasons for the differences between sports apparel are related to the

design, rules, etiquette, weather conditions, flexibility, and most importantly, safety issues of sports apparel. It is important to wear sports clothes that suit the sport. Let's look at the difference between different sportswear.

3. Tips for Enhancing Perceived Self-Efficacy in Engaging in Regular Exercise

Self-efficacy refers to your belief in your ability to succeed in specific situations or accomplish a task. When it comes to physical activity, having high self-efficacy means believing you can successfully engage in and maintain regular exercise. This confidence can help you overcome challenges and persist in your fitness goals.

Building Confidence in Your Ability to Exercise

Set Realistic Goals

Begin with manageable goals like a **10**-minute walk daily, and gradually increase the duration and intensity.

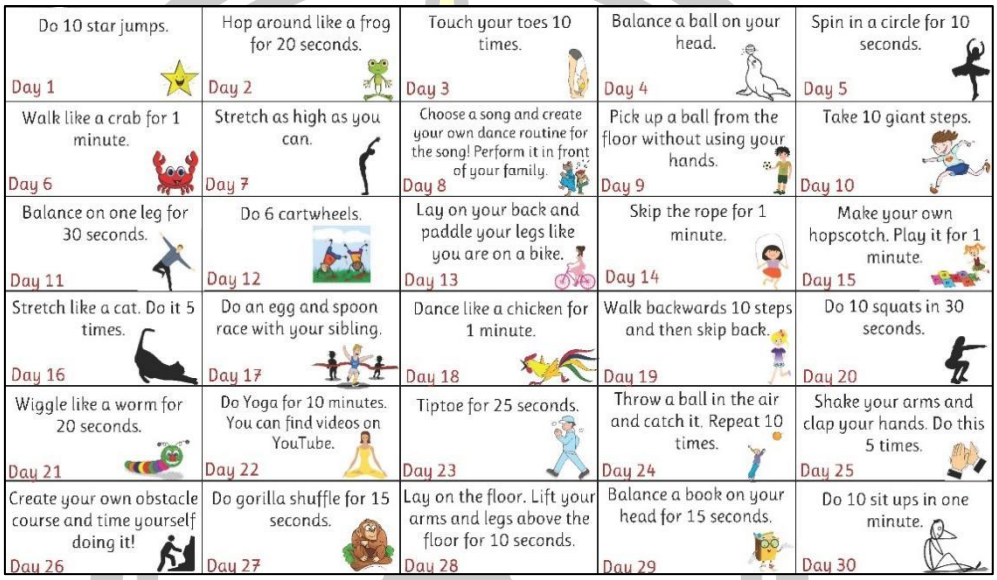

Figure 18 Exercise schedule for children
Source: themumeducates**,2021**

Track Your Progress

Keep a fitness journal to log your workouts, progress, and how you feel after exercising. Keeping fit and exercising can be difficult for many people, but keeping track can help you stick to the plan and keep seeing progress. The key is to keep track of what you do and how you feel. After 6 months, you will see how much progress you have made. Samantha Clayton, Vice President of Global Sports and fitness at Herbalife Nutrition, shares stories of overcoming obstacles to exercise and how keeping track of your workouts can help you get healthier and lead a healthier lifestyle. Exercise programs, like weight loss, can be repetitive. Many people begin their exercise programs with enthusiasm and then give up. Or they start exercising but end up disappointed with the results. If people are ruining their health, the advice and support is to exercise gradually and continuously. Try keeping track of your workouts for 12 weeks. This will help you stay disciplined, stay on schedule, stay motivated to exercise, and feel more pleasure. Keep a detailed record of your exercise. The coach will ask each athlete to keep a record of his or her training and conduct a monthly evaluation. Some coaches, like mine, check their athletes' exercise records on a regular basis, while others only ask to see them if something goes wrong, such as an injury or a drop in performance. There are four important reasons why athletes need to keep track of their workouts:

1.Help them take responsibility for their training programs

2.Help coaches and trainers prevent injuries

3. Track progress

4. Help athletes and coaches analyze which factors contribute to success and which contribute to failure.

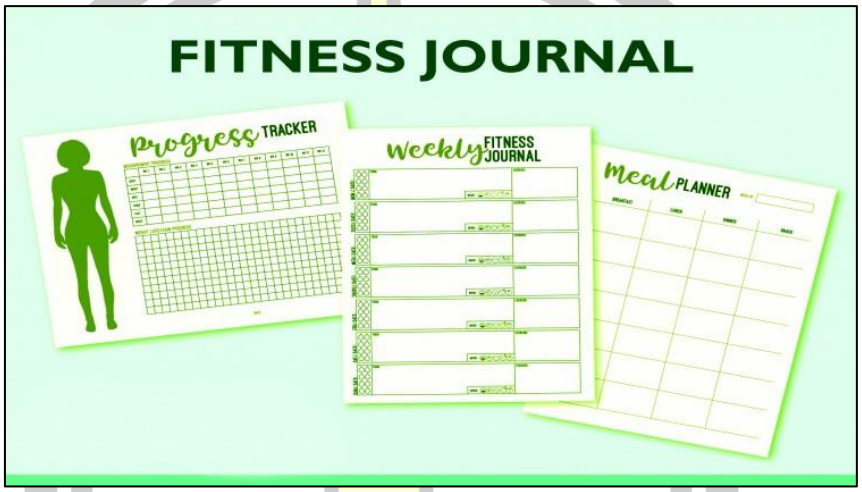

Figure 19 Fitness Log
Source: bangkokbiznews,2021

Keeping track of exercise is important not only for athletes, but also for those who exercise to achieve their health and nutrition goals. This article presents a simple and easy way to keep a daily exercise log that works for all levels of fitness. Keeping track of exercise and activities helps achieve goals, including improving fitness, keeping fit, losing weight, and prioritizing exercise. Here are the main reasons to document how exercise improves your exercise program:

1. Keeping track of your workouts can help you be honest with yourself and understand why you are achieving or not achieving your goals, so that you can continue to exercise at whatever level you are.

2. Keeping track of your workouts will help you keep improving. If an injury occurs during your exercise program, the exercise log will help you more easily review your exercise steps and return to your exercise program.

How to start recording exercise

1. Use any tool that can record dates and times on a regular basis, such as a journal application, journal, calendar, or even a download template.

2. Feel. Do this at the end of each day, whether you are happy, sad, or normal (emoji) . If you want to elaborate, you can add extra text or important events.

3. Activity, time, duration, type and intensity of exercise

Four. Physical assessment, do you feel excessive pain or fatigue? Are some exercises making you uncomfortable? Or does some exercise make you happy?

5. Nutrition, diet is comprehensive? On a scale of 1 to 10,1 means very bad, 10 means you've achieved your goal.

Keep track of what to look out for after a workout? After at least six weeks, you'll feel like a detective, enjoying exploring, reflecting, and evaluating your behavior patterns. With an exercise record, you can more easily spot problems or successes right away. Next, I'll share some of the common exercise disorders and patterns that people have found in their records.

- The fitness model allows you to think about the day when you are most successful in your activities. Many people find it important to work out on Monday. If you look at your daily fitness record, you'll find that the week that starts with working out on Monday usually includes more exercise. Therefore, you should always make time to exercise on Mondays.
- If you've noticed a drop in activity over the past week, it's important to figure out why. Is it injury, fatigue, or just not enough time? By keeping track of your workouts, you can help develop an exercise plan to maintain your level of activity at all times.
- Life is full of distractions and messes, but be aware that family or friends can sometimes disrupt your exercise routine. In this case, you should seek their support, or invite them to exercise with you.
- The emotional impact of exercise, some people will find that certain types of exercise will make them feel happier. So, choose the sports you like and make your life better. If you're feeling low on motivation, try moving from the gym to an outdoor or home workout. Finding what works best for You is the key to long-term success.
- Keeping track of your workouts can help you track your goals. When starting self-discipline and exercising regularly, you can ensure that past activities that led to weight gain are a thing of the past. Keeping track of your workouts can help you find exercises that suit your personality and schedule for greater success.

4. Information on Local Resources and Opportunities for Physical Activity in Guangdong Province

Guangdong Province offers numerous opportunities for physical activity, from urban parks to community sports centers. Leveraging these resources can make it easier to incorporate exercise into your daily routine.

With the continuous improvement of China's economy and living standards, China's society has also undergone profound changes. The days when food and clothing were the mainstay of life have been replaced by a focus on health. More and more Chinese people are beginning to love sports, especially in big cities such as Shanghai, Beijing and Guangzhou. In addition, the growing number of sports enthusiasts and the trend of consumption upgrading, but also for Thailand's health and sports industry in China provides a good opportunity for development.

According to State General Administration of Sports statistics, the number of Chinese participating in sports and fitness activities reached 421 million in 2018, a figure that continues to grow steadily and has plenty of room for further growth. By 2025, that number is expected to reach 500 million. Meanwhile, Gymsquare's 2018 report on the Chinese fitness industry showed that the Chinese mainland had 46,050 fitness centers and studios, with the industry's revenue exceeding $6 billion in the same year.

In addition, the National Development and Reform Commission of China's sports consumption market in 2018 was close to 1 trillion yuan, with per capita spending on sports at 3,448 yuan, according to the report from the Chinese Academy of Social Development. Sports consumption includes spending on sporting goods, sports magazines, watching games, sports performances or exhibitions, participating in sports activities, fitness classes and health activities.

This spending reflects the opportunities for Thai sports, such as Muay Thai. Muay Thai, as a fitness course, is gradually becoming the latest selling point of many gyms in China. One reason is the growing interest and love of Thai boxing among Chinese, which is linked to Chinese tourists visiting Thailand. Besides enjoying the beautiful scenery of Thailand, many Chinese tourists also want to watch the Thai boxing match. More importantly, many people hope to experience and learn Muay Thai more deeply by enrolling in Muay Thai classes and studying at Muay Thai schools. Thai boxing is a kind of fitness course which can train the whole body muscles and strengthen the physique, and it is becoming more and more popular among Chinese teenagers in recent years.

In addition, it found that 46 fitness centers and studios in Shanghai have recently opened Muay Thai classes, with 41 in Beijing, 21 in Guangzhou, 20 in Shenzhen and 23 in Chengdu. However, the number of gyms offering Muay Thai classes is still small compared with China's 46,000 gyms, but this is a trend worth watching, especially in Guangzhou.

At present, although Muay Thai has become popular in China and there are opportunities for development, but it still faces some challenges. These include cultural values, since some Chinese nationalists are resistant to foreign sports culture. In addition, the high cost of training in Thai boxing has resulted in a limited number of Chinese Muay Thai trainers. As Thai boxing is a unique culture and art, it is necessary to learn Thai boxing directly from the local Thai instructors. At the same time, restrictions on foreign coaches have led to higher salaries for Chinese and Thai coaches than for local coaches, which in turn has led to higher prices for Thai boxing courses. In addition, foreigners who want to work in China must apply for a work permit and need Chinese institutions or companies as guarantors of their employers. The employee must be a rare and needed professional in China, with at least a bachelor's degree and at least 2 years of relevant professional work experience.

However, in recent years, both the government and the private sector in Thailand and China have been working together to promote Thailand's sports cause and image, for example, holding a sino-thai friendship football match, holding a Thai boxing match in China and showcasing Thai boxing culture in China are considered to be effective ways to increase the popularity of Thai sports in China. Another attractive channel for promoting knowledge in the area of Thai sports and health and for expanding business opportunities in Thai sports and health products is international sports and health fairs such as FIBO China. The FIBO China has been held in the city since 2014 and is one of the world's largest fairs, attracting exhibitors from around the world. The exhibition is divided into three sections: (1) Fibo EXPERT section, which displays sports equipment and equipment, rehabilitation equipment and spa equipment; (2) Fibo Passion section, which introduces fitness courses, sports shoes, sports apparel and spa products; (3) Fibo Power, showcasing sports nutrition, health food and energy drinks. This year, FIBO China 2019 was held from August 22 to 24 at the National Convention and Exhibition Center of China. The Thai Sports Board and the Thai Tourism Board also organized delegations to participate in the exhibition to promote Thai boxing culture and knowledge. Next year, the exhibition will be held again from August 15 to 17,2020.

As living standards continue to improve, more and more Chinese people have begun to pay attention to health, and increased spending on sports and health. The trend reflects opportunities for the Thai sports industry and, in particular, the growing popularity of Thai boxing in China as a whole-body sport that is healthy for all ages. At the same time, there has been a growing trend for Thai boxing coaches to teach abroad as the sport has become more popular internationally. However, the number of Thai boxing trainers in China is still relatively small compared with the growing number and demand of gyms in China. So this is a great opportunity for Thai companies to bring Muay Thai to the Chinese market, where fitness is a high priority. It also opens up opportunities for other Thai products with health appeal, such as

dietary supplement, such as Bird's nest and cereal, energy drinks, latex mattresses and health spa products.

1. Fitness equipment

The fitness equipment market is growing well, according to iiMedia Research. In 2022, the market for fitness equipment reached 62.85 billion yuan, up 15 percent year on year. The market size of 2023 fitness equipment is expected to further increase to 71.02 billion yuan and reach 79.96 billion yuan in the 2024. Analysts at iiMedia Consulting believe fitness habits are changing in China and the growing popularity of home-based fitness is driving demand for small home-based fitness equipment.

2. Diet food

According to iiMedia Research, the size of the Chinese diet food market in 2022 will reach 338.71 billion yuan, up 21.29 percent year-on-year, and the 2023 market is expected to reach 402.08 billion yuan, with a 2024 of 474.45 billion yuan. Analysts at iiMedia Consulting say Chinese consumers are more likely to opt for convenient and effective weight-loss foods. In recent years, the marketing channels for weight-loss food have become more diversified, especially through live streaming and social media to promote the products, effectively attracting the attention of consumers.

3. Online weight loss applications

Figure 20 Online weight loss applications
Source: ditp,2023

4. Consumption of healthy weight loss products and services

According to a survey of Chinese netizens' weight-loss behavior, 32.7 percent of them are willing to spend 2,001-4,000 yuan on weight-loss products and services, and 26.3 percent are willing to spend 1,001-2,000 yuan, only 6.1% of the population

spent $8,001 or more. Chinese consumers are increasingly willing to pay for health or weight loss, according to data.

5. The brand recognition channel of the health and weight loss industry

According to the 2023 survey, 62.4% of consumers were aware of information or productsservices about healthy weight loss on the Internet, and 53.5% of consumers were aware of information or productsservices about healthy weight loss on television. In addition, 37.7 percent of consumers learned about healthy weight-loss products and services through acquaintances, 30 percent learned about them through online promotions, and 34.9 percent learned about them through offline advertising. Online and television campaigns are effective ways to increase consumer awareness of products and services related to healthy weight loss. In addition, the offline channel can also attract consumer attention, combined with promotional activities, the effect is better.

China has 250 million obese people, accounting for 18.9 percent of the total population, with a higher proportion of males. Although the obesity rate in China is not high, the demand for health goods and services is growing as a new generation of people pay more attention to health, and as China's population's income, purchasing power and living standards rise, in particular, healthy weight loss trends, people tend to choose to lose weight in a healthy way, rather than relying on the body may be harmful weight loss drugs. China's healthy weight loss market is developing rapidly, driven by internal and external factors. In 2022, China's market for diet and weight loss reached 338.71 billion yuan, up 21.2 percent year-on-year. In 2022, China's market for fitness equipment reached 62.85 billion yuan, up 15 percent year-on-year. China's overall fitness market shows a steady trend of development. At present, China's Internet users are changing the way the body-building, home-based exercise and diet to lose weight in increasing ways. Healthy weight-loss equipment and diet weight-loss products conform to the current trend, the healthy weight-loss industry has a broad space for development.(iimedia.cn,2024) and has a negative impact on long-term health. As a result, healthy weight-loss products and services, such as food and beverages, fitness equipment and entertainment, are gaining attention in the Chinese market. Companies need to study the needs of different age groups of consumers to lose weight in order to develop products and services that meet their needs, and develop appropriate marketing and pricing strategies to stand out in the highly competitive Chinese market.

5. Suggestions for Incorporating Physical Exercise into Daily Routines

Incorporating physical activity into your daily routine does not have to be complicated. Small changes can make a big difference in your overall fitness and well-being. Here are some practical suggestions to help you stay active every day. For starters, they often don't properly assess their physical condition, which makes them prone to accidents during exercise. Many people mistakenly believe that the more intense the exercise, the longer it will be effective, this is a misunderstanding. Safe exercise should start light and gradually increase in intensity and duration.

Simple Ways to Stay Active Every Day

Activities 1 Stretch the upper body.

1. Neck extensor muscle Place your hands on the back of your head with your hands crossed and your head lowered. Apply pressure gently. Feel a slight stretch in the back of your neck. Hold for 15-30 seconds, then rest and repeat 5-10 times.

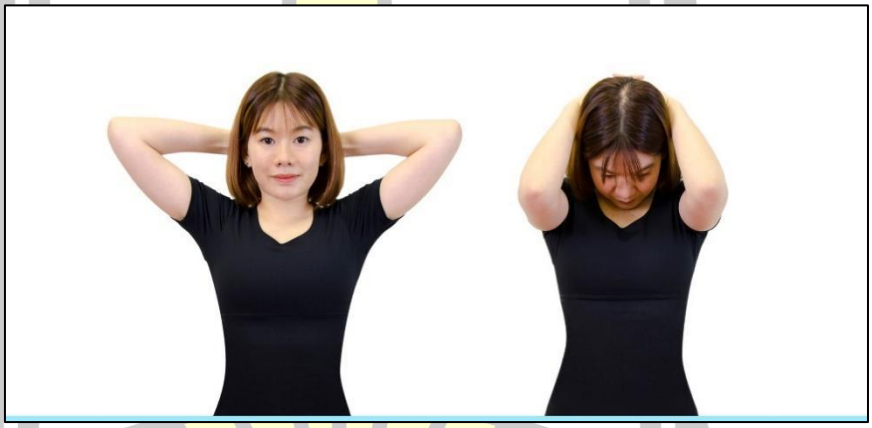

Figure 21 Neck extensor muscle
Source: manarom,**2023**

2. Neck rotator, Neck lateral flexor Grab the sides of your head with your hands, tilt your head to one side, and gently stretch with your hands (on the same side of your hand). You'll feel the muscles on the side of your neck tighten. Do this on both sides, holding the stretch for 15-30 seconds, then rest and repeat 5-10 times.

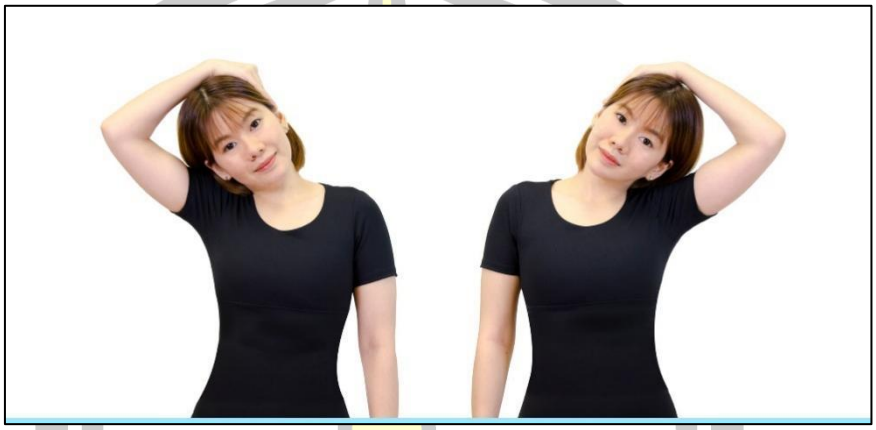

Figure 22 Neck rotator, Neck lateral flexor
Source: manarom**,2023**

3. Subscapularis mucle Raise your arms above your head, bend your elbows, and touch the opposite shoulder. Use Your Hand to pull your elbows to the opposite side and feel the muscles near your shoulder blades stretch slightly. Repeat on both sides, hold for 15-30 seconds, then rest. Repeat 5-10 times.

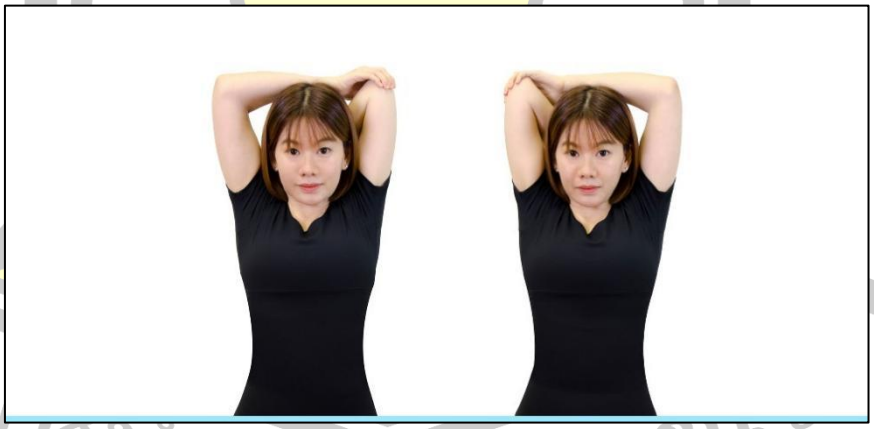

Figure 23 Subscapularis mucle
Source: manarom**,2023**

4. Shoulder adductor, Retractor muscle Extend your arm to the opposite side, then bend your elbow with your other arm and stretch the opposite arm. Feel the muscles in your shoulders and back scapula tighten. Do both sides for 15-30 seconds, then rest and repeat 5-10 times.

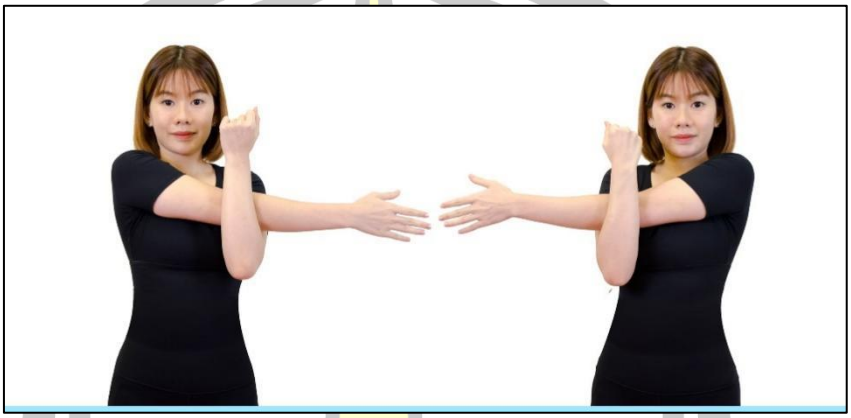

Figure 24 Shoulder adductor, Retractor muscle
Source: manarom**,2023**

5. Pectoral muscle Spread Your Arms out at an angle of about 90-120 degrees, palm against the wall, then lean forward and rotate your torso slightly, on both sides, for 15-30 seconds, then rest and repeat 5-10 times.

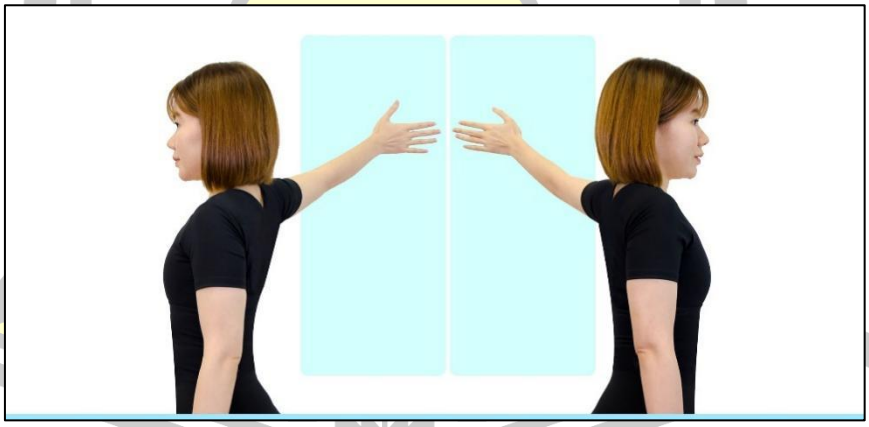

Figure 25 Pectoral muscle
Source: manarom**,2023**

6. Extensor group of forearm muscle Keep your arm straight forward with your palm facing down, and then hold it with your other hand until you feel a stretch under your forearm. Do both sides for 15-30 seconds and repeat 5-10 times after the break.

Figure 26 Extensor group of forearm muscle
Source: manarom,**2023**

7. Flexor group of forearm muscle Keep your arm straight forward with your palm facing down, and then hold it with your other hand until you feel a stretch under your forearm. Do both sides for 15-30 seconds and repeat 5-10 times after the break.

Figure 27 Flexor group of forearm muscle
Source: manarom,**2023**

8. Abdominal & Upper body muscle Put your hands together, then stretch your arms straight and up to the limit. Stretch both sides of your body at the same time. Hold for 15-30 seconds, then rest and repeat 5-10 times.

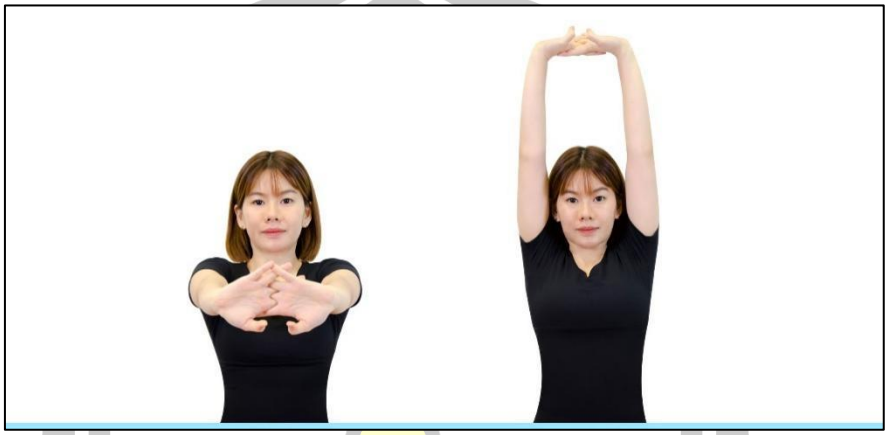

Figure 28 Abdominal & Upper body muscle
Source: manarom**,2023**

Activities 2 Yoga. Yoga for kids focuses on simple, easy-to-learn poses that are not complicated, and focuses on basic poses that children can easily perform. Here are some simple yoga poses for kids:

1. Lotus Pose is a posture used to focus attention and practice breathing. It helps your child focus and get ready for Yoga practice.

Practice

- Sit cross-legged, with your back and torso straight and your eyes looking straight ahead.
- Turn your palms up, put them on your thighs, relax your shoulders, and don't strain.

Figure 29 Lotus Pose
Source: youngciety**,2019**

2. Butterfly Pose this position stretches the lower back and legs, while bending down stretches the neck area.

Practice

- Sit Up straight with your feet pointed at each other, then hold your feet in your hands and slowly bring them closer to your body.
- Slowly close your eyes, take a deep breath, and then exhale, bending over so your head touches your toes and stays still, then slowly control your breathing, inhale and exhale, and repeat about five times.

Figure 30 Butterfly Pose
Source: youngciety**,2019**

3. Crescent moon Pose This position helps increase the flexibility and strength of the side of the torso, and deep breathing helps stretch the lateral abdominal muscles.

Practice

- Stand up straight with your feet shoulder-width apart, then take a deep breath and raise your hands above your head, holding them together, and exhale slowly.
- Then take a deep breath, lean to the left, and come back to the center as you exhale. Then take a deep breath and lean to the right, returning to the center as you exhale.
- Repeat step 2 about 5 times

Figure 31 Crescent moon
Source: youngciety**,2019**

4. Childe's Pose This position helps stretch the torso, hips, thighs and joints, including the ankles, knees, wrists, as well as the digestive system.

Practice

- Get down on your knees with your toes on the floor and sit on your heels, keeping your body straight and your eyes looking straight ahead.
- Then take a deep breath and stretch your arms as far up as you can over your head. Exhale and bend over so that your forehead touches the ground and your hips remain on your heels (if not, lift your hips slightly). Hold the pose, slowly control your breathing, about 5 times, then slowly lift your head

Figure 32 Childe's Pose
Source: youngciety**,2019**

5.Cobra Posture This position helps the spine to be flexible, improves the digestive system, and promotes excretory function.

Practice

- Lie on your stomach with your hands at your sides, elbows bent up, and slowly close your eyes. Then take a deep breath and push up with your elbows, pushing up with your upper body. Lift your head as high as you can, and exhale slowly.

- Hold this position, then take 5 deep breaths, then lower your body back to the prone position.

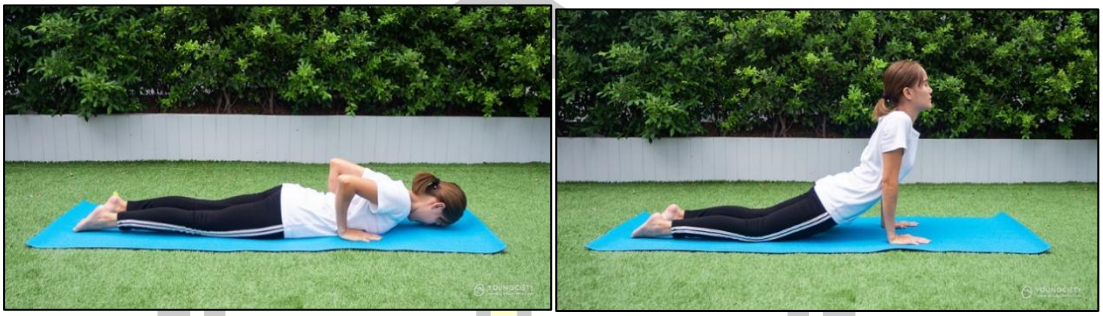

Figure 33 Cobra Posture
Source: youngciety**,2019**

6. Corpse Pose This is the last pose you must do after each yoga practice. Lie on your back with your hands at your sides, slowly close your eyes, put everything down and let your body relax for about 10 minutes, preferably to sleep. This will help to relax the different muscles, allowing the body and mind to relax.

Figure 34 Corpse Pose
Source: youngciety**,2019**

In the early days of Yoga, a child may be easily bored and distracted. Parents can play soft music to help their children relax during practice. At the same time, you can specify the number of breaths during the exercise. If you practice yoga every day, your child's concentration time during practice will also increase.

A Guide to safe exercise

Choose the right equipment

1.Choose shoes that are suitable for exercise. Choose shoes that are suitable for any kind of exercise, such as running shoes and special shoes for all kinds of sports, in order to reduce the possibility of accidents or injuries

• Wear clothes appropriate for exercise and consider the environment in which you exercise. When exercising outdoors in a stuffy environment, clothes should be thin and breathable.

• If you lift weights to exercise, choose the weight that suits your body

2. Variety of sports, sports should choose a variety of ways to avoid excessive concentration on a single movement, and reduce the sense of movement boring. Exercise should include flexibility training, aerobic exercise, strength training and endurance training.

3. Warm-up exercises. Warm-up exercises help prepare the muscles, heart and blood vessels for exercise

4. Stretching: stretching is the slow stretching of a muscle so that it stretches and relaxes.

5. Take time to stretch, holding each stretch for 10-20 seconds until your muscles feel tight. Also, take slow, deep breaths to lower blood pressure and increase blood flow to the brain.

6. Drink plenty of water: drinking plenty of water can prevent dehydration and heat stroke. Drink a glass of water 15 minutes before exercise and every 20 minutes after exercise. Drink a glass of water every hour during exercise.

7. Body warm-up: at the end of exercise, should gradually reduce the intensity of exercise, about 10 minutes of warm-up, do not suddenly stop the exercise.

Risk factors for accidents during exercise

- The duration, intensity, and frequency of exercise, especially if done too quickly
- Hot or cold weather
- Use inappropriate sports equipment
- Has there been an accident before
- Smoking or not exercising
- The body, muscles and heart are not healthy

Therefore, if the child has this situation, should increase some exercise. As mentioned above, we should create an environment where children can exercise while having fun and encourage them to engage in various physical activities on their own. Parents need to help when necessary and pay attention to the safety of their children. In addition to paying attention to where your child is likely to go, you should also pay attention to the type of venue and equipment. Parents should regularly check facilities, equipment safety and potential danger areas. When playing games, parents need to

guide their children to understand the importance of rules, understand dangerous behavior, dangerous places and safe use of equipment methods, so that they enhance safety awareness.

6. Guidance on Setting Realistic Exercise Goals and Tracking Progress

Setting exercise goals is crucial for maintaining motivation and achieving long-term fitness success. Realistic and well-planned goals can help you stay focused and make consistent progress.

SMART Goals for Physical Activity

SMART goal this is an effective goal setting principle, it is not random set goals, but through systematic thinking, and full of determination to achieve the goal. SMART is an acronym for an important part of goal setting, including.

S = Specific Please specify the sports you intend to do, such as running, walking, swimming, boxing, weight lifting, yoga or other activities.

M = Measurable Set a measurable amount of exercise, including intensity and time, such as 30 minutes of moderate-intensity running each day

A = Attainable Set realistic goals that are appropriate for you, such as people who have never exercised before. Set short-term, achievable goals, such as walking, if you haven't walked long before, start with 10 minutes and gradually increase to 30-50 minutes if you reach your goal time, until you reach the recommended 150 minutes per week.

T = Timely Set specific time goals, such as walking 30 minutes every Monday, Wednesday, and Saturday for 3 months. If the goal is reached after 3 months, set a new goal.

Setting short-term goals makes it easier to achieve them and motivates us to keep challenging harder goals. Because every time we set a new goal, we feel excited and challenged. But the goals we set should not be too easy or too difficult. Many times we feel like we're failing because we set goals too far away.

SMART Goal Setting can be useful not only for setting exercise goals, but also for adjusting to other healthy behaviors, such as diet planning or weight control. Setting good goals is key to achieving a healthy lifestyle and making health accessible.

Figure 35 Online weight loss applications
Source: blockdit,2022

7. Advice on Creating a Supportive and Motivating Environment, Including Parental Involvement

Having a supportive environment is crucial for maintaining an active lifestyle. Involving family and friends can provide motivation and accountability, making it easier to stick to your exercise routine.

Involving Family and Friends

The environment around the child has a lot to do with the child's physical activity. Based on the investigation of environmental indicators and factors supporting children's physical activity, it is found that both environmental indicators and supporting factors are at a good level. For example, school gymnasiums, outdoor playgrounds, playgrounds, multi-purpose areas, and equipment in use, it was found that 70.1% were gymnasiums, outdoor playgrounds, sports grounds, multi-functional areas and equipments in use. Support factors such as playing with your child, taking your child to the park, paying for your child's sports club or equipment, and government support such as, strong leadership, funding, resources, and support and encouragement of physical activity for children and adolescents at the national level were all at a good level, at 71.0% and 74.4%, respectively. Community and environmental factors, such as children or parents who knew that there were facilities, activities, parks and playgrounds in the community that could be accessed and used, were also at a good level, at 64.2%. Data on supportive factors in the child's environment show that factors including school are at a high level and children have adequate opportunities for physical activity. However, children's opportunities for physical activity, especially at school, can be further increased. If your child is tired

after exercise, there are other types of physical activity that can be used, such as marathons, charity runs, and tree-planting, it can also bring benefits to society**.**

Figure 36 Tree planting activities
Source: blockdit**,2019**

Figure 37 Running for charity/Marathon
Source: crl online**,2024**

8. Information on the Potential Health Consequences of a Sedentary Lifestyle

A sedentary lifestyle can lead to numerous health issues. Understanding these risks can motivate you to stay active and make healthier choices.

Health Risks of a Sedentary Lifestyle

The negative impact of physical inactivity on health is a serious global problem, with inactivity contributing to the 8% Global Non-communicable Disease Rate (NCD).

Lack of exercise increases the risk of premature death and many chronic diseases, such as heart disease, stroke, high blood pressure, type 2 diabetes and many cancers. It also increased the risk of hypertension by 1.6% and the risk of dementia by 8.1%.

Physical inactivity is defined as less than 150 minutes of moderate-intensity physical activity or less than 75 minutes of high-intensity physical activity per week.

The incidence of physical inactivity increases with the level of national income, and the rate of physical inactivity in high-income countries is more than twice that in low-income countries. The results also show that while the health burden of physical inactivity is higher per capita in high-income countries, middle-income countries in general are more affected by their larger populations.

Reduced or no physical activity may be due to the availability of amenities, such as an increase in private cars, this has led to a reduction in the use of public transport, walking, cycling and other forms of physical activity.

In addition, long-term inactivity is also extremely easy to lead to depression. Stopping exercise directly affects physical health and, more importantly, “Mental health.”. You may be moody, irritable, often angry, and not as refreshed as before. This is because of changes in Brain chemicals that may be associated with Brain Fog Syndrome. Jim Wyett, a exercise physiology at the American College of Sports Medicine (ASCM), says that prolonged inactivity reduces blood flow to the hippocampus, which is responsible for memory, learning and mood. The hippocampus has a reduced blood supply compared with people who exercise regularly, and some people may also experience symptoms such as depression or depression.

Two weeks after you stop exercising, your blood pressure goes up, causing your blood circulation to deteriorate. Long-term home office, almost no outside activities, the body almost no exercise, can not stimulate blood circulation, blood supply to the body. This causes fat to build up on the walls of the blood vessels, causing them to age and block blood flow to the heart or other parts of the body, increasing the pressure on the heart to pump more blood around the body. In a study published in the journal Physical Therapy Science, Japanese scientists found that the degree of hardening of the arteries increased in athletes who stopped exercising for

three months and became more pronounced after 12 months. There may be future risks of heart and vascular disease.

High blood sugar can directly affect weight gain, as well as injuries and chronic diseases such as diabetes or heart disease. A study published in the journal of Applied Physiology found that subjects who did strength training or aerobic exercise regularly over an eight-month period were better able to control their blood sugar levels. But when they stopped exercising, half of the subjects lost control of their blood sugar levels within 14 days.

How much weight do you need to lift to have a perfectly developed chest, arms, back and buttocks? How long does it take to build cool, powerful quadriceps and gastrocnemius muscles that explode with each run? When we stop running or exercising for long periods of time, the muscles we've built up will atrophy and diminish, and our bones will become brittle. Of course, when we start working out again after a long break, in the hope of regaining the muscles we once had, we may be more prone to physical injuries, including those in our joints, back muscles, or legs, because of a lack of continuity.

Weight gain, of course, depends on what we eat minus what we burn when we exercise. But when we stop exercising, all that's left is to eat. While weight and body fat may not increase immediately, if you record and measure your body data weekly, you will definitely see an increase in fat and body weight. When we're not exercising, our brains direct our bodies to learn and remember to conserve energy, much like a hibernating bear uses less energy. This leads to a poor metabolism because there is no need to expend extra energy, coupled with an increase in fat mass, which is the main factor in burning fat, which means that the more we eat, the more we accumulate.

Bones are not strong, and many people believe that running can worsen knee degeneration, and that lifting weights can make bones loose or brittle, but exercise, including strength training, running, and even walking, can help increase bone density, reduce the risk of bone diseases such as Osteoporosis or Knee Osteoarthritis Osteoarthritis/osteodystrophy. Because running or physical activity puts pressure on articular cartilage, it has sponge-like properties that absorb shock and pressure and release it in a rhythmic fashion. Running increases the circulation of lubricant in the joints and nourishes cartilage cells that have no blood supply. Regular physical activity is like feeding cartilage, stimulating its growth and repairing worn-out areas. If you work from home for long periods of time, are less active, sit for long periods of time without resting or adjusting your working posture, then your skeletal age will definitely decline.

Sleep problems. Sleep is an important part of body repair, regular exercise can promote the brain release of relaxing chemicals, help you sleep better. Have you ever found that after exercise, you come home for dinner and shower, and you really want to tuck in? I woke up feeling refreshed the next day. Conversely, if the lack of exercise, brain blood circulation is not smooth, may feel tired, pressure accumulation,

resulting in insomnia. You'll wake up tired, and intermittent sleep will leave you irritable and less able to recover.

Reduce the workload of the respiratory and circulatory systems (cardiovascular systems) From simple movement to vigorous exercise, it takes energy to drive. One of the most important components of energy is the air we breathe, which is transported by the blood to various parts of the body, through a series of metabolic processes, and eventually converted into energy for our activities. The more you exercise, the faster your body needs to breathe and circulate blood to meet your energy needs.

If inactivity, inactivity, inactivity is the most serious consequence, it is illness, or chronic Non-communicable disease disease (NCDS), which is becoming increasingly common among city dwellers around the world. For example, some cancers, heart disease, high blood pressure, high blood lipids, cerebrovascular disease, obesity and so on, we may die from these diseases. Second, although it may not cause death, sitting for long periods of time studying or working and not exercising can lead to office syndrome, muscle tension and soreness, which have a big impact on our lives. It can make it harder for us to exercise, more likely to get injured, and more likely to get lazy and not want to exercise, which can lead to chronic Non-communicable disease.

Figure 38 The headache
Source: synphaet,**2021**

Figure 39 Overweight children
Source: posttoday**,2016**

9. Evaluating Your Progress

Regularly evaluating your progress is essential to stay on track with your fitness goals. It helps you identify areas for improvement and celebrate your achievements.

Follow-Up and Continuous Improvement

If you don't know where to start, it's hard to know which direction you're heading. The goal of what experts call "Baseline Training" is to get a clear picture of your fundamentals so that you can easily see progress and feel rewarded for your weekly efforts. Typically, the baseline training consists of one exercise (for example, do push-ups, 2k rowing, or jumping as much as possible) or multiple exercises (any combination of intensity, cardio, and/or gymnastics). Either way, the goal of baseline training is to test different aspects of physical ability, such as strength, speed, and technique. Baseline training can be used at any time, but the most effective time is before starting a new goal or training program to determine your starting point. Then, it can help you achieve your goals.

Each time you repeat a test, you can directly compare your progress, allowing you to see growth, or identify weaknesses for improvement. In many cases, benchmarking can be a great motivator. On the one hand, it makes you responsible, "If you do a standard workout for the first time and think, 'Wow, this is bad, ' then you know you need to work hard or else it's going to be bad," says Niko Clayton, a Fitness expert at NJC Fitness Solutions in Laguna Nigel, Calif. "On the other hand, when you feel that your first baseline test is easy, or your score improves from the last

one, it increases your self-confidence and your belief that you can keep improving if you work hard." Regularly evaluating your training can help you keep track of your progress, and can adjust the training plan pertinently. You can use running time, distance, or other indicators of physical performance to get clear information. In addition, there are many weight-loss and fitness apps that track your physical activity.

Figure 40 Fitness and weight loss apps
Source: nimg,**2023**

Conclusion

Your Path to a Healthier Future

Exercise is a great tool for building confidence. Exercise helps to develop proper confidence in conversation and to develop effective communication skills with others. In addition, the individual in the appropriate sitting, standing and walking will feel confident. Therefore, exercise help to enhance the social life of individuals and bring discipline to life. It definitely teaches people strong values and perseverance, and it also teaches people how to deal with failure. In addition, there is a need to follow a schedule during exercise. On top of that, exercise also improves one's ability to think, and definitely helps train the brain to be sharper. Children who are active tend to do better on tests than those who are inactive.

Ultimately, exercise relieves mental stress. People who exercise regularly are less likely to suffer from depression because it calms the mind and brings happiness and joy to everyone's life. Sports is an indispensable part of human life, it can definitely improve the quality of human life. It should be enforced in schools because

it is as important as education. Everyone should engage in at least one physical activity on a regular basis.

By adopting the principles outlined in this handbook, you can take charge of your health and well-being. Remember, physical activity is a key component of a healthy lifestyle, and with dedication and support, you

12-WEEK ACTION PLAN

Week 1: Perceived Risk
Topic: Understanding the Health Risks of Inactivity.
Time: Monday to Friday, 15-minute break
Activity Form: Stretch the upper body. Do the following upper body stretches:

1. Neck extensor muscle
2. Neck rotator, Neck lateral flexor
3. Subscapularis mucle
4. Shoulder adductor, Retractor muscle
5. Pectoral muscle
6. Extensor group of forearm muscle
7. Flexor group of forearm muscle
8. Abdominal & Upper body muscle

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Week 2: Perceived Severity

Topic: The Grave Consequences of a Sedentary Lifestyle.

Time: Schedule from 5:00 pm to 8:00 pm Monday to Friday

Activity Form: Yoga. Arrange after-school yoga activities as follows:

1.Lotus Pose
2.Butterfly Pose
3.Crescent moon Pose
4.Childe's Pose
5.Cobra Posture
6.Corpse Pose

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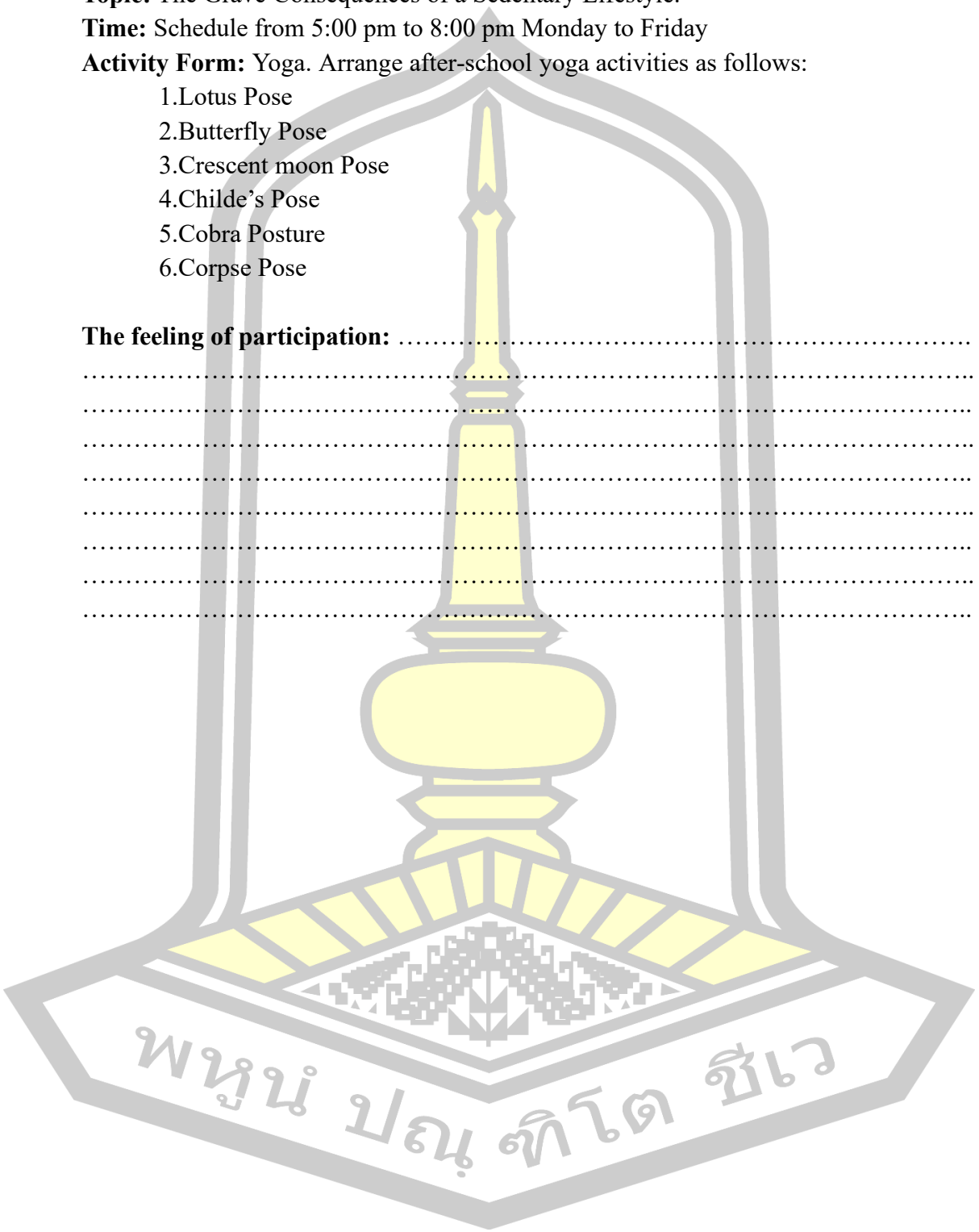

Week 3: Perceived Benefit

Topic: Celebrating the Rewards of Physical Activity.

Time: A full-day sports event on Saturday, with different activities scheduled throughout the day. Activities from 9 AM to 5 PM, with breaks for meals and rest.

Activity Form: Hiking activities. Go hiking with your family as a weekend getaway. Before you travel, you can make the following plans:

1. Plan a hiking route
2. Get the equipment ready
3. A To-do list
4. Learn to hike every season
5. Hike alone

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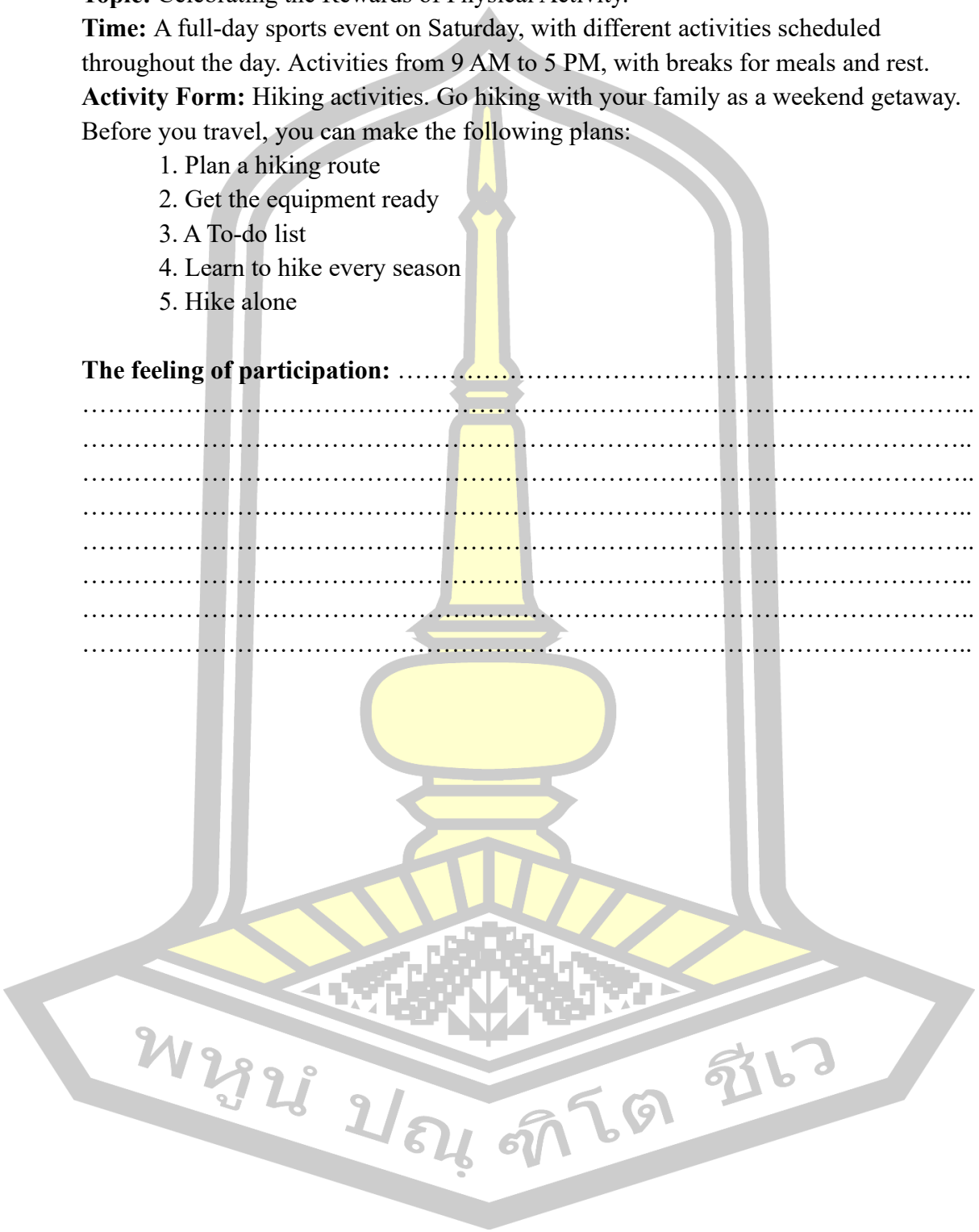

Week 4: Perceived Barriers

Topic: Overcoming Barriers to Physical Activity.

Time: 45-minute lunch break**.** Monday to Friday

Activity Form: Badminton**.** Before playing badminton, you should warm up or get ready. You should warm up your muscles by stretching. For example:

1.You can stand up straight, hold one arm straight up for 2 minutes, then switch arms. After you have finished the first way of stretching your arms, switch to stretching your legs. Sit down with your legs straight, touch your toes with your fingers, and keep your knees straight. Hold this position for about 3 minutes.

2. You can take a brisk walk around your yard or house for at least 10 minutes before playing badminton. Jump Rope, the number of times depending on your physical condition.

3. To warm up your wrists, arms, and shoulders, you can swing the club, or gently rotate your wrists, as a pre-game warm-up. You can first use the badminton racket on the bat to check the badminton, and improve the accuracy before the game.

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Week 5: Perceived Self-efficacy

Topic: Building Confidence in Exercise Habits.

Time: Schedule from 5:00 pm to 8:00 pm Monday to Friday

Activity Form: Football. There are five main techniques for controlling foot movements to control the ball:

1. Use your hands to help swing the ball
2. Alternate bouncing the ball with your foot
3. Bounce the ball with your heel
4. Bounce the ball with your knee
5. Bounce the ball with the rest of your body

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Week 6: Perceived Risk
Topic: Family Health and the Impact of Inactivity.
Time: Saturday, with activities from 10 AM to 4 PM.
Activity Form: Ride a bike. Prepare as follows:

1.Before cycling. Warm-up exercises help reduce injuries. You should warm up for 5-10 minutes before riding. You can do some arm exercises or go light riding. Do light exercise to prepare your lungs and heart for work. Don't overstretch your muscles before you ride, as overstretching can make you more vulnerable to injury.

2. After riding. It is important to stretch your muscles after riding a bike to help prevent sports injuries. It is best to stretch immediately after riding, or within 30 minutes. Don't let the muscles cool down, because it's harder to stretch them when they're cool.

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Week 7: Perceived Severity

Topic: Personal Journeys: Overcoming Health Challenges through Physical Activity.

Time: Schedule from 5:00 pm to 8:00 pm Monday to Friday

Activity Form: Running. Prepare as follows:

Set achievable goals, step by step, and don't get ahead of yourself. If you don't exercise regularly, start by walking or jogging for 30 minutes three to five times a week. When you can do it consistently, start setting goals for fun runs or 5K. Generally speaking, it takes 2-3 months to prepare. The basic principle is to gradually increase the running time and distance.

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Week 8: Perceived Benefit

Topic: Incentivizing Regular Physical Activity: Rewards and Recognition.

Time: Schedule from 5:00 pm to 7:00 pm Monday to Friday

Activity Form: Aerobic exercise. The following should be followed:

1.Every aerobic exercise should be done from start to finish.

2. Warm up your blood circulation for about 5-7 minutes with low-impact exercises, such as walking, stepping, heel-touching, and toe-touching. Start with a slight movement.

3. Joint and muscle stretches should be performed for 5-7 minutes at a time, especially for large muscle groups.

4. Exercise should be done continuously for 20-40 minutes at a time.

5. Some exercise should be done to relieve fatigue, about 5-10 minutes at a time, using low-impact exercise.

6. Should carry on the pointed physical training, each time approximately 7-10 minutes.

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Week 9: Perceived Barriers

Topic: Addressing Adolescent Exercise Challenges.

Time: Saturday, with activities from 10 AM to 2 PM.

Activity Form: Swimming. Use the following simple methods:

1. Learn to swim by practicing breathing. When your face is above the water, take a deep breath through your mouth. Then, dip your head in the water and exhale through your nose. Repeat until you feel comfortable swimming.

2. Practice floating from one side of a horizontal pool to the other, taking a deep breath in through your mouth, then pushing your feet away from the edge of the pool, straight forward, hands together, palms folded, hands level on the water, arms close to your face, tilt your head down and look directly at the bottom of the pool

3. Practice kicking to maintain buoyancy. The right way to kick, toes together, thumbs slightly close together, do not force. From the base of the thigh, do not bend the knee, because if you bend the knee, the body will immediately sink into the water.

4. Practice Your Arms, jump from one side of the pool to the other, and kick. Then wave with one hand under the water, fingers together, and bend your arms slightly as you wave under the water. Sweep until the arms are straight, close to the body and out of the water. Then pull your arm back in front of you and switch arms.

5. Practice turning over and breathing while swimming. From the pool side kick, kick and wave the way you practiced before, but increase the amount of underwater breathing with your nose. After the 1st-3rd swing, Throw your arm down into the water on the 4th swing, roll over, and lift one shoulder out of the water with your face toward the upper shoulder, the other side of the face is pressed against the straight arm in front.

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Week 10: Perceived Self-efficacy

Topic: Mentorship and Support in Building Exercise Habits.

Time: Saturday, with activities from 10 AM to 4 PM.

Activity Form: Rock climbing. Basic skills for indoor rock climbing:

1. Warming up and stretching before climbing can help reduce the risk of injury. Try stretching the muscles in your arms, legs and back to prepare your body.

2. Using your feet correctly is essential in climbing. Try to grip and move with your toes, not just your hands. Because the feet can help support the weight, let you save more energy.

3. Balance is essential in climbing. Keep your body as close to the wall as possible, and use your hands and feet alternately to grip so you can move steadily.

4. In principle, the route should be planned along the same color cave, for example from the Yellow Cave, you can only touch the yellow cave until the end of the climbing route. So, before you start climbing, try to explore and plan your route, try to find points along the way that you can firmly grasp, and plan your path in advance.

5. Breathe and rest. Don't forget to breathe rhythmically and rest when needed. Deep breathing helps the body get enough oxygen and reduces stress. Intermittent rest can prevent excessive muscle fatigue.

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Week 11: Review & Integration

Topic: Reviewing and Integrating Health Belief Model into School Programs.

Time: Conduct 1-hour activities in different subject classes**.**

Activity Form: Tree planting activities**.** The process of planting trees:

1. Carry Out Area Survey, planning and preparation. Survey what type of forest the region used to have and what tree species were and are found in the region. The survey was conducted by interviewing local residents and surveying the trees in and around the area.

2. The seedlings were prepared by sowing, selecting mother plants and testing seed vigor before collection.

3. Fine planting: dig a hole about **5** times the depth of the seedling ball, and then water, when the soil is settled, will be inserted from the stem **1-2** cm place, **7-10** cm thick with straw to prevent weeds growth. If in an arid area, water it one last time.

4. Post-planting maintenance, need to plan well watering, fertilization, loose soil**.**

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Week 12: Review & Integration

Topic: Sustaining Health Consciousness Beyond the Program.

Time: Schedule from 5:00 pm to 8:00 pm Monday to Friday**.**

Activity Form: Basketball. This is done as follows:

1. Check your health, find out how you are, if you have any problems, and make sure you are healthy in case of accidents.

2. Warm up or stretch for **3-5** minutes before and after exercise to prepare the muscles for stretching and relaxation in order to perform various postures while also improving blood circulation.

3. To have adequate rest, if the lack of rest, should not be excessive exercise, because it will cause the body can not bear, and may even lead to dizziness. You should exercise according to your physical condition, don't force yourself.

4. Be prepared to exercise for at least **2** hours at a time. It usually takes an hour to exercise and another hour to bathe and clean the body of sweat and dirt.

5. The equipment to be used for exercise should be checked to see that it is intact and in good working condition to prevent accidents that may occur due to insufficient strength of the equipment.

The feeling of participation: ……
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APPENDIX E
FIGURES OF ACTIVITIES





Figure 41Activities

Figure 41-45 Activities

Figure 42 Activities

Figure 43 Activities

Figure 44 Activities

Figure 45 Activities

BIOGRAPHY

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