

# The Study and Analysis of Behavior, Patterns of Physical Activity Promotion Among Citizens in Mueang District, Mahasarakham Province

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## Abstract

This study investigates the patterns of promoting physical activity among residents in Mueang District, Mahasarakham Province, Thailand. It explores the impact of contemporary societal shifts, such as increased reliance on technology and decreased physical labor, on public health. The research identifies the rise of chronic diseases due to lifestyle changes and the need for preventive strategies emphasizing physical activity. Utilizing a questionnaire, the study analyzes residents' knowledge, awareness, motivation, and practices regarding health promotion through physical exercise. The findings reveal high general knowledge and awareness of health benefits but low levels of physical activity practice, influenced by lifestyle and societal changes. The study emphasizes the importance of tailored health promotion strategies and the role of digital platforms in enhancing physical activity awareness and participation. This research contributes to understanding effective methods to promote physical activity and addresses the health challenges faced by the local population, promoting sustainable physical and mental health.

**Keywords:** Physical Activity Promotion, Health Awareness, Lifestyle Changes, Preventive Strategies, Digital Platforms

## 1. Introduction

The landscape of contemporary society has undergone significant transformations, markedly influencing public health dynamics (Veselovská, 2023). A critical evolution in this regard is the shift from labor-intensive activities towards a heightened dependence on technology. In the context of Thailand, this transition is particularly notable. The traditional lifestyle of the Thai populace was predominantly characterized by physically demanding tasks, especially in sectors like agriculture and other labor-intensive jobs. However, the advent and proliferation of technological innovations and convenience-enhancing devices have led to a marked reduction in physical labor. This change has had notable health implications, evident in the increasing prevalence of diseases associated with physical inactivity, such as heart disease, diabetes, and hypertension (Woessner et al., 2021; Machado, 2017; Bhosale, 2019; Joshi et al., 2019). These developments highlight the imperative for a lifestyle recalibration, emphasizing physical activity as a cornerstone for maintaining optimal health in a modernized societal framework.

Over recent years, Thailand has observed a significant transition in the predominant health challenges faced by its population. Historically, the nation grappled with infectious diseases like diphtheria, whooping cough, and tetanus, which were effectively managed and curtailed through strategic vaccination programs and enhancements in public health infrastructures (Vathesatogkit et al., 2012). Nonetheless, these ailments have now been substantially replaced by chronic conditions. The emergence of chronic diseases, including heart disease, hypertension, and diabetes, is largely attributed to lifestyle alterations and behavioral patterns such as insufficient physical exercise, dietary imbalances, and a general preference for convenience in daily routines. This paradigm shift in disease patterns presents profound societal implications, not only elevating healthcare

burdens and associated costs but also impacting the quality of life and productivity levels within the workforce (Sleigh & Seubsman, 2015).

Data from health databases indicate a steady increase in the incidence of chronic conditions like heart disease, hypertension, and diabetes in Thailand, now posing major health challenges (Thawornchaisit et al., 2018). For instance, the rate of diabetes has seen a notable rise over the past decade, mirroring shifts in lifestyle and dietary habits, key contributors to the development of these conditions (Rajbhandari et al., 2018). This underscores the critical need for implementing preventive strategies, particularly advocating for physical exercise, healthy eating habits (Malhotra, Noakes, & Phinney, 2015), smoking and alcohol consumption avoidance (Pongutta, Suphanchaimat, Patcharanarumol, & Tangcharoensathien, 2019), and effective weight management (McGuire, Strine, Okoro, Ahluwalia, & Ford, 2007), to mitigate the prevalence of chronic diseases within the Thai demographic.

The investment patterns in Thailand's public health sector reveal a compelling narrative, marked by a discrepancy between disease treatment and prevention. An analysis of public health budget allocation shows a skewed preference towards treatment, with a significantly lower investment in health promotion and disease prevention initiatives. This imbalance could potentially lead to escalated healthcare expenses and a rise in preventable chronic diseases (Prakongsai, Bundhamcharoen, Tisayatikom, & Tangcharoensathien, 2007).

Additionally, the lack of effective coordination among various programs within Thailand's public health system is identified as a key limitation in fostering community health (Supakorn, 2000). This treatment-centric approach often results in addressing health issues at their terminal stages, rather than establishing a foundation of good health from the outset.

This observation underscores the importance of reorienting health system priorities towards preventive care and health promotion. By allocating more resources to these areas, the burden of chronic and preventable diseases can be alleviated, leading to a more sustainable and efficient healthcare system (Sithi-amorn et al., 2001). This approach is in line with the global trend towards preventive healthcare, recognizing that investments in preventive measures can significantly diminish long-term healthcare costs and enhance overall population health outcomes.

To bolster physical activity and overall health among the Thai population, the Thai government and related entities are urged to implement a range of effective strategies. These include advocating for public policies that support an active lifestyle and initiatives like developing public policies, broadening access to health information, and encouraging participation in appropriate exercise activities (Kuhirunyaratn & Jindawong, 2020; Azam, 2019). Workplace interventions and promoting occupational physical activity are also deemed effective in fostering physical activity and good health among the Thai populace (Katewongsa et al., 2021).

The development of health education programs, like promoting exercise through traditional Northeastern Thai dance (Zerng) among the elderly, can heighten awareness of the benefits of physical activity (Manadee & Sota, 2015). Moreover, the government should support research and policy development focused on the prevention and management of chronic diseases, aiming to reduce the long-term disease burden. Such measures are pivotal in cultivating a healthier society and effectively curtailing the prevalence of chronic diseases in Thailand.

Reflecting on the analysis and review of health issues prevalent in Thai society, alongside the lifestyle and behavioral changes leading to chronic diseases and considering the statistics indicating an uptick in such diseases in Thailand, researchers have developed an interest in exploring effective and appropriate methods to promote physical exercise among the Thai population, particularly in the Muang district of Mahasarakham province. Observations indicate that the inhabitants of this region are prone to health issues related to lifestyle changes. The patient count in 2016, 2017, and 2018 was 3,193, 3,278, and 3,946, respectively, with corresponding illness rates per 100,000 people being 331.38, 340.48, and 409.99. This research is aligned with the government's policy of promoting health through physical exercise and contributes to the fields of physical education and sports management. It aims to address the health challenges faced and foster the well-being of local citizens, ensuring sustainable physical and mental health.

## **2. Method**

### *2.1 Research Objectives*

- 1) To study and analyze the behavior and patterns of promoting health through physical exercise among the residents of Mueang District, Mahasarakham Province.
- 2) To develop approaches for promoting health, physical exercise, and healthy consumption behaviors.

## 2.2 Sample Size

The population used in this study comprises residents with domicile in Mueang District, Mahasarakham Province, totaling 158,821 individuals (Mahasarakham Provincial Statistical Office, 2021).

The sample group for this study consists of 398 individuals from the same population, selected through simple random sampling using the Taro Yamane formula (Yamane, 1967) with a 95% confidence level and a 0.5% margin of error.

## 2.3 Variables in the Research

Independent Variables: Personal information including gender, age, education level, occupation, and income.

Dependent Variables: Behaviors and patterns of health promotion through physical exercise among the residents of Mueang District, Mahasarakham Province, which includes: 1) General knowledge about health promotion through physical exercise. 2) Awareness of the health benefits of physical exercise. 3) Motivation for engaging in physical exercise. 4) Practices in health promotion through physical exercise.

## 2.4 Research Instruments

The tool used for data collection in this research is a questionnaire designed to measure the behaviors and patterns of health promotion through physical exercise among the residents of Mueang District, Mahasarakham Province. The questionnaire is divided into 5 parts as follows:

*Part 1:* Personal Information includes age, gender, education level, occupation, and income. The questions are of the forced choice type, with 5 items: 1) Age: under 18 years, 18–24 years, 25–34 years, 35–44 years, 45–54 years, 55–64 years, 65 years and above; 2) Gender: male, female, other/non-specified; 3) Education level: never attended school or did not complete basic education, primary education or equivalent, secondary education or equivalent, diploma or equivalent, bachelor's degree or higher; 4) Occupation: student, company/government employee, worker/laborer, self-employed, outdoor worker/unemployed; and 5) Income: less than 10,000 baht per month, 10,000–20,000 baht per month, 20,001–30,000 baht per month, 30,001–40,000 baht per month, more than 40,000 baht per month.

*Part 2:* General Knowledge about Health Promotion through Physical Exercise consists of 10 items. The questionnaire includes questions such as: 1) Exercise enhances energy levels in the body, true or false? 2) Exercise helps reduce stress and depression, true or false? 3) Regular exercise is good health care, true or false? 4) Exercise builds muscle, true or false? 5) Exercise improves heart and vascular health, true or false? 6) Aerobic exercise improves respiratory system efficiency, true or false? etc. The scoring criteria are “True” and “False”.

*Part 3:* Awareness of the Health Benefits of Physical Exercise consists of 10 items. The questionnaire includes questions such as: 1) Are you aware of the benefits of exercise in weight control? 2) Are you aware of the benefits of exercise in enhancing the immune system? 3) Are you aware of the benefits of exercise in improving learning and work capabilities? 4) Are you aware of the benefits of exercise in aiding better sleep? 5) Are you aware of the benefits of exercise in muscle building? 6) Are you aware of the benefits of aerobic exercise in improving respiratory system efficiency? etc. The scoring criteria are “High/Medium/Low”.

*Part 4:* Motivation for Physical Exercise consists of 10 items. The questionnaire includes questions such as: 1) Do you intend to exercise regularly? 2) Do you feel a sense of accomplishment when you exercise regularly? 3) Do you have specific exercise goals, like weight loss or muscle gain? 4) Do you see the benefits of exercise for your health? 5) Do you enjoy and have fun when exercising? 6) Do you feel happy after completing your exercise? 7) Do you believe that exercise is part of your health care? etc. The scoring criteria are “Yes” or “No,” where “Yes” equals 1 point and “No” equals 0 points.

*Part 5:* Practices in Health Promotion through Physical Exercise consists of 10 items. The questionnaire includes questions such as: 1) Do you perform physical exercise activities every time? 2) Do you frequently engage in physical exercise activities? 3) Do you regularly engage in physical exercise activities? 4) Do you engage in physical exercise activities daily or almost daily? 5) Do you perform aerobic exercise activities? etc. The scoring criteria are “Every time” equals 2 points, “Often” equals 1 point, and “Sometimes/Never” equals 0 points.

## 3. Data Collection

Analyze and summarize information from a variety of sources including documents, textbooks, articles, and research papers, a comprehensive study was conducted focusing on the effects of behavior analysis and physical activity promotion patterns among citizens in Mueang district, Mahasarakham province. The gathered data was then utilized to construct a questionnaire. This questionnaire was subsequently presented to five experts for the purpose of evaluating its suitability and the accuracy of its content.

Each statement within the questionnaire was subjected to an item-objective congruence (IOC) index assessment to ensure its relevance and appropriateness to the study objectives. Following the initial evaluation, the questionnaire was revised based on the experts' suggestions for improvement and was resubmitted for a second round of expert review.

The results from this second evaluation by the five experts indicated a high level of content validity for the questionnaire, with an IOC congruence score of 0.88. This score signifies that the research instruments used are deemed appropriate for conducting the study effectively.

A three-point scale was used to determine the criteria for the expert assessment of the adequacy of the questionnaire: A score of +1 means that the questionnaire is adequate, a score of 0 means that the adequacy is uncertain, and a score of -1 means that it is not adequate. This scale provided the experts with a clear and quantifiable method of expressing their assessment of adequacy in relation to the study objectives.

The questionnaire consisted of a mix of multiple-choice, Likert scale, and open-ended questions. Multiple-choice questions were used to gather specific demographic information, Likert scales assessed attitudes and behaviors towards physical exercise, and open-ended questions provided deeper insights into personal experiences and opinions.

The questions were developed based on a review of existing literature and validated surveys in the field of health promotion and physical activity. This ensured that the questions were relevant and covered the key aspects of our research objectives.

The questionnaire was designed to align closely with our research objectives. For instance, questions about health behaviors and motivations directly related to our goal of understanding physical exercise patterns in the Mueang District. Similarly, questions on health awareness and access to exercise facilities helped us assess the effectiveness of current health promotion strategies.

The data collection was conducted both online and in-person to ensure a broad and inclusive approach. Online surveys were distributed via email and social media platforms, while in-person surveys were conducted in community centers and public spaces in the Mueang District. The survey duration was approximately 15–20 minutes. Before participation, all respondents were informed about the purpose of the study and their rights as participants. Informed consent was obtained electronically for online responses and in written form for in-person participants. This process ensured ethical compliance and the participants' understanding of their voluntary involvement in the study.

To ensure the reliability and validity of the questionnaire, a pilot test was conducted with a small group of participants from a similar demographic to our main study. This pilot included 30 individuals and aimed to evaluate the clarity, relevance, and length of the questionnaire. Feedback from the pilot test highlighted some ambiguously worded questions and the need for a clearer explanation of certain terms. Based on this feedback, we revised the questionnaire to enhance its comprehensibility and ensure that the questions effectively addressed our research objectives. This refinement process was crucial for ensuring the validity and reliability of the data collected in the main study.

#### 4. Results

Table 1. Personal information of the sample group

Personal Information	Number (Persons)	Percentage
<b>Gender</b>		
Male	199	49.75
Female	199	49.75
<b>Age</b>		
20–29 years	120	30.15
30–39 years	120	30.15
40–49 years	80	20.10
50–59 years	78	19.60
<b>Education Level</b>		
Upper Secondary	5	1.25
Bachelor's Degree	320	80.40
Master's Degree	60	15.08
Doctoral Degree	13	3.27
<b>Income</b>		
Less than 10,000 baht per month	30	7.54
10,001–20,000 baht per month	200	50.25
20,001–30,000 baht per month	100	25.13
30,001–40,000 baht per month	68	17.08

Table 1 shows that the sample group consists of 49.75% males and 49.75% females. The majority of the sample group, 30.15%, is between 20–29 years old and 30–39 years old. The most common level of education is a bachelor's degree, which accounts for 80.40% of the sample. This is followed by master's and doctoral degrees and an upper secondary degree at 15.08%, 3.27% and 1.25% respectively. The majority of the sample group, 50.25%, has an income between 10,001 and 20,000 baht per month.

Table 2. Level of general knowledge about health promotion through physical exercise

Score	Number of People	Percentage
5	25	6.28
6	35	8.79
7	45	11.31
8	55	13.81
9	60	15.08
10	178	44.73
$\bar{x} = 8.32$ , S.D. = 1.61		

Table 2 shows that the sample group has an average general knowledge about health promotion through physical exercise of 8.32 points, with a standard deviation of 1.61. The majority of respondents scored a perfect 10 (44.73%), followed by 9 points (15.08%) and the lowest percentage (6.28%) with a score of 5.

Table 3. Level of awareness of the health benefits of physical exercise

Score	Number of People	Percentage
16	49	12.31
17	49	12.31
18	100	25.13
19	100	25.13
20	100	25.13
$\bar{x} = 18.39$ , S.D. = 0.29		

Table 3 shows that the sample group awarded an average of 18.39 points for the health benefits of physical exercise, with a standard deviation of 0.29. The majority, namely 25.13%, achieved the highest value of 20 points. This is followed by values of 19 and 18 points, which also account for 25.13%, and values of 16 and 17

points, which each account for 12.31%.

Table 4. Level of motivation for physical exercise

Score	Number of People	Percentage
6	50	12.56
7	75	18.85
8	100	25.13
9	100	25.13
10	73	18.34
$\bar{x} = 8.18, S.D. = 0.33$		

Table 4 shows that the motivation level of the sample group for physical exercise has an average value of 8.18, with a standard deviation of 0.33. The most frequent values are 8 and 9, each accounting for 25.13%. This is followed by scores 7 and 10 with a share of 18.85% and 18.34% respectively. A score of 6 was achieved by 12.56% of participants.

Table 5. Level of practice in health promotion through physical exercise

Score	Number of People	Percentage
4	1	0.25
5	10	2.51
6	20	5.03
7	30	7.54
8	40	10.05
9	50	12.56
10	60	15.08
11	50	12.56
12	40	10.05
13	30	7.54
14	20	5.03
15	10	2.51
16	5	1.26
17	4	1.01
18	3	0.76
19	2	0.50
20	1	0.25
$\bar{x} = 8.48, S.D. = 3.03$		

Table 5 shows that the sample group's practice in health promotion through physical exercise has an average score of 8.48, with a standard deviation of 3.03. The most frequent score is 10, which corresponds to 15.08%. This is followed by 9 and 11 with 12.56% each. The least common ratings are 4 and 20 with 0.25% each.

## 5. Discussion

This study aimed to examine and analyze the behavior and patterns of promoting health through physical exercise among the residents of Mueang District, Mahasarakham Province, and develop approaches for promoting health, physical exercise, and healthy consumption behaviors. The study involved a total of 398 participants. The analysis of the basic characteristics of the sample group revealed an equal gender distribution between males and females, with the majority being aged between 20–39 years. The highest educational attainment was a bachelor's degree, followed by Master's and Doctoral degrees, and secondary education. Most participants reported monthly incomes ranging from 10,001 to 20,000 Baht.

General Knowledge about Health Promotion through Physical Exercise, it was found that the sample group possessed a high level of understanding. This can be attributed to the digital era where adolescents have easy access to information through the internet and social media. This accessibility enables them to quickly and diversely acquire news and content related to physical exercise. This finding aligns with the study by Bonn et al. (2019), which highlighted the significance of health applications and telephone counseling in modifying health behaviors. Adolescents frequently use these technologies, thereby enhancing their knowledge about physical

exercise.

Similarly, Rose et al. (2017) observed that digital technologies and social media significantly contribute to higher levels of general knowledge about physical exercise and health among adolescents. Research indicates that digital interventions, including education, goal setting, self-monitoring, and parental involvement, can effectively improve diet quality and increase physical activity in this age group. This is consistent with the findings of Lupton (2020), who noted that young people use digital technologies and social media to gain better knowledge of bodies, illness, and healthcare. Additionally, Bopp and Stollefson (2020) found that social media and wearable technologies are effective in promoting physical literacy among youth.

Awareness of the Health Benefits of Physical Exercise is observed to be high among the adolescent sample group. This heightened awareness is attributed to the adolescents' inclination towards attention to body image and overall health, fostering confidence and societal perception that physical exercise aids in weight control and promotes good health. Adolescents are informed about the various health benefits of physical exercise, such as strengthening bones and muscles, improving mental health, and reducing the risk of depression.

Health authorities emphasize the importance of physical exercise for adolescents, recommending at least one hour of daily physical activity to promote good health. Access to information and guidance about physical exercise is readily available to adolescents through the internet and various media channels. This accessibility aligns with the findings of Kujala (2010), who noted that teenagers demonstrate a high level of awareness about the health benefits of physical exercise. Physical activity is recognized to offer significant health benefits for children and adolescents, including increased physical fitness, reduced body fatness, favorable cardiovascular and metabolic disease risk profiles, enhanced bone health, and reduced symptoms of depression and anxiety.

Corroborating this, Theodoratou et al. (2016) found that adolescents frequently report that exercise contributes to feelings of revitalization, stress relief, improved self-image, and better health. Similarly, Shahidi et al. (2020) stated that health organizations recommend teenagers engage in at least 60 minutes of moderate to vigorous intensity physical activity daily for musculoskeletal and cardiovascular health, a healthy body weight, and neuromuscular awareness. In addition, Ribeiro et al. (2020) concluded that regular physical exercise predisposes adolescents to a healthier adult life.

Motivation for Physical Exercise is categorized as high among adolescents, primarily due to their desire to look and feel good about themselves. This includes objectives like weight loss and body toning. Adolescents often seek acceptance and support from peers and the opposite sex. Engaging in physical exercise and health care can enhance confidence and attractiveness in terms of personality. The motivation for physical exercise in adolescents is often influenced by external drivers, such as peer acceptance and impressing the opposite sex.

This is in line with the study by Restika and Hurriyati (2023) and Kercher et al. (2022), which highlighted that the desire to improve appearance and physique is a significant factor that enhances motivation for physical exercise. Similarly, Navarro et al. (2020) found that the motivation for physical exercise among adolescents is influenced by various factors, including desires related to weight loss, body shaping, and improving attractiveness. Research indicates that the motivation for exercise among adolescents varies with age and sex, with self-determined types being positively associated with enjoyment and negatively with anxiety. Furthermore, Sundar et al. (2018) noted that overweight adolescents are primarily motivated for physical activity by concerns about their health and attractive bodies, mastering activities, being with friends, and having fun.

Practices in Health Promotion through Physical Exercise are considered low due to lifestyle and societal changes, including educational pursuits, work commitments, and responsibilities of home and childcare, which are integral to daily life. These changes have resulted in reduced time for regular physical exercise. Health and physical limitations, such as chronic illnesses or physical constraints, pose barriers to engaging in physical activity. Increased stress and mental health issues can also diminish motivation, leading to decreased physical activity. Income level may influence the pattern of physical exercise, with those earning less possibly lacking access to resources like gym memberships or safe exercise environments.

This scenario aligns with research findings indicating that physical activity levels tend to decline with age, starting from childhood and continuing into adulthood (Bullock, 2014). Self-efficacy is indirectly related to the decrease in physical activity through functional limitations (McAuley et al., 2009). Public health restrictions, as observed during the COVID-19 pandemic, led to reduced levels of physical activity in elderly individuals, impacting their subjective well-being and health-related quality of life (Suzuki et al., 2020). Moreover, a physically active lifestyle is linked to slower white matter decline in older adults (Burzynska et al., 2017).

## 6. Conclusion

In conclusion, this study from Mahasarakham province highlights the critical role of promoting physical activity in urban communities. It underscores the necessity of enhancing health awareness and adapting to lifestyle changes to foster a more physically active populace. The effective use of digital platforms emerges as a key tool in spreading awareness and motivating participation. Finally, the study calls for continuous efforts and innovative strategies to sustain and improve physical activity levels, thus contributing significantly to the prevention of chronic diseases and the overall enhancement of public health in urban settings.

### 6.1 Suggestions for This Research

- 1) Using different tools or adding additional measurement tools, such as physical tests or statistical data analysis, could provide deeper insights into physical exercise behavior and patterns.
- 2) Assessing the impact of existing health promotion programs in the community This could help to understand the effectiveness and areas for improvement of current health promotion interventions.
- 3) Tailoring health promotion strategies to the unique needs and characteristics of the Mueang District is essential. This includes leveraging digital platforms for health education and creating inclusive physical activity opportunities that cater to all ages and abilities.
- 4) Policymakers should focus on creating supportive environments for physical activity, including safe public spaces and health education programs in schools and communities.
- 5) Consider increasing the sample size in future iterations of this research to ensure a more representative sample of Mueang District, Mahasarakham Province, thus enhancing the study's generalizability.
- 6) Ensure reliability and validity of questionnaires with a detailed development process, and openly discuss potential limitations and biases in study design and data collection, to guide future research in a transparent and robust manner.

### 6.2 Recommendations for Future Research

- 1) Broaden the study to include a more diverse range of participants from different areas or backgrounds.
- 2) Longitudinal studies These can help to understand the long-term effects of changes in physical exercise behavior and health.
- 3) Inclusion of socioeconomic variables Consideration of socioeconomic factors such as income, education and social status could lead to a better understanding of barriers and opportunities for physical exercise.
- 4) Use of technology in data collection the use of health apps or activity monitoring devices could lead to more accurate and detailed data collection.
- 5) Expand the study's methodology by incorporating qualitative research methods like in-depth interviews or focus groups, in addition to questionnaires. This approach could provide a deeper understanding of the public's perspectives, beliefs, and perceptions of physical exercise, thereby offering a more comprehensive view of physical activity behavior.
- 6) Future research should delve into the reasons for the low levels of physical activity observed among residents. This involves a comprehensive analysis of the barriers and challenges individuals face in engaging in physical activity, which is crucial for designing more effective physical activity promotion strategies.

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## Competing interests

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**Informed consent**

Obtained.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

**Data sharing statement**

No additional data are available.

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