Physical Fitness and Fitness Criteria for the students of the Border Patrol Police School, Ban Mai Pattansanti, Mae NaChon, Mae Chaem, Chiang Mai

Thanat Yoddumnern
Faculty of Education, Chiang Mai Rajabhat University, Thailand
E-mail: thanat_yod@cmru.ac.th
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Abstract

This research has the ideology for the study, strengthening and organizing physical sidewalks of students at Ban Mai Pattanasanti Police School, Mae Nachon, Mae Chaem, Chiang Mai. The population used in this research was both male and female students. Border Patrol Police School, Ban Mai Phatthana Santi, Mae Nachon, Mae Chaem, Chiang Mai 42 students who are currently enrolled in the 2018 academic year aged 4-12 years and the research tools consisted of 6 physical fitness tests.

The research results were found that physical development of school children in various fields Have improved In which children can respond better to the command and follow the instructions of the teacher. You can also set up physical fitness criteria. That is suitable for a sample as well and physicalperformance after having tested before and after appeared to improve physical performance.

Keywords: Physical development, Physical fitness, Exercise, Student center

Introduction

In the National Economic and Social Development Plan No. 12 (2017-2021), the country's development guidelines have been laid out as follows. By adhering to the philosophy of sufficiency economy, sustainable development and people as the center of development. Chiang Mai Province is a province with a high level of development and potential for tourism. Economy and investment there are many natural and cultural tourist attractions. Has a long history which was the location of the Lanna Kingdom in ancient times. There is Lanna language (Kham Mueang) which is the local language of Chiang Mai Province, which is unique and different from other provinces in terms of traditions. It has a beautiful culture and can be considered the capital of the northern region and the second largest city in Thailand due to Her Royal Highness Princess Maha Chakri Sirindhorn. Princess Maha Chakri Sirindhorn by following His Majesty the King and Her Majesty the Queen Visiting the people, he learned that most rural youth faced problems. Malnutrition, health problems. This will have a link to educational problems because when children and youth have poor health was unable to receive a good education through the mercy of Her Royal Highness Princess Maha Chakri Sirindhorn. Therefore, he bestowed quality of life for students at the Coastal Patrol Police School. Anyone who has contact with the people living along the coast will know that those areas are home to people of many nationalities. There is a diversity of languages, cultures, traditions. People living in that area are on the verge of not knowing that they are Thai. Due to communication problems, using different languages and not understanding each other, this greatly affects national security. From the police patrolling the border, they encountered people living in remote areas and tried to understand those people that they were Thai people. By providing education until it became the Border Patrol Police School. And Border Patrol Police education centers established throughout the country. It is considered the good fortune of Thai people living in remote areas, far from transportation, to receive the royal grace of Her Royal Highness Princess Maha Chakri Sirindhorn. Princess Maha Chakri Sirindhorn in doing work with different hands instead of royal ears His Majesty's delight His Majesty the King Her Majesty the Queen and Her Royal Highness Princess Srinagarindra Boromarajonani In all royal duties that he has always worked at the Border Patrol Police School.

Therefore, the researcher has realized the importance of solving problems related to health promotion and disease prevention. Treatment and restoration of health to the people locals and physical fitness plays a crucial role and is closely related to work in every occupation. This is because good physical fitness enables individuals to work for extended periods with high efficiency. It also provides the capacity to confront life's challenges without emotional stress and allows for the adjustment of the mind and emotions to suit each individual's condition. Therefore, physical fitness is an essential factor for any occupation researchers are well equipped with academic knowledge to integrate and cooperate with agencies that will help drive research to achieve full results. This is the reason why the researcher is interested in conducting research on “Physical fitness and fitness criteria for the students of the Border Patrol Police School, Ban Mai Pattan Santi Community, Mae Na Chon, Mae Chaem, Chiang Mai”. This was a research project that involved students in the Banmai Patanasanti Border Patrol Police School and teachers in the school. In addition, in order to enhance fitness and establish physical fitness criteria. By appropriate to age gender and age. It is also a survey of physical fitness information. To create a standard physical fitness criteria. For evaluating results that are appropriate for students and can be used to perform physical

fitness tests and serve as guidelines for physical, mental, emotional, social, and intellectual development. of the students of the Banmai Patanasanti Border Patrol Police School.

Objective

1. To study the physical fitness of students at Banmai Phatthana Santi Border Patrol Police School. Mae Na Chon, Mae Chaem, Chiang Mai.

2. To prepare physical fitness criteria for students at Banmai Phatthana Santi Border Patrol Police School.Mae Na Chon, Mae Chaem, Chiang Mai.

3. To promote physical fitness and strength.

Methodology

In this research, the researcher studied information on fitness enhancement and preparation of physical fitness criteria for students at Ban Mai Phatthana Santi Border Patrol Police School, Mae Na Chon, Mae Chaem, Chiang Mai.

Population and sample population used in this research. There are male and female students of the Ban Mai Phatthana Santi Border Patrol Police School, Mae Na Chon, Mae Chaem, Chiang Mai who are studying in the academic year 2019, between the ages of 4-13 years, number 42 people which was obtained from a simple random sample.

The sample group consisted of both male and female students of the Ban Mai Phatthana Santi Border Patrol Police School, Mae Na Chon, Mae Chaem, Chiang Mai. Who are studying in the academic year 2019, between the ages of 4-13 years, divided into 23 males and 19 females, totaling 42 people.

Research instruments used in this research. The researcher uses tools created by the researcher, which consists of the physical fitness test consists of 8 items Including weight measurement, height measurement, sitting and bending posture assessment, hand grip strength measurement, rolling to catch a ball with the left and right hands, standing long jump, object retrieval while running, swinging, and catching a ball with both hands as follows: Weight (kg), Height (cm), Sit and Reach (cm), Shuttle Run (sec), Throw and catch a ball with 2 hands (30 sec), Standing balanced (sec), Grip Strength and Roll to catch the ball left-right (1 min). Equipment used in conducting physical fitness tests. Use the following equipment: weight scale, height meter, BMI and WHR calibration table, hand grip dynamometer, back and leg dynamometer, long jump rubber mat, distance measuring tape approximately 60 inches long or ruler measuring tape divided into centimeters approximately 30 centimeters long, distance measuring tape or ruler not less than 25 inches long. Finger and stopwatch.

Data collection

1. Consider the test taking into account standardization. Covers the main components of physical fitness. It is a test with not very complicated techniques. It does not waste a budget or can be applied and modified.
2. Prepare a record sheet for the sample group for testing and enhancing physical fitness.
3. Providing tools, equipment, and facilities and test the data collection process system.
4. Coordinate with the sample groups that must be tested for each item.
5. Set the date, time, and location of data collection.
6. Collect data on the specified date, time, and location.
7. Analyze data and prepare physical fitness criteria. Ready to try out.
8. Printed as a book for distribution to educational institutions. and various agencies.

Data analysis

Part 1The results of the study of the body image status and size of the sample presented the mean (μ) and standard deviation (σ) of the number of males and females in each age group in the form of tables and charts.

Part 2 Results of the physical fitness study of the sample group.

2.1 Present the mean (μ) and standard deviation (σ) values in tables and graphs of test results including weight, height, sit and reach, shuttle run, throw and catch a ball with 2 hands, standing balanced, grip strength and roll to catch the ball left-right. Divided into males and females, ages 4-6.

2.2 Present the mean (μ) and standard deviation (σ) values in tables and graphs of test results including weight, height, sit and reach, shuttle run, standing broad jump, grip strength. divided into males and females, age range 7-9 and 10-1.

Results

This research study has the research objectives. To study fitness enhancement and preparation of physical fitness criteria for students at Banmai Phatthana Santi Border Patrol Police School, Mae Na Chon Subdistrict, Mae Chaem District, Chiang Mai Province. To have growth and development appropriate to age by analyzing data divided into 2 parts as follows.

Part 1 Analysis of study results regarding the status and body size of the male and female sample groups. Ban Mai Phatthana Santi Border Patrol Police School, Mae Na Chon Subdistrict, Mae Chaem District, Chiang Mai Province.

Table 1 Number and percentage of male and female samples in each age group

Age range (years)	Male		Female		Total	
	Amount	**Percent**	**Amount**	**Percent**	**Amount**	**Percent**
4 - 6	8	19.05	5	11.90	13	30.95
7 - 9	12	28.57	4	9.53	16	38.10
10 - 12	3	7.14	10	23.81	13	30.95
Total	**23**	**54.76**	**19**	**45.24**	**42**	**100.00**

From table 1 it is found that males and females, age range 4-6 years, accounted for the percentage. 30.95, ages 7-9 years accounted for 38.10 percent and ages 10-12 years accounted for 30.95 percent and were male. Accounted for 54.76 percent and were female. Accounting for 45.24 percent, total 100.00 percent.

Data analysis of physical fitness study results of male and female samples of the students of the Ban Mai Phatthana Santi Border Patrol Police School, Mae Na Chon, Mae Chaem, Chiang Mai.

Table 2 Mean and standard deviation of physical fitness of male and female samples, age range 4-6 years

Test items	Male		Female	
	μ	σ	μ	σ
Weight (kg)	22.55	2.31	16.18	2.52
Height (cm)	110.38	36.80	106.00	6.96
Sit and Reach (cm)	31.13	3.08	32.10	3.03
Shuttle Run (sec)	6.71	0.57	7.54	0.64
Throw and catch a ball with 2 hands (30 sec)	6.00	2.51	4.00	1.41
Standing balanced (sec)	53.75	15.75	51.00	20.12
Grip Strength	58.63	7.37	55.80	5.40
Roll to catch the ball left-right (1 min)	30.13	4.39	27.80	2.77
Total	**39.33**	**4.80**	**33.05**	**5.36**

From table 2 the male sample, age 4-6 years, found that the highest mean of physical fitness was height with a mean of 110.38, followed by Grip strength with a mean of 58.63, standing balance with a mean of 53.75, sit and reach an average of 31.13, roll to catch the ball left-right an average of 30.13, weight had an average of 22.55, shuttle run an average of 6.71, and throw and catch a ball with 2 hands had the lowest average of 6.00, respectively.

The sample group of females aged 4-6 years found that the average of the highest physical fitness was height with an average of 106.00, followed by grip strength with an average of 55.80, standing and balancing with an average of 51.00, and sit and reach. had an average of 32.10, roll to catch the ball left-right had an average of 27.80, weight had an average of 16.18, shuttle run an average of 7.54, and throw and catch a ball with 2 hands had the lowest average of 4.00, respectively.

Table 3 Mean and standard deviation of physical fitness of male and female samples, age range 7-9 years

Test items	Male		Female	
	μ	σ	μ	σ
Weight (kg)	26.20	3.02	22.55	2.50
Height (cm)	132.00	13.54	137.07	11.43
Sit and Reach (cm)	34.62	2.61	34.36	3.40
Shuttle Run (sec)	13.35	0.72	13.50	0.93
Standing broad jump (cm)	142.89	24.31	139.50	16.21
Grip Strength	16.97	6.61	34.36	5.19
Total	**61.60**	**8.38**	**62.96**	**5.90**

From table 3, the male sample, age 7-9 years, found that the average of the highest physical fitness was standing broad jump with an average of 142.89, followed by height with an average of 132.00, and sit and reach with an average of 142.89. 34.62, weight had an average of 26.20, grip strength had an average of 16.97, and shuttle run had the lowest average of 13.35, respectively.

The female sample, aged 7-9 years, found that the average of the highest physical fitness was standing broad jump with an average of 139.50, followed by height with an average of 137.07, sit and reach with an average of 34.36, and grip strength have an average of 34.36, weights have an average of 22.55, and shuttle run had the lowest average of 13.50, respectively.

Table 4 Mean and standard deviation of physical fitness of male and female samples, age range 10 - 12 years

Test items	Male		Female	
	μ	σ	μ	σ
Weight (kg)	44.03	6.21	39.62	10.39
Height (cm)	156.67	7.51	143.00	6.72
Sit and Reach (cm)	35.43	4.05	35.00	3.06
Shuttle Run (sec)	13.49	0.78	13.43	1.06
Standing broad jump (cm)	28.03	6.89	20.92	3.77
Grip Strength	171.33	37.82	143.70	16.77
Total	**74.83**	**13.59**	**65.94**	**5.80**

From table 4 the male sample, aged 10-12 years, found that the average of the highest physical fitness was grip strength with an average of 171.33, followed by height with an average of 156.67, weight with an average of 44.03, and sit and reach an average of 35.43, standing broad jump an average of 28.03, and shuttle run the had lowest average of 13.49, respectively.

The sample group of females, aged 10-12 years, found that the highest average of physical fitness was grip strength with an average of 143.70, followed by height with an average of 143.00, weight with an average of 39.62, and sit and reach. The average was 35.00, the standing broad jump an average of 20.92, and the shuttle run had the lowest average of 13.43, respectively.

Through the comparison of all three age groups, different skills are found in each range. In the age range of 4-6 years, it is found that the highest average physical fitness is in height. In the age range of 7-9 years, the highest average physical fitness is found in standing and long jumping. In the age range of 10-12 years, the highest average physical fitness is found in hand grip strength.

Discussions

In terms of size and physical fitness

By the sample group used to collect data. There were a total of 42 people, divided into 23 males or 53.48% of the sample. and there were 19 females, or 46.52% of the sample. and the population used to collect this data They are students at the Banmai Phatthana Santi Border Patrol Police School, Mae Na Chon Subdistrict, Mae Chaem District, Chiang Mai Province. Both male and female between the ages of 4 - 12 years, divided into 23 males and 19 females, totaling 42 people. Population this time more males than females. This is in line with the Office of the National Economic and Social Development Council (2019, p.128). Regarding the proportion of the population in Thailand with the number of females being 33,626,627, accounting for 50.97%, the number of males being 32,355,032, accounting for 49.03% from the country's total population of 65,981,659 in 2013. But the number of samples in each age group and gender. It may not be consistent with the age range. Gender of the population of students at Ban Mai Phatthana Santi Border Patrol Police School, Mae Na Chon, Mae Chaem, Chiang Mai, as expected. The researcher will conduct a survey next year. There will be changes to some tests to make them more suitable for your physical condition.

Body weight: both males and females in the sample were underweight between the ages of 4-6 years and tended to increase continuously. As age increases when comparing body weight between males and females. It was found that females weigh about 1-3 kilograms more than males and when compared to the body weight of Thai people. The sports authority of Thailand (2000, p.35) conducted a study on the physical fitness standards of Thai people. It was found that the research sample had weight. More than about 1-2 kg for both males and females. Females tend to gain slightly more weight than males. For weighing the body is important in everyday life. Because it is an evaluation of body size. Growth condition of obesity and the state of malnutrition or abnormalities caused by certain diseases, which Hubley-Kozey (1991, p.58) mentioned the element of height to be considered as well check your own weight to see how much it has increased or decreased. Can be weighed and measured normally, from day to day body weight can change up to + 1 kg for children. And each day's weighing should be at the same time. And the clothes you wear should be as lightweight as possible. Weighing yourself without clothing gives the best idea of your weight.

Height: the male sample has the highest height in the age group of 10-12 years, but females are generally 1-6 centimeters taller than males when compared to the height of Thai people. Kerdchantuk (2000, p.63) conducted a research study on the physical fitness standards of Thai people in 1999 and found that they were very similar in almost every age group, both males and females. But between the ages of 10 - 12 years, females have more differences than in other periods. In this study the highest heights were in the age range of 10-12 years, with the average male being 156.67 centimeters and the average female being 143.00 centimeters. Although the sample size may have been too small. However, from a study of physical fitness criteria for Thai people in 1999, there were a large number of samples in this age group and the average height was similar to this study. It is enough to say that it is a height that meets the minimum height target of Thai youth set by the Department of Health, Ministry of Public Health. Expected in the year 2000 targeted at Thai people aged 20 years with an average height of 169.60 centimeters for males and 157.70 centimeters for females. This is in accordance with the Department of Health (1999, p.21), showing that the guidelines for physical development of Thai children and youth are reasonably in line with the desired guidelines. And in line with

Israsena (2018) conducted research to compare the physical, emotional, mental, social and intellectual development of early childhood children before and after receiving physical activities using media from waste materials. It was found that changes in the physical, emotional, mental, social and intellectual development levels of early childhood children before organizing physical activities using media from waste materials. Early childhood children had an average physical, emotional, mental, social, and intellectual development score of 38.17 after organizing physical activities using media from waste materials. Early childhood children's average scores for physical, emotional, mental, social, and intellectual development were 54.11. And after the experiment, early childhood children had higher levels of physical, emotional, mental, social, and intellectual development than before the experiment, with statistical significance at the .05 level. Keywords: physical activity, early childhood development.

For the test of sit and reach. It measures the flexibility of the muscle groups in the area. Posterior thighs and lower back of the sample, both male and female. It was found that the age group of 10-12 years was most flexible by sitting and bending over. This is consistent with Heyward (1991, p.23) who said that it is sometimes used as an indicator of people who have back pain (lower back pain) to a certain extent. Morrow et al. (2000, p.42) conducted a research study. This time, it was found that males were 10-12 years old and females were 10-12 years old. It is flexible by being able to sit and bend as much as possible and is better than males. It may tend to gradually decrease as people get older. It is caused by changes in the elasticity of tissues, synovial fluid (Synovial fluid) and a decrease in the level of physical activity of the body. As a result, it has decreased flexibility. Heyward (1991, p.51) conducted a study and found that females are always more malleable than males. Because the characteristics of the pelvic structure and hormones of females result in connective tissue being more flexible than males. in daily life persons with soft, flexible joints and muscles It will have a positive effect on your personality. Physical movement usually does not cause body aches and pains. Physical exercise activities or stretching your muscles regularly. In addition to making the body more flexible, it also increases the efficiency of movement. Relieve muscle pain menstrual cramps reduce tension in the nervous system and muscles. It can also reduce breathing rate and symptoms of high blood pressure.

For testing shuttle run of the sample, both male and female. It was found that the age group of 7-9 years was the most agile. Then the fitness will gradually decrease with age and when comparing males and females, it was found that males have higher ability to run and collect things. More than females of all ages females will have an average agility of approximately 13.35 that of males. Which is a storage run test. It is a test that has high accuracy and is used to measure performance and agility. This is a muscle that is important to a good personality and health. Hoeger & Sharon (2002, p.49) testing is generally agile. There are various methods such as wig zag running, etc. But this method may cause injury to the ankle and thigh muscles and while testing the thigh muscles. The muscles required to flex the hips must be more forceful. Shuttle run is therefore a test of agility in particular. and greatly reduce the risk of danger that may arise from testing

For testing grip strength and standing broad jump. It is a test of the strength and endurance of the upper body muscles of the sample, both male and female. It was found that the age group of 10-12 years had the highest muscular endurance strength, consistent with Wilmore & Costill (1994, p.48) who studied the results of a weightlifting competition and found that Females have about 63% of the muscle strength of males. In addition, there has been a study of the muscle strength of the upper body. Females have approximately 43-63% of the strength of males. The reason why males are stronger than females. Due to the size and shape

components of the body, especially muscles physiological response to training, etc. However, in this research study Data from a muscular strength and endurance test. It is consistent with the above principles. Both in terms of maximum strength in the age range decline with age or differences between the genders very well and Robbins et al. (1999 , p.55) stated that in the test postures of males, the arms, chest, and shoulders will bear more weight than females who applied the postures. To reduce body weight by using the knees to touch the floor, while McArdle et al. (2000 , p.37) while testing (modified push-ups) instead of using the toes to touch the floor. From this study it was found that male, age 10-12 years females have the highest upper body muscle endurance. After that, it will gradually decrease with age as well. Males performed more tests than females at every age group. Females will have about 68% more strength and endurance in their upper body muscles in the push-up test than males, and McArdle et al. (2000, p.61) have mentioned that their muscle mass will be high. The highest age range is 16-20 years for males and 18-25 years for males. In females, male strength is highest between the ages of 20-30 years, while females are highest at the age of 20 years. The decline continues. When you get older In general, after age 30, muscle strength will decrease by 1.0-1.5% each year until age 70, after which the rate of decline may be even greater. It depends on each person's lifestyle. This is consistent with Chatwirot (2008) who conducted research to study health problems and health promotion for preschool children. of parents and teachers in the Kamphaeng Phet community area using a questionnaire asking 341 parents of preschool children aged 3-6 years in the Kamphaeng Phet community area and teachers of preschool children aged 3-6 years in the area. Kamphaeng Phet community totaling 70 people. The research results found that health problems of preschool children in the Kamphaeng Phet community area. The overall level was at a minimal level. The overall level of promoting the health of preschool children by parents was at a moderate level. And the overall health promotion of preschool children by preschool teachers is at a high level.

In conclusion, this research study provides information on enhancing fitness and creating physical fitness criteria. Having a very thick and obese body size will cause various physical abilities to decrease. Having physical abilities in various aspects. A good body shape will result in an appropriate size and proportion. For males, having good physical fitness in one area usually leads to good physical fitness in other areas as well, or it can be said that it affects good overall fitness. For females, physical fitness in any aspect is good. It may not affect other aspects of physical fitness as well. This may be the result of elements within the body. Daily routine response to training selecting specific exercises for specific areas. As a result, each aspect of physical fitness is still not as balanced as it should be Corbin et al. (2013) define physical fitness as the body's ability to perform duties efficiently, which includes 5 components related to health 1) cardiovascular endurance 2) muscular endurance 3) flexibility 4) muscle strength 5) body composition. These components help promote and support the quality of life. Additionally, physical fitness related to skills includes 6 components: 1) agility 2) power 3) reaction time 4) balance 5) speed 6) coordination. These components contribute to the fitness of specific movements, especially for athletes. This study revealed the enhancement and preparation of physical fitness criteria for students at the border Patrol Police School. Including models for developing physical fitness makes students experience changes in their bodies. Obtain correct and appropriate methods for testing the body. Have knowledge, understanding and guidelines in practice very well. Such as research of Chaiyamang (2020) to study development of movement skills of preschoolersp. This research will result in the community, parents and schools to be aware of the development of movement in preschool children together, including being a preliminary examination and screening of preschool children with problems in movement development so that preschool children can receive care and treatment

in a timely manner and allow preschool children to return to normal. The results of this research will result in a program for developing movement, exercise and physical fitness tests for preschool children. However, the results from this research study can also promote and organize exercise activities. They also know about their health and physical fitness. and can solve physical fitness problems. As well as giving advice and advice on exercise. And most importantly, physical fitness criteria can be prepared. In order to prepare it as a standard for further dissemination.

Conclusion and suggestions

This study revealed the enhancement and preparation of physical fitness criteria for students at the Border Patrol Police School. Including models for developing physical fitness makes students experience changes in their bodies. Obtain correct and appropriate methods for testing the body. Have knowledge, understanding and guidelines in practice very well suggestions for next research. The fitness and physical fitness criteria for students at the Border Patrol Police School should be strengthened and thoroughly developed in other related schools. Furthermore, the research findings can also be utilized as criteria for testing in other Border Patrol Police Schools.

New knowledge and the effects on society and communities

The researcher has seen the physical fitness of the students in the Border Patrol Police School, seen the physical changes of the Border Patrol Police students, and also has internal factors that affect the physical development of the students. This is the teaching curriculum in schools that should give importance to physical education. To strengthen the body and understand the correct physical examination method. And external factors that affect the physical development of Border Patrol Police students include economic conditions, social conditions, and equipment and places for exercising students that are not yet conducive to students as they should Increase access to communities and target group villages to enhance access to physical fitness information.

References

Chaiyamang, A. (2020). The Development Of Movement Skills Of Preschoolers, Chiangmai Rajabhat University Demonstration School, Mueang District, Chiang Mai Province. *Community and Social Development Journal*, *21*(3), 68–83. Retrieved from https://doi.org/10.14456/rcmrj.2020.216996

Chatwirot, A. (2008). *Health and Health Promotion for Early Childhood in Kamphaeng Phet Community area.* Kamphaeng Phet : Kamphaeng Phet Rajabhat University.

Corbin, C., Welk, G., & Welk, K. (2013). *Concepts of Physical Fitness*. (7th ed.). New York : McGraw-Hill.

Department of Health. (1999). *Handbook for the new generation who are tall and suitable for their age.* . Ministry of Public Health. War Veterans Organization Printing.

Heyward, H. V. (1991). *Advanced Fitness Assessment and Exercise Prescription*. (3rd ed.). Champaign,llinois: Human Kinetics Publishers.

Hoeger, W. W., & Sharon, A. H. (2002). *Principles and Labs for Fitness and Wellness*. (6th ed.). Canada: Wadaworth Thomson Learning.

Hubley - Kozey, L. C. (1991). *"Teating Flexiblity", in Physiological Testing of the High Performance Athlete*. Edited by Mac Dougall, Dancan J. and other. P 338. Lllinois : Human Kinetics Publishers.

Israsena, C. (2018). *Results of organizing physical activities using media from waste materials on the development of 4 areas of early childhood children at Chiang Mai Rajabhat University Demonstration School*. Chiang Mai: Chiang Mai Rajabhat University.

Kerdchantuek, S. (2003). *A study of the physical fitness of Thai people using a simple test.* Sports Science Department Sports Authority of Thailand.Bangkok: New Thai Mit Printing (1996).

McArdle, D. M., Frank, L. K., & Victor, L. K. (2000). *Essentals of Exercse Physiology.* 2nd ed. United States of America: Lippincott Williams and Wilkins.

Morrow, J. R., Mood, D. P., Zhu, W., & Kang, M. (2000). *Measurement and Evaluation in Human Performance.* United States of America: Human Kinetics Publishers.

Office of the National Economic and Social Development Council. (2019). *Report on population estimates of Thailand 2010 - 2040 (revised edition).* Office of the National Economic and Social Development Council. Bangkok.

Robbins, G., Debbic, P., & Sharon, B, A. (1999). *Wellness Way of Life*. (4th ed.). United States of America : The McGraw-Hill Companies.

Sports Authority of Thailand. (2000). *Physical fitness standards for Thai people*. Sports Science Department Sports Authority of Thailand. Bangkok: New Thaimit Printing (1996).

Wilmore, H. J., & Costill, L. D. (1994). *Physiology of Sport and Exercise*. Champaign: Human Kinetics Publishers.