

The development of the physical activity model to improve the physical fitness of regular government teachers using the smart ladder agility tool

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Abstract:

Designing quantitative research methods to develop the physical activity model and improve the physical fitness of regular government teachers in Thailand. This requires regular exercise 2-3 times a week for at least 30 minutes in 8 weeks. Using the Physical Activity Appropriateness Assessment Form (PAAA), the Smart Ladder Agility Tool (SLAT), and the Physical Fitness Competency Test (PFCT) instruments that are valid and reliable, 35 controlling and 35 experimental teachers were evaluated with average age means of 37.57 and 40.29 years, respectively. Statistically, significance was analyzed with mean, and standard deviation, compared to the benchmark, t-test analysis on body mass index (BMI), sitting bent forward, stands-sitting on a chair for 60 seconds, sitting with knees up and down in 3 minutes, and hand grip strength training activities. The design of the pre-test control-experimental, post-test control-experimental, pre-test control, and pre-test post-experimental groups was compared. Statistically, the significance is differentiated at the .05 level on the pretest-posttest-experimental group of the Standing-Sitting on a Chair for 60 seconds and Standing with Knees up and down in 3 minutes activities differently. Therefore, in three out of five, the physical fitness competency test using SLAT on body mass index (BMI), sitting bent forward, and hand grip strength training activities are not differentiated, none significant at the .05 level. The results found that comparing the interpretation to the benchmark on proportional BMI is correlated. Overall, in Sits Bent Forward is moderate level, and the Hand Grip Strength scale is perfect for experimental group training activities.

Key Words: Developing the physical activity model, improving physical fitness, regular government teachers, smart ladder agility tool, pre-test-post-test-design-model, controlling and experimental teacher groups.

Introduction

Behaviours of Thai people in daily life, Thais are generally very friendly and tolerant people who often turn a blind eye to major faux pas by foreigners. Relationship problems between Thais and Western people's behaviours are usually caused by misunderstanding of cultural differences and other misunderstandings related to them (Siam-Info, 2016). Thai culture is warm and welcoming, but also conservative. Although people are keen to save face and avoid confrontations, there are a number of ordinary western habits that can be liable to cause offence (Wilson, A. (2014).

The Central Registration Office, Department of Provincial Administration, Ministry of Interior, has issued an announcement regarding the number of inhabitants throughout the Kingdom. According to the principle of civil registration as of December 31, 2020, Thailand has a total population of 66,186,727 (Wongpanya, 2021). However, the 12th National Economic and Social Development Plan (2017-2021) has given importance to strengthening and developing human capital potential. A 2012 survey found that Thais average 13.25 hours of sedentary behavior per day, and in 2015 the average increased to 13.54 hours per day. The top 4 sedentary behaviors of Thai people who performed continuously for more than 1 hour at a time were sitting or lying watching television, sitting and talking or meeting, sitting at work or studying, and playing games. These behaviors pose a risk of disease, especially chronic noncommunicable diseases (Office of the Prime Minister, 2017).

This research study was modified from Research and Development (R&D) that includes activities on educational personnel to educational innovation. It is often the first stage in the development process (Kenton,

2021). The main role of the R and D department is to help a company or organization maintain its competitiveness (Dalley, 2019). It takes place in companies of all sizes. One of the most outstanding model designs is the Research and Development Method (R&D) Method (Gustiani, 2019). Think of it as research for the sake of research, the method of this research study was applied for human physical activity model.

Physical activity is an area of life in which social influence plays a major role. Observing the activity of a sedentary person can cause the observer to exercise less; Observing a persistently active person can serve as a motivating factor. This research conducts an observational study of data collected from a mobile health and fitness application, which allows users to follow each other in addition to tracking physical activity (Turchaninova et al., 2015). Physical activity occurs when your muscles contract to move your body. The national physical activity guidelines for teens recommend at least 60 minutes and up to several hours of physical activity each day of the week (Corbin, Masurier & Lambdin, 2019). Popular adult sport and physical activity: walking (recreational), exercise or gym, running or athletics, swimming, cycling, bushwalking, football or soccer, and yoga are common physical activities (Better Health Channel 2017). Physical activity is more than exercise that is developed in the physical activity model (University of Minnesota, 2017).

Physical development refers to the advancements and refinements of motor skills, or, in other words, children's abilities to use and control their bodies. Physical development is one of the many domains of infant and toddler development (Infants & Toddlers Physical Development, 2019). Regular physical activity promotes growth and development and has multiple benefits for physical, mental, and psychosocial health that undoubtedly contribute to learning. Physical activity can improve mental health by reducing and preventing conditions such as anxiety and depression, as well as improving mood and other aspects of well-being (Public Health Information (CDC), 2016). Physical activity and exercise can have immediate and long-term health benefits. Most importantly, regular activity can improve your quality of life, for example, fitness activity is too common activity (Better Health Channel, 2018).

Physical fitness activities keep your heart, lungs, and circulatory system healthy and improve your overall fitness. Examples include brisk walking, jogging, swimming, and biking (Medicine Plus: Trusted Health Information for You, 2019). There are five fitness activities that you can do anywhere, anytime: kneeling push-ups, start with your knees on the ground, feet lifted and your hands directly underneath your shoulders, planks, and start lying face down, squats, jumping jacks, and running in place (Jump IN for Healthy Kids, 2017). Furthermore, considering the total body, there are six elements of fitness: aerobic capacity, body structure, body composition, balance, muscular flexibility, and strength (Center for Disease Control and Prevention, 2019). Benefits of improving brain health, weight management, reducing disease, strengthening bones and muscles, and improving your ability to do daily activities to get started with physical activity for a healthy weight (Philadelphia Inquirer, 2015).

In simple terms, 'physical fitness' refers to the ability of the body to adapt to the external environment and cope with daily activities. Good physical fitness not only enables a person to perform daily work, but also gives him extra energy to enjoy leisure, ensuring the body can adapt to unexpected environmental changes and daily pressures. There are two types of physical fitness, namely health-related physical fitness and sports-related physical fitness (Division of Physical Fitness, Leisure and Cultural Services, 2014). Ten things you can do to improve your physical fitness: walk a little extra, go stairs, go outdoors, lead with your heart, stretch, go dancing, play a sport or exercise in a gym, do aerobics and weight resistance training (Rosard, 2011). Getting into physical fitness steps you can take to start improving your fitness and feeling better physically and mentally (Gordon, 2021). Physical fitness is very important for health. Citizens are advised to enhance their physical fitness with the following three types of exercises, aerobic activities, stretching activities, and resistance activities, as well as enjoying a quality life (Department of Physical Fitness, Leisure and Cultural Services, 2014).

The Office of the Basic Education Commission (OBEC) is a Thai governmental agency, founded in 2003. It is an office of the Thai Ministry of Education (MOE). Its mission is to organize and promote basic education from primary school to high school (Office of the Basic Education Commission (OBEC), 2017). The OBEC was formed by combining the Department of General Education of the Office of the National Primary Education Commission and the Office of the Private Education Commission of the Ministry of Education. The OBEC has agencies in each region, including an Education Service Area Office in 181 areas and 16 central agencies through (Thailand Ministry of Education, 2017).

Government teachers are government personnel who perform duties in the Thai government. In the past, it was called "Government Teachers" under the supervision of the Office of the Teachers Commission and Educational Personnel. A government teacher affiliated with the local government is also known as government teachers and educational personnel in Bangkok, Provincial Administrative Organization teachers, municipal government teachers, and Sub-district Administrative Organization teachers (Government Gazette, 2017). The number of government teachers stationed in schools under the Basic Education Commission, the Ministry of Education has 406,550 people (UNICEF, 2018).

The Education Service Area Office is a Thai agency in the Office of the Basic Education Commission of Thailand, the Ministry of Education founded in 2009. Its responsibilities include the administration of

education from primary education or secondary education in each responsibility area including Primary Education Services Area and Secondary Education Services Areas. The OBEC, there are central government agencies in various regions throughout the country, including 183 primary education areas, 62 secondary education areas, and 17 central agencies (Office of the Basic Education Commission, 2020). The supporting budget for the year 2021 from 278,317,466,700 THB was received for administration management (Government Gazette, 2020).

Smart ladder for agility for improving the physical performance of athletes and the general public, it is a training or testing device that contains time and step information with the ability to count the number of steps and time accurately, which is important feedback. In addition, the smart monkey ladder has various operating modes to be consistent with the training objectives. In which the trainer can choose from a variety of training modes. Also, being able to control and report the results through the application on the smart phone. This greatly facilitates the trainers and can also be used with different groups of people. The smart ladder for agility is designed to be portable and easy to use. All devices are powered by rechargeable batteries. It can work in manual or automatic mode (Kasetsart University Research and Development Institute, 2020) (ladders' samples show in Figure 1).



Fig.1 Agility smart ladder tool for sports training

Source: Movement First Singapore (2019).

The Smart Organizer simplifies the gathering and release of ladder rungs, preventing tangling and knotting. Handle included for easy transport and storage. Twist two organizers together for even more convenient storage. Create various patterns from double/triple lane ladders to obstacles, zigzag patterns, and a full grid. Unlimited options for drills and exercises, snap ends together for increased length, and connect rungs for increased number of rows (Gym Tech Fitness, 2019).

Material & methods

The Research & Development Method was modified to Thai RGTs that are overweight and obese are increasing exponentially and are at risk of developing diabetes unconsciously, of which 5-10% per year will develop diabetes if health behaviors are not changed. Therefore, exercise is important and necessary. This requires regular exercise 2-3 times a week for at least 30 minutes (Office of the Health Promotion Fund, 2016). Therefore, it will bring maximum benefits to the body with the smart ladder agility tool trained and practiced to develop the physical activity model to improve the physical fitness of the RGTs under the Office of the Basic Education Commission of Thailand.

The research aims to develop the physical activity model to improve the physical fitness of RGTs under the Office of the Basic Education Commission using the smart ladder agility tool to affect the competency of their physical performance for regular government teachers.

Step 1: Develop a form of physical activity with the Smart Ladder Agility Tool

Development of physical activity patterns to improve the physical fitness of RGTs with the smart ladder agility tool (SLAT). Synthesized data to shape the physical activity model, adopt the physical activity model in order to improve the physical fitness of teachers with the SLAT was developed to consult with experts for determining suitability, and improved according to the recommendations of experts who were specialists in Health Sciences, Sports Science, Physical Education, and Recreation.

Step II: Research Instrument

The Physical Activity Appropriateness Assessment Form (PAAA)

The PAAA was to improve the physical fitness of RGTs with the SLAT which was an open-ended questionnaire to assess suitability.

The Smart Ladder Agility Tool (SLAT)

The 40-item Smart Ladder Agility Tool (SLAT) on four scales in five options is an electronic device that uses wireless technology to operate on the power of a rechargeable battery for developing and testing physical fitness which has integrity and confidence. The Pearson product moment correlation coefficient is 0.92 and 0.78, respectively. It has time information, step count capability, and accurate timekeeping, which is

important feedback. There are various modes of operation. In accordance with the objectives of the training, users can choose from a variety of training modes, as well as control and report the results through the application on the smart phone, which facilitates.

The SLAT has 5 operating modes: Auto Timing Mode, Auto Step Count Mode, Timing Mode with Auto Step Count, Manual Timer Mode with Auto Step Count and Built-in Step Count Mode. The step count mode of the SLAT in 30 seconds and this statistically significant with Cronbach alpha reliability and validity study appropriateness are valid and reliable. The tests in two timing tests using the SLAT were statistically significantly correlated at the .01 level, with a relatively high correlation and high overall suitability of the SLAT.

The Physical Fitness Competency Test (PFCT)

The PFCT was related to health for the general public (aged 19 - 59), which includes body composition, strength; muscular endurance, muscular weakness, and circulatory and respiratory system endurance consist of five tests such as body mass index (BMI), foreword and reach, 3 minutes step up and down, hand grip strength, and 60 seconds chair stand.

Step III: Research Collections

The research model was a two-group pretest-posttest design method, with data collection steps as follows: Criteria for inclusion of the samples in the group (inclusion criteria), the sample participated in the research project voluntarily and signed a consent document. Criteria for selecting the sample from the group (exclusion criteria) there was a reason for leaving the research because of a health problem while participating in the research project.

Step IV: Data Analysis

Take data from the questionnaire Content analysis and improve physical activity patterns to improve the physical fitness of RGTs with the SLAT. The performance of the physical activity model with the SLAT was tested on the physical performance of the RGTs such as:

Orientation: Research participants can independently decide to participate when the sample agrees to participate in the research project. The researcher will require the sample to sign a consent form to participate in the research project.

Experimental group: A health check by a doctor or professional nurse to assess the health of the body before participating in the research project, taking a health-related physical fitness test. Conducting a physical activity model to develop physical fitness of the RGTs with the SLAT for 8 weeks, 3 days, 1 hour each time, between 1.00-4.00 pm, and their physical competency fitness test to collect data for the first time were tested. This is the accompanying information before/after the experimental design.

Controlling group: Health check by a doctor or professional nurse to assess the health of the body before participating in the research project was recorded. The taking of a health-related physical fitness test was examined. The control group resumed normal activities for a specified period of time and health-related physical fitness tests to collect post-test data.

Bring the developed model to trial in the research procedures: Taking a health-related physical fitness test to collect data before the experiment. The physical activity model was carried out to improve the physical fitness of RGTs with SLAT for 8 weeks, 3 days, 1 hour per week, between 3:30 PM and 4:00 PM that followed as the purpose of the model, the results of the interviews using the model, the user feedback form at this stage, the focus will be on the process of developing a model, checking the suitability of the model, and the methods when it is actually used. Analyze the results of the model development by analyzing the content. Modify the format according to the results of the test.

The sample size was determined using the G*power version 3.1.2 package program, with the confidence level set at .05. The power of the test was 0.95. The effect size was 0.5, which is a high level of influence. The sample size was 70 teachers from basic education schools under the Office of the Basic Education Commission using a multistage sampling method. A sample size consisted of 35 teachers for the experimental group and 35 teachers for the controlling group.

Analyzing with a package of processing programs: General information of the sample analyzed by frequency and percentage values, analysis of the results of the model development with content analysis, analysis of physical competency fitness by body mass index, compared average means of the health-related physical competency fitness scores in the pretest-posttest-design method trial using t-test analysis was analyzed.

Results

The modified research and development method was integrated to develop the physical activity model to improve the physical fitness of RGTs under the Office of the Basic Education Commission using the SLAT tool and a sample size was assessed consisting of 35 teachers for the experimental group and 35 teachers for the controlling group.

General data of the sample size

The general data of the sample size was participated in this research project that is reported in Table 1.

As reported in Table 1, the sex of the male teachers was 6 persons (17.1%) and the female 29 persons (82.9%), SD = 0.38 and variance = 0.15 for the controlling group. In terms of the experimental group, the male teachers were 5 persons (14.3%) and the female 30 persons (85.7%), SD = 0.36 and variance = 0.13, respectively.

Table 1: Accounting RCTs, percentage, standard deviation, and variance of Sex for the Controlling and Experimental groups

Trial	Accounting RCTs	Percentage (%)	Standard deviation	Variance
Male for Controlling group	6	17.1	0.38	0.15
Female Controlling group	29	82.9		
Male Experimental group	5	14.3	0.36	0.13
Female Experimental group	30	85.7		

N=35

Table 2: Means, standard deviation, variance, and t-test for accounting RCTs of age for the controlling and experimental groups

Trial	Mean	Standard deviation	Variance	t-test	Sig.
Controlling group	37.57	10.72	114.96	-0.96	0.35
Experimental group	40.29	9.16	83.86		

N=35, * $p < .05$, ** $p < .01$, *** $p < .001$

The results in Table on the age average means (years) are 37.57, SD = 10.72, variance = 114.96 for the Controlling group. Focused on the Experimental group ($\bar{x}$ = 40.29, S.D. = 9.16, variance = 83.86). The average means of their ages for the controlling and experimental groups are not differentiated with t-test analysis, none significantly at .05.

Comparisons between the results of the Body Mass Index (BMI) physical fitness test with the pre-test-post-test design method for controlling and experimental groups using the Smart Ladder Agility Tool (SLAT)

Developing the Physical Activity Model to improve the physical fitness of regular government teachers under the Office of the Basic Education Commission was compared using the Smart Ladder Agility Tool (SLAT) with the Pre-test-Post-test Design Method for control and experimental groups (Department of Physical Education, (2019). Statistically significant was analyzed with mean, standard deviation, compared to the t-test benchmark analysis reported in Table 3.

Table 3: Means, standard deviation, variance, and t-test on results of the body mass index (BMI) on physical fitness test with the pre-test-post-test design method for Controlling and experimental groups

Trial	Mean	Standard deviation	Compared to benchmark	t-test	Sig.
Pre-body mass index (BMI) for Controlling group (kg/m^2)	23.69	4.60	Proportional BMI	1.68	0.10
Post-Body Mass Index (BMI) for Controlling group (kg/m^2)	23.33	4.59	Proportional BMI		
Pre-Body Mass Index (BMI) for Experimental group (kg/m^2)	25.24	5.77	Proportional BMI	1.44	0.16
Post-Body Mass Index (BMI) for Experimental group (kg/m^2)	24.97	5.55	Proportional BMI		

N=35, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3 reports on the Body Mass Index (BMI) between the pre-post-BMIs for the Controlling and experimental groups (kg/m^2) are Proportional BMI status, and none significantly with the t test, differently after training with the SLAT in 8 weeks.

Comparisons between the results of the physical fitness test of the pre-body mass index (BMI) and post-body mass index (BMI) for the control and experimental groups using the SLAT

Developing the Physical Activity Model to improve physical fitness of regular government teachers under the Office of the Basic Education Commission using the Smart Ladder Agility Tool (SLAT) with the pre-test-post-test-design method for pre-BMI control and pre-BMI-experimental, and post-BMI control and post-BMI-experimental were compared. Statistically significant was analyzed with mean, standard deviation, compared to the t-test benchmark analysis reported in Table 4.

Table 4: Means, standard deviation, simple correlation and t-test on results of the physical fitness test of the pre-body mass index (BMI) and with post-body mass index (BMI) for control and experimental groups

Trial	Mean	Standard deviation	Simple correlation	t-test	Sig.
Pre-BMI-Controlling group (kg/m ²)	23.69	4.60	0.26*	-1.43	0.16
Pre-BMI-Experimental group (kg/m ²)	25.23	5.77			
Post-BMI-Controlling group (kg/m ²)	23.33	4.59	0.22*	-1.52	0.14
Post-BMI-Experimental group (kg/m ²)	24.98	5.55			

N=35, *p<.05, **p<.01, ***p<.001

Using the SLAT with the pre-test-post-test-design method for pre-BMI-Controlling and pre-BMI-Experimental, and post-BMI-Controlling and post-BMI-Experimental were compared that reports in Table 4. The results of the Pre-BMI-Controlling and Pre-BMI-Experimental groups and the Post-BMI-Controlling and Post-BMI-Experimental groups are none significant, differently with the t-test. However, comparisons between results are correlative with a simple Pearson correlation at .05 (p<.05).

Comparisons between pre-test, post-test, control-experimental groups to develop the physical activity model to improve physical fitness of regular government teachers in the Sits Bent Forward (sit and reach) using the SLAT

The results of the physical fitness test for the Sits Bent Forward (sit and reach) with the pre-test-post-test-design method for the Controlling and Experimental groups to improve physical fitness of regular government teachers using the SLAT with means, standard deviation, simple correlation and t-test analysis reported in Table 5.

Table 5: Means, standard deviation, simple correlation and t-test on results of physical fitness test for Sits Bent Forward (sit and reach) with the pre-test-post-test-design method the for Controlling and Experimental groups

Trial	Mean	Standard deviation	Simple correlation	t-test	Sig.
Pre- Sits Bent Forward (sit and reach) for Controlling group (second)	6.91	7.50	0.89***	-0.12	0.90
Post- Sits Bent Forward (sit and reach) for Controlling group (second)	6.57	9.38			
Pre- Sits Bent Forward (sit and reach) for Experimental group (second)	7.17	9.18	0.94***	-0.39	.69
Post- Sits Bent Forward (sit and reach) for Experimental group (second)	7.49	9.29			

N=35, *p<.05, **p<.01, ***p<.001

Comparisons between the results of the physical fitness test for the bent forward sit (sit and reach) with the pre-test-post-test design method for the control and experimental groups using the SLAT

The results of the physical fitness test for the Sits Bent Forward (sit and reach) with the pre-test-post-test-design method of the pre-controlling and pre-experimental groups and the post-controlling and post-experimental groups to improve the physical fitness of regular government teachers were compared (Department of Physical Education, (2019). Using the SLAT with means, standard deviation, simple correlation, and t-test analysis were analyzed that reported in Table 6.

Table 6: Means, standard deviation, simple correlation and t-test on results of physical fitness test results for the Sits Bent Forward (sit and reach) with the pre-test-post-test design method for Controlling and experimental groups

Trial	Mean (accounting times)	Standard deviation	Compared to benchmark	t-test	Sig.
Pre- Sits Bent Forward (sit and reach) for Controlling group	6.91	7.50	Moderate	-0.12	0.90
Pre- Sits Bent Forward (sit and reach) for Experimental group	7.17	9.29	Moderate		
Post- Sits Bent Forward (sit and reach) for Controlling group	6.57	9.18	Moderate	-0.39	0..69
Post- Sits Bent Forward (sit and reach) for Experimental group	7.48	9.29	Moderate		

N=35, *p<.05, **p<.01, ***p<.001

As reported in Table 6, using the t-test analysis, sit bent forward (sit and reach) activities were analyzed between the pre-controlling and pre-experimental groups, and the post-controlling and pre-experimental groups are not differentiated, none significantly at the level of .05 Most of them are modulate to compare to standard benchmark criteria after their training in 8 weeks.

Comparisons between the results of the physical fitness test for standing on a chair in 60 seconds with the pre-test-post-test design method for control and experimental groups using the SLAT

Regular government teachers were tested for their activities with standing and sitting on a chair in 60 seconds using the SLAT to their pre-test-post-test- and pre-test-post-test - Experimental groups were compared with means, standard deviation, compared to the benchmark (Department of Physical Education, (2019). and t-test analysis.

Table 7: Means, standard deviation, compared to benchmark and t-test on physical fitness test results for Standing Sitting on a Chair on 60 seconds with pre-test-post-test-design method for Controlling and experimental groups

Trial	Mean (accounting times)	Standard deviation	Compared to benchmark	t-test	Sig.
Pre-Standing-Sitting on a Chair for Controlling group	38.31	10.62	Modulate	-0.54	.59
Pre-Standing-Sitting on a Chair for Experimental group	39.60	9.18	Good		
Post-Standing-Sitting on a Chair for Controlling group	39.37	15.98	Good	-2.48*	.02*
Post-Standing-Sitting on a Chair for Experimental group	47.63	12.25	Very Good		

$N=35$, * $p<.05$, ** $p<.01$, *** $p<.001$

The results in Table 6 reported that the mean, SD, compared to the reference (CB) and the t-test: mean average = 38.31 and 39.60; SD. = 10.62 and 9.18; the CDs indicate Modulate and Good levels for pre-controlling and pre-experimental groups, respectively. Comparisons between the post-controlling and post-experimental groups report that of means = 39.37, 47.63; SD. = 15.98, 12.12; the CDs indicate that of Good levels too; statistically significant is differentiated at .05 ($t = -2.48$, $p<.05$).

Comparisons between results of the physical fitness test for standing-sitting on a chair in 60 seconds with the pre-test-post-test design method for the control and experimental groups using the SLAT

Regular government teachers were tested for their activities with standing and sitting on a Chair in 60 seconds using the SLAT to their pre-test-post-test-Controlling and pretest-posttest- Experimental groups were compared with means, standard deviation, compared to the benchmark (Department of Physical Education, (2019). and t-test analysis.

Table 8: Means, standard deviation, compared to benchmark and t-test on physical fitness test results for Standing Sitting on a Chair on 60 seconds with pre-test-post-test-design method for Controlling and experimental groups

Trial	Mean (accounting times)	Standard deviation	Compared to benchmark	t-test	Sig.
Pre-Standing-Sitting on a Chair for Controlling group	35.31	10.62	Modulate	-0.37	0.90
Post-Standing-Sitting on a Chair for Controlling group	39.37	15.99	Good		
Pre-Standing-Sitting on a Chair for Experimental group	39.60	9.18	Good	-4.87***	.000***
Post-Standing-Sitting on a Chair for Experimental group	47.63	12.25	Very Good		

$N=35$, * $p<.05$, ** $p<.01$, *** $p<.001$

As reported in Table 6, the mean, SD, compared to benchmark (CB), and t-test ($\bar{x} = 35.31$, S.D.=10.62, CD=Modulate level for pre-Standing-Sitting on a Chair; and $\bar{x} = 39.37$, S.D.=15.99, CD=Good level for post-Standing-Sitting on a Chair for the Controlling group that none significantly with t-test analysis. ($\bar{x} = 39.60$, S.D.=9.18, CD=Good level for pre-Standing-Sitting on a Chair; and $\bar{x} = 47.63$, S.D.=12.12, CD=Very Good level for Post-Standing-Sitting on a Chair on the Experimental group that are differentiated significantly ($p<.001$).

Comparisons between the results of the physical fitness test for the activities of standing with knees up and down in 3 minutes with the pretest-post-test design method for the control and experimental groups using the SLAT

Designing the analysis of pre-Stand with knees up and down for 3 minutes for the Controlling and Experimental groups, and post-Stand with knees up and down for 3 minutes for the Controlling and Experimental groups was compared with Means, standard deviation, compared to benchmark and t-test analysis using the SLAT that is shown in Table 9.

In Table 9 showed the mean average, SD, compared to the benchmark (Department of Physical Education, (2019), and the t-test analysis was compared on the pre-test-post-test-Stand with knees up and down for control (mean = 134.80, 135.54; SD. = 48.82, 31.78; the CBs indicate modulate levels, too; and statistically significant is none differentiated ($p < .05$). The results of the pre-test-post-Stand with knees up and down for experimental groups are found that the average means are 170.57 and 177.57; the SD indicate that of 55.25 and 53.82; the CBs reveal that of Very Good levels together, similarly; the t-test value as -0.76 ($p < .05$) is not differences, none significantly.

Table 9: Means, standard deviation, compared to benchmark and t-test of their physical fitness test results for training with stand with knees up and down activities in 3 minutes with pre-test-post-test-design method) the for Controlling and Experimental groups

Trial	Mean (accounting times)	Standard deviation	Compared to benchmark	t-test	Sig.
Pre-Stand with knees up and down for Controlling group	134.80	48.82	Modulate	-0.12	0.91
Pre-Stand with knees up and down for Experimental group	135.54	31.78	Modulate		
Post-Stand with knees up and down for Controlling group	170.57	55.25	Very Good	-0.76	.45
Post-Stand with knees up and down for Experimental group	177.57	53.82	Very Good		

$N=35$, $*p < .05$, $**p < .01$, $***p < .001$

Comparisons between the results of the physical fitness test for standing with knees up and down activities in 3 minutes with the pre-test-post-test design method for the control and experimental groups using the SLAT

Designing the analysis of pre-post-Stand with knees up and down for 3 minutes for the Controlling and pre-post-Stand with knees up and down for 3 minutes for the Experimental group, the analysis of pre-post-Stand with knees up and down was compared with Means, standard deviation, compared to benchmark and t-test analysis using the SLAT shown in Table 10.

Table 10: Means, standard deviation, compared to benchmark and t-test of physical fitness test results for training with stand with knees up and down activities in 3 minutes with the pre-test-post-test design method for controlling and experimental groups

Trial	Mean (accounting times)	Standard deviation	Compared to benchmark	t-test	Sig.
Pre-Stand with knees up and down for Controlling group	134.80	48.82	Modulate	-3.23**	0.003**
Post-Stand with knees up and down for Controlling group	170.60	55.24	Good		
Pre-Stand with knees up and down for Experimental group	135.54	31.78	Good	-4.04***	.000***
Post-Stand with knees up and down for Experimental group	177.57	53.82	Very Good		

$N=35$, $*p < .05$, $**p < .01$, $***p < .001$

Table 10 showed the mean average, SD, compared to the benchmark (Department of Physical Education, (2019) and the t-test analysis was compared on the pre-test-post-test-Stand with knees up and down for control (mean = 134.80, SD. = 48.42; mean = 170.60 SD. = 55.24 for the pre-post-controlling group; the indicate modulate and good levels: mean = 135.54, SD. = 31.78; and mean = 177.57; SD. = 53.82 for the pre-post-experimental group; the indicate good and very good levels, respectively; and statistically significant is differentiated at the .01 and .001, respectively with knees up and down activities.

Comparisons between physical fitness test results for hand grip strength activities with pretest-posttest-design method for control and experimental groups using the SLAT were prepared to benchmark standardized criteria

Modified training activities were compared between the results of the physical fitness test for hand grip strength activities with pretest-posttest-design method for control and experimental groups using the SLAT was prepared to benchmark the standardized criteria. Statistically significant was analyzed with means, standard deviation, compared to the benchmark, and t-test analysis reported in Table 11.

Table 11: Means, standard deviation, compared to benchmark and t-test of physical fitness test results for the Hand Grip Strength activities with pretest-posttest-design method for control and experimental groups

Trial	Mean (accounting times)	Standard deviation	compared to benchmark	t-test	Sig.
Pre-Hand Grip Strength activities for Controlling group	0.50	0.13	Modulate	-0.32	0.75
Post- and Grip Strength activities for Controlling group	0.51	0.14	Modulate		
Pre-Hand Grip Strength activities for Experimental group	0.46	0.12	Low	-1.65	.11
Post-Hand Grip Strength activities for Experimental group	0.48	0.13	Low		

$N=35$, $*p<.05$, $**p<.01$, $***p<.001$

The results as reported in Table 11 with means, standard deviation, compared to the benchmark and t-test value are compared in the pre-test-post-test-Hand Grip Strength activities for the controlling group indicate that the average means are 0.50, 0.51; SD. = 0.13, 0.14; the CBs are modulate levels, similarity; and none statistically significant, differently. In terms of pretest-posttest-hand grip strength activities for experimental group shows that of average means as 0.46, 0.48; S.D. = 0.12, 0.13; the CBs are low levels, similarity; and none statistically significant, differently.

Comparisons between physical fitness test results for Hand Grip Strength activities with pretest-posttest-design method for control and experimental groups using the SLAT were prepared to benchmark standardized criteria.

Creating training activities were compared between physical fitness test results for hand grip strength activities with pretest control-experimental group and posttest control-experimental group training activities using the SLAT was prepared to benchmark standardized criteria. Statistically significant was analyzed with means, standard deviation, compared to the benchmark, and t-test analysis that reported in Table 12.

In Table 12, pre-hand grip strength activities were compared for control and experimental groups. Similarity, post-Hand Grip Strength activities for the controlling and experimental groups are compared. The results have found that average means are 0.50, 0.46; S.D. = 0.50, 0.48; the CBs indicate ally significant, differently. In terms of the post-Hand Grip Strength activities for the Controlling and Experimental groups with means as 0.50, 0.48; SD. as 0.14, 0.13; and the CBs indicate Modulate and Low levels, respectively; the value of the t test is 0.90 while it is not differentiated, none significantly.

Table 12: Means, standard deviation, compared to benchmark and t-test on physical fitness test results for the hand grip strength with the pretest-posttest-design method for control and experimental groups

Trial	Mean (accounting times)	Standard deviation	Compared to benchmark	t-test	Sig.
Pre-Hand Grip Strength activities for Controlling group	0.50	0.13	Modulate	1.46	.15
Pre-Hand Grip Strength activities for Experimental group	0.46	0.12	Low		
Post-Hand Grip Strength activities for Controlling group	0.50	0.14	Modulate	0.90	.37
Post-Hand Grip Strength activities for Experimental group	0.48	0.13	Low		

$N=35$, $*p<.05$, $**p<.01$, $***p<.001$

In general, on two out of five developing the physical activity model to improve physical fitness of regular government teachers under the Office of the Basic Education Commission using the Smart Ladder Agility Tool (SLAT), it was concluded that physical fitness before and after in the 5 trials showed that after the physical fitness test, there was a statistically significant difference of 0.05 in the 60 second standing sitting program and the stand with knees up and down training activities in 3 minutes are differences, significantly ($p<.05$).

Discussion

The 12th National Economic and Social Development Plan (2017-2021) have given importance to strengthening and developing human capital potential. To promote Thais to have good health throughout their lives with the goal of making Thais' people have better health, the government has set indicators such as the population aged 15-79 years with reduced overweight. More people play sports and participate in recreational activities, and total health expenditures do not exceed 5% of the gross domestic product. There are development

guidelines to reduce health risk factors and allow all sectors to take into account health impacts by encouraging people to have appropriate health activities for their age. Both forms of exercise, proper nutrition and support the community to manage public spaces to their fitness and sports facilities are tested (Office of the National Economic and Social Development Board, 2018).

The total number of RGTs is 406,550, an entire group of people in the country's education system. Because they have many responsibilities and teach many students, the teacher is physically, mentally, and intellectually complete. Being ready for work will lead to efficiency in educational management and affect the quality of education. Which country will develop faster or slower depends on the quality of its people. In particular, they are considered to play an essential role in developing the country's education, which has to produce and develop youth at different levels and build those youths to be citizens of the country with quality but from the study of the exercise behavior of teachers (Yampradit, 2012).

One of the indicators of the quality of the RGTs is good health. The factor reflecting good health is good physical fitness, which refers to the ability of the body to perform each occupation, can carry out daily activities without excessive fatigue. This is simply summarized as the ability of the body to be practical and effective (Heyward, 2006). Physical fitness for health is a feature or the ability of each person's human body to perform the activities that occur in daily life safely and result in a healthy lifestyle. The ability of the body to perform its functions effectively and still have the power left to perform other activities in both standard and critical conditions (Hemara, 2012).

In this research, it was found that the BMI, when comparing the mean and the criteria, showed that the BMI was at the proportional level. BMI is a test used to assess body proportions in body mass index, which is consistent with the research study by Nuttall (2015) who reported that body mass index (BMI) is the metric currently in use to define anthropometric height/weight characteristics in adults and to classify (categorize) them into groups. The common interpretation is that it represents an index of an individual's fatness. It is also widely used as a risk factor for the development or prevalence of several health issues.

Although practiced regularly, this research model can help improve physical performance, which has research reports on evidence suggesting that increasing physical activity and physical fitness may improve academic performance and that the time of the school day dedicated to recess, physical education class, and physical activity in the classroom may also facilitate academic performance (National Center for Biotechnology Information, 2015) Benefits of improving brain health, weight management, reducing disease, strengthening bones and muscles, and improving your ability to do daily day activities to get started again (Center for Disease Control and Prevention, 2019)

Research on the development of a physical activity promotion model to improve subjective well-being of elderly people was reported to be a protective factor for elderly health which varies in the community context (Orthopedicone, 2020) To provide practical implications associated with a better understanding of SWB among the elderly, and to promote a high level of SWB among the elderly. It is important to encourage single seniors to participate in an elderly club and continue exercising. Also, prevention of dementia among the elderly is highly recommended (Jingmark et al., 2020)

Research on exercise with a form of fitness activity model using the smart ladder agility tool can help improve physical fitness to improve three key fitness factors: speed, agility, and speed, in addition to strengthening your joints, ligaments, and tendons. Incorporating agility ladder workouts into your fitness routine is also great for improving brain health (Quinn, 2020) The effectiveness of the improved activity model results in fat, liability, leg muscle strength, circulatory endurance, and respiration using the smart ladder drill tool was designed. The muscle endurance of the experimental group was different from before the experiment and different from the control group after the experiment with a statistically significant affect on the improvement in physical performance of the regular government teachers, significantly, differently.

Conclusions

Creative Method of Research and Development (R&D) method for developing the physical activity model to improve physical fitness of regular government teachers under the Office of the Basic Education Commission using the Smart Ladder Agility Tool (SLAT). Normally, Thailand has a total population of 66,186,727 in 2020. Thai culture is warm and welcoming, but also conservative; people are keen to save face and avoid confrontations. This research performs an observational study of data collected from a mobile health and fitness application for the development of a physical activity model. Most importantly, regular activity can improve people quality of life, for example, fitness activity is a too common activity.

Designing the smart ladder tool for agility to improve the physical performance of athletes and the general public, it is training or testing device that contains time and step information with the ability to count the number of steps and time accurately which is important feedback. This requires regular exercise 2-3 times a week for at least 30 minutes in 8 weeks. Using the Physical Activity Appropriateness Assessment Form (PAAA), the Smart Ladder Agility Tool (SLAT) and the Physical Fitness Competency Test (PFCT) instruments are valid and reliable, which were assessed 35 Controlling and 35 Experimental regular government teachers whose age average means of 37.57 and 40.29 years, respectively, were compared.

Statistically significant was analyzed with mean, standard deviation, compared to benchmark, t-test analysis on five activities in the Physical Activity Model to improve physical fitness using the SLAT on body mass index (BMI), sits bent forward (sit and reach), standing-sitting on a chair for 60 seconds, stand with knees up and down for 3 minutes, and hand grip strength training activities. Designing the pretest-controlling-experimental, posttest-controlling-experimental, pretest-posttest-controlling, pretest-posttest-experimental groups were compared in five activities.

Statistically significant is differentiated at the level ($p < .05$) on pretest-posttest-Experimental group of standing-sitting in a chair for 60 seconds, standing with knees up and down in 3 minutes activities using the SLAT, differently. Therefore, overall on three of five, the Physical Fitness Competency Test using the Smart Ladder Agility Tool (SLAT) on Body Mass Index (BMI), Sits Bent Forward (sit and reach), and Hand Grip Strength training activities are not differentiated, none significant at the level 0.05. However, the results were found to correlate with the interpretation to be compared with the reference point on proportional BMI. Overall, Sits Bent Forward (sit and reach) are moderate level, and the hand grip strength scale is very good for experimental group training activities.

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