# EFFECTIVENESS OF GROUP-MEDIATED LIFE STYLE PHYSICAL ACTIVITY (GLPA)PROGRAM FOR PHYSICAL ACTIVITIES AMONG OLDER PERSONS IN PHRA NAKHON SI AYUTTHAYA DISTRICT PHRA NAKHON SI AYUTTHAYA PROVINCE THAILAND

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A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Public Health
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# ประสิทธิผลของโปรแกรมกระบวนการกลุ่มในการทำกิจวัตรประจำวันต่อการจัดกิจกรรมทางกายในผู้สูงอายุอำเภอพระนครศรีอยุธยา จังหวัดพระนครศรีอยุธยา ประเทศไทย

นางเพลินตา อิทธิศานต์



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรดุษฎีบัณฑิต
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| Thesis Title | EFFECTIVENESS OF GROUP-MEDIATED LIFE STYLE PHYSICAL ACTIVITY (GLPA)PROGRAM FOR PHYSICAL ACTIVITIES AMONG OLDER PERSONS IN PHRA NAKHON SI AYUTTHAYA DISTRICT PHRA NAKHON SI AYUTTHAYA PROVINCE THAILAND |
| By | Mrs. Plernta Ethisan |
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เพลินตา อิทธิศานต์ : ประสิทธิผลของโปรแกรมกระบวนการกลุ่มในการทำกิจวัตรประจำวันต่อการจัดกิจกรรมทางกายในผู้สูงอายุอำเภอพระนครศรีอยุธยา จังหวัดพระนครศรีอยุธยา ประเทศไทย (EFFECTIVENESS OF GROUP-MEDIATED LIFE STYLE PHYSICAL ACTIVITY (GLPA)PROGRAM FOR PHYSICAL ACTIVITIES AMONG OLDER PERSONS IN PHRA NAKHON SI AYUTTHAYA DISTRICT PHRA NAKHON SI AYUTTHAYA PROVINCE THAILAND) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ดร. รัตนา สำโรงทอง, หน้า.

ความเป็นมาและวัตถุประสงค์ จังหวัดพระนครศรีอยุธยา ได้ก้าวสู่การเป็นสังคมผู้สูงอายุ โดยพบผู้สูงอายุมีการออกกำลังกายเพียง 23 % ในช่วง 3 เดือนก่อนทำการศึกษา และการทำกิจกรรมทางกายเพื่อสุขภาพยังเป็นปัจจัยสำคัญในการส่งเสริมสุขภาพให้ผู้สูงอายุมีสุขภาพที่ดี การศึกษานี้มีวัตถุประสงค์ เพื่อประเมินประสิทธิผลของโปรแกรมกระบวนการกลุ่มในการทำกิจวัตรประจำวันต่อการทำกิจกรรมทางกายในผู้สูงอายุ อำเภอพระนครศรีอยุธยา จังหวัดพระนครศรีอยุธยา ประเทศไทย

รูปแบบและวิธีการศึกษา เป็นการศึกษาเชิงกึ่งทดลองโดยทดสอบก่อนและหลังในกลุ่มควบคุม ซึ่งทำการศึกษาในพื้นที่อำเภอพระนครศรีอยุธยา จังหวัดพระนครศรีอยุธยาในปีพ.ศ. 2514 มีกลุ่มศึกษาเป็นผู้สูงอายุจำนวน 102 คนที่มีอายุตั้งแต่ 60 ปีขึ้นไป และสุ่มเลือก (ramdom)ให้ผู้สูงอายุจากตำบลบ้านใหม่จำนวน 52 คนเป็นกลุ่มทดลอง และผู้สูงอายุจากตำบลวัดตูม จำนวน 50 คน เป็นกลุ่มควบคุม และวิธีการวัดกิจกรรมทางกายใช้แบบสอบถามขององค์การอนามัยโลก (GPAQv2) ประกอบด้วย 4 กิจกรรม 1) กิจกรรมจากการทำงาน ได้แก่การออกแรงกายอย่างหนัก (การยกของหนัก, การทำนา/ทำไร่) และการออกแรงกายปานกลาง (การเดิน, การทำงานบ้าน) 2) กิจกรรมจากการเดินทางในชีวิตประจำวัน ได้แก่ การเดิน และการขี่จักรยาน 3) กิจกรรมยามว่าง ได้แก่ การออกแรงกายอย่างหนัก (การวิ่งเหยาะ, การเต้นแอโรบิค) และการออกแรงกายปานกลาง (การว่ายน้ำ, การปั่นจักรยาน) และ 4) พฤติกรรมนั่งๆนอน ได้แก่ การนั่งพักที่ทำงาน ที่บ้าน และการใช้เวลาอยู่กับเพื่อน โดยผู้สูงอายุในกลุ่มทดลองได้รับการทำโปรแกรมกระบวนการกลุ่มในการทำกิจวัตรประจำวัน ส่วนผู้สูงอายุในกลุ่มควบคุมจะไม่ได้รับโปรแกรมดังกล่าว การประเมินได้ดำเนินการในช่วงก่อนเริ่มโครงการ และหลังจบโครงการ(6 เดือน) และการวิเคราะห์ประสิทธิผลของโปรแกรมใช้สถิติ General Linear Model repeated-measure ANOVA adjusted confounding factors

ผลการศึกษา 53.8% ของผู้สูงอายุในกลุ่มทดลอง และ48 %ในกลุ่มควบคุม เป็นผู้หญิง โดยผู้สูงอายุกลุ่มทดลองมีอายุเฉลี่ย 69.33 ±6.408 (SD) กลุ่มควบคุมมีอายุเฉลี่ย 67.96±5.119 (SD) ผู้สูงอายุ 3ใน 5 (61.5%) ของกลุ่มทดลอง และ2 ใน 5 (42%)ของกลุ่มควบคุมมีปัญหาสุขภาพโดยพบเป็นโรคความดันโลหิตสูงมากเป็นอันดับแรก (กลุ่มทดลอง 44.2% และกลุ่มควบคุม 38.6%) ผู้สูงอายุน้อยกว่า 2 ใน 3 (65.4%) ของกลุ่มทดลอง และครึ่งหนึ่ง (50%) ของกลุ่มควบคุมมีการทำกิจกรรมทางกาย โดยเป็นกิจกรรมจากการทำงานที่มีการออกแรงกายอย่างหนัก (กลุ่มทดลอง 36.5% และกลุ่มควบคุม 62.0% ) และกิจกรรมจากการทำงานที่มีการออกแรงกายปานกลาง ( กลุ่มทดลอง 53.8% และกลุ่มควบคุม 56.0% ) กิจกรรมจากการเดินทางในชีวิตประจำวัน ( กลุ่มทดลอง46.2% และกลุ่มควบคุม 54%) กิจกรรมในยามว่างที่มีการออกแรงกายอย่างหนัก (กลุ่มทดลอง 30.8% และกลุ่มควบคุม 60.0%) และกิจกรรมยามว่างที่มีการออกแรงกายปานกลาง (กลุ่มทดลอง 40.4% และกลุ่มควบคุม 10.0%) และส่วนใหญ่ของผู้สูงอายุมีพฤติกรรมนั่งๆนอนๆมีระยะเวลาเฉลี่ย 2.80 ชั่วโมงต่อวัน (SD±1.544)

สำหรับประสิทธิผลของโปรแกรมหลังเสร็จสิ้นโครงการ พบว่า ผู้สูงอายุในกลุ่มทดลองมีความรู้ด้านกิจกรรมทางกาย ทัศนคติด้านกิจกรรมทางกาย และการปฏิบัติด้านกิจกรรมทางกายเพิ่มขึ้น โดยมีค่าเฉลี่ยสูงกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ (p-value <0.05) และยังพบว่าประสิทธิผลของโปรแกรมสามารถเพิ่มระยะเวลาเฉลี่ยในการทำกิจกรรมทางกายที่มีการออกแรงกายปานกลางอย่างมีนัยสำคัญทางสถิติ (p-value <0.001) โดยเป็นกิจกรรมจากการทำงานที่มีการออกแรงกายปานกลาง (p-value <0.001) กิจกรรมจากการเดินทางในชีวิตประจำวัน (p-value =0.001) และกิจกรรมยามว่างที่มีการออกแรงกายปานกลาง (p-value <0.001)

การสรุปและอภิปรายผล ผลการศึกษาแสดงให้เห็นว่าโครงการได้ให้ประสิทธิผลในการเพิ่มความรู้ ทัศนคติ และการปฏิบัติด้านกิจกรรมทางกาย โดยประสิทธิผลของโปรแกรมกระบวนการกลุ่มในการทำกิจวัตรประจำวันนี้มีความเหมาะสมเฉพาะการทำกิจกรรมทางกายที่มีการออกแรงกายปานกลาง ได้แก่ การเดิน การขี่จักรยาน และการทำงานบ้าน โดยส่งเสริมให้ผู้สูงอายุในเขตชนบทได้ทำกิจกรรมทางกายที่มีการออกแรงกายปานกลางเพื่อสุขภาพให้ได้ระยะเวลาอย่างน้อย150 นาที ต่อสัปดาห์

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2557 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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PLERNTA ETHISAN: EFFECTIVENESS OF GROUP-MEDIATED LIFE STYLE PHYSICAL ACTIVITY (GLPA)PROGRAM FOR PHYSICAL ACTIVITIES AMONG OLDER PERSONS IN PHRA NAKHON SI AYUTTHAYA DISTRICT PHRA NAKHON SI AYUTTHAYA PROVINCE THAILAND. ADVISOR: ASSOC. PROF. RATANA SOMRONGTHONG, Ph.D., pp.

Background and objective: Phranakhonsiayutthaya province currently is becoming an aging society. Previous study showed that the older persons in Phranakhonsiayutthaya district have had exercise only 23% in the last 3 months. Physical activity in older persons is one of the major factors for promoting older persons health. This study aimed to evaluate the effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on changing physical activity among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya Province, Thailand.

Methods: A quasi-experimental study, pretest-posttest with control group was conducted in Phranakhonsiayutthaya district, Phranakhonsiayutthaya Province, Thailand in 2014. 102 older persons who had aged 60 and over were randomly selected. 52 older persons from Ban-Mai sub-district were enrolled in the intervention group and 50 older persons from Wat Tum sub-district were enrolled for the control group. Physical activity was measured with Global Physical Activity Questionnaire-GPAQv2 (WHO, 2006). Physical activities classified into four activity domains: 1) activities at work (vigorous intensity activities: heavy loads, farming, moderate intensity activities: brisk walking, housework), 2) travel to and from places (transport activities: walking, bike), 3) recreational activities (vigorous intensity activities: jogging, aerobic, moderate intensity activities: swimming, cycling), and 4) sedentary behavior (sitting at work, home, time spent with friend). The intervention group received the GLPA program and the control group did not receive. The evaluation was done at baseline and 6 month after finished the intervention program. For an evaluation the effects of intervention program used General Linear Model repeated-measure ANOVA adjusted confounding factors.

Results: 53.8% in the intervention group and 48.0% in the control group were females. Mean age of older persons in the intervention group was 69.33 (SD±6.408) and 67.96 (SD±5.119) in the control group. Health problems showed three-fifth (61.5 %) of intervention group and two-fifth (42.0%) in control group knew; prevalent disease was hypertension (44.2% intervention group and 38.0% in control group). The physical activity showed that less than two-third of them (65.4% in the intervention group), and half of them (50.0%) in the control group) had performed physical activities. Activities at work were vigorous intensity activities (36.5% in the intervention group, 62.0% in the control group) and moderate intensity activities (53.8% in the intervention group, 56.0% in the control group)). Travel to and from places was 46.2% in the intervention group and 54.0% in the control group. Recreational activities were vigorous intensity activities (30.8% in the intervention group, 60.0 % in the control group) and moderate intensity activities were 40.4% in the intervention group and 10.0% in the control group. Most of them have had sedentary behavior mean 2.81 hours per day (SD ± 1.544).

The results of the study reveal that, after implementing the program, the intervention group had a significantly higher mean score of knowledge, mean score of attitude, practice (mean minute of total physical activity) with p-value <0.05 than before the experiment and the control group. It was also found that the effectiveness of the intervention program had a significantly higher mean minute of moderate intensity physical activity (p-value<0.001) such as activity at work (moderate intensity activity) with p-value <0.001, travel to and from places (p-value=0.001), and recreational activity (moderate intensity activity) with p-value<0.001 than before experiment and the control group.

Conclusion: The finding was effective to improve knowledge of physical activities, attitude of physical activities and practice of physical activities. The program appropriate to promote physical activity especially moderate intensity activity in daily lifestyle such as walking, cycling, and housework at least 150 minutes per week as the recommendation on physical activity for health among older persons in rural community.



Field of Study: Public Health Student's Signature .....
Academic Year: 2014 Advisor's Signature .....

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# CHAPTER I

# INTRODUCTION

## 1.1 Background and Rationale

Thailand is a country with rapidly increasing rate of older persons. The rate of ageing increase from 6.8 in 1994 to 9.4 percent in 2002, and to 12.2 percent in 2012 which proves its rapidly increasing tendency (National Statistical office of Thailand, 2011). Among this increasing rate of older persons around 50 percent are going through chronic disease at present. (Kespichayawattana J & Jitapunkul S, 2009)The national survey of health problems and illness among Thai elderly generation conducted in 2007 shows that almost one fourth of the elderly population judge themselves under poor health category. The most common problem found among older persons was problem of vision. Almost one fifth of elderly population was under mild blindness and few indicate that they do not see clearly. The problem of squatting and climbing steps were also found to be reportedly moderately higher in elderly person. Considerably higher proportions of older persons are unable to undertake certain activities which require a higher level of physical exertion such as lifting 5 kilogram of weight or walking more than 200meter.The considerably increase was noticed in percentage of disabilities of older persons from 5.8 percent in 2001 to 9.3 percent in 2002, and 15.3 percent in 2007. As per the National Statistic Office the three most common disabilities found in older persons are blurred vision, deafness, and paralysis and the three most common major health problems in Thai elderly are diseases of the musculoskeletal system and connective tissue, disease of respiratory system, and cardiovascular disease(National Statistical Office, 2007). People of aged groups get involve in an inevitable strength, energy, and fitness. The frail health issues and loss of function was associated with aging for instance difficulty walking long distances, climbing stair, or carrying groceries, is found more among aged group due to physical inactivity. The physical activity is considered to be an essential factor for improving quality of life. Regular physical activity by older person age groups not

only improves their physical health but also their psychological health. Physical activity is considered very beneficial in reducing the risk of chronic disease. Physical activity has been included in the guideline for prevention of chronic disease, which recommends that people should accumulate minimum of 30 minutes on moderate-intensity physical activity to prevent chronic disease and health condition (Mosca, 2006)

The physical activity does not mean running a strenuous marathon or playing competitive sports rather, it refers to general physical activity by most of people like walking along with children to school or even taking a brisk stroll in the park. It also include taking the stairs instead of the elevator and getting off the bus two stop early and walking to the destination (World Health Organization, 2008). Physical activity helps in improving muscle strength, power and functional performance among older persons; the positive gains in lower body muscle strength are associated to improve abilities in task of daily living. An individual is considered to be physically active if he is able to stand from a chair better, climb stairs and have improved long and short distance walking abilities. Although some older persons do know that disease can be prevented and reduced by physical activities, they also have knowledge about health promotion but they do not change their behavior or they are not motivated to change their behavior. Despite the favorable health benefits associated with regular physical activity (PA), inactivity levels in developed countries are alarmingly high (Cameron C, 2002). In addition to this the Centers for Disease Control and Prevention (CDC) studies found that about 28 to 34 percent of American older persons aged between 65 to 74 and 35 to 44 percent of older adults aged above 75 years are inactive. Inactivity is more common in older persons than in middle- aged men and women (Centers for Disease Control and Prevention, 2001). The National data indicates that very few older persons find themselves to be more physically active. According to the data collected from the U.S. Department of Health and Human Service, it is noticed that the elderly individuals aged between 65 to 74 were involved in a moderate 20 minutes of physical activities for three days or more in a week and 16 percent of elderly individuals with in this same age group were involved

in more physical activities. These small groups of aged individuals were involved in five or more days per week with 30 minutes of moderate physical activities. As far as the aged individuals above 75 years are concern, it is noticed that the level of physical activity went down drastically. In this age group the 20 percent kept busy themselves with 20 minutes of daily activities for three or more days per week and 12 percent in this age group are involved in little more physical activities. This small group of older persons themselves busy with 30 minutes of physical activity 5 or more days per week. The year 1998 reveals that time period only 10 % of elderly individuals aged between 65 to 74 were involved in some sort of physical activities and strength endurance physical activity like walking or bicycling for two or more days in a week to keep themselves active. The year 1995 data reveals that 16 to 19percentages of the elderly individuals aged between 65 to 74 were interested in one mile or less running or walking activities. In that same age group less than 0.3 percentages were interested in bicycle rides for five or less miles for two or more days in a week (U.S. Department of Health and Human Service, 2000). The activities such as usual day to day household routines, physical routines related to the work life can be amalgamated with the life style physical actives. These things can be used as the alternative physical activates with the traditional physical activity exercises routines. The senior adults should give more emphasis on incorporating some sort of physical actives in their daily life style. They should park their vehicles little far from their designated parking spaces when they go for work or shopping in order to achieve more walking physical activity. When they are using any public transport system then they should get down one stop earlier to their destination or get a little ahead from where they intended to go and they can cover the rest of the distance with walking activity. They should use the stairs where ever they are in the position to use them as an alternative to escalators, keeping their physical conditions and limitations in mind. All these small changes with their daily routines and habits can help the senior adults to keep them physically and mentally active. It will also help them to improve and sustain their physical fitness levels. (Franks B. Don, 2010).

The study conducted by the Brian, C. Focht, found out that life style activity programs can initiate interest in aged people towards moderate intensity physical activities. It all depends on how effectively these programs can help the process of changing the perceptions and also removing the barriers that are affecting older persons with regards to their motivational levels and personal preference. These lifestyle physical activity programs can be very much effective when compared with traditional structured exercise programs (Brian C. Focht et al, 2004).

The Phranakhonsiayutthaya province, in Central Region of Thailand reported of continuous increase of their older persons from 12.25 percent in 1990 to 13.66 percent in 2011 and 15.28 in 2013 (The Bureau of Registration, Department of Ayutthaya Provincial Administration, 2013).The rate of older persons by the end of 2011 making Phranakhonsiayutthaya Province the second highest in the Central Regions of Thailand. The five most prevalent diseases in Phranakhonsiayutthaya province found increasing among these aged population are respiratory, circulatory, digestion, and muscular diseases as well as various metabolic syndromes (Bureau of Registration, 2011). Old age is the period of changes in physical and mental capacities, which result in many inevitable health problems. According to the natural order the physical fitness levels, the flexibility levels and the agility levels tend to decrease with the increasing age. The collective impact of those factors can make older persons little physically inactive than younger people and in parallel with that the senior adults tend to face the limitations towards the physical activities because of their health conditions and age related issues (America College of Sports Medicine, 2009).

A lack of interest towards the physical actives was found across among the elder communities, this is according to the statistics of Thailand National Statistical office. The statistics of year 2007 shows that only 27.8 percent from the older population are involved in some sort of physical actives (National Statistical Office, 2007).

An alarming decline rates with the physical activity levels in the older communities was found during the years 2004 to 2008 when a series of data

collection was done by the fourth national health examination survey during the years 2008 to 2009. During that time span the rate of physical activity levels across the older communities gradually declined from 22.4 percent to 18.5 percent. The inactivity of older person's data showed that 20.6 percent were belonged 60 to 69 age group band, 30.6 percent were belonged 70 to 79 age group band and approximately 60.4 percent were belonged to above 80 years age group band. (National Health Examination Survey Office, 2010). Another survey conducted by the National Health Examination Office in 2010 showed that the central region of the Thailand country was found to the third highest physically inactive region with an alarming percentage of 21.2. The Phranakhonsiayutthaya province belongs to central region of country Thailand. In this province 80.95 percent of the older persons were found with less than 30 minutes of physical activity routines. (Bureau of Registration, 2008). An effective healthy life style should include balanced emotional states along with consistent physical actives. The life style activity programs among the older persons will certainly enhance the health conditions and the physical fitness levels of each and every older individual. The positive outcomes achieved by the life style activity programs are almost same and effective when compared with the traditional exercise routines. The success of the life style activity programs depends on the effective blending of house hold physical activities with consistency towards the daily routines. It is advised to promote more the positive life style programs to older citizens (Dunn AL. Marcus BH Kampert JB et al., 1999).

Every aged individual undergo a certain amount of sigma regarding the loss of perceived control with the internal and external body changes and health conditions. The life style programs could help address these issues to certain degree. The studies established the explicit facts about the life style programs. They had a positive effect on physiological well-being and they also influenced to increase the self -esteem levels and self confidence levels among the older individuals (R. D. McAuley E, 1995).

A balanced state of mind with consistent physical activity routines, together they are responsible for the success of any life style activity program with a positive

outcome. A psychological state is an interlinked combination of the factors such as self -esteem levels, self confidence levels and self -motivation levels. With the right mind sent and with the right perspectives can lead to the sustainable physical activates in any individual. All these can help in the positive reengineering of behavioral changes with reinforced psychological levels and fitness levels in senior citizens (K. J. McAuley E, 1998). The aged individuals have the common tendency for not adhering to consistent physical activates routines. The older persons in the Phranakhonsiayutthaya region are less exposed to effective physical activity intervention programs. Designing and executing efficient and effective life style programs in this region can encourage the older communities to adapt with the healthy life style routines. The researcher want to study the effects and outcomes of the Group- Mediated Lifestyle Physical Activity programs in the selected older persons in the Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand.

**1.2 Research Question**

Does the Group-mediated Lifestyle Physical Activity program effect on changing physical activity among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand?



**1.3 Research Objective**

**1.3.1 General Objective**

To evaluate the effectiveness of Group-Mediated Lifestyle Physical Activity program on changing physical activity among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand.

**1.3.2 Specific Objective**

To compare the changing before and after participating in the Group-Mediated Lifestyle Physical Activity program among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand on the following variable:

1. Knowledge of physical activities

2. Attitude of physical activities

3. Practice of physical activities (amount of time)

**1.4 Hypothesis**

The research hypothesis of this study were as follows:

**Null Hypothesis**: There is no significant difference between intervention and control groups after Group-Mediated Lifestyle Physical Activity program (GLPA) on changing knowledge of physical activities, attitude of physical activities, and practice of physical activities among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand.

**Alternative Hypothesis**: There is significant difference between intervention and control groups after Group-Mediated Lifestyle Physical Activity program (GLPA) on changing knowledge of physical activities, attitude of physical activities, and practice of physical activities among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand.

**1.5 Scope of this study**

The impacts of the Group-Mediated Lifestyle Physical Activity program (GLPA) on selected aged individuals 60 and over studied during January 2014 to December 2014. The participants selected from both the genders. This study conducted at Ban Mai sub district in Phranakhonsiayutthaya province, Thailand.

At the time of the study the initial details regarding the physical activity of each and every participant was collected. There were two sets of data. One set of data contained the details of the individuals with no physical activity. The other set

of data contained the details of the individuals who do not practice any plays, physical activities on a regular base and older persons who have disease but positive medicine advice regarding physical activities.

The tools compose of group education and support systems were introduced to the participants. They encouraged to use them in order to keep them within the parameters of the study. The dependent variables in this study were knowledge of physical activities, attitude of physical activities, and practice of physical activities would vary from one participant from other. These factors can influence the outcomes of the study.

The study was conducted in the three phases. The first phase was the collection of background information and other details of the participants by using the cross sectional study. The second phase would contained a quasi- experimental study keeping the Group- Medicated Lifestyle Physical Activity program frame work in the background. The statistical methods like mean score for knowledge of physical activities, attitude of physical activities and mean minute for physical activities were used in the third phase to understand the effectiveness of the Group- Mediated Lifestyle Physical Activity programs. The effects of variables such as knowledge of physical activities, attitude of physical activities, and amount of time in physical activities can be evaluated with respected to the type of physical activities. The variables can be varied to study the effectiveness of the physical actives and their aftermath effect will be noted down. The time will be increased to at least 30 minutes and the frequency will be increased for five days per week with the selected participants. All these three phases conducted within the 12 months from the starting of the study.

**1.6 Conceptual Framework**

As explained by many authors (2006) the framework offered a guide for exploration of the complex bio-psychosocial process that motivates individuals to

engage in behaviors directed toward the enhancement of health (Pender, 2006). The model explained is considered as competence-or approach-oriented model. The model can easily be applicable to any health behavior in which treatment is not proposed as a major source of motivation for the behavior. Thus, this model is appropriate to promote physical activity in older persons. The model comprises of three major components such as:

1. The individual characteristics and experiences components which includes prior related behavior and the personal factors (Pender, 2006).

2. The behavior-specific cognitions and affect component which includes perceived benefit and barriers to action, perceived self-efficiency, activity-related effects, interpersonal influences, and situational influences. The study from 1999 to 2006 by various authors indicated that these behavior-specific cognitions are actually related to their exercises (Kaewthummanukul, 2006); (Vannarit T, 1999) ;(Youngpradith Apa, 2000). In addition, the study conducted by (Kaewthummanukul, 2006) found that there was significant relationship between exercise participation and the set of selected personal factors, perceived benefits of and barrier to exercise, perceived self-efficacy, and perceived social support (Kaewthummanukul, 2006).

3. Behavior outcome component using a model to explain behavior change include raising consciousness, reevaluation the self, promoting self-efficiency, enhancing the benefits of change, controlling the environment, and manage barriers to change (Pender, 2006).

In sum, the results from these studies can be used to guide the effective intervention to change physical activity. The suggested interventions for health behavior change in health promotion model include raising consciousness, reevaluating the self, promoting self-efficacy, enhancing the benefits of change, controlling the environment, and managing barriers to change (Pender, 2006) See Figure 1.

**Individual Characteristics Behavior-specific Cognitions Behavior outcome and experience and effect**

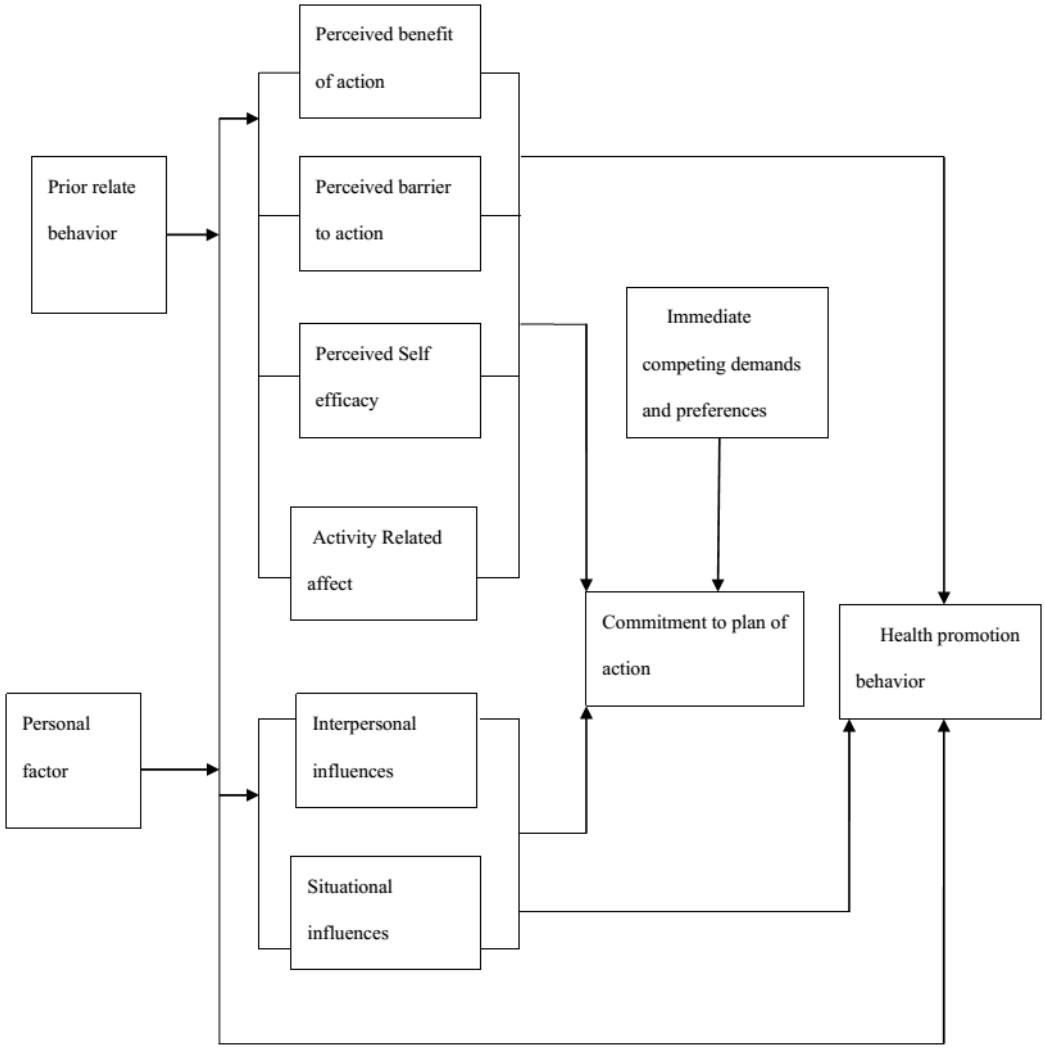


**Figure 1:** Pender's Health Promotion Model (Pender, 2006)

**Conceptual framework of using GLPA for changing physical activity**

The conceptual framework in this study is based on the health promotion model (See Figure 2).

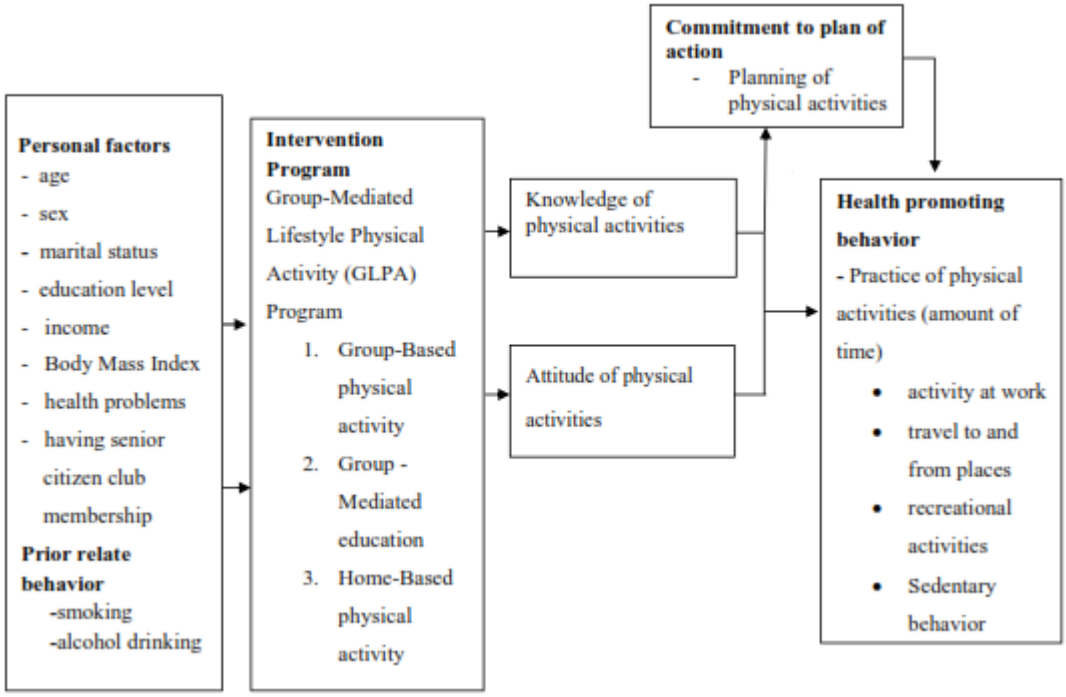


**Figure 2:** Conceptual framework of using GLPA program for physical activity

**1.7 Variable to be study**

The variable for this study were as follows:

**1.7.1 Independent variables**

1. Personal factors were age, sex, marital status, education level, income, Body Mass Index (BMI), health problems, having senior citizen club membership

2. Prior relate factors were smoking and alcohol drinking

3. Commitment to plan of action was planning of physical activities.

**1.7.2 Dependent variable**

1. Knowledge of physical activities

2. Attitude of physical activities

3. Practice of physical activities

3.1 Activity at work were vigorous intensity activities (heavy loads, farming) and moderate intensity activities (brisk walking, housework).

3.2 Travel to and from places (walking, bike)

3.3 Recreational activities were vigorous intensity activities (jogging, aerobic) and moderate intensity activities (swimming, cycling)

3.4 Sedentary behavior (sitting at work, home, time spent with friend)

**1.7.3 Operational Definition**

Here are some operational definitions given for better understanding physical activities intensities as follows:

1. Physical activity is the bodily movement exercise produced by skeletal muscles that requires energy expenditures with at least 30 minutes of moderately intense physical activities per day for at least 5days per week in older persons which include four activities domains (World Health Organization, 2006).

- Activities at work (vigorous intensity activities such as heavy loads, farming, moderate intensity activities such as brisk walking, and housework)

- Travels to and from places (walking and bike)

- Recreational activities (vigorous intensity activities such as jogging, aerobic, moderate intensity activities such as swimming, and cycling)

- Sedentary behavior (sitting at work, home, time spent with friend)

2. Light Physical Activity is the minimal increase in breathing rate, older persons is able to carry on a conversation and have scale 3 or 4 on a scale of 0 to 10 (Physical Activity Centre of Excellence, 2011)

3. Moderate-intensity physical activity is the noticeable increase in breathing rate, older persons is able to carry on a conversation but does not have enough breath to sing, have the performing an activity at 3.0-5.9 times the intensity of rest and have scale 5 or 6 on a scale of 0 to 10 (Physical Activity Centre of Excellence, 2011).

4.Vigorous-intensity physical activity is the large increase in breathing rate, older persons is not carry on a conversation but is not out of breath, have the performing an activity at 6 or more times the intensity of rest and have scale 7 or 8 on a scale of 0 to 10 (Physical Activity Centre of Excellence, 2011).

5. Frequency is the physical activity that expressed in bouts per week.

6. A mounts of time is the mean minute/ mean hour in physical activity is performed per week as follow:

6.1 mean minute of total physical activity

6.2 mean minute of vigorous intensity physical activity

6.3 mean minute of moderate intensity physical activity

6.4 mean minute of activity at work (vigorous intensity activities: heavy load, farming)

6.5 mean minute of activity at work (moderate intensity activities: brisk walking, housework)

6.6 mean minute of travel to and from places (transport activity: walking, bike)

6.7 mean minute of recreational activities (vigorous intensity activities: jogging, aerobic)

6.8 mean minute of recreational activities (moderate intensity activities: swimming, cycling)

6.9 mean hour of sedentary behavior (sitting at work, home, time spent with friend)

7. Older persons is the persons who have aged 60 and over in Phanakhonsiayutthaya district, Phanakhonsiayutthaya province, Thailand

8. Individual characteristic is describe as the personal and socio-cultural factors and prior relation behavior of the person (Pender, 2006). Which includes age, sex, marital status, education level, income, BMI, health problems, having senior citizen club membership, smoking, and alcohol drinking.

9. Group- Mediated for Lifestyle Physical Activity (GLPA) Program this program is the intervention consisting of three components:

- Group-Based physical activity
- Group-Mediated Education
- Home - Based physical activity

10. Knowledge of physical activities refers to the knowledge and understanding about physical activities.

11. Attitude of physical activities refers to the opinion about physical activities.

12. Planning of physical activities refers to the tool for designing to measure the planning about physical activity

13. The recommendation on health for physical activity is the older person should accumulate 150 minutes of moderate-intensity aerobic per week or 75 minutes vigorous-intensity aerobic per week (World Health Organization, 2006).

14. The recommendation on health benefit for physical activity is the older persons should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engaged in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate-and vigorous-intensity activity.

**1.8 Expected outcome and benefit**

- The older persons will get used to a certain kind of regular physical activities. They may tend to follow the routines at least five times in a week and the duration of those physical activities may span up to 30 minutes.

- The older persons will become more active and their immune system and physical strength and their flexibility levels are improved. It will help on healthy ageing.

- The ultimate goal is to develop effective and efficient model for educating and executing the physical activity programs for the Thailand older persons and encouraging all the older communities to take the benefits from the programs. There should me more emphasis on finding suitable physical actives and methods keeping in the mind all the diversities within the older committees, life styles and barriers.

# CHAPTER II

# LITERATURE REVIEW

The study undertakes selected reviews of literature for better understanding of the following:

1. A situation of the older persons in Thailand
2. Age-related changed in older persons
3. Physical activity in older persons
4. Group-Mediated Lifestyle Physical Activity
5. Factors effect to physical activity in older persons
6. Theory related physical activity

## 2.1 A situation of the older persons in Thailand

### 2.1.1 Trend of the older persons in Thailand

The definition of old age varies with culture and countries. World Health Organization (2008) classified older adults into elderly (60–74 years), old (75-90 years), and very old over 90 years). Older adults were classified into young old (65-74 years), middle old (75-84 years), and very old (over 85) (Pender, 1996). In Thailand, old age means the person who has aged 60 years and over (National Statistical Office, 2004). This study was conducted to study the physical activity among older persons who are aged 60 and over.

There is rising on the older persons from 1960 because of decline in mortality and fertility rates. This pattern of decline can be observed for the last 30 years of the current millennium. The institute for population and social research data shows that the rate of older people increased from 1.2 million to 7.2 million during the years from 1960 to 1990.This is like a rise of older persons from 4.5 percent to 7.2 during time period of 1960 to 1990.The National statistical office of Thailand states that the

life expectancy rate among elderly people in Thailand raised from 55.9 years to 69.6 years for men and 62 years to 77.6 years for woman during the time period of 1964 to 2000 (National Statistical Office, 2007). It is forecasted that the elderly population will be more than 10 percent during the years 2010 to 2030 due to the increase in the life expectancy among the older age groups (United Nation Population Fund. (UNFPA) Thailand, 2006). It is predicted that the life expectancy of the elderly people in Thailand will have an improvement because of their changed life styles, living conditions and better medical facilities. We can foretell that the increase in the elderly population will be 15.2 by the year 2020 and it may continue to rise till 23.6 by the year 2050 (Institute for Population and Social Research Mahidol University, 2006). It is also expected that by the year 2025 the life expectancy rate will reach 74.8 years for men and 80.3 years for woman (Institute for Population and Social Research Mahidol University, 2006). According to the United Nations population data, the rise in the older persons will be going to be one of the major concerns for kingdom of Thailand.

**2.1.2 Characteristics of older persons aged 60 years and over**

The proportion of older persons increased more over than other groups the change in the age and gender structure in elderly aged 60 years and over between 2000 and 2030 indicated that the elderly aged 80 years or over has the highest rate group when compared with other age groups. Moreover, the age and gender structure of this elderly also indicated imbalance between genders in the 60 or over age group. This is because of the higher proportion of elderly women and a higher growth rate between 2009 and 2030 when compared to men (the proportion of women 56 percent compared with the men 44 percent). This phenomenon can be referred as the“ Feminization of elderly” (Knodell and Chayowan, 2000). At the same time, the higher proportion of elderly women than elderly men which indicate gender imbalance means that the provision of health service should be prepared for this change. However, it is also important that the men elderly is not overlooked despite the smaller proportion as they are also growing, but at a slower rate than the women elderly (Institute of Research and Development of Ageing in Thailand, 2009).

In Thailand, most of the elderly lives in rural area than in urban area and the region with the highest proportion of elderly people are the Northeastern region, followed by Central (excluding Bangkok), Northern, Southern, and Bangkok regions (Table 1)

**Table 1:** Characteristics of populations aged 60 and over in 2003, 2006, 2009, and 2011

| | Percentage | | | |
|---|---|---|---|---|
| **Characteristics** | **2003** | **2006** | **2009** | **2011** |
| **Gender** | | | | |
| Male | 44.82 | 44.67 | 44.38 | 44.1 |
| Female | 55.18 | 55.33 | 55.62 | 55.9 |
| **Age** | | | | |
| 60-69 years | 57.00 | 55.21 | 54.74 | 57.8 |
| 70-79 years | 31.77 | 32.66 | 32.71 | 32.0 |
| Over 80 years | 11.53 | 12.13 | 12.55 | 10.2 |
| **Residential area** | | | | |
| Municipality | 29.55 | 29.99 | 34.25 | 33.5 |
| Non municipality | 70.45 | 70.01 | 65.75 | 66.5 |
| **Region** | | | | |
| Bangkok | 8.76 | 8.90 | 9.16 | 9.8 |
| Central | 24.98 | 25.11 | 25.27 | 23.2 |
| Northern | 21.27 | 20.76 | 20.25 | 20.3 |
| Northeastern | 31.28 | 31.74 | 32.10 | 34.1 |
| Southern | 13.71 | 13.49 | 13.22 | 12.6 |

**Source:** Civil registration data, Department of provincial, Ministry of Interior, Thailand 2003, 2006, 2009, National Statistical Office 2011.

## 2.2 Age-related changed in older persons

Every species undergo certain aging process with the time. The human life cycle also contains the aging process and it has effects on them. As people getting older few individuals can be diagnosed with some common diseases or at times the seriousness of the disease can be fatal too.

These diseases can have the effect on the quality of the life span. Sometimes a little bit of physical activity can help the older persons to improve their health and it also helps to control certain kind of diseases which are less fatal.

There are various factors should be considered when it comes to the aging process of older persons. The impact of those factors can be observed as follows:

### 2.2.1 Physical changes

1. Cardiovascular System: Human organs can deteriorate with its functionality gradually with the time in the most of the people. One of such physical changes can be the cardiovascular system anomalies.

The usual symptoms of the cardiovascular defects contain the slightly stiffening of the heart muscle and may be little increase in the size. This will lead to the decrease in the blood holding capacity with the chamber of the heart. The further effects will be like the arteries and other blood vessels becoming hard and they also become less responsive with the heart cortisone hormones which usually do the work of relaxing the blood vessels walls. All these are because of the increase in the systolic blood pressure that is part of the aging process of the people. More than 50 percent people will be suffering with chronic hypertension. The cardiovascular diseases have the impact of the diet, life styles of the urban societies and heredity. With the anomalies in the cardiovascular system the blood flow to the kidneys can be decreased up to 50 percent and then 15 to 20 percent less flow to human brain. The doctors can identify the usual sounds with the human heart and this is common with the aged individuals. This is because of the heart values becoming less flexible and the deposition of calcium in the blood vessels (Smith Suzanna & Gove Jennifer E, 2005).

2. Respiratory System: The malfunctions can happen with the respiratory muscle strength and it leads to the endurance diminution and the chest will become more stiffer. According to the finding of the Williams at age of 20 the residual air content will be about 20 percent when it compared with the individuals with the age of 60 which is 35 percent of the residual air content in with the lung capacities respectively (Williams, 2007). The studies showed with the normal aging lung the alveolar surface area tend to decrease up to 20 percent which effects the maximum oxygen in take and further it may continue to decrease up to 55 percent less intakes by the age of 85 years. The resulting effects of these diminutions in the lung capacities and anomalies tend in collapsing or more exertion when compared to the young individuals. These conditions cause less efficiency in monitoring and controlling the breathing capacities in older persons (Sailer, 2000).

3. Gastrointestinal System: The disorders in the elderly people are unique in their nature. The usual symptoms can be the inflammation sensations in the inner intestines. According to the statistics of national academy of sciences thirty percent of people are suffering with achlorhydria in the above 50 age group. The B12 insufficiency can cause the achlorhydria in older persons. In Healthy human beings and in the young adults the secretion of gastric acids, proteins and digestive enzymes will be in normal in nature and they keep the B12 levels in balance. This will help the gastrointestinal to be minimal in young adults compared with older individuals.

The absorption levels of B12 vitamin can be effect by the GI tract. At times the liver can be less efficient with the intake of drugs and metallization process due to the damaged liver cells. The constipation is also one of the common and major issues with older adults (Sailer, 2000); (Smith Suzanna & Gove Jennifer E, 2005).

4. Urinary System: The starting of decline in the kidney functionality can be observed in the 40 years or above aged individuals. With the increasing age the blood supply to the kidneys will start decreasing almost 10 percent per decade and will reach nearly half that of younger adults. The approximate count will be for younger adults will be 600 ml per minute and when people each near 80 years of age that count will be almost 300 ml per minute. The nephrons decrease can make

the kidney lose one quarter to one third of its mass. As the aging process proceeds the number of glomeruli fall by 30 percent to 40 percent by the age of eighty years.

The Selectric and non functional glomeruli count will be almost 30 percent by age eighty years. These changes can affect the kidney's retreating capacity of the blood. The resulting side effects could be the imbalance in the regulating hormones of the dehydration process and also the salt conserve levels may go down. These changes can make older people more vulnerable to quick dehydration. The kidneys may face difficulties with filtering process of solutes and the issues with the bladder capacities can also be observed.

The frequency of residual urine is caused by the decrease in the bladder capacity in the older people. The resulting side effect will be urinary infections, incontinence and urinary obstructions (Sailer, 2000); (NIH National Institute of Health, 2007).

5. Endocrine System: With the help of endocrine system the secreted hormones are supplied through the blood flow to various organs in the body. The reproductive process, stress level maintenance and energy metabolism activities are controlled and monitored by endocrine system. One of such activity is the regulating hormones of pituitary gland used by ovaries, testes, breasts, thyroid and adrenal cortex. The pancreas controls the insulin levels in the body which in turn affects the body blood sugar levels. The older persons are less responsive to the insulin levels due to the aged muscle cells and nerve system. The Glucose levels rises from six to fourteen milligrams per deciliter for every decade after 50 years of age.

The imbalances in the body insulin levels cause the disease diabetes. It can be managed with proper diet, physical activity and some sort of oral medication. The hormones cortisol and aldosterone are secreted by adrenal glands. The aldosterone levels are thirty percent less in the above seventy age group when it is compared with the young health adults. The orthostatic hypertensions usually know as the drop in the blood pressure is caused by the imbalance in aldosterone secretion

levels. The cardiovascular functions and immune systems are affected by the decrease in the levels of aldosterone and cortisol (Sailer, 2000).

6. Nervous System: In human body few process and systems cannot replaced or reprogrammed. The aging process affects the functionalities of central nervous system of the human body. The resulting decline in the functions of dendrites the never system tend to lose its optimum message transmission capacity. Most of the time these neurological anomalies will not affect the usual routines of the life unless it's turns to some major catastrophes. We can observe a certain amount of increase in these anomalies after 60 years of age. It is also observed that the common complaint such as memory problems will start from age of 45 years.

The common symptoms of the neurological issues could be with encoding information, retention of the information, memory issues and the imbalance with the motor actives. All these issues could be identified with aged individuals in certain percentage. With the increasing age the aged individuals are more prone to these neurological issues (Sailer, 2000); (NIH National Institute of Health, 2007).

7. Immune System: The antibodies are responsible to stop the infection in the body. The balanced production of antibodies helps to maintain the immune system. The older persons are more susceptible to infections due to the decreased production levels of antibodies in the system. The hormones from the thymus gland helps the defense system of white blood cells.

The rate of those hormones start decreasing  from age 30 and the age 60 there will be a steep decline in their count in the blood system. The decline in the immune system affects the response mechanism against the antigens produced due to the foreign substances induced in the system (Sailer, 2000).

8. Musculoskeletal System: An average reduction of about two inches height can be spotted in the elder people of above 80 years of age. The vertebrae changes and increased change in curvature of the hips can knees can use the decrease in the height. The aging can affect the bone mass and in turn that affects the skeletal system. As the age increase the body bones becomes more porous. The calcium

levels in the body affect the bones. The rapid rate of bone loss is observed more in woman compared to men. After menopause within the five years of span women tend to face more musculoskeletal issues. About 23 percent loss of the muscle mass can happen when people reach near 80 years of age. Endurance, strength, size and width of the muscle fiber tend to lose its effective characteristics till people reach the 80 years of age. With the age the skin may become thin and hair becomes gray. The malnutrition, less physical activities and chronic illnesses can affect the muscle strength.

In men the testosterone levels may decrease about 30 percent with age and it affect the reproductive system, sperm count and decrease in the size of testes. It is noted that the erectile dysfunction rates can increase from 15 percent to 50 percent in the age group of people between 65 years of age and 80 years of age. In woman the drop of estrogen levels cab is up to 95 percent with the age and it can cause ovulation, decrease of vaginal lubrication and thinning of vaginal walls (Sailer, 2000); (Smith Suzanna & Gove Jennifer E, 2005)

9. Reproductive System: The capacity of the reproductive system in women will undergo many changes and it almost becomes to halt when they reach menopause. The estrogen levels will go down drastically when woman reach menopause. When it comes to men they may experience the ED issues, their sperm count decreases as well as a drastic drop in their testosterone levels (Frazier B.H., 1987); (Sailer, 2000).

10. Sensory System: It a common problem with almost 95 percent with the aged individuals when it comes their vision. They need the help of glasses or some time the vision connecting operations need to improve their vision. The hearing capacity of the aged individuals may decrease 10db after 60 years of age for each coming decade. The alzheimer decrease can cause more hearing issues with the older persons. The human tongue may lost its tasting abilities and also the scene of smelling abilities will go down very much and can cause indignation and food poisoning (Sailer, 2000); (Smith Suzanna & Gove Jennifer E, 2005)

**2.2.2 Mental Changes**

1. Learning: The learning process with older persons is very much limited most of the time. They need more time to process the information and may take time to respond. They tend to be little less accurate and slow when compared with young adults (Mental Health Foundation, 2005).

2. Reasoning: With the past experience in life older persons have little more reasoning capacity when compared with young adults. There could be some slow responses and more caution patterns with older persons (Sailer, 2000).

3. Creativity: Most of time the creative thinking capacities are less in older persons than younger people. It may be because of fatigue or less interest towards significant goals at that point of time and age (Enjo, 2010).

4. Memory: It is noted that older persons tend to remember the fragments of past more than the present memories. It may be the lack of interest in things and lack of attentiveness. May be some time some psychological, neurological issues can also cause some soft memory issues (Enjo, 2010).

5. Recall: Recall is affected more by age than recognition. Many older persons use cues, especially visual auditory and kinesthetic ones to aid their ability to recall. The recalling capacities of the older persons may go down. It includes the visual auditory response and kinesthetic abilities (Sailer, 2000).

6. Sense of humor: A common stereotype of the elderly people is humorless tendency. While it is true that their comprehension of the comic tends to decrease with advance age, their appreciation for the comic than they can comprehend increases (Enjo, 2010).

7. Reminiscence: At times the reminisce play a role with past impressions. There will also be an impact on their living conditions (Sailer, 2000).

8. Vocabulary: We can note the deterioration levels in the vocabulary levels in the older person individuals. Learning new words in older person individuals happens very less frequent (Mental Health Foundation, 2005).

9. Mental rigidity: The mental rigidity will increase with the increasing of age. It may be because of old perceptions, old habits and more fatigue in life (Mental Health Foundation, 2005).

**2.2.3 Social changes**, this relate to lifestyle, loss of other family members, neighbors and friend. The main social problems which contract elderly are social isolate, loneliness, rejection and loss of purpose in life, deterioration in housing standard, and poor nutrition level (Pollsawat Wee, 2007).

**2.3 Physical activity (PA) in older persons**

**2.3.1 The components of physical activities among older persons**

The physical fitness, function skills, physiological health could been enhanced gradually work outs containing moderate intense work outs and physical activities duration of 30 minutes or more for three or more days a week. In the case of senior adults the physical activities should not be more strenuous considering their age factor. Slow biking, walking, gardening and just house hold works for at least for 60 minutes every day could be very effective with the senior adults. In a week the total physical activity of schedules should be not less than 150 minutes. These physical activities can contain a shorter periods of fitness routines each day in a week. They could be any sort of physical activities such as less intensity 30 minutes less intensive weightlifting or slow walking or slow biking five times in a week. These fitness suggestions and finding are applicable to all segments and sectors of senior age groups irrespective of their genders, culture back grounds, and race and income levels. Some sort of physical activities always will help in the senior adults with no some diseases limitations. It will sure help some total inactive adults to little active persons. Every senior adult should be aware of their physical conditions and their limitations regarding their physical fitness. It is suggested that the every senior adult should push themselves towards some sort of physical activity from less to more intense schedules with increased durations gradually (World Health Organization, 2008).

More moderate physical activity improved physiological functioning by increasing heart vitality, decreasing hypertension, and reducing arteriosclerosis as well as rates of cardiovascular disease (Seguin, 2003). It has shown to increase muscle function, by enhancing strength and power, augmenting tendon and ligament flexibility (Micheli, 1995) and reversed sarcopenia (Avila Funes, 2003). Physical activity has also proven psychological and cognitive benefits for older adults including augmented reasoning, working memory and reaction time (Louise-Smith, 1990), decrease in levels of anxiety and depression (King, 1993) and improve executive control through the enhancement of prefrontal and temporal grey matter (Erickson, 2009). Physical activity are so closely related an individual's fitness level in large measure determined by his or her physical activity over the most recent weeks or months. From the studies it is shown that aerobic-based physical activity at least 30 minutes per week clearly prevents disease and health condition (Lakka, 1994). Regular daily physical activity is a major component in preventing chronic disease and falls (World Health Organization, 2008).

Physical activity programs can be grouped into two broad categories: general physical activity (walking, aerobic movements, and other endurance exercises), and specific physical activity (training geared specifically toward increasing balance and strength). To be effective, physical activities should be tailored to the adult's physical capabilities and needs. Physical activity may be generally recognized as important for maintaining fitness and strength, but its importance in maintaining good balance and function needs to better publicize. It is likely that the approach will prove effective for both high and lower-risk populations (America College of Sports Medicine, 2009).

The characteristics of physical activity prescription and its benefits vary depending on the individual's age, gender, health status, fitness level and goals. Tipton and Franklin gave the components of physical activity prescription as mode, frequency, intensity, duration, and rest intervals (Tipton, 2006). Given below is brief description of each component:

Mode of physical activity: Sports also include aerobic conditioning potential, if they are pursued for a sufficient duration along with intensity. The greatest improvement in maximum oxygen consumption occurs only when exercise involves the use of large muscle groups over prolonged periods in the activities that are rhythmic and aerobic in nature such as walking, hiking, running, machine-based stair climbing, swimming, elliptical activity, cycling, rowing, dancing, skating, and endurance games. If possible, the trainer should design programs to eliminate barriers that might decrease the likelihood of compliance with, or adherence to the exercise (America College of Sports Medicine, 2009). Duration of physical activity: The intensive life style physical activity routine contains rigorous and consistent physical activity sessions. All these physical actives are directed to burn as much as the excessive calories present in the body. This can lead to more physical fitness levels and also reduction of fat deposit levels in the body. These intensive physical activity routines should be the duration 30 minutes every day. The little time spans of the warming up time before the physical activity as well as the cooling down time after the physical routines should not be included in the actual duration of the physical activity routines (America College of Sports Medicine, 2009). Frequency of physical activity: Frequency of physical activities according to Tipton & Franklin refers to the appropriate frequency of endurance-related activities (Tipton, 2006). (America College of Sports Medicine, 2009) recommends the frequency of 3 to 5 days/week. An exercising frequency of 3 days/week is sufficient to improve or maintain maximal oxygen consumption for individual who exercise at 60% to 80% heart rate reserve or 77% to 90% maximal heart rate, whereas physical activity frequency of 5 to 7 days/week is appropriate for individuals with 3-5 MET capacities.

Intensity of physical activity: Intensity is an essential component of the prescription because of its importance in eliciting the acute effects while maintaining the chronic effects of physical activities. Intensity of physical activities refers to the magnitude of the physiological disruption or stress caused by the activity. For dynamic physical activity, intensity is best characterized by a measure of energy expenditure, which may be expressed on an absolute or relative basis. Intensity and

duration of physical activities determine the total caloric expenditure during a training session and are inversely related. Improvement in health –related benefits may be achieved by a low-intensity, long-duration (>20 minutes) regimen whereas improvements in cardio respiratory fitness are associated with a higher-intensity, shorter-duration (< 10 minutes) program. Intensity of physical activities can be described either by oxygen consumption (VO2) or heart rate (HR). Traditionally, the range of physical activities training intensities (ml/kg/min or in MET) has been based on a straight percentage of maximal oxygen consumption. The actual maximal HR is specific to the mode of exercise and may differ within populations of the same age and sex. Obtaining the actual maximal HR through a maximal exercise test is preferred. However, based on the absence of a true determination of maximal HR, the traditional, empirically based, easy-to-use base (220-age) is still acceptable (Whaley, 2006).

The physical activity for older persons in each individual is different. The characteristic of proper physical activity (Pate RR, 1995) are as follows:

1. Frequency can be divided to 3 types

1.1 Activities that elderly can be done every day such as walking and stair climbing.

1.2 Activities that should be done 3-5 times/week such as aerobic exercise (fast walking, bicycling, and swimming) and activities for fun (dancing, painting, and playing sport).

1.3 Activities that should be done 2-3 times/week such as leisure activities (playing golf, bowling and gardening) and stretching exercise.

2. Intensity can be divided to 3 levels

2.1 Low level: intensity in physical activity less than 3.0 MET such as walking with velocity less than 1-2 miles/hour and fishing.

2.2 Medium level: use 3-6 MET such as bicycling with velocity less than 10 miles.

2.3 High level: more than 6 MET such as fast walking and bicycling with velocity less than 10 miles.

For older persons, proper intensities are low and medium (Pate RR, 1995).

Metabolic equivalent: MET is defined as the ratio of the associated metabolic rate for a specific activity divided by the resting metabolic rate (Ainsworth B. E., 2004). MET is used in the Compendium of Physical Activities to reflect the intensity of the specific activities. The Compendium of Physical Activities was developed to facilitate the coding of physical activities obtained from physical activity records, logs, and surveys and to promote comparison of coded physical activity levels across observational studies. MET intensities listed in the Compendium of Physical Activities can be used to estimate the energy expended during physical activities(Ainsworth. B.E. et al & 2000). In addition, MET is used to calculate the energy expenditure from physical activity in kilocalories per week (Ainsworth. B.E. et al & 2000) . The US Department of Health and Human Service (1996) recommended that expenditure of at least 150 kilocalories per day or 1,000 kilocalories per week in moderate-and vigorous-intensity physical activities for all adults. The intensity range for the Absolute Intensity of Dynamic Exercise (MET) for adults by The American College of Sports Medicine (2006) for dynamic exercise lasting 60 minutes is < 2.0 for very light, 2.0-3.9 for light, 4.0-5.9 for moderate, 6.0-8.4 for heavy, ≤ 8.5 for very heavy, and 10 for maximal (Tipton, 2006) (Table 2 and Table3).

**Table 2:** Energy consumption in each activity

| **Activities** | **Energy consumption (MET)** |
|---|---|
| Physical activity | |
| Walking with velocity 1.7-2 km/hour | 2.3-2.5 |
| Walking with velocity 2.5-3 km/hour | 2.9-3.3 |
| Walking with velocity 3.4-3.75 km/hour | 3.6-3.9 |
| Slowly bicycling | 3.5 |
| Rapidly bicycling | 6-7 |
| Bicycling with velocity 6 km/hour | 4.5 |
| Jogging with velocity 5 km/hour | 7-8 |
| Aerobic and stretching exercise | 4.5 |
| Swimming | 5.0 |

**Source**: Ainsworth, 2000

**Table 3:** Energy consumption in each activity (cont.)

| **Activities** | **Energy consumption (MET)** |
|---|---|
| Household and outdoor working | |
| Eating | 1.5 |
| Typing | 2.0 |
| Cleaning furniture | 2.0 |
| Sweeping floor | 3.0 |
| Outdoor sweeping floor | 3.5 |
| Mopping | 3.5 |
| Carpenter work | 5.5 |
| Digging | 6.0 |
| Cleaning Car | 5-6 |
| Gardening | 4.5 |
| Self –care activity | |
| Eating | 1-2 |
| Preparing food | 2.5 |
| Clothing | 2-3 |
| Taking a bath with shower | 3-4 |
| Descending stair | 5.0 |
| Walking with gait aid | 6.5 |

**Source**: Ainsworth, 2000

3. Duration: physical activity is of benefit only if it is done at least 20 minutes.

4. Normally the physical activity should be of duration like 30 minutes/day or 10 minutes/ time for 3 times/day.

5. Mode: Old citizen or older adults should do the physical activities more than of one type for being healthy.

**2.3.2 The improving of physical activities among older persons**

Before understanding the impacts and uses of physical activity and exercise routines, it is suggested to know their basic descriptions and their characteristics. A physical activity can be defined as the bodily moments produced by the skeletal muscles of earthly species that leads to the consumption of body calories. (Casperson, 1985). The usual house hold activities, recreational activities, leisure time activities, sport activities, work life activities and exercises can be part of physical activity. According to Casperson exercise is a structured, planned and repetitive bodily moments done to reinforce one or more factors of fitness. Suitable exercises and physical activities can help to improve elder people fitness levels. While choosing those exercises and physical activities the older people should consider their body limitations (Casperson, 1985). The physical by the various factors such as the cultural context, the effecting elements of the environment where the physical activities taking place and other intervention tools used as the catalyst activities can be influence for the physical activities. In the socio cultural context the exercise can be defined as the function of human body indulged in some sort of physical activity. Those activities may include obligations of paid work, house hold chores, personal care and child care. The other aspects of it could be the physical activities undertaken as a specific means to improve fitness or to improve health or the physical activities are the integral part of some hobby activity (Praft Mchael, 1999).

The urbanization and technology made the lives easy and effortless all around the world in the current century. The negative impact of this could reduce of the physical activities in daily life. The examples include the use of lifts and escalators, ordering the fast food, remote operated equipment and more use of

vehicles for every small distance. Like this various forces are so much intervened with the daily life and their use cannot be completely stopped.

The effective counseling and efforts to inculcate the healthy life style philosophy and the awareness programs about fitness can achieve the objective of measurable increment in the physical activities in work places as well as house hold environments. The employees should be encouraged to use stairs rather than lifts and escalators. They are also encouraged to take up some physical activity to increase their fitness levels or join some health clubs. The current generations are recognizing the importance of the physical activities in their mundane life. They are finding ways to link the physical actives that suite their life styles and trying to mix the leisure games, playing, recreational activities and sports to keep a healthy life style (Tudor-Locke, 2002).

The awareness programs and community counseling events can bring a notice able improvement regarding the physical fitness and physical activity programs among the elder citizens population. These physical activities can be part of paid work, shopping or other day to day activities. The physical activity campaigns can also help to alter the perceptions in order to spread the philosophy of health life style. These results cannot be achieved over night and it all takes long term plans and effective program implementations. With the current recourses the redesigning and rebuilding the active older communities may take more than ten years (Dunn AL, 1998). The factors affecting the physical activity as follows:

1. Increase in population and population density: The density of the population plays a very critical role in many ways. Larsen states that more the population densities there is chance of more people susceptible to various diseases, more psychological problems with the stressed life styles, impacts on natural environments, the increased toxic levels in air because of more industries and more use of transport systems. The higher the population indexes the lower the chance for effective amount of physical activity in the day to day habitat. Sometimes trying to perform the physical activities in outdoors can be more unhealthy and

uncomfortable because of more air pollution and hustle bustle environments around (Larsen, 1993).

2. The Dominance of Automobiles and the Decline of Walking: The automobiles have become the major means of public and private transport system in the current century all over the world. The fast urbanization and rapid development of sub urban cites utilized the mass transit mediums. The availability of affordable private commuting means can provide more customized traveling schedules and privacy. According to the year 2000 surface transportation policy project report showed a steep decline of 42 percent in the walking activity as well as forty percent increase of obesity people in the people of USA over the previous last two decades. At times it was found that the reason for the decrease in the walking activity was due to unsafe neighbor hoods in the US sub urban communities. (Surface Transportation Policy Project, 2000).

3. Dysfunctional Distribution of Free Time: On the whole an average American was getting thirty to forty hours of free time during a week. Only one fifth of the population was getting less than twenty hour of free time (G. Godbey, 1997). The time famine schedule of everyday life will limit the opportunities with the physical activities. Over all free time in a day could be the collection of small time intervals. This free time could be more or less couple of hours in a day. To increase the frequency with the physical activities the older people should use their small chunks of free time effectively without any wastage of time. At time it is difficult to find the common times slots for house hold social interactions with the busy work life schedules that lead to less physical actives as well as less social activities.

4. The decline of physically active paid work and housework: Apart from the paid works the amount of physical activities in day to day life became very less because of the technological advancements in the present situation all over the world. The technology made lives easy when it comes to house hold works, personal care and child care. The use of lawnmowers reduced the manual labor of cutting and trimming the grass fields. The cars with power steering and automatic gears removed the need for more physical strength maneuvers. The manufacturing

industries are completely getting automated and slowly removing the human intervention. Only monitoring work were taken care by the workers and large machines are operated to do the work. The use of machines and equipment in other sectors like farming, masonry, carpentry and other hard manual labor incentive works took out the element of hard labor ships(Humpel, 2002). The decline in the time spent for the house hold works has become a more predominant pattern over the last two decade. The fast food culture and using dish washers, washing machines and vacuum cleaners removed the physical labor in the every common house hold(G. Godbey, 1997). Even in some sports the use of technology reduced the physical activity part. For example the golfers using the battery operated cars to move around and also to carry their golf kits.

5. Environmental Attributes of physical activities: The developed cites, rapid transportation systems, and technological advancements caused the minimized exercise activities in the mundane life. The factors of environment can influence the physical activity. The environmental elements like access to the facilities, chance for activity, weather, safety conditions and soothing surrounding have a considerable effect on the physical activity.

According to Sallis, Bauman and Pratt the successful promotion of the physical activity programs depends on the effective use of natural environments as well as building conducive environments. The availability of adequate resources, efficient infrastructure along with implementation of well drafted physical activity polices could lead to better out comes. Sometime the bad weather, hot and humid conditions can make older people less interested towards outdoor physical activities. The studies showed that well designed community parks with more trees, shaded walking paths with few recreation facilities can motivate and comfort the older people to take up some sort of physical activities.

The well developed nations like USA understood the importance of physically and mentally fit communities around the nation with concepts of healthy

life style. By passing the Land and Water Conservation Fund Act the US government was able to plan and build the more community parks and also able to develop outdoor recreation areas for the citizens of the nation. A remarkable change with the habits of older people related with the physical activities was noticeable with the effective. These felicities and awareness programs are intended to motivate older people to choose a healthy life style mixed with some sort of the physical actives in their daily life. These facilities could be in terms of better side walk ways, more clean green parks and community health centers(Brownson, 2001); (G. Godbey, A. Graefe and S. James,, 1993). In the current century people all over world are very much used to the technological benefits and their lives are very much interlinked with the gadgets and equipment around them. Because of this the amount of manual labor very much reduced in day to day life. Going back to old life style with the hardships of manual labor can be a faraway dream. The better solution could be re designing the older communities and encouraging them for more active participation with the physical activities. To achieve these objectives the governments need ample time, resources, infrastructure and effective implementation of action plans.

At times the physical actives are undertaken to improve the fitness levels or to improve the health or to battle against few diseases. Sometimes people are very much motivated and they constantly pursue their health life style habits. There is common trend with the few people only focusing on short term health objectives. They may tend to lose interest or focus when the immediate health threat temporally taken care (Sallis, 1994).

The lack of focus, consistency and will power cannot achieve the long term benefits of the physical activities. The efforts to blend those physical activities with one' life style will play an important role to keep the fitness levels on regular basis. The health cubs and fitness spas are intended to enhance the fitness levels in the individuals. This could be little tiresome and boring to few people. It was found out that blending of physical activities with leisure actives can be a pleasurable experience for individuals. There is no linkage found between the physical activity equipment availability in home and the memberships in health spas with the

amount and the frequency of physical activities. It only depends on personal interest towards fitness or the necessity to fight against a disease. The factors can influence the physical activity process. In the case of Americans it was observed that they get average 35 to 40 hours of free time per week. Encouraging them to utilize the free time towards the fineness routines could be one good solution to increase the health conscious in the communities around the country (Jakcic, 1997); (G. Godbey, 1997).

The study found out that more American give more importance to their leisure time than day to day work routines. Most of the free time they wish to utilize viewing TV and relax after the work or during the break. While watching television doing some tread mill exercises can be on good alternative to mix the physical activity with the TV viewing habit (G. Godbey, 1997).

The North American neighbor hoods are having more parks and other places that could be used for walking activities and other recreational physical activities. The more awareness programs could help the people to use those facilities to improve their fitness levels.(G. Godbey, A. Graefe and S. James,, 1993); (Harper. J. D. Neider and G. Godbey, 1997).

**2.3.3 The Benefits of Physical Activities**

Some of the benefits of physical activities are listed below:

1. Control weight: have physical activity 150 minutes of moderate-intensity aerobic activity, 75 minutes of vigorous-intensity aerobic activity, or an equivalent mix of the two each week. Strong scientific evidence shows that physical activity can help and maintain the weight over time. However, the exact amount of physical activity needed to do this is not clear since it varies greatly from person to person. It's possible to do more than the equivalent of 150 minutes of moderate-intensity activity a week to maintain the weight (ElsawyBassem& Higgins Kime, 2010).

2. Reduce Risk of Cardiovascular Disease: Heart disease and stroke are two of the leading causes of death in older people. The physical activity at least 150 minutes a week (2 hours and 30 minutes) of moderate-intensity aerobic activity can

reduce a lower risk for these diseases. Regular physical activity can also lower the blood pressure and improve cholesterol levels (America College of Sports Medicine, 2009).

3. The Effects of Physical Activities on Type 2 Diabetes and Metabolic Syndrome: The diabetes and metabolic syndromes are part of health issues with the older age communities. The Imbalance of insulin levels in the body causes diabetes that lead to high blood sugar levels. This can cause damage to every internal organs present in the body with in no time. The blood sugar levels should be controlled with proper medication, change in the diet habits and with the help of some physical activities. The Metabolic syndrome is a condition in which people having too much bad cholesterol levels and more fat deposits around the certain parts of the body, high levels of blood pressure, low HDL cholesterol levels, high triglycerides levels. The study can shows that effects of Metabolic syndrome and Diabetes can be controlled to certain extinct with some sort of regular levels of physical activities containing some aerobics, walking, swimming, cycling or some sort of moderate weight listing exercises. All these physical activities can help in little rise in insulin secretion levels in the body and same time blood pressure levels will be controlled. Apart from this the prescribed Doctor medication should be followed without much negligence to improve the health conditions (Centers for Disease Control and Prevention, 2012).

4. The Effect of Physical Activities on Certain Types of Cancers: The cancer can cause an uncontrolled growth of the body cells in the human body with in the certain internal body parts. We can identify the different kinds of cancers basing on their symptoms and the type of internal cell growth. The colon cancer is related with the large intestine, which passes from the cecum to the rectum and absorbs water and electrolytes from food which is part of human digestive system. Usually the rate of Breast cancers is more in women than men. The constant breast examination can reduce the chance of Breast cancers. When any lumps are found within the breasts its advised to meet the oncologists immediately to find the facts. Usually the type one and type two cancers can be completely cured when they are diagnosed in the

early stages. The chances and effects of colon and breast cancers can be reduced a little bit with the help of physical actives. It is noticed that more physically active people are less prone to certain types of cancers (Centers for Disease Control and Prevention, 2012).

5. The Effects of Physical Activities on Bone Strength and Muscle Fibers: the well-known fact is that doing muscle strengthening exercises and aerobics will help in building and sustaining muscle mass in the body. Moderate and less intensive psychical exercises can slowly increases the bone strength with time. The senior adults should consider their age factor, their body conditions and limitations when they are selecting the physical activities. They should choose the physical actives that can blend with their life styles. A proper diet habits and active healthy life style can help in the increase of bone strength and muscle mass. The older adults can use the vitamin supplements with the consent of the physicians. Especially the older women should be more careful with the bone strength issues. After menopause the estrogen levels will go down drastically and it will affect the bone strength in older woman. In additions to the vitamin supplements the women can also take oral hormone supplements, iron supplements and more importantly the calcium supplements with the consent of the doctor. All this medication will help to improve and also to retain the bone strength in the women. The medication will be much more effective when the body metallization rate is increased with the help of physical activities. Along with those oral supplements a moderate and less intensive physical activities like walking, swimming or cycling on regular basis will help remarkably to build the bone strength, muscle mass as well as to increase body flexibility levels (America College of Sports Medicine, 2009).

6. Improve mental health and mood*:* regular physical activity can help keep the thinking, learning, and judgment skills sharp as in age. It can also reduce the risk of depression and may help sleep better. Research has shown that doing aerobic or a mix of aerobic and muscle-strengthening activities 3 to 5 times a week for 30 to 60 minutes can give these mental health benefits. Some scientific evidence has also

shown that even lower levels of physical activity can be beneficial (ElsawyBassem& Higgins Kime, 2010).

7. Improve ability to do daily activities and prevent falls for older adults*:* from the research shows that doing balance and muscle-strengthening activities each week along with moderate-intensity aerobic activity, like brisk walking, can help reduce the risk of falling (America College of Sports Medicine, 2009).

8. Improve your quality of life*:* from the research shows that getting regular physical activity not only helps give you a better quality of life, but also improves the physical fitness beneficial (ElsawyBassem& Higgins Kime, 2010).

9. Increase the chances of living longer*:* from science shows that physical activity can reduce the risk of dying early from the leading causes of death, like heart disease and some cancers. This is remarkable in two ways:

9.1 Lifestyle choices have as large an impact on health as physical activity. People who are physically active for about 7 hours a week have a 40 percent lower risk of dying early than those who are active for less than 30 minutes a week.

9.2 Don't have to do high amounts of activity or vigorous-intensity activity to reduce the risk of premature death. People can do physical activity a lower risk of dying early by doing at least 150 minutes a week of moderate-intensity aerobic activity.

For older persons who have regular physical activity routine can improve functional health, improve cognitive function and enhance the quality of life, improved sleep quality, help to maintain independence, prevent disease, ease symptoms and / or slow progression of chronic conditions, help build muscle strength, flexibility and balance to prevent falls, and facilitate a faster recovery from surgery or a fall beneficial (ElsawyBassem& Higgins Kime, 2010).

**Physical activity in people with chronic disease**

The moderate-intensity aerobic activity, like brisk walking, is generally safe for most people. For people with a chronic health condition such as arthritis, diabetes,

or heart disease, older persons must see the doctor to find out for condition limits, in any way, work with the doctor to come up with a physical activity plan that matches their abilities (America College of Sports Medicine, 2009).

**2.4 Group-Mediated Lifestyle Physical Activity (GLPA)**

Lifestyle Physical Activity (LPA) is a part of daily life style routines of every adult. The daily errands, daily chores are part of life style physical activity. The activities such as Vacuuming, sweeping, cooking, making bed, gardening, moving the lawn, raking leaves, pushing a shopping cart while grocery shopping, playing an instrument such as a guitar, drums, piano, trombone or violin , walking, cycling near the house and playing games with children can come under the LPA list of activities.

According to the study done by Dun AL the physical activity intervention programs should reach each and every senior adult as well to all the older communities present in USA. All these programs should address the problems related to the older person's life styles, awareness towards the physical activities and benefits of the physical activity programs. The intervention life style programs can consist of a small collection of moderate physical activity routines that are part of usual daily activities. All these life style intervention programs will enhance the physical fitness levels and active participation levels in the activities senior adults. (Dunn AL, 1998).



The finding showed that almost 20 percent to 30 percent of senior adults are completely inactive and approximately other more or less 25 percent of senior adults are minimally active. The daily mundane activities such as playing with children, the daily chores, the daily errands, gardening and walking are the be part of the Lifestyle Physical activities. All these kind of daily activities can also help the senior adults to maintain their fitness levels. These kind of physical activities can complement the little moderate physical exercises. The study also found that the life style physical activity programs helped in reducing the risk of cardiovascular diseases in older people as well as the reduction of fat deposits in the body. These

life style activities increased the fitness levels in the older individuals (Mchael Praft, 1999).

It is the well-known fact that the success of any kind of physical activity program depends on the motivation levels, more acceptation levels towards the changes with diets and physical fitness routines. The researcher identified many factors that can influence the physical activity program. The Key success lies in identifying the different motivation factors on individual basis, customized life style physical activity programs. The effective and efficient clinical counseling to alter the individual behaviors regarding the fitness be a challenging task for any researcher. The more physically inactive people can use the life style physical activity routines as an alternative option to the intensive traditional exercise program. The physical activity awareness counseling programs should reach the older committees present nationwide. Effective counseling methods should be developed to address all the LPA issues and the factors influencing behavioral patterns, diet patterns, motivational issues, physiological and physical barriers should be incorporated in the counseling programs (Mchael Praft, 1999).

The observations were made by Dun in the similar fashion with the help of the existing study done by his predecessors regarding the physical activity programs. He took a longer time period of two years for conducting the study. During the study the effect of life style physical activity programs on fitness, body composition, and risk factors for cardiovascular disease we observed. The study sample consisted of both men and woman between the ages 35 to 60 years of age. The size of the sample was 235. The percipients were slightly over weighted and are involved in zero physical activity at that point of time. The study also focused the comparison between the traditional structured physical routines with the controlled trail base exercise routines. The improvements were similar in the two groups. The study showed a measurable increase in the physical activity levels among all the participants and the increase in the fitness levels. There were also a significant improvement in the oxygen intake levels, reduce in systolic and diastolic blood

pressures as well as the reduction in the fat deposits in the body (Dunn AL. Marcus BH Kampert JB et al., 1999)

The researcher Anderson under took a study to analyze the risk of cardiovascular diseases linked with long term and shot term exercise routines and long term and short term changes with the diet habits and the details of weight and body composition levels in those particular individuals. The study was conducted on 40 obese women between the ages of 22 to 66 in the university based weight control environment. The program was combined with the weight based exercise activities and aerobics with healthy diet. The program went for almost sixteen weeks. After those first sixteen weeks the participants were instructed to maintain the same healthy diet habits and regular physical fitness routines. The research findings are noted time to time and used to study the effectiveness of the physical activity programs (Andersen RE, 2001).

The tests conducted by Anderson shows a remarkable weight loss and reduction of cholesterol levels with the respect study groups. He also approached the test groups with life style physical activity approach as well the traditional structured exercise routines approach. The study found that the physical life style approach and be used an alternative method for traditional exercise routines and these life style activity programs are proved to be more effective at times. It is reported that a comparable weight loss and reductions in total cholesterol was found in the both the groups with the life style physical activity approach study groups and as well as in the traditional exercise routines study group. Another finding was the life style physical activity programs can increase the active participation levels in the participants and showed a positive effect on their fitness. beneficial (Andersen RE, 2001; ElsawyBassem& Higgins Kime, 2010).

Andea L and Dunn states that house hold activities, leisure activities, self-selected activities and occupational activities of approximate 30 minutes of duration are conjoined with the daily routines and that defines the life style of that particular individual. (Andreal L Dunn, 2009).

An experiment was conducted with a random sample size consisting 279 middle aged people in loved with zero physical activities. Two groups are formed with one group contains the home-based exercises with high-intensity levels of exercises along with proper guidance and instructions. The other group followed class-based exercise routines. It is observed that the risk for cardiovascular diseases were also most same for both the groups but the long term befits were found with the home based exercise group with regular physical activities (King AC, 2010).

There will be always the initial huddles with the older individuals when it comes to change their habits and change in the amount of physical activities. The old habits need to be broken with the effective counseling and support mechanisms. It will help to increase the active participation levels. To achieve the objectives different strategies can be followed. The strategies such as making a family member to support the elder people present in the family with the physical activities, setting the pre-defined goals time to time for the elder people such as walking around the house or cycling near the home daily or couple of times during the week, making whole family members to participate in some friendly gaming activities, making the older people to record their progress and daily activities in their pocket log books.

The main objective of all the life style activity program strategies should support the elder people in effective manner. One of such strategy could be identifying the favorite list of lifestyle physical activities among all the family members and also encouraged them to try some new activities too. The vehicles can be parked little far from the entrance to stores, home, school, and other places in order to active the little walking activity. More usage of the stairs instead of the elevator or escalator is also recommended. The other strategies can be playing with pets, exploration of new walking routes and visiting new parks with pets, avoiding more sitting while doing any work, walk or ride a bike to reach the destinations, focusing in raising the bar with daily physical activity levels like more long walks or more physical routines, celebrating the personal efforts and success, rewarding oneself for the personal excellence and effectiveness. All these strategies can be

useful with the older people in order to achieve the maximum result with their life style physical activity programs (Table 4 and Table 5).

**Table 4:** Examples of Lifestyle Physical Activities

| **Activity** | **Description** | **MET** |
|---|---|---|
| Walking | Slow | 3.0-4.0 |
| | Brisk | 4.0-5.5 |
| Yard work | Pushing hand mower | 6.0-7.0 |
| | Pushing power mower | 4.0-5.0 |
| | Raking leaves | 3.0-4.0 |
| | Shoveling | 5.0-7.0 |
| | Chopping wood | 6.0-7.0 |
| Recreational | Bicycling (slow) | 3.0-5.0 |
| | Bicycling (brisk) | 5.0-7.0 |
| | Bowing | 3.0-3.5 |
| | Golf (walking) | 3.5-4.5 |
| | Social dance | 3.0-6.0 |
| Occupation work | Bricklaying | 3.5 |
| | Carpentry | 5.5 |
| | Heavy assembly work | 5.5 |
| Housework | Mopping floor | 3.0-4.0 |
| | Ironing | 3.0 |
| | Making beds | 3.0 |
| | Hanging the wash | 3.5 |

Source: Karen Mc Connell, 2013

**Table 5:** The FIT Formula for Getting Health and Wellness Benefits from Lifestyle Physical Activity

| FIT formula | Threshold of training | Target zone |
|---|---|---|
| Frequency | Most days of week | Daily, of most days of week |
| Intensity | Moderate activity equal to brisk walk 200+ calories/day (4 METs) | Moderate activity equal to brisk walk 200+ calories/day (4-7 METs) |
| Time | 30 min in bouts of 10+ min | 30 min to several hr in bouts of 10+ min |

Source: Karen Mc Connell, 2013

This study use Lifestyle Physical activity education to all participants by group instruction and discussion about physical activity.

Boonyong explains Health education as a systematically planned procedure with aims to enable people; family and community think reasonably thinking by themselves to make choices and decision on correct behavior, and to have lasting good health (Boonyong Keiwkanka, 1983). Health education actually refers to three facts that is learning to know, appreciate, and able to really practice (Darunee Junhavat, 1983).

In this study, the researcher undertook method of health education as Lifestyle Physical Activity program in order to increase physical activities among older citizens with the help of group discussions and physical activity handbook.

**2.4.1 Group discussion method**

Group discussion can be referred as the strategy to encourage and learn from each other by synthesizing group ideas for finding out some solutions of problems and reach a suitable conclusion on the same topic (Frazee, 1995). The number of people under the group of discussion should be of around 5-12 members or more

than 15 people in a group it actually depends on the problem and method for discussion, use time for sharing the thought. This method helps in creating learning method of the area of thought, belief and suitable behavior. (SutheeraVisutthiwan, 2000).

The following are the steps for arranging group discussion

1. Preparation step: this step involves the main objective or reason of joining the group. The step is to make appointment on time and place and different methods followed for joining the group discussion.

2. Step in leading the discussion: in this step the leader introduces himself and let other members introduce themselves like giving their name, experience of physical activity and duration of physical activities or any other suitable information. The members are told to keep their introduction short and to the point then, the discussion leader make small introduction to the group informing them about the aim of joining the group and time for discussion.

3. Discussion step: in this step the group leader gives equal chances to all the group members to take their own time for giving their voicing idea on the issue under discussion. Everybody is requested to hear the idea of discussing member clearly. The leader has to control the discussion as per the sequence, ask questions to all members participating in the discussion to the utmost, the leader even has to control the time for each member discussion suitable to the issue, stop any discussion that use too much time or getting out of the concern issue, remind the members to discuss to the point of the issue in order to reach to a conclusion.

4. Summarizing the discussion: in this step the leader finally summarizes and allows the members to add or the members can help each other to summarize and finally the leader adds up whatever is left out.

5. Evaluating the learning by questioning: in this step the learners are allowed to express their idea and observe behavior and then follow up on the application.

**2.4.2 Benefit of health education by using group discussion**

1. The group discussions can be a good plat form for all the participants to express their fear, concerns and barriers they facing. The knowledge gained by the past experiences can be shared with each and everybody present in the group.

2. The people in the group can get help and support from the other people in the group. The people with similar kind issues can develop the sense of belongingness to each other and bonding levels, trust levels will be improved. They can share their experiences with the group as team. This will lead to the effective cohesiveness in the group.

3. The group discussions will give the opportunity to interact with the each and every individual present in the group. This help to people to know others more on personal level.

4. The people in the group can find the solutions to their problems by themselves with the knowledge they acquired with the other peoples experiences. They can also consult the group leader for more clarification and support.

**2.4.3 Limitations**

The leader of the group should be more knowledgeable, dynamic, communicative, and empathetic. The leader of the group should lead each and every individual in the group to achieve their objectives within the specified time frames. The other main responsibility of the leader is to keep the more cohesive levels in the group.

**2.4.4 Mass Media Campaigns**

Mass media campaigns are held which are actually interventions that give message about physical activities to the large and relatively undifferentiated audiences. The campaigns are designed in such way that it increases knowledge, influences attitudes and beliefs, and change behaviors. Messages through these campaigns are transmitted by using channels such as newspapers, radio, television, and billboards singly or in combination. Mass media campaigns can also bring

improvements in knowledge and beliefs and important roles in changing awareness of opportunities for and benefits of physical activities (Emily B. Kahn, 2002). The present study uses the guideline-book which contains information to motivate the older persons in order to consider the effect on physical activities and how to combine physical activities in their daily lifestyle.

**2.4.5 Family-Based Social Support**

Family-based social support attempts to change health behaviors with the help of the use of techniques that increase the support of family members for behavior change. The family is considered as the major source of influence for older persons in the modeling of health behaviors. Many disease risk factors, both behavioral and physiologic, aggregate within families. Thus, a supportive social environment is needed to be shown in order to increase maintenance in behavior change. The present study is targeted to a family with older persons or to their spouses or partners. Programs typically include joint or separate educational covered sessions on health, goal-setting, problem-solving, or family behavioral management and therefore will often incorporate some physical activities. Interventions under this category are targeted to older persons and their families who are often implemented as part of a larger strategy. In this setting, the family component is often conceptualized as an adjunct home curriculum to the group activities, involving take-home packets, reward systems, and family record keeping. The family-oriented special events may also be included. According to the family intervention can increase in self-efficacy for physical activities and increase in satisfaction with the amount of family activities (Emily B. Kahn, 2002). The present study uses family based social support to help older persons for recording the diary of lifestyle physical activity daily every week.

**2.5. Factors effecting physical activity in older persons**

**2.5.1 Individual characteristics**

Every individual is born with certain individual characteristics that affect his physical activities such as the individual age, gender, marital status, education level, income, and member of senior citizen club (Pender, 1996).

1. Age: generally people with different age have different behavior. The older persons with age group 60-69with good health can participate in social activities. People with age group up to 70-79 years, begin to have some disease they reduce their participation in social activity participation. The aged people with age 80-89 years were found to be more difficult to adapt with environmental change and there they were found more dependent and the age group of 90-99 years old adults usually face many health problems and they become more dependent. According to Srisaard S the older persons with age above 75 years have least level of health promotion behavior and are affected to have health condition (Srisaard S, 1997).Also, from the studied about physical activity among older Mexican American women found that the age significantly and inversely related to daily activity, leisure/sport activity, and total habitual activity. Thus, the type of activity decreases with age (Laffrey, 2000)

2. Gender: sex is actually the personality and it plays important role in family and community of the person leaving. In family, men is the head of family or a leader, when he gets older, the role and activity played by him as head decreases but many studies found that men physical activities more than women (Laffrey, 2000).

3. Marital Status: the couple whose life partner is with them can support and help each other to have physical activities. The studies about the health promotion behavior found that older persons who are married have health promotion behavior more than single adult (Hunkittikul S, 1996).

4. Education level: the education can play important role in improving the knowledge, skill, and good attitude of older persons for understanding the physical

activities. The older persons with low education level or knowledge are found to have less physical activities compared to educated elderly people (Basselt, 2004).

5. Income*:* older persons with good amount of income has positive effect to their self-care and health care services which results in good social and financial status of an individual it makes one to have good chance of having good care of himself ( Pender, 1996) and apparently older persons with low income status have to face problem of less physical activities (Basselt, 2004).

6. Being member of senior citizen club*:* the group of older persons who are the member of senior citizen club spend their time doing activities at the club more than non member older persons (Laffrey, 2000).

**2.5.2. Behavior-specific Cognitions**

1. Perceived self-efficacy for being physically active.

A person's capacity to take the self- initiatives towards the goal oriented behaviors with regards to a specific domain activity can be defined as self- efficiency. The high levels of self- efficiency and self- discipline can play a good role in being physically active. These factors can be the key design elements in the social cognitive theory. These elements can help in the decoding the human behavioral theories. According to Stutts the self -efficiency can be identified as one of the important variable that can influence the human behavior as well the outcomes of the levels of physical activity. It is liked with the levels of overall exercise results of the inactive women participated in the experiment. (Stutts, 2002).

The self- efficiency levels depends on various sources that are related to the human behavior patterns. The mastery of these various sources such as control with the physical activities, knowledge of past experiences, command on the verbal communications and the time to time finding the appropriate motivation factors. The measurable increase in self- efficiency levels can cause a dynamic shift with level of physical activities. The increase in the self- efficiency levels can make the previously inactive people as active people (Stutts, 2002),(Resnick B, 2004); ). The self- efficiency levels can influence other elements of human behavior such as self- control, self-

regulations and self- discipline. All these factors reinforce the confidence levels and performance levels. The pre- defined targets can be easily reached with the sustainable and effective self- efficiency levels in spite of unexpected hurdles and stress levels(Harnirattisai, 2005); Shin, Hur, Pender, Jang, Kim et al, 2006).

When we observer the survivors of cancer and people with the chronic disease we can note one point. They possess a very high dress of self- efficiency towards the physical actives and high motivation levels. That helped them to battle against those cancers and chronic deceases (Pender, 2006).The factors affecting the self- efficiency and the outcomes of effective self- efficiency levels can be same to older communities present worldwide including the people in the Thai older communities.

2. Perceive benefits of and barriers to being physically active

In the health promotion model, perceive benefits of and barriers to the action are viewed as one of the behavior-specific cognitions and affect factors (Pender et al., 2006). Perceive benefit of exercise refers to perceptions of the anticipated benefit of exercise, which were mental representations of the reinforcing consequences of an exercise behavior (Pender et al., 2006).Benefits of exercise can be classified into five dimensions: life enhancement, physical performance, psychological outlook, social interaction, and preventive health (Nygaard, 2005). Perceive barriers to physical activity were defined as the individual's perception of factors that prevent individual from being physically active (Pender et al., 2006). Lack of time was cited as the most frequent barrier in the studies (Heesch, 2004); (Nygaard, 2005).Feeling too tired and lack of money were also reported in the studies (Nygaard, 2005) which might be associated with lack of time. Interestingly, muscle pain of limited mobility was also considered as a barrier to physical activity. Moreover, the studies showed those barriers to exercise varied depending on age, gender, and setting. Thus to increase physical activity in older people, healthcare providers should understand what perceive barriers are and help them minimize those barriers (Nygaard, 2005).

3. Perceived social support for being physically active.

Social support by many authors is viewed as the resources with useful information provided by other person. It is considered important for healthcare providers as they support individual health status (Schaffe M.A., 2009). Pender considers Social support as one of the interpersonal influence processes (Pender, 2006). It is found to be a significant predictor of physical activity. The interpersonal influence of social support includes norms, modeling, and social support. People with level of social support are less likely to be sedentary then those with low support. As given by Eyler in 1999 “For the lifestyle activity, the study found that people with high social support were twice as likely to reach the recommended physical activity level compared to those with low or no social support” (Eyler & 1999)Resnick in 2002 agreed that “Social support for physical activity involves instrumental, informational, emotional, or appraisal supports from family, relatives and friends. The support from family members and friends plays a significant role in physical activity. However, social support was described as an indirect influence on physical activity rather than a direct influence” (Resnick, 2002) when compared with Thai working women, social support is also the significant determinant for physical activity (Kaewthummanukul, 2006).

The studies about predictor factors of physical activity in older adults with hypertension showed that the gender, income, previous exercise experience, perceived self- efficacy for physical activity, income, environment, perceived health status, barrier for physical activity, and motivation for health explained 44% of the variable in physical activity (Laffrey, 2000) Also ,when compared with Thai rural senior adults the predictors of physical activities among them found that all predictor variable account for 27% of the variability of exercise activity. Therefore gender and perceived benefit of exercise were found to be significant independent predictors (Vannarit T, 1999).

## 2.6. Theory related physical activity

The understanding and promotion of health-related physical activity needs to be based on appropriate theories are as follows:

### 2.6.1 Trans Theoretical Model (TTM)

Application of TTM found that the primary function is the created stage-matched interventions for individuals attempting to change behaviors. The initial stage of TTM model can create a platform form and a conducive environment for stage matched interventions for the people willing to attempt the behavior modification process. The stage matched events will reinforce the physical activity outcome process we well as making sure the change initiative process should achieve its objective. The more emphasis is given to the replacing the old habits with new habits and behaviors. The feed backs and reinforcing methods can play a good role with the people in the pre-contemplation stage in order to improve their adaptation process. At times social support or group efforts can help the people in the preparation stage while they wish to indulge themselves with some physical activity such as jogging or cycling. The effective and efficient education about pre-contemplators and contemplators factors of TTM model as well as the better understating about the outcomes of the physical activity programs can help the participants. These educations can help to overcome the barriers time to time and it also can help the participants in realizing the fact that a good amount of constant physical activity can have a positive effect on the fitness levels.

The experimental facts shows that the people want to bring a chance in their physical activity habits will undergo a series of stages containing a gradual changing and adapting processes. All these stages were focused to improve the physical activity levels, the consistency level, and the self- efficiency levels.( Marshall, 2001).According to Schumann study the effectiveness of the TTM model can be linked with the self- accountability and self- efficiency towards the fitness levels. The participants were chosen from various collages (Schumann A et al., 2002)While designing the TTM model the factors affecting the process of intentional behavior

chance were considered. Many researchers are done various studies with the help of TTM model on the human behavioral change and its effects in altering the old habits, old perceptions and overcoming the barriers. These stages of TTM model change are related to pre-contemplation, contemplation, preparation, action, and maintenance in the respective order.(Nigg, 1999);(Nigg CR, 2001), (Marshall, 2001)The change in the physical activity levels and the change with the habits will happen gradually in different stages. There could be various factors affecting the motivational levels at different stages during the change and adapting process (Nigg CR, 2001). With the help of TTM model the various factors affecting the motivational levels and the barriers with the accepting the new health habits can be studied.(Schumann, 2002). The factors such as self- efficiency and the appropriate decision capabilities of an individual can affect the TTM stages of change with respect to the physical activity behaviors. The more the self -efficiency and self- discipline the more will be the advantages when the TTM model of phase of changes were applied (Marshall, 2001).

**2.6.2. Health Belief Model (HBM)**

The physical activity behavior is the major area of study in the health education. With the help of HBM model the physical activity interventions along with usual physical activity behaviors can be studied. The study also aims to understand the process of change and its effects of chances regarding the physical activity habits. Along with the other factors the HBM framework can be used to evaluate the effect of psychological factors on the physical activity behavior. (Frewen, 1994)

The psychological profiling and evaluations of health behaviors are the key elements with the Health Belief Model. This model focuses on the health habits in physically active and inactive people. The physically active people take more initiatives to avoid the certain illnesses when compared with the physically inactive people. In the health education the theories HBM models can be very much effective. (Janz, 2002).

The central elements of HBM and the amalgamation and effects of those elements with the health behavior and health education are as follows:

1. The risk factors towards a chronic health issues can be evaluated taking the susceptible health conditions of those particular individuals taken in to consideration. This factor is called perceived susceptibility levels.

2. Sometimes people tend to be more carious and more worried about the decease they may contact. They may undergo certain psychological stress and impact of social obligations. This condition can be called as the foreseen threat or perceived threat.

3. Few specific predetermined actions along with the health awareness information can help to reduce the severity of the illness and also to reduce the levels of susceptibility of those illnesses in those particular individuals. The individuals will never take serious actions to protect their health unless until they are sure of some imminent health threat or decease condition. This element can be named as the perceived benefits.

4. Every individual can assess the psychological barriers, physical barriers and financial barriers when assessing and trying to deal a condition of illness before or after contacting to it. The other factors could be the pain levels, the effectiveness of physical activities and effects of medication, the side effects. This perception is called the perceived barriers.

The other important elements with the HBM study could the effective initiative levels, the age factors of the individuals, the type gender, the ethnicity background, the personality traits and habits, and socioeconomic conditions, the individual beliefs about the illnesses could cause a major impact on the study.

1. The well- known fact is that less physical activities can cause the deceases such as overweight and cardiovascular anomalies.

2. More awareness about the effects of the chronic deceases on the health should help the individuals to take some actions to prevent them or control them.

3. Change in the behaviors, change in health habits and more active physical activities can reduce the rate of risk with certain chronic deceases.

4. Every individual should try to overcome the barriers with change in the behaviors, chance in the health habits and active participation with physical activity programs could help to enhance the health levels and reduce the rate of risk with the deceases and illnesses.

On the whole the every individual can take certain health initiatives basing on the external and internal factors for improving the health conditions and making them ready to fight battle against the chronic deceases. The high motivation levels and more awareness towards the deceases and its effects and their willingness to take actions to control the illnesses can improve the health conditions.

**2.6.3 Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB)**

According to the Theory Of Reasoned Action that a behavior of a particular individual is evaluated with the help their willingness levels to adhere to a certain behavior and those willingness levels in turn a function of their attitude and perceptions towards the behavior and their subjective norms. With the help of TRA frame work the effects and patterns of human volitional behavior can be studied. The common interpretations about people is that they possess some sensible and rational thinking. They are aware of the significant positive and negative impacts of their behaviors in the process of interacting with the other people (Hausenblas, 1997). The TRA emphasis on and process of finding the effective and efficient behavior traits that will help to reach the pre-defined goals. It all depends on the high motivation levels in order to achieve a specific behavioral change that can have positive effects on mind and body.

The elements of attitude regarding the performing behaviors a particular individual's ,self-efficiency levels and the elements regarding the subjective norms such as obligation toward the social pressure and the perceptions of the people around them can be the part of Theory Of Reasoned Action (TRA) study. The

individual perceptions and their conceived notions about the positive and negative consequences are also part of TRA study (Hausenblas, 1997). Every individual should be aware of the benefits with the physical activities. All these physical actives will help to increase the physical fitness levels and well as improved health conditions. The physical excretion and certain acceptable levels of body pains are part of physical activity routines.

The Theory of Planned behavior consist the personal elements of the people such as attitudes and subjective norms and perceived behavioral control accepts. These collective elements are part of human psychology and that leads to forming a intention or an idea and later that may become a consistent behavior. Both the theories of TRA and TPA can be used to study the different individual motivation factors and the effects of specific behavior patterns (Montano, 2002).

Both TRA and TPA give importance to the factors influencing the physical activity. One such important factor is personal intension and this personal intention is strongly associated with their personal attitudes. Sometime the external factors such as family issues and work life issues can hamper the physical activity routines however practicing the high levels of positive attitude towards physical fitness. The theories suggest that at time the external factors cannot be controlled completely they can only minimize. The particular individual should get back to grove and should continue with the physical fitness routines in order to continue with the active health life style activities (Hausenblas, 1997).

# CHAPTER III

# RESEARCH METHODOLOGY

This chapter described and explained the research methodology used in this study as followed;

3.1 Research design

3.2 Study area and study period

3.3 Sample, Sampling technique, and Sample size

3.4 Study procedure and planning

3.5 Structure of Intervention model

3.6 Measurement tools

3.7 Data collection

3.8 Data analysis

3.9 Ethical Consideration



## 3.1 Research Design

This study used Quasi-experimental, pretest-posttest with intervention and control group design to assess the effects of group-mediated Lifestyle Physical Activity intervention on changing physical activity among older persons in Phranakhonsiayutthaya district ,Phranakhonsiayutthaya province, Thailand.

## 3.2 Study area and study period

### 3.2.1 Study area

The study area is confined to Phranakhonsiayutthaya province. The province is divided into 21 districts, 120 villages, with the total population of 138,746 persons. The study selected 42 participants from Ban Mai sub-district as the intervention group, and 42 participants from Wat Tum as the control group (see Figure 3)

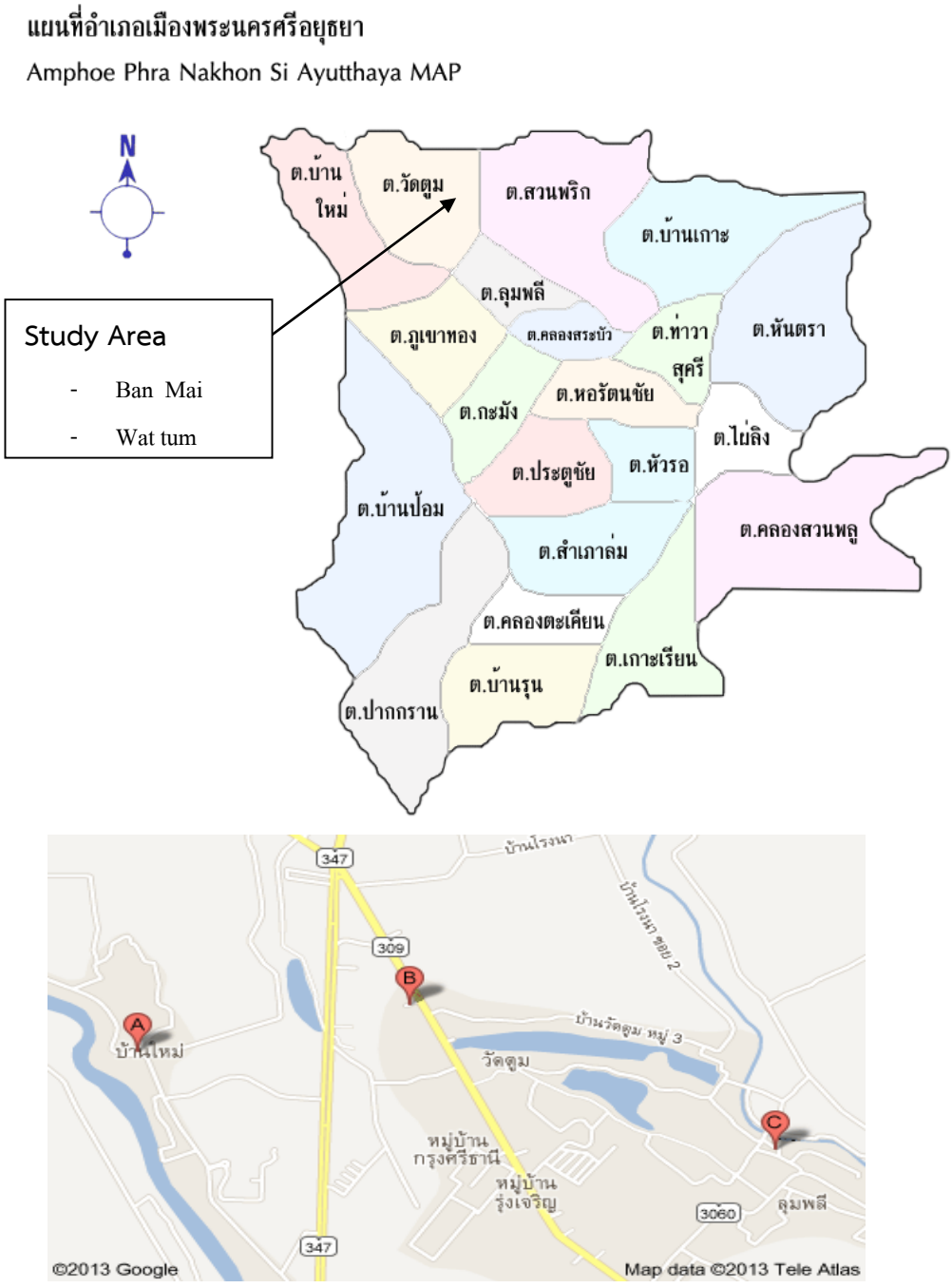


**Figure 3:** Map of Study area

### 3.2.2 Study period

This study used time around 12 months. It started in January 2014 to December 2014.

## 3.3 Sample, Sampling technique, and Sample size

Ban Mai sub district of Phranakhonsiayutthaya province has been selected as the intervention group. As the target population for this study is the older persons, it has been studied that the Phranakhonsiayutthaya province is the second highest in the population under the Central regions of Thailand. The province is found to have the period of exercise time less than 30 minutes up to 80.90 percent (The Bureau of Registration Development of Ayutthaya Provincial Administration, 2008). The participants selected in the study are older persons who are in the age group of 60 and over who can read and write Thai language, and are willingly participating in this study. The total households of Ban Mai sub district are 1,203 households, total population are 6,484 persons, and total older persons are 644 persons.

Wat tum sub district of Phranakhonsiayutthaya province has been selected as the control group. Total households of Wat Tum sub district are 1,232 households, total population are 5,264 persons, and total older persons are 556 persons.

This study used a quasi-experimental study conducted by the pre-test and post-test. The target population has been divided into two groups namely the intervention group and the control group. From a meta-analysis about the interventions for changing physical activity by means of time in physical activity (Deesomboon Sarunya, 2008) the sample size can be calculated (AJ Dobson,1984) as follow:

The average mean of intervention group ($\mu 1$) = 10.0

The average mean of control group ($\mu 2$) = 4.3

$(\mu 1 - \mu 2)^2$ = 32.49

$\alpha$ = 0.05, $\beta$ = 0.10

z $\alpha/2$ = z 0.05/2 = 1.96 (two tail)

z $\beta$ = z 0.10 = 1.28

$\sigma^2$ = 50

$$n/\text{group} = \frac{2[(z\alpha/2) + (z\beta)]^2 \sigma^2}{(\mu 1 - \mu 2)^2}$$

$$= \frac{2(1.96+1.28)^2 (50)}{32.49}$$

= 32 participants per group

Adjusting for potential dropouts, 30 percent of participants will be added in the intervention group for lost to follow up. Thus in all, 84 persons (42 for intervention group and 42 for control group) will be invited to participate in the study (see Figure 4).

Phranakhonsiayutthaya district was divided into 21 sub districts. Two sub districts, Ban Mai sub district (consisting 11 villages and total population 6,484) and Wat tum sub district (consisting 6 villages and 5,264 populations) were selected by using the purposive sampling method according to the similarity of demography and socio-cultural characteristics. Moreover, this area has the potential in team human resources (health staff team) and is interested in increasing physical activity among older population.

A total of 102 persons who met the following inclusion and exclusion criteria participated in the study.

**Inclusion Criteria**

- Older persons both male and female (aged 60 and over)

- Older persons who did not have exercise regular in last 3 months

- Older persons with disease but positive medical advice regarding physical activity form the medical doctor

- Older persons who have member in their family for helping record daily physical activity

- Older persons literate and fluent in Thai language.

**Exclusion Criteria**

- Older persons with disease and medical advice against physical activity.

- Older persons who have disability

- Older persons who are not available for telephone communication.

In both the experimental group and control group under survey, the subject who is the representative of household is selected (one subject per household is selected) by using simple random sampling under the inclusion criteria as follow:

- must be the older persons male or female aged 60 and above.

- must be the older persons who are physically inactive and who do not have physical activity on a regular based must be willing to participate in this study.

- must have member in the family for helping record daily physical activity

All subjects will have to sign and inform consent to indicate their willingness to participate in this study. During implementation in the intervention, the subject excluded from this study will be under the criteria of:

-Sickness, absent at least one time from the intervention group and control group, and need to leave from this study

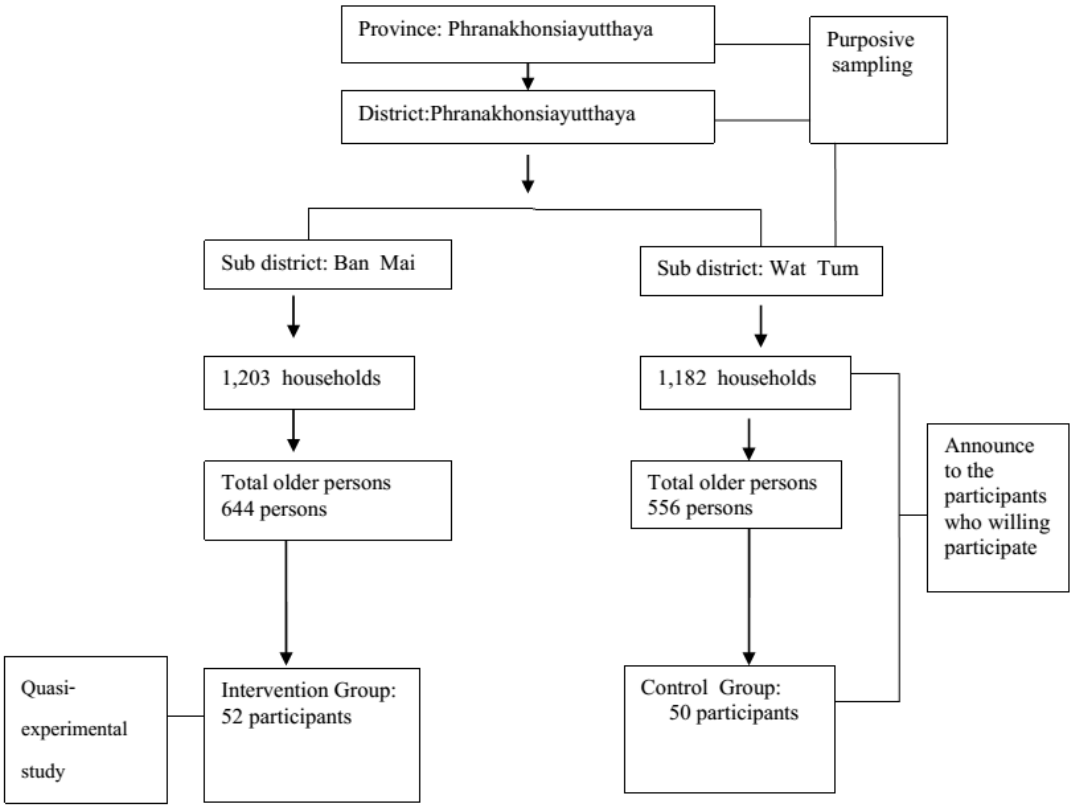


**Figure 4**: Sampling technique of this study

### 3.4 Study procedure and planning

The study classified into 3 phases as follow:

Phase 1 the process of situation analysis to provide the background and general information among older persons in selected at Ban Mai sub district and Watt um sub district in Phranakhonsiayutthaya district.

Phase 2 a quasi-experimental pretest-posttest with control group study to develop and implement the Group-Mediated Lifestyle Physical Activity (GLPA) program by group-based physical activity, group-mediated education by group discussion and physical activity handbook, and home-based physical activities by social support.

Phase 3 the process of evaluation to evaluate the effectiveness of the Group-mediated Lifestyle Physical Activity (GLPA) program in order to change physical activities among older persons in selected district of Phranakhonsiayutthaya.

**3.5 Structure of Intervention model**

The structure of intervention model consists of three components and the process of intervention as shown in Table 6 and Figure 5 as follow:

**Table 6:** Structure of Intervention model

| **Activity** | **Time** |
|---|---|
| **1.Preparation for intervention model** | |
| 1.1Prepare community by sending a letter to Director of Ban Mai Tambon Health Promotion Hospital for permission and cooperation leader in community. | Month 1 |
| 1.2The researcher trained researcher assistant in order to contribute understanding by informing objective, participants characteristics, interview process and technique to do in Group-Mediated Lifestyle Physical Activity Program (GLPA) and recording method. | |
| 1.3The researcher trained physical activity leader to know about how to monitoring in physical activity calendar and how to leader in group-discussion. | |
| **2.Structure of intervention model** | |
| 2.1 Group-based physical activity: This component consists of one month period. For the every week the participants has to attend session of 1.5 hours which includes educating the participant by group discussion on various health-related topics (30 minutes), and the participant will also undergo an hour of physical activity in daily life that is composed of the activity at work, travels to and from different places ,recreational activity, and sedentary behavior. | Month **2** |

| Activity | Time |
|---|---|
| 2.2 Group-mediated education: At the end of each group session the participant's various group behavior skills and learning skills are evaluated with the help of physical activity handbook references provided. This group discussion and learning sessions will be of 30 minutes duration.<br><br>For instance, during week 1, participants were asked to identify their primary motivation for becoming more active. In addition, participants were introduced to the concept of self-monitoring of overall physical activity by lifestyle physical activity. Also during this period, individual and group goal setting for physical activity were discussed. Participants were instructed on how to set appropriate goals and how to deal with failure to goals<br><br>During week 2, discussion focused on the concept of becoming an "independent physical activity" and how to plan home-based physical activity that is safe and effective. Group discussion staff and participants were coupled with peer-initiated solutions on how to maintain an active lifestyle physical activity. Throughout this period, strategies were discussed on how to overcome barriers and lapses in physical activity. The importance of group support to promote independent physical activity and these solutions and strategies were reinforced during this time. | Month 2 |

| Activity | Time |
|---|---|
| In week 3-4, group discussions focused on the recognition that, as individuals and a group participants had reached a stage of rehabilitation in which they could view themselves in active older persons. As this stage discussions focused on how to use lifestyle physical activity cues to facilitate activity goals, develop plans to deal with common barriers, recognize signs of relapse, and how to avoid or deal with relapse. Attention was given to raising awareness of the progress that participants had achieved over the past weeks, the importance of developing and maintaining their own independent physical activity programs, and the plans they had developed for the first month of independence from Group-based physical activity. | |
| 2.3 Home-based physical activity: For the first three weeks, participants are encouraged to engage based physical activity in daily life (same format, intensity and duration) outside of the group-based sessions. Once the group-based sessions decreased to once per week. In the remaining six months, the participants are told to gradually increase their level of physical activities outside the group-based physical activity up to five times per week. They are also told to use lifestyle physical activity, or to develop hobbies that require physical activity efforts. Home-based activities are self-monitored using the record diary calendar of the lifestyle physical activity. | Month 3-8 |

| Activity | Time |
|---|---|
| **3.Monitoring the intervention model**<br><br>Physical activity leader monitor the participant in this program by visiting at home one time per month for helping record daily calendar. During this phase, researcher contact with participants in the GLPA condition was less intensive than in the group-based physical activity plan and was accomplished through the combination of booster physical activity sessions, telephone contacts was held to older persons during month 4, 6, and 8. The purpose of the booster sessions and the phone calls was to discuss the progress of each participant's physical activity program, to examine potential barriers, and to use either the group setting (booster session) or individual contract (phone calls) to develop strategies to overcome barrier and lapses. Post-test by visiting their older persons at 6 months complete lifestyle physical activity program. | every month |

**Source:** Brian C Focht et al, 2004

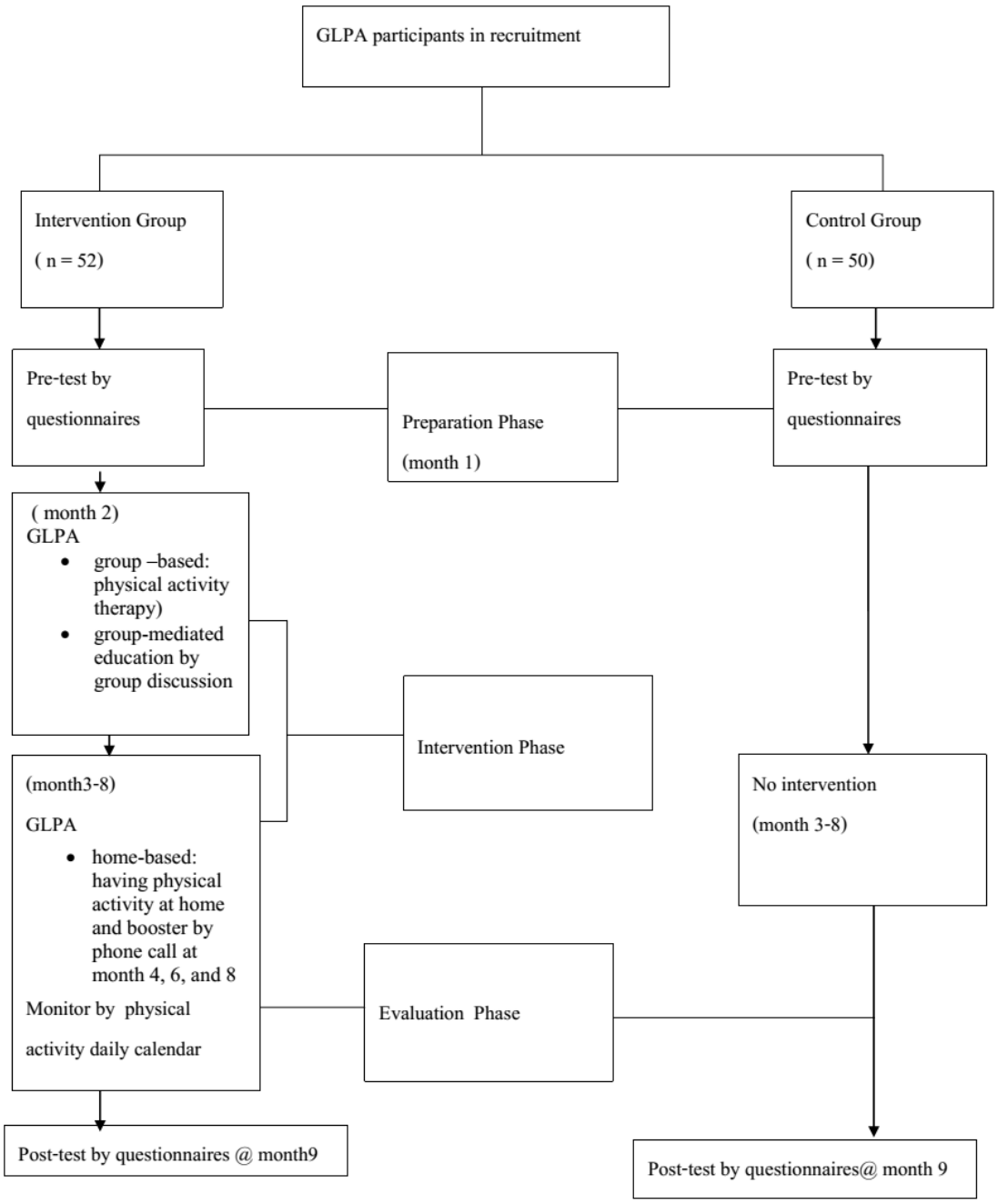


**Figure 5**: The process of intervention

### 3.6 Measurement tools

#### 3.6.1 Questionnaires

The measurements tools consist in this study used the questionnaires. This type of questionnaire was adopted on the basis of objective of the study. The questionnaire has been also applied in previous studies relating to our present study. The validity was proved and tested the content by expert of public health. The reliability of the questionnaire was tested in thirty older persons whose physical activity is less than 3 days per week for one month in the Ban Pom sub district, Phranakhonsiayutthaya district, Phranakhonsiayutthaya province before the study began and modified according to their feedback. After that the researcher collected the data from the participants in Ban Mai sub district and Wat Tum sub district. The questionnaire was categorized into four sections as follow:

**Section 1: Physical activity screening from**

This questionnaire collected the information on exercise screening such as rate of health, rate of ability, and rate of activities (F. Silver, 2006).

**Section 2: General characteristics**

The questionnaires explanation of general and background data of older persons such as age, sex, marital status, education level, Body Mass Index (BMI), health problems, smoking, alcohol drinking, and having senior citizen club membership.

**Section 3: Knowledge, attitude, and practice of physical activities**

The questionnaire collects the data about knowledge of physical activities, attitude of physical activities, and practice of physical activities (Pollsawat Wee, 2007).

3.1 The questionnaire to evaluate the knowledge of older persons consists of 32-item questionnaire. The questionnaire was designed to measure the knowledge of

physical activities with 2-point scale (0=wrong answer and 1=correct answer). All items were summed for a total score by mean score.

3.2 The questionnaire on attitude is a 16-item questionnaire. This questionnaire is designed to measure the attitude of physical activities. A 3-point Likert Scale (Jan Losby & Anne Wetmore, 2012) as follows:

| Level of Attitude | Positive Statement | Negative Statement |
|---|---|---|
| Agree | 1 | 0 |
| Not sure | 0 | 0 |
| Disagree | 0 | 1 |

Total attitude of physical activities used mean score.

3.3 Practice (physical activity), which is applied from the Global Physical Activity Questionnaire-GPAQv2 it develops protocol in variety of networks such as MEGA country network, IPAQ network, Regional health promotion networks and Regional WHO office. The GPAQ research results found the reliability in overall results looking very good-mostly r > 0.6 and often r > 0.9 showing very good reliability. Validity found concurrent in moderate to good, better for vigorous (r= 0.56) than moderate ( r = 0.43) and criterion found having similar or slightly better magnitude to both previous IPAQ studies and other studies on other physical activities measure (r= 0.34 pedometers / r = 0.40) (World Health Organization, 2006). The specific questions for each group are as follows:

**Activity at work:**

P1: Does the work undertaken by you involve vigorous-intensity activities that cause tremendous increases in breathing or makes increase heart rate (examples) for at least 10 minutes continuously?

P2: In a typical selected week, for how many days did you go through vigorous-intensity activities as part of your work?

P3: How much time do you spend doing vigorous-intensity activities as part of your work?

P4: Does your work involve moderate-intensity activities, that cause tempted increases in breathing or heart rate such as brisk walking for at least 10 minutes continuously?

P5: In a typical selected week, for how many days did you do moderate-intensity activities as part of your work?

P6: How much time do you spend doing moderate-intensities at work on a typical day?

**Travel to and from places:**

P7: Do you walk or use a bicycle for at least 10 minutes continuously to get to and from places?

P8: In a typical week, for how many days do you walk or do you use bicycle for at least 10 minutes continuously to get to or from places?

P9: How much time do you spend in walking or bicycling for travelling on a typical day?

**Recreational activities:**

P10: Are you involved in any vigorous-intensity sports, fitness or recreational activities that cause large increase in breathing or heart rate measuring 10 minutes continuously a day?

P11: In a typical week, on how many days do you do vigorous-intensity sports, fitness or creational activities?

P12: How much time do you spend doing vigorous-intensity sports, fitness or recreational activities?

P13: Are you involved in any moderate-intensity sports, fitness or recreational activities that cause large increase in breathing or heart rate measuring 10 minutes continuously a day?

P14: In a typical week, for how many days you get involve with moderate-intensity sports, fitness or recreational activities?

P15: How much time do you spend doing moderate-intensity sports, fitness or recreational activities on a typical day?

**Sedentary behavior:**

P16: How much time do you usually spend sitting or reclining on a typical day?

Amount of time in physical activities such as activity at work, travel to and from places, recreational activities used mean minute, and sedentary behavior used mean hour. Total physical activity in minutes per week was categorized to determine the proportion of each sample that met the physical activity guideline of a minimum of 30 minutes of moderate-intensity physical activity on most, and preferably all days of the week. The 10-minute sessions can be accumulated throughout the week to achieve 150 minutes of moderate intensity, or 75 minutes of vigorous intensity physical activity a week. (World Health Organization, 2006).

**Section 4: Planning of physical activities**

The questionnaire is a 10-item questionnaire (Pender, 2006). This questionnaire is designed to measure the planning about physical activity. A 3-point Scale (0=never, 1=sometimes, and 2= regular) Total planning for physical activities used mean score.



**For the evaluation process**: visiting at home every month and monitoring physical activities for each participants and use daily calendar to record personal physical activities in each day.

**3.6.2 Validity and Reliability**

**Validity**

The questionnaires used in this study reviewed for accuracy of language use and content validity used Index of Item-Objective Congruence (IOC = 0.5-1) and (IOC <0.5 were question 2,3 in knowledge questionnaire, and question 2,7 in attitude questionnaire) by a panel of experts who are the specialists in Physical activity and

Geriatric Medicine prior to a tryout with a pilot group of 30 older persons at Ban Pom sub district, Phranakhonsiayutthaya district, Phranakhonsiayutthaya province whose main characteristics were similar to the target in this study.

**Reliability**

The questionnaires examined and analyzed for their reliability. The reliability of knowledge in physical activity used Kuder-Richardson= 0.674 and the attitude in physical activity used formula coefficient of Cronbach's alpha= 0.762.

### 3.7 Data Collection

The questionnaires relating to the physical activities were collected which is presented below as:

**The intervention group**

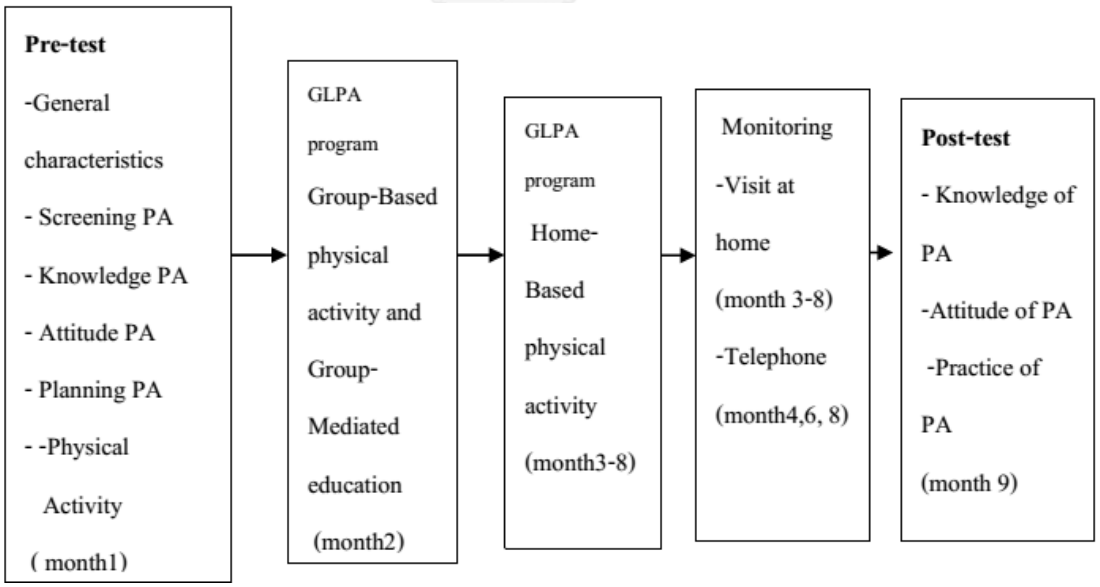


**Figure 6**: Collecting data framework for intervention group

The Group – Mediated Lifestyle Physical Activity programs are part of group interventions and group physical activity therapy. All the activities follow the pre-defined guide lines. More focus is given to group sharing and conversations and at

times take the help of one to one personal interviews regarding the ongoing activities in the group. Various lifestyle activities are suggested by the researcher to all the participants. The researcher may help the participants to find the suitable lifestyle physical activity program with contain some sort of physical activity (See Figure 6).

1. The first month, the pre-test: all participants had their baseline data and physical screening measured by the researcher. Later the selected older persons under survey answered the questionnaire giving their opinions related to general characteristics, knowledge of physical activities, attitude of physical activities, practice of physical activities, and planning of physical activities.

2. The GLPA program (Group-Based physical activity) was conducted one months of span. Every week a group- based physical activity in daily life session were organized in the respected at Ban Mai Tambon Health Promotion Hospital where the study was conducted. Each session lasts 1.5 hours and consists of and educational on various health-related topic (30minutes), and a one hour physical therapy portion.

3. The GLPA program (Group-Mediated education) was conducted at the end of each group-based physical activity. The program was conducted at Ban Mai Tambon Health Promotion Hospital every week. This took about 30 minutes by group discussion and participants received physical activity handbook which contained information to motivate older persons to consider the effect on physical activity and how to combine physical activity with their lifestyle. This session addressed the physical activity problems and concerns.

4. The GLPA (Home-Based physical activity): The special and customized home based physical activities are designed for every participant that suites their life styles. The participants older age factor and their physical endurance levels were taken into consideration while designing the programs. Apart from this home based activities of the participants and the group-based physical activities are also

conducted in regular intervals. The output levels, the commitment levels, the resistance to change levels and the motivation levels are assessed for each and every participant as well as the group performance levels on the whole. Both individual data and group data were collected for further study.

5. The monitoring programs are designed in such a way that they can be carried out in parallel with the activities are also approximately spanned from one to six months. The monitoring in physical activity regarding to the lifestyle activity programs are done very day by physical activity calendar and every month over the visiting at home by physical activity leader. The booster by phone call at month 4, 6, and 8 approximate duration of every telephonic conversation was set about 15 minutes. Each and every individual was contacted over the phone to monitor and time to time their progress and findings was registered. The telephonic conversations are more focused on identifying any pit falls with the homed programs and on going individual activities. The divinations in the routines are noted and participants are helped get back in to their usual physical routines. The participants were encouraged to discuss their concerns, difficulties and barriers regarding the physical activity programs over the phone. All the discussions were kept more confidential. The more emphasis was given to blend those physical activities with the current lifestyles of the participants. The participants are monitored time to time and given proper suggestions over phone to overcome any physiological barriers and their motivational levels were reinforced to achieve their individual goals.

6. The month 9, the post-test: the participants were contacted to collect the data for further study and to find the level of success rate with the GPLA program conducted across the older persons. Each and every participant was hand out a questionnaire containing various details of the GPLA program they voluntarily participated. The questionnaires contained the evaluating bands related to GPLA

program based on knowledge of physical activities, attitude of physical activities, and practice of physical activities. The guide lines and the rating methods were explained to each and every participant in order to complete the questionnaires. The completed questionnaires are collected and data was analyzed. The data is used to evaluate the effectiveness of the program as well as the pit falls and deviations were observed to conclude the study.

**The control group**

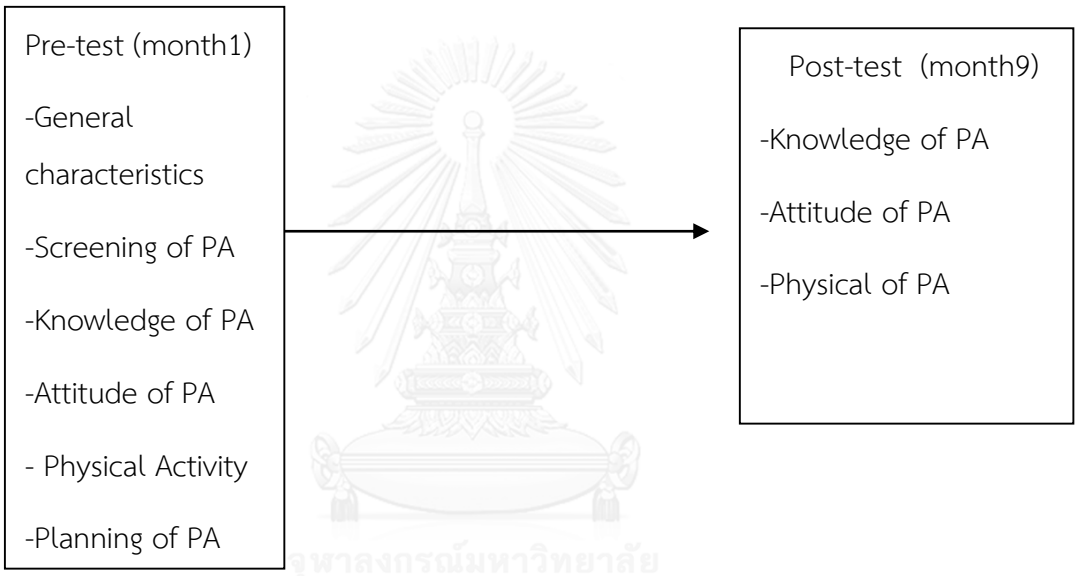




**Figure 7**: Collecting data framework for control group

The Intervention program was not introduced to the control group (Figure 7). The researcher met each and every older person belong to the control group on one to one basis. More personal attention was provided with the older persons in the comparison group as follow:

1. Within the first month, pre-test of the commencement in the study the participants were handed out the preliminary questionnaires to obtain information about the baseline data, the screening physical activity patterns, knowledge of

physical activities, attitude of physical activities, practice of physical activities, and planning of physical activities

2. No intervention activities were introduced during the first 6 months period (month2-8).

3. At month 9, post –test: all the participants were asked to respond to physical activity questionnaire handed out. These questionnaires once again focused on evaluating the knowledge, attitude, and practice of physical activities.

**3.8 Data Analysis**

The SPSS/PC+ software program running on windows 16 version operating system were used to process the data. The data set contains the details of the test subjects such as knowledge, attitude, and practice (amount of time in physical activity) data are as follows:

3.8.1 Descriptive statistics for frequency, percentage, mean, and the standard deviation to analyze general characteristics data.

3.8.2 Inferential Statistics used to infer cause and effect, and to determine the degree to which the findings of a sample can be generalized to a larger population.

3.8.2.1 Comparing baseline characteristics between control and intervention groups

In preliminary data analysis (before intervention program) for baseline difference tested; compared independent variables-general characteristics, and dependent variables- knowledge, attitude, and practice (amount of time in physical activity) between intervention and control groups. Chi-square tests for categorical variables and independent t-test was used in continuous data.

3.8.2.2 Characterizing and assessing intervention effects

As mentioned above, study outcomes were measured at baseline and at follow-up (6 month) in the intervention and control groups. The repeated measures analysis of variance routine was used to generate figures showing means of continuous outcomes, in each group at each measurement time.

For continuous outcomes (knowledge, attitude, and practice (amount of time in physical activity), and the magnitude of the intervention effect is equal to: Intervention effect = (Mean of intervention group at follow up- Mean intervention group at baseline) - (Mean of control group at follow up- Mean of control group at baseline)

For continuous outcomes, General Linear Model repeated- measures ANOVA was used to assess effects of the intervention program. In the SPSS routine for repeated-measures ANOVA, overall intervention effects (not time-specific) are assessed in the multivariate table and the table for within-subject effects. Linear models enable assessment of the intervention effect at the follow-up (6 months). The models included a "repeated" statement that accounted for repeated measures within each individual subject. Corresponding p-values allow evaluation of the statistical significance of the intervention effect at the follow-up time. Intervention effects adjusted for sex and income because p-values were <0.1 in the bivariate analysis form situation studied. The adjusted effects are presented in the next chapter.

**3.9 Ethical consideration**

The researcher was given the opportunity to participate in the study with the permission from the ethical committee, College of Public Health Sciences, Chulalongkorn University. The written consent form is collected from all the participants assuring their voluntary participation. A strict privacy and confidentiality data policy were maintained thought out the study.

# CHAPTER IV

# RESEARCH RESULTS

This study used quasi-experimental study to evaluate the effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on changing physical activity among older persons by using Global Physical Activity Questionnaire-GPAQv2. The study was conducted in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province due to its population being the second highest older persons in the Central Region of Thailand. The study area had been selected purposive sampling. 102 older persons were randomly selected method. Fifty-two older persons were enrolled in the intervention group from Ban Mai sub district and fifty older persons were enrolled for the control group from Wat Tum sub district. The results is presented in 2 parts: 1) general characteristics of the older persons consisting of socio-demographic and physical activity of older persons, knowledge of physical activities, attitude of physical activities, and practice (amount of time of physical activities), and 2) expressed the effectiveness of the GLPA program

## 4.1 General characteristics of older persons at baseline evaluation

In this session showed the general characteristics at baseline by using Chi-square test for categorical data and Independent t-test for continuous data were conducted to test difference at baseline between intervention group and control group. General characteristics which have p-value < 0.10 were adjusted for assessing the effect of the GLPA program.

### 4.1.1 Socio-demographic and health status of older persons

Socio- demographic and health status of older persons include sex, age, marital status, education level, income, Body Mass Index (BMI), having senior citizen club membership, health problems, smoking, and alcohol drinking as shown in table 7.The total participants were 102 people including 52 older persons in the intervention group from Ban Mai sub district and 50 older persons in the control

group from Wat Tum sub district. The results revealed that socio-demographic were similar in both groups (p-value > 0.05). The most of the participants were female, 53.8 % in the intervention group and 48.0 % in the control group respectively. The mean age of older persons in the intervention group was 69.33 (SD ± 6.408) and 67.96 (SD ± 5.119) in the control group. Most of them were married, 73.1 % in the intervention group and 88.0 % in the control group. The majority of older persons in the intervention group (82.7%) and the control group (88.0%) finished their education at primary school. More than two-fifth of the intervention group (44.2%) and more than three-fifth (64.0%) of the control group had enough income and have extra money. Most of them reported their Body Mass Index (BMI) had low/thin/ normal level (76.9% intervention group and 70.0% in control group). More than three-fifth of the participants in the intervention group (67.3%) and three-fifth (60%) in the control group were having senior citizen club membership.

In term of health problems showed that three -fifth (61.5%) of older persons in the intervention group and two-fifth (42.0%) in the control group knew that they had chronic illness which the first highest disease was hypertension (44.2 % intervention group and 38.0 % in control group). Most of them (78.8 % intervention group, 72.0 % control group) showed that they never smoke. Most of participants (73.1 % intervention group, 72.0% control group) never drink alcohol.

**Table 7:** Socio-demographic characteristics of intervention group and control group at baseline

| Socio-demographic | Intervention group (n=52) | | Control group (n=50) | | P-value* |
|---|---|---|---|---|---|
| | n | % | n | % | |
| Gender | | | | | 0.555 |
| Male | 24 | 46.2 | 26 | 52.0 | |
| Female | 28 | 53.8 | 24 | 48.0 | |
| Age | | | | | 0.922 |
| 60-64 | 16 | 30.8 | 14 | 28.0 | |
| 65-69 | 10 | 19.2 | 11 | 22.0 | |
| 70 and over | 26 | 50.0 | 25 | 50.0 | |
| | Mean 69.33 SD ±6.41 | | Mean 67.96 SD ±5.12 | | |
| Marital status | | | | | 0.058 |
| Single /Window/Separate | 14 | 26.9 | 6 | 12.0 | |
| Married | 38 | 73.1 | 44 | 88.0 | |

**Table 7:** Socio-demographic characteristics of intervention group and control group at baseline (cont.)

| **Socio-demographic** | **Intervention group (n=52)** | | **Control group (n=50)** | | **P-value*** |
|---|---|---|---|---|---|
| | **n** | **%** | **n** | **%** | |
| Education level | | | | | 0.247 |
| No education/ Primary school | 44 | 88.2 | 46 | 92.0 | |
| High school and over | 8 | 15.4 | 4 | 8.0 | |
| Income | | | | | 0.133 |
| Not enough | 9 | 17.3 | 6 | 12.0 | |
| Enough but no saving | 20 | 38.5 | 12 | 24.0 | |
| Enough and have extra | 23 | 44.2 | 32 | 64.0 | |
| Body Mass Index (BMI.) (from report) | | | | | 0.428 |
| Low/thin /normal | 40 | 76.9 | 35 | 70.0 | |
| Overweight/fat | 12 | 23.1 | 15 | 30.0 | |
| Having senior citizen club membership | | | | | 0.443 |
| Yes | 35 | 67.3 | 30 | 60.0 | |
| No | 17 | 32.7 | 20 | 40.0 | |

**Table 7:** Socio-demographic characteristics of intervention group and control group at baseline (cont.)

| Socio-demographic | Intervention group (n=52) | | Control group (n=50) | | P-value* |
|---|---|---|---|---|---|
| | n | % | n | % | |
| Health problems (from report) | | | | | 0.170 |
| Not have health problems | 20 | 38.5 | 26 | 52.0 | |
| Have health problems | 32 | 61.5 | 24 | 48.0 | |
| - Heart | 4 | 7.7 | 4 | 8.0 | |
| - Diabetes | 9 | 17.3 | 2 | 4.0 | |
| - Hypertension | 23 | 44.2 | 19 | 38.0 | |
| - Others | 10 | 19.2 | 5 | 10.0 | |
| Smoking | | | | | 0.428 |
| Current smoker | 4 | 7.7 | 8 | 16.0 | |
| Yes but quit | 7 | 13.5 | 6 | 12.0 | |
| No | 41 | 78.8 | 36 | 72.0 | |
| Alcohol drinking | | | | | 0.528 |
| Drinks currently | 6 | 11.5 | 9 | 18.0 | |
| Yes but quit | 8 | 15.4 | 5 | 10.0 | |
| No | 38 | 73.1 | 36 | 72.0 | |

* Chi-Square test

**4.1.2 Physical activities of older persons**

In term of physical activities among older persons showed that less than two-third of them (65.4%) in the intervention group, and half of them (50.0%) in the control group had physical activities. Activity at work were vigorous intensity activities (heavy loads, farming) (36.5% in the intervention group, 62.0% in the control group) and moderate intensity activities (brisk walking, housework) (53.8% in the intervention group, 56.0% in the control group)). Travel to and from places (transport activity: walking, bike) were 46.2% in the intervention group and 54.0% in the control group. Recreational activities were vigorous intensity activities (jogging, aerobic) (30.8% in the intervention group, 60.0 % in the control group) and moderate intensity activities (swimming, cycling) were 40.4% in the intervention group and 10.0% in the control group. Most of them have had sedentary behavior(sitting at work, home, time spent with friend) mean 2.81 hours (SD ± 1.544), 65.4 % in the intervention group have had sedentary behavior less than 3 hours, 64.0% in the control group have had sedentary behavior average 3-4 hours per day. (Table 8)

**Table 8**: Physical activity of intervention group and control group at baseline

| Physical activities | Intervention n=52 | | Control n=50 | | P-value* |
|---|---|---|---|---|---|
| | n | % | n | % | |
| **Physical activity** | | | | | 0.116 |
| Yes | 34 | 65.4 | 25 | 50.0 | |
| No | 18 | 34.6 | 25 | 50.0 | |
| **Activity at work** | | | | | |
| -Vigorous intensity activities ( heavy loads, farming) | | | | | 0.010 |
| Yes | 19 | 36.5 | 31 | 62.0 | |
| No | 33 | 63.5 | 19 | 38.0 | |
| - Moderate intensity activities ( brisk walking, housework) | | | | | 0.827 |
| Yes | 28 | 53.8 | 28 | 56.0 | |
| No | 24 | 46.2 | 22 | 44.0 | |
| **Travel to and from places** ( transport activity: walking, bike) | | | | | 0.428 |
| Yes | 24 | 46.2 | 27 | 54.0 | |
| No | 28 | 53.8 | 23 | 46.0 | |
| **Recreational activities** | | | | | |
| - Vigorous intensity activities ( jogging, aerobic) | | | | | 0.003 |
| Yes | 16 | 30.8 | 30 | 60.0 | |
| No | 36 | 69.2 | 20 | 40.0 | |
| - Moderate intensity activities ( swimming, cycling) | | | | | <0.001 |
| Yes | 21 | 40.4 | 5 | 10.0 | |
| No | 31 | 59.6 | 45 | 90.0 | |
| **Sedentary behavior** ( sitting at work, home, time spent with friend) | | | | | < 0.001 |
| < 3 hours/day | 34 | 65.4 | 13 | 26.0 | |
| 3-4 hours/day | 13 | 25.0 | 32 | 64.0 | |
| >4 hours/day | 5 | 9.6 | 5 | 10.0 | |
| Mean = 2.81 | | | | | |
| SD ± 1.544 | | | | | |

* Chi-square test

**4.1.3 Knowledge of physical activities, attitude of activities, practice of physical activities, and planning of physical activities**

Table 9 showed Mean and standard deviation of knowledge, attitude, practice, and planning of physical activities in the intervention group and control group at baseline as follow:

The knowledge score used questionnaire 32 items. The correct answer used 1 point, and incorrect answer used zero. The minimum and maximum possible total score 0 and 32 respectively. The result showed that both intervention and control groups have had similar score of knowledge of physical activities (p-value = 0.875). Mean score of knowledge was 16.20 (SD ± 5.46) and 16.00 (SD ± 6.84) intervention and control group, respectively.

In term of attitude of physical activities used questionnaire 16 items. A3-point Likert scale (positive direction questions were score from 1 point for " agree" , zero for "not sure" , and zero for " disagree" (negative direction question were score from zero for " disagree" , zero for "not sure" , and 1 point for " agree. The results found that both intervention and control groups have had similar score of attitude in physical activities (p-value = 0.721). Mean score of attitude was 11.40 (SD ± 3.68) in intervention group and 11.70 (SD ± 3.49) in control group.

The practice in physical activity used Global Physical Activity Questionnaire 6 items (World Health Organization, 2006). Amount of time in physical activity used mean minute in total physical activity, activity at work, travel to and from places, recreational activities and used mean hour for sedentary behavior. Total physical activity based on World Health Organization, the minimum physical activity should be at least 10 minutes. The 10-minutes can be accumulated throughout the week to achieve 150 minutes of moderate intensity, or 75 minutes of vigorous intensity physical activity a week. Mean minute of total physical activity showed that both

intervention and control groups have had similar mean minute in total physical activity (p-value= 0.095). Mean minute was 170.1 minutes per week (SD ±209.81) in intervention group and 167.9 minutes per week (SD ± 139.68) in control group.

Activity at work (vigorous intensity activities) showed that mean minute in both groups had similar (p-value =0.981). The mean minute in the intervention group was 35.00 (SD±73.86) and the control group was 35.30 (SD±49.66).

Activity at work (moderate intensity activities) found that both intervention and control groups had similar mean minute (p-value = 0.108). The intervention group (56.06 SD±78.28) had mean minute higher than the control group (36.00 SD±39.59).

In term of travel to and from places showed that in both groups had similar mean minute (p-value = 0.263). The intervention group (44.33 SD±70.16) had mean minute higher than the control group (31.48 SD±40.70).

In term of recreational activities (vigorous intensity activities) in both groups had not similar mean minute with p-value= 0.001. The control group (63.00 SD±80.71) had mean minute higher than the intervention group (19.42 SD±50.71).



The recreational activities (moderate intensity activities) in both groups had not similar mean minute with p-value = 0.001. The intervention group (18.37 SD± 33.04) had mean minute higher than the control group (2.10 SD ± 6.86).

In term of sedentary behavior in both groups had not similar mean hour with p-value= 0.004. The control group (3.06 SD±1.13) had mean hour of sedentary behavior more than the intervention group (2.19 SD±1.76).

In term of planning of physical activities used questionnaire 10 items. A3-point scale (0=never, 1=sometime, and 2=regular). The results found that both intervention and control groups had not similar score in planning of physical activity

(p-value < 0.001). Mean score of planning in physical activity was 3.56 (SD ± 4.05) in intervention group and 8.38 (SD ± 2.46) in control group.

**Table 9:** Mean and standard deviation of knowledge, attitude, practice, and planning of physical activities at baseline in the intervention group and control group

| Variable | Intervention | | Control | | P-value* |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| Knowledge of physical activities | 16.20 | 5.46 | 16.00 | 6.84 | 0.875 |
| Attitude of physical activities | 11.40 | 3.68 | 11.70 | 3.49 | 0.721 |
| Practice of physical activities | | | | | |
| -Total of physical activities | 170.10 | 209.81 | 167.88 | 139.68 | 0.095 |
| -Activity at work (vigorous intensity physical activity) | 35.00 | 73.86 | 35.30 | 49.66 | 0.981 |
| -Activity at work ( moderate intensity physical activity) | 56.06 | 78.28 | 36.00 | 39.59 | 0.108 |
| -Travel to and from places | 44.33 | 70.16 | 31.48 | 40.70 | 0.263 |
| -Recreational activities (vigorous intensity activity) | 19.42 | 50.71 | 63.00 | 80.71 | 0.001 |
| -Recreational activities (moderate intensity activity) | 18.37 | 33.04 | 2.10 | 6.86 | 0.001 |
| -Sedentary behavior | 2.19 | 1.76 | 3.06 | 1.13 | 0.004 |
| Planning of physical activities | 3.56 | 4.05 | 8.38 | 2.46 | <0.001 |

*Independent t-test

**4.2 Effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program, Adjusted for confounding factors repeated-measures analysis variance**

**4.2.1 Effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on knowledge of physical activities, attitude of physical activities, and practice of physical activities (KAP) (adjusted for confounding factors)**

At baseline, from the situation studies by binary logistic regression found that sex (female) was associated with physical activity a statistically significant at p-value <0.001, and income with p-value 0.040 (cut off point significant difference level at p-value< 0.10) were 2 variable (confounding factors). The analytical model were adjusted for these 2 variables.

Table 10 showed effects of intervention on knowledge in physical activity, attitude in physical activity, and practice in physical activity in the intervention and control groups at baseline and follow-up at 6 month (adjusted for confounding factors) were calculated as follow:

Intervention effect (magnitude) = (Mean of intervention group at follow up- Mean intervention group at baseline) - (Mean of control group at follow up- Mean of control group at baseline)

Intervention effect of knowledge in physical activity

= (24.33-15.80)-(14.40-16.40)

= 8.53-(-2.00) = 10.53

Intervention effect of attitude in physical activity

= (13.33-11.30)-(10.62-11.69)

= 2.03-(-1.07) = 3.10

Intervention effect of practice (total physical activity)

= (374-171)-(123-167)

= 203-(-44) = 247

Intervention effect of practice (vigorous intensity physical activity)

= (45.0-51.7)-(68.0-101.1)

= -6.7-(-33.1) = 26.4

Intervention effect of practice (moderate intensity physical activity)

= (318-119)-(50-69)

= 199-(-19) = 218

Intervention effect of practice (activity at work: vigorous intensity activities; heavy loads, farming)

= (33.46-34.59)-(52.62-35.73)

= (-1.13)-(16.89) = -18.02

Intervention effect of practice (activity at work: moderate intensity activities; brisk walking, housework)

= (159.60-54.50)-(27.90-37.60)

= 105.10-(-9.70) = 114.80

Intervention effect of practice (travel to and from places: transport activity; walking, bike)

= (80.40-45.60)-(15.80-30.10)

= 34.80-(-14.30) = 49.10

Intervention effect of practice (recreational activities: vigorous intensity activities; jogging, aerobic)

= (11.50-17.10)-(15.40-65.40)

= (-5.60)-(-50.00) = 44.40

Intervention effect of practice (recreational activities: moderate intensity activities; swimming, cycling)

= (89.20-19.30)-(6.90-1.20)

= 69.90-(5.70) = 64.20

Intervention effect of practice (sedentary behavior: sitting at work, home, time spent with friend)

= (1.602-2.139)-(1.674-3.116)

= (-0.537)-(-1.442) = 0.905

The results found that adjusted for confounding factors of intervention effects on knowledge, attitude, and practice of physical activities at follow up after 6 month, the intervention was associated with substantial and statistically was significant improvement in knowledge of physical activities (p-value <0.001), attitude of physical activities (p-value=0.001), and practice of physical activities (p-value <0.001). The intervention program increased knowledge score in the intervention group greater than the control group with magnitude 10.53. The attitude score in the intervention group had higher than the control group with magnitude 3.10. Moreover, the intervention group had mean minute of total physical activity per week more than the control group with magnitude 247.

The vigorous intensity physical activity in the control group was deceased mean minute that higher than the intervention group with magnitude 26.4. The statistic was not significant.



The moderate intensity physical activity found that the intervention group was increased mean minute that higher than the control group with magnitude 218 and was statistically significant (p-value <0.001).

In part of type of physical activities showed that the mean minute of activities at work: vigorous intensity activities (heavy loads, farming) in the control group increased higher than the intervention group with magnitude -18.02. The statistic was not significant. The mean minute of moderate intensity activities (brisk walking, housework) in the intervention group was increased that higher than the control group with magnitude 114.80 and was statistically significant (p-value <0.001).

In term of travel to and from places (transport activity; walking, bike) found that the GLPA program increased mean minute in the intervention group that higher than the control group with magnitude 49.10 and was statistically significant (p-value =0.001).

The recreational activities after implemented the intervention program at 6 month found that the mean minute of vigorous intensity activities (jogging, aerobic) in the control group had higher than the intervention group with magnitude 44.40 and was statistically significant (p-value =0.003). The mean minute of moderate intensity activities (swimming, cycling) in the intervention group was increased that greater than the control group with magnitude 64.20 and was statistically significant (p-value <0.001).

The sedentary behaviors (sitting at work, home, time spent with friend) after used intervention program found that the mean hour in the control group was slight decreased that higher than the intervention group at magnitude 0.905 and was statistically significant (p-value =0.012).

**Table 10:** Effects of intervention on knowledge in physical activity, attitude in physical activity, and practice in physical activity in the intervention and control groups at baseline and follow-up at 6 month (adjusted for confounding factors)

| Variable | Pre-test (Baseline) | | Post-test (6 month) | | Magnitude (6 month) | P-value* |
|---|---|---|---|---|---|---|
| | I (n=52) Mean | C (n=50) Mean | I (n=52) Mean | C (n=50) Mean | | |
| Knowledge of physical activities | 15.80 | 16.40 | 24.33 | 14.40 | 10.53 | <0.001 |
| Attitude of physical activities | 11.30 | 11.69 | 13.33 | 10.62 | 3.10 | 0.001 |
| Practice (total of physical activities) | 171 | 167 | 374 | 123 | 247 | <0.001 |
| Vigorous intensity physical activities | 51.7 | 101.1 | 45 | 68 | 26.4 | 0.337 |
| Moderate intensity physical activities | 119 | 69 | 318 | 50 | 218 | <0.001 |
| Activity at work (vigorous intensity activity) | 34.59 | 35.73 | 33.46 | 52.62 | -18.02 | 0.422 |

**Table 10:** Effects of intervention on knowledge in physical activity, attitude in physical activity, and practice in physical activity in the intervention and control groups at baseline and follow-up at 6 month (adjusted for confounding factors) (Cont.)

| Variable | Pre-test (Baseline) | | Post-test (6 month) | | Magnitude (6 month) | P-value* |
|---|---|---|---|---|---|---|
| | I (n=52) Mean | C (n=50) Mean | I (n=52) Mean | C (n=50) Mean | | |
| Activity at work (moderate intensity activity) | 54.50 | 37.60 | 159.60 | 27.90 | 114.80 | <0.001 |
| Travel to and from places | 45.60 | 30.10 | 80.40 | 15.80 | 49.10 | 0.001 |
| Recreational activities (vigorous intensity activity) | 17.10 | 65.40 | 11.50 | 15.40 | 44.40 | 0.003 |
| Recreational activities (moderate intensity activity) | 19.30 | 1.20 | 89.20 | 6.90 | 64.20 | <0.001 |
| Sedentary behavior | 2.14 | 3.12 | 1.60 | 1.67 | 0.905 | 0.012 |

I= intervention group, C= control group

** P value : After adjusted confounding factors, General Linear Model repeated measures ANOVA (Wilks' Lambda from multivariate test) showed that the overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on changing knowledge of physical activities, attitude of physical activities, and practice of physical activities*

**4.2.1.1 Effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on knowledge of physical activities (adjusted for confounding factors)**

Figure 8 showed the average mean knowledge score at baseline and 6 month. At baseline, average mean of knowledge score in control group (16.40 points) was slightly higher than intervention group (15.80 point). At follow-up after older persons received the Group-Mediated Lifestyle Physical Activity (GLPA) program at 6 months found that average mean of knowledge score in intervention group (24.33 points) was increased that higher than control group (14.40 points).

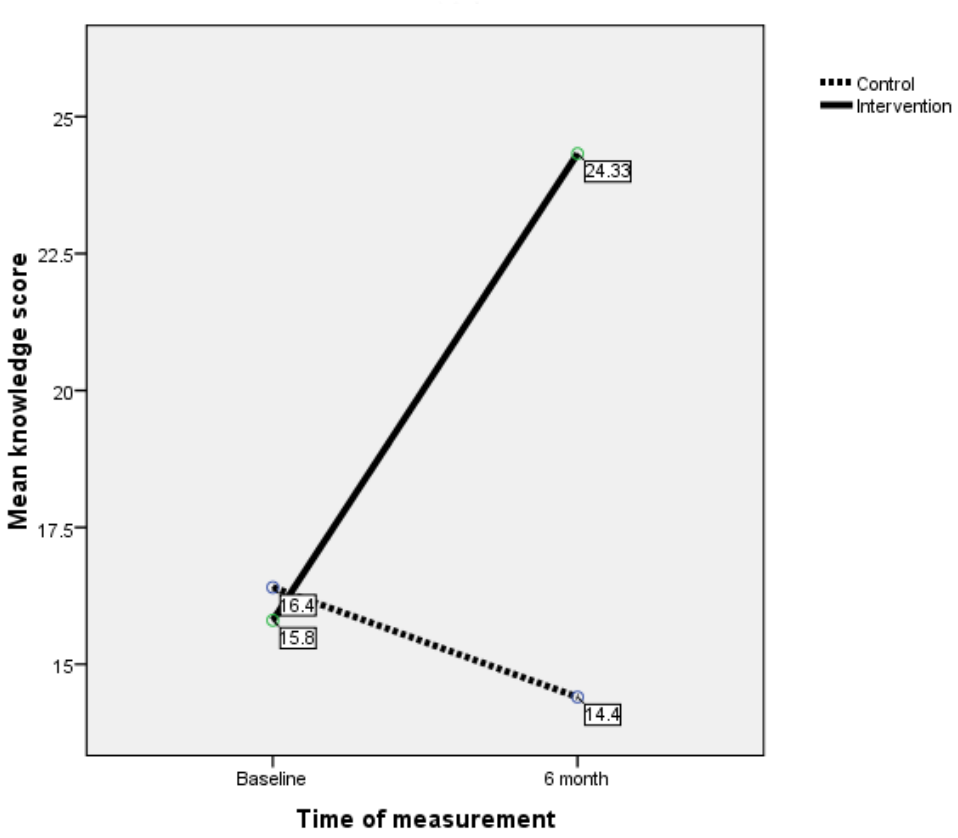


**Figure 8**: Mean knowledge score in intervention and control groups at baseline and 6 month (adjusted for sex and income)

After adjusted confounding factors, General Linear Model repeated measures ANOVA showed that the overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect in knowledge score at p-value < 0.001 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) shown in table 11.

**Table 11:** Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on knowledge score in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Knowledge score | 42.745 | 1.000 | 98.000 | < 0.001 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect in knowledge score at p < 0.001 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) shown in table 12.

**Table 12:** Overall test of intervention effects on knowledge score in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Knowledge score | Type III Sum of Squares | df | Mean Square | F | P-value |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *1337.203* | *1* | *1337.203* | *42.745* | *<0.001* |
| Greenhouse-Geisser | 1337.203 | 1.000 | 1337.203 | 42.745 | <0.001 |
| Huynh-Feldt | 1337.203 | 1.000 | 1337.203 | 42.745 | <0.001 |
| Lower-bound | 1337.203 | 1.000 | 1337.203 | 42.745 | <0.001 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

**4.2.2.2 Effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on attitude of physical activities (adjusted for confounding factors)**

Figure 9 showed the average mean attitude score at baseline and 6 month. At baseline, average mean of attitude score in control group (11.69 points) was slightly higher than intervention group (11.30 point). At follow-up after older persons received the Group-Mediated Lifestyle Physical Activity (GLPA) program at 6 months found that average mean of attitude score in intervention group (13.33 points) was slightly increased and higher than control group (10.62 points).

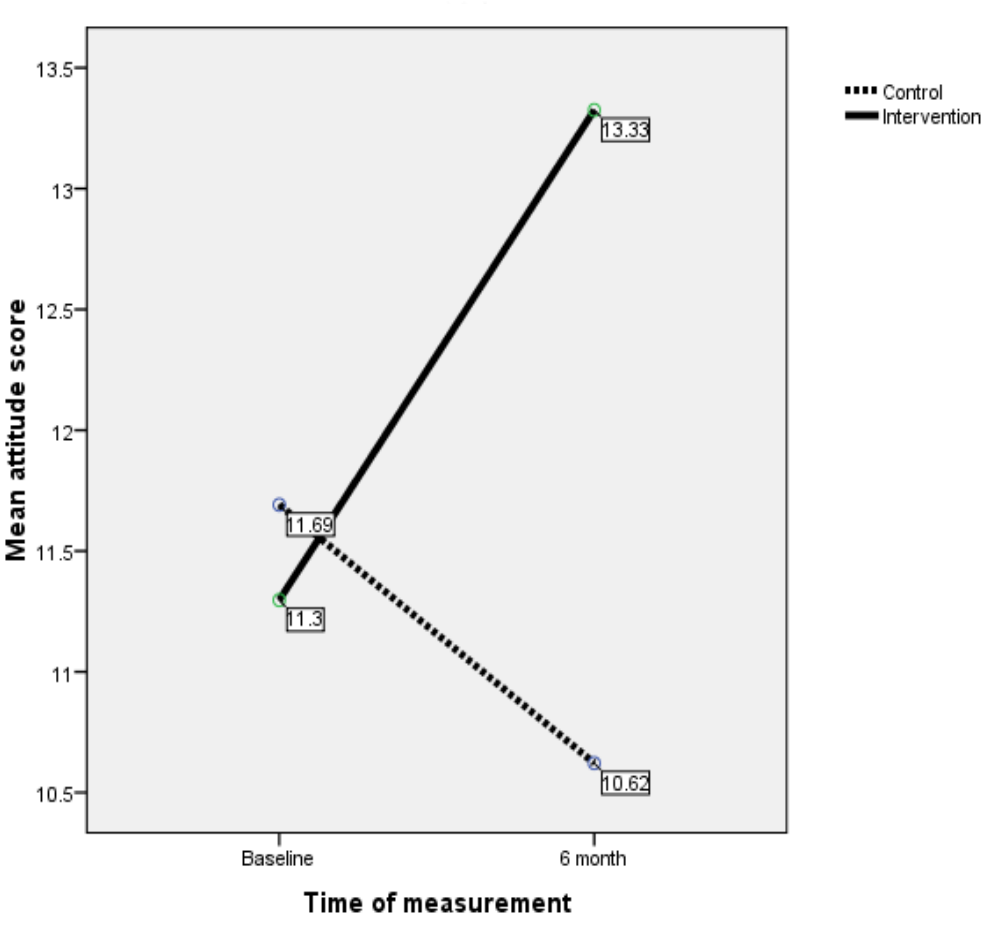


**Figure 9**: Mean attitude score in intervention and control groups at baseline and 6 month (adjusted for sex and income)

After adjusted confounding factors, General Linear Model repeated measures ANOVA showed that the overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect in attitude score at p-value= 0.001 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) shown in table 13.

**Table 13**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on attitude score in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Attitude score | 11.276 | 1.000 | 98.000 | 0.001 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect in attitude score at p-value =0.001 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) shown in table 14.

**Table 14**: Overall test of intervention effects on attitude score in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Attitude score | Type III Sum of Squares | df | Mean Square | F | P-value |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *115.890* | *1* | *115.890* | *11.276* | *0.001* |
| Greenhouse-Geisser | 115.890 | 1.000 | 115.890 | 11.276 | 0.001 |
| Huynh-Feldt | 115.890 | 1.000 | 115.890 | 11.276 | 0.001 |
| Lower-bound | 115.890 | 1.000 | 115.890 | 11.276 | 0.001 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

**4.2.2.3 Effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice in physical activity (adjusted for confounding factors)**

Figure 10 showed the average mean minute of total physical activity at baseline and 6 month. At baseline, average mean minute of total physical activity in the intervention group was slightly higher (171 minutes per week) than the control group (167 minutes per week). At follow-up after participants received the intervention program at 6 months found that average mean minute of total physical activity of intervention group was increased to 374 minutes per week that higher than control group (123 minutes per week).

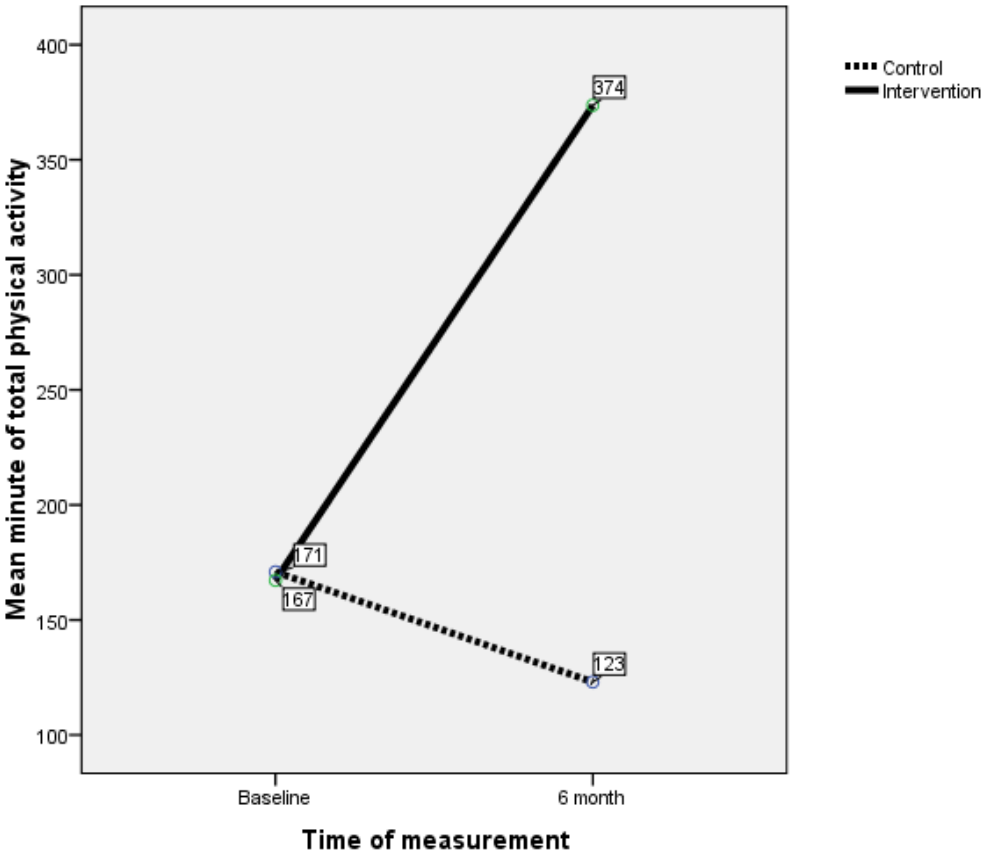


**Figure 10**: mean minute of total physical activity in intervention and control groups at baseline and 6 month (adjusted for sex and income)

After adjusted confounding factors (sex and income) found that the overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect in practice (mean minute of total physical activity) at p-value < 0.001 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) (Table 15).

**Table 15**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of total physical activity) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice (mean minute of total physical activity) | 25.505 | 1.000 | 98.000 | < 0.001 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect in practice mean minute of total physical activity) at p-value < 0.001 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) shown in table 16.

**Table 16**: Overall test of intervention effects on practice (mean minute of total physical activity) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Mean minute of total physical activity | Type III Sum of Squares | df | Mean Square | F | P-value |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *781499.917* | *1* | *781499.917* | *25.505* | *<0.001* |
| Greenhouse-Geisser | 781499.917 | 1.000 | 781499.917 | 25.505 | <0.001 |
| Huynh-Feldt | 781499.917 | 1.000 | 781499.917 | 25.505 | <0.001 |
| Lower-bound | 781499.917 | 1.000 | 781499.917 | 25.505 | <0.001 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

Figure 11 showed mean minute of vigorous intensity physical activity at baseline and 6 month. At baseline, average mean minute of vigorous intensity physical activity in the control group had more than the recommendation physical activity for health that higher (101.1 minutes per week) than the intervention group (51.7 minutes per week). At follow-up after participants received the intervention program at 6 months found that average mean minute of vigorous intensity physical activity in the control group was decreased to 68 minutes per week that higher than intervention group (45 minutes per week).

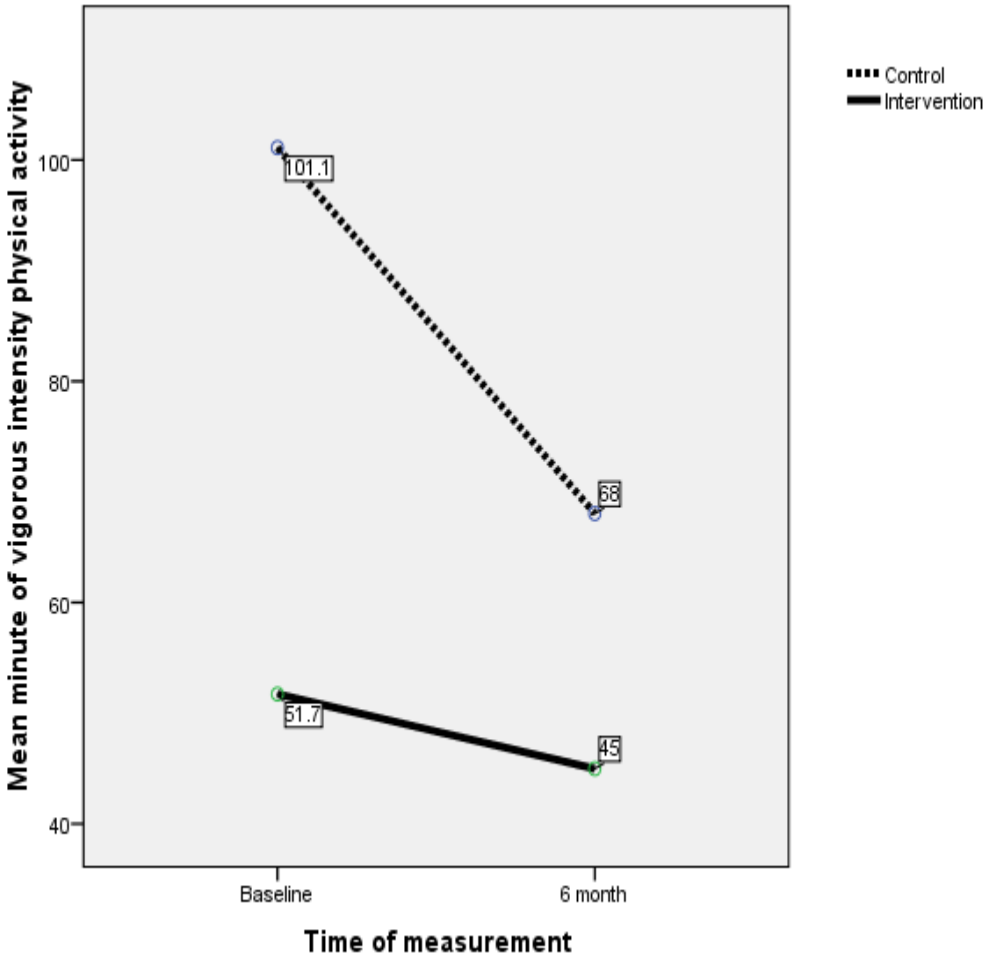


**Figure 11**: Mean minute of vigorous intensity physical activity in intervention and control groups at baseline and 6 month (adjusted for sex and income)

Table 17 showed overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of vigorous intensity physical activity) in intervention and control groups at baseline and 6 month. The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was not significant effect on practice (mean minute of vigorous intensity physical activity) at p-value = 0.337 in repeated measure analysis of variance (Wilks' Lambda from multivariate test).

**Table 17**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of vigorous intensity physical activity) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice (mean minute of vigorous intensity physical activity) | 0.930 | 1.000 | 98.000 | 0.337 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test



In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was not significant effect on practice ( mean minute of vigorous physical activity) at p-value = 0.337 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) shown in table 18

**Table 18:** Overall test of intervention effects on practice (mean minute of vigorous intensity physical activity) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of vigorous intensity physical activity)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *8360.176* | *1* | *8360.176* | *0.930* | *0.337* |
| Greenhouse-Geisser | 8360.176 | 1.000 | 8360.176 | 0.930 | 0.337 |
| Huynh-Feldt | 8360.176 | 1.000 | 8360.176 | 0.930 | 0.337 |
| Lower-bound | 8360.176 | 1.000 | 8360.176 | 0.930 | 0.337 |

**Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA**

Figure 12 showed mean minute of moderate intensity physical activity at baseline and 6 month. At baseline, average mean minute of moderate intensity physical activity in the intervention group was less than the recommendation physical activity for health that higher (119 minutes per week) than the control group (69 minutes per week). At follow-up after participants received the intervention program at 6 months found that average mean minute of moderate intensity physical activity in the intervention group was increased to 318 minutes per week that higher than control group (50 minutes per week).

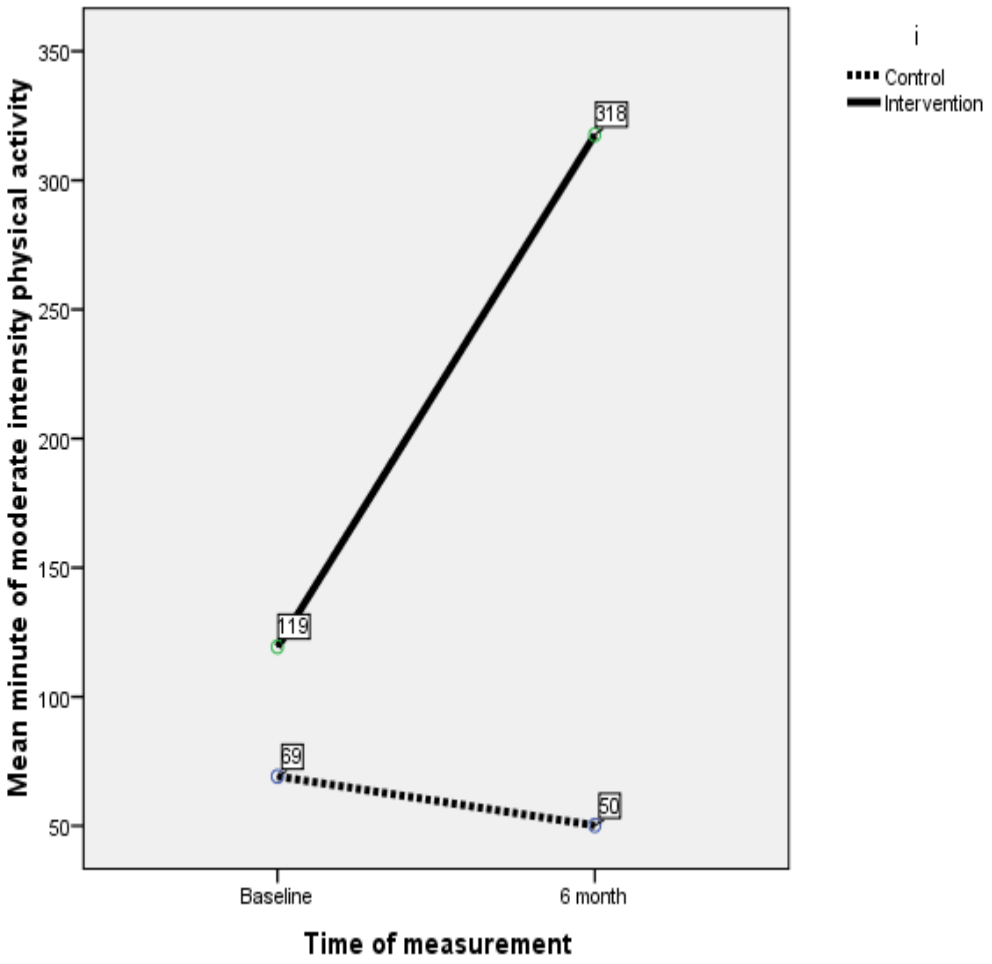


**Figure 12**: Mean minute of moderate intensity physical activity in intervention and control groups at baseline and 6 month (adjusted for sex and income)

Table 19 showed overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of moderate intensity physical activity) in intervention and control groups at baseline and 6 month. The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect on practice (mean minute of moderate intensity physical activity) at p-value < 0.001 in repeated measure analysis of variance (Wilks' Lambda from multivariate test).

**Table 19**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of moderate intensity physical activity) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice(mean minute of moderate intensity physical activity) | 32.292 | 1.000 | 100.000 | < 0.001 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect on practice ( mean minute of moderate intensity physical activity) at p-value < 0.001 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) shown in table 20.

**Table 20**: Overall test of intervention effects on practice (mean minute of moderate intensity physical activity) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of moderate intensity physical activity)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *569942.252* | *1* | *569942.252* | *32.292* | *<0.001* |
| Greenhouse-Geisser | 569942.252 | 1.000 | 569942.252 | 32.292 | <0.001 |
| Huynh-Feldt | 569942.252 | 1.000 | 569942.252 | 32.292 | <0.001 |
| Lower-bound | 569942.252 | 1.000 | 569942.252 | 32.292 | <0.001 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

In term of activity at work (vigorous intensity activities; heavy loads, farming) showed that the control group had mean minute (35.7 minutes per week) higher than the intervention group (34.6 minutes per week) at baseline. At follow-up after participants received the intervention program at 6 months found that average mean minute in the control group was increased to 52.7 minutes per week that higher than the intervention group (33.5 minutes per week) as shown in figure 13.

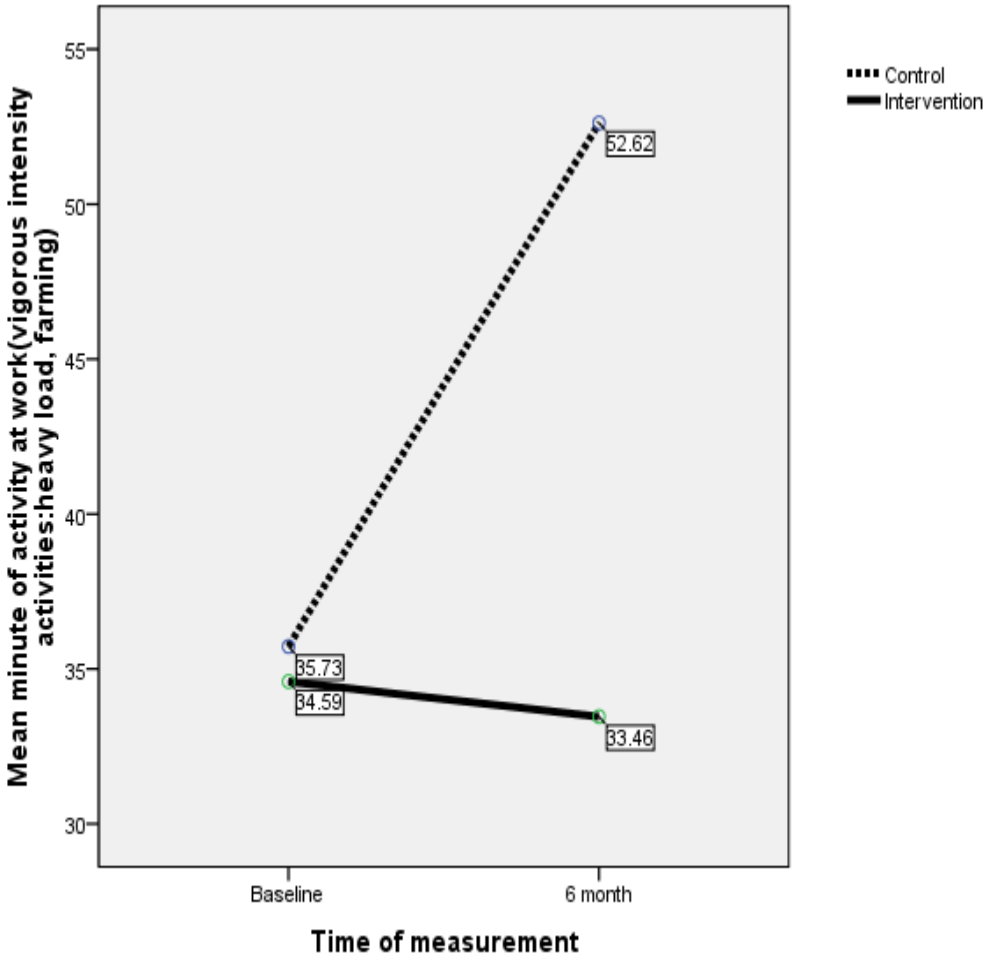




**Figure 13**: Mean minute of activity at work: vigorous intensity activities; heavy loads, farming) in intervention and control groups at baseline and 6 month (adjusted for sex and income)

Table 21 showed the overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was not significant effect on practice (mean minute of activities at work: vigorous intensity activities; heavy loads, farming) at p-value = 0.422 in repeated measure analysis of variance (Wilks' Lambda from multivariate test).

**Table 21**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of activity at work: vigorous intensity activities; heavy loads, farming) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice(mean minute of activity at work: vigorous intensity activities; heavy loads, farming) | 0.649 | 1.000 | 98.000 | 0.422 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was not significant effect on practice (mean minute of activity at work: vigorous; heavy loads, farming) at p-value = 0.422 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) as shown in table 22.

**Table 22**: Overall test of intervention effects on practice (mean minute of activity at work: vigorous intensity activities; heavy loads, farming) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of activity at work: vigorous intensity activities; heavy loads, farming)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *3923.655* | *1* | *3923.655* | *0.649* | *0.422* |
| Greenhouse-Geisser | 3923.655 | 1.000 | 3923.655 | 0.649 | 0.422 |
| Huynh-Feldt | 3923.655 | 1.000 | 3923.655 | 0.649 | 0.422 |
| Lower-bound | 3923.655 | 1.000 | 3923.655 | 0.649 | 0.422 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

At baseline, average mean minute of activity at work (moderate intensity activities; brisk walking, housework) in the intervention group had higher (54.5 minutes per week) than the control group (37.6 minutes per week). At follow-up after participants received the intervention program found that average mean minute in intervention group was increased to 159.6 minutes per week that higher than control group (27.9 minutes per week) as shown in figure 14.

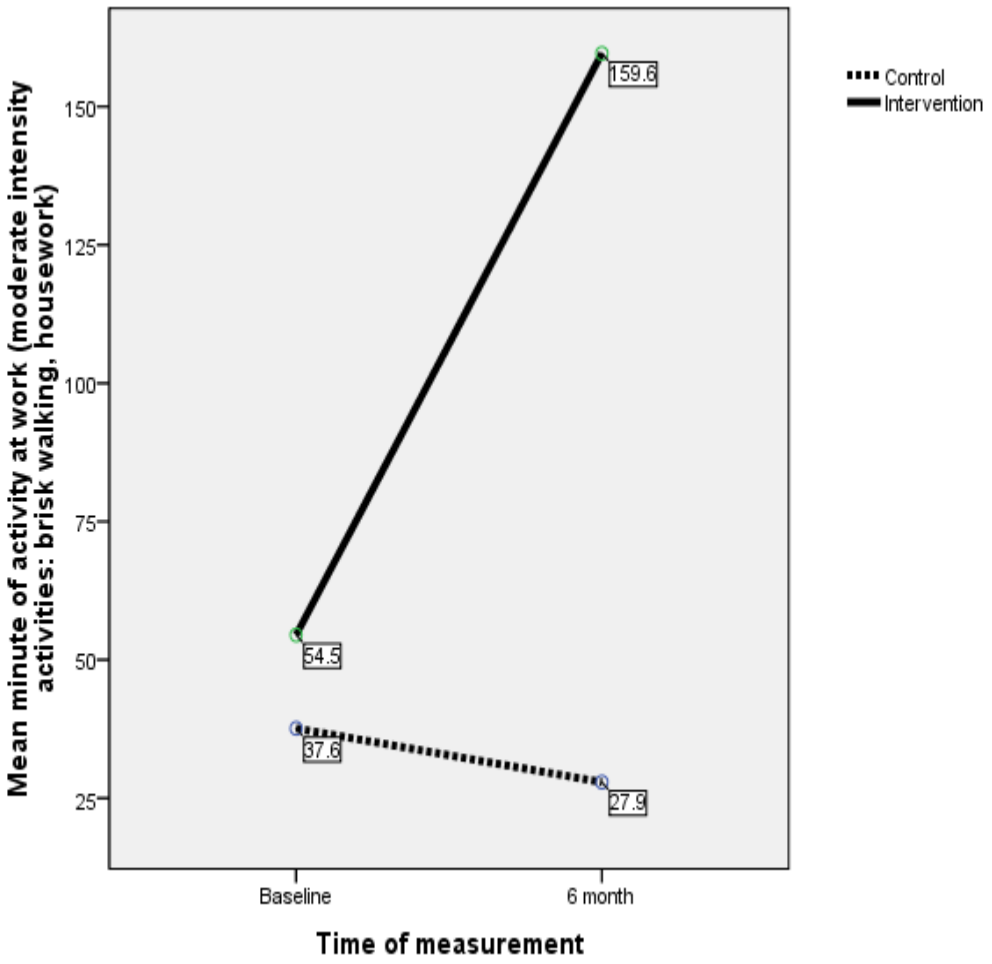


**Figure 14**: Mean minute of activity at work: moderate intensity activities; brisk walking, housework) in intervention and control groups at baseline and 6 month (adjusted for sex and income)

The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect on activities at work (moderate intensity activities; brisk walking, housework) at p-value <0.001 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) as shown in table 23.

**Table 23**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of activity at work: moderate intensity activities; brisk walking, housework) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice(mean minute of activity at work: moderate intensity activities; brisk walking, housework) | 18.929 | 1.000 | 98.000 | < 0.001 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect on practice (mean minute of activity at work: moderate; brisk walking, housework) at p-value <0.001 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) as shown in table 24.

**Table 24:** Overall test of intervention effects on practice (mean minute of activity at work: moderate intensity activities; brisk walking, housework) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of activity at work: moderate intensity activities; brisk walking, housework)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *159186.747* | *1* | *159186.747* | *18.929* | *<0.001* |
| Greenhouse-Geisser | 159186.747 | 1.000 | 159186.747 | 18.929 | <0.001 |
| Huynh-Feldt | 159186.747 | 1.000 | 159186.747 | 18.929 | <0.001 |
| Lower-bound | 159186.747 | 1.000 | 159186.747 | 18.929 | <0.001 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

In term of travel to and from places (transport activity: walking, bike). At baseline, mean minute in the intervention group was greater (45.6 minutes per week) than the control group (30.1 minutes per week). At follow-up after participants received the intervention program at 6 month found that average mean minute of intervention group was increased to 80.4 minutes per week that higher than control group (15.8 minutes per week) as shown in figure 15.

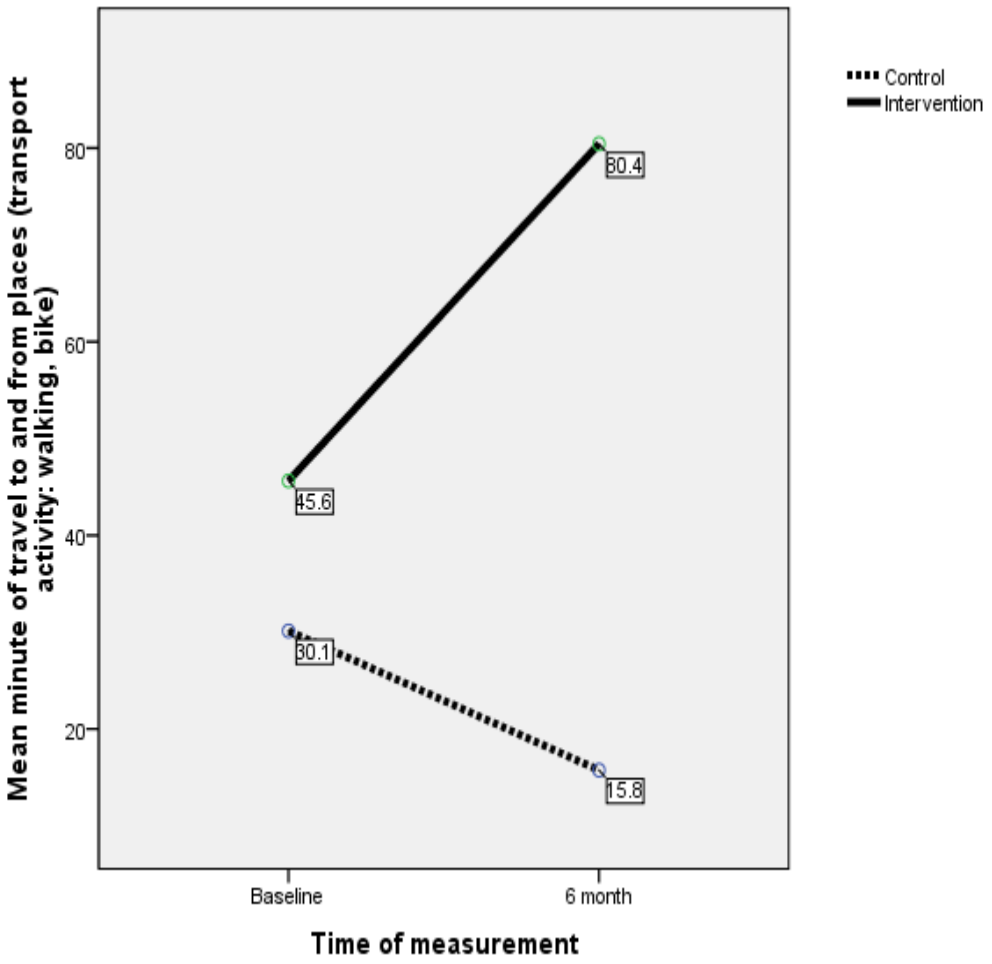


**Figure 15:** Mean minute of travel to and from places (transport activity: walking, bike) in intervention and control groups at baseline and 6 month (adjusted for sex and income)

The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect on practice (mean minute of travel to and from places: transport activity; walking, bike) at p-value = 0.001 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) as shown in table 25.

**Table 25**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of travel to and from places: transport activity; walking, bike) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice(mean minute of travel to and from places: transport activity; walking, bike) | 10.895 | 1.000 | 98.000 | 0.001 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect on practice (mean minute of travel to and from places) at p-value = 0.001 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) as shown in table 26.

**Table 26**: Overall test of intervention effects on practice (mean minute of travel to and from places: transport activity; walking, bike) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of travel to and from places: transport activity; walking, bike)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *29196.116* | *1* | *29196.116* | *10.895* | *0.001* |
| Greenhouse-Geisser | 29196.116 | 1.000 | 29196.116 | 10.895 | 0.001 |
| Huynh-Feldt | 29196.116 | 1.000 | 29196.116 | 10.895 | 0.001 |
| Lower-bound | 29196.116 | 1.000 | 29196.116 | 10.895 | 0.001 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

In term of recreational activities (vigorous intensity activities; jogging, aerobic), at baseline, average mean minute in the control group had higher (65.4 minutes per week) than the intervention group (17.1 minutes per week). At follow-up after participants received the intervention program at 6 months found that average mean minute in the control group was decreased to 15.4 minutes per week that higher than the intervention group (11.5 minutes per week) as shown in figure 16.

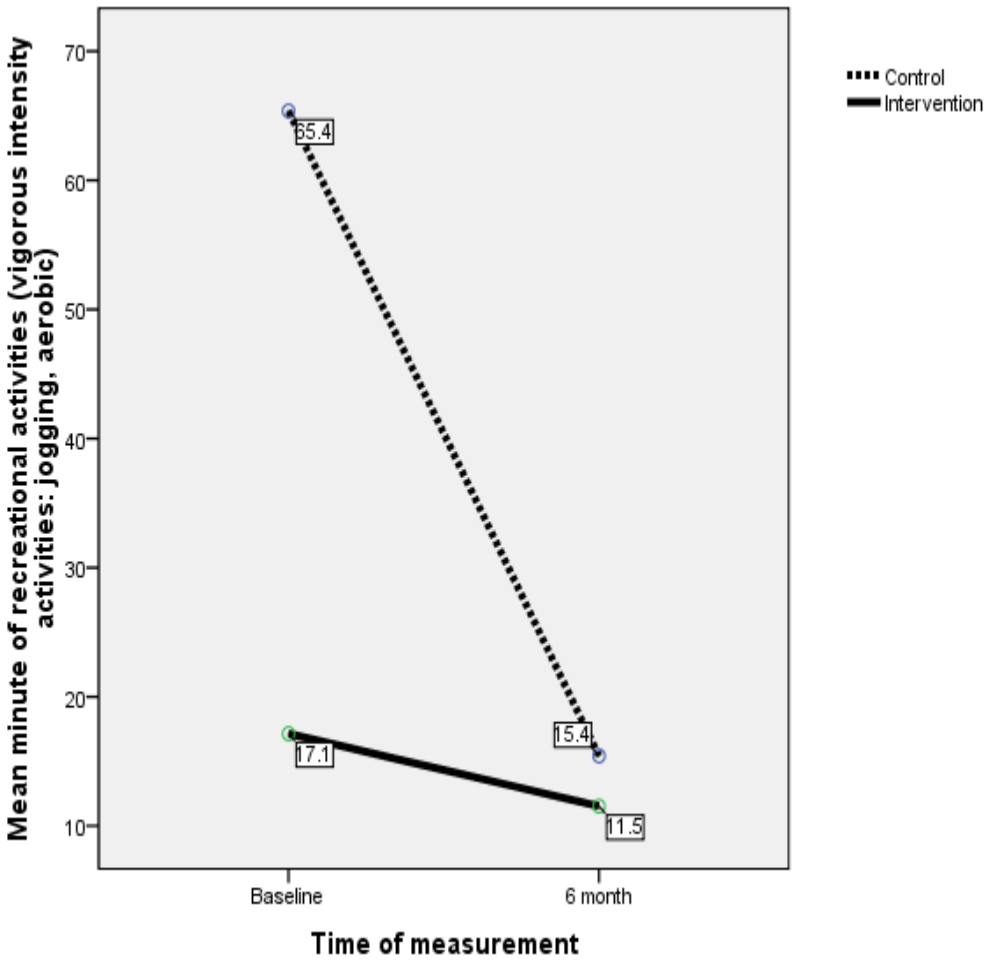


**Figure 16**: Mean minute of recreational activities (vigorous intensity activities; jogging, aerobic) in intervention and control groups at baseline and 6 month (adjusted for sex and income)

The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect on practice (mean minute of recreational activities: vigorous intensity activities; jogging, aerobic) at p-value = 0.003 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) as shown in table 27.

**Table 27**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of recreational activities: vigorous intensity activities; jogging, aerobic) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice(mean minute of recreational activities: vigorous intensity activities; jogging, aerobic) | 9.332 | 1.000 | 98.000 | 0.003 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect on practice (mean minute of recreational activities: vigorous intensity activities; jogging, aerobic) at p-value = 0.003 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) as shown in table 28.

**Table 28**: Overall test of intervention effects on practice (mean minute of recreational activities: vigorous intensity activities; jogging, aerobic) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of recreational activities: vigorous intensity activities; jogging, aerobic)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *23738.513* | *1* | *23738.513* | *9.332* | *0.003* |
| Greenhouse-Geisser | 23738.513 | 1.000 | 23738.513 | 9.332 | 0.003 |
| Huynh-Feldt | 23738.513 | 1.000 | 23738.513 | 9.332 | 0.003 |
| Lower-bound | 23738.513 | 1.000 | 23738.513 | 9.332 | 0.003 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

At baseline, mean minute of recreational activities (moderate intensity activities; swimming, cycling) in the intervention group had higher (19.3 minutes per week) than the control group (1.2 minutes per week). At follow-up after participants received the intervention program found that average mean minute of recreational activities (moderate intensity activities; swimming, cycling) of intervention group was increased to 89.2 minutes per week that higher than control group (5.9 minutes per week) as shown in figure 17.

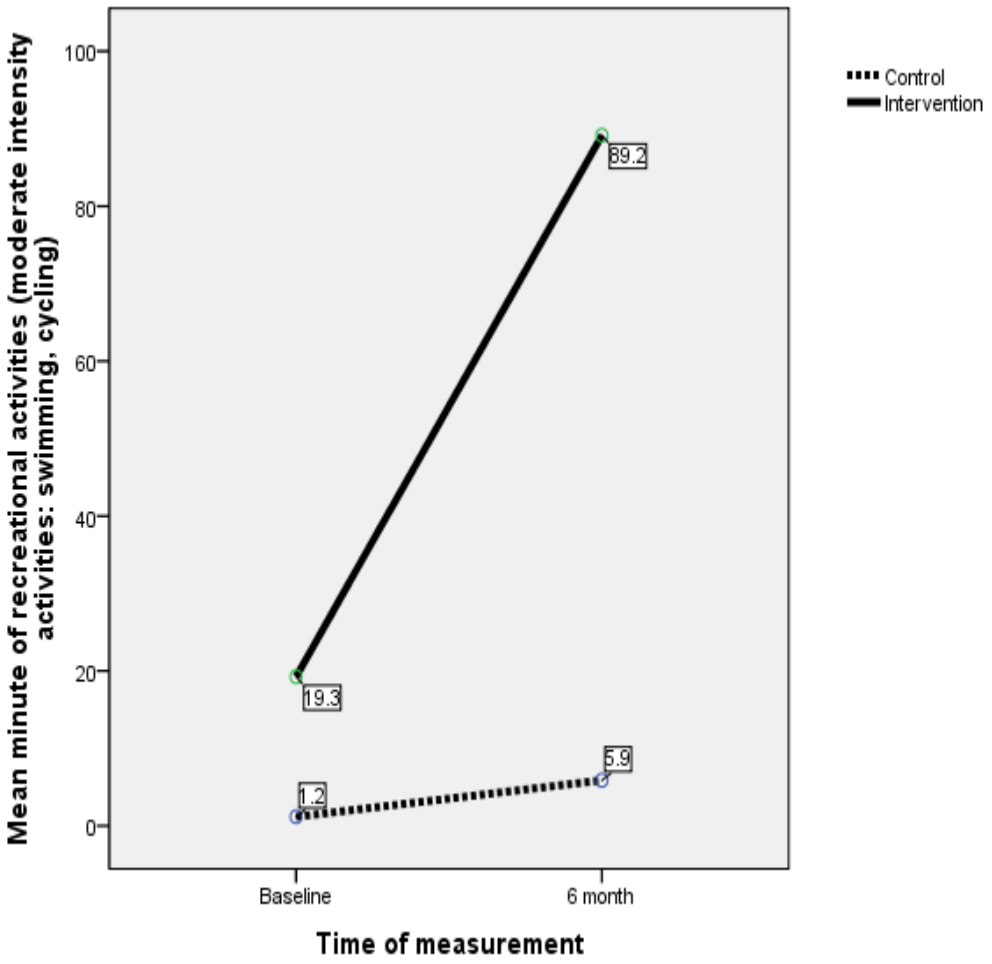


**Figure 17:** Mean minute of recreational activities (moderate intensity activities; swimming, cycling) in intervention and control groups at baseline and 6 month (adjusted for sex and income)

The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect on practice (mean minute of recreational activities: moderate intensity activities; swimming, cycling) at p-value < 0.001 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) as shown in table 29.

**Table 29**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of recreational activities: moderate intensity activities; swimming, cycling) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice(mean minute of recreational activities: moderate intensity activities; swimming, cycling) | 21.784 | 1.000 | 98.000 | < 0.001 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was highly statistically significant effect on practice (mean minute of recreational activities: moderate intensity activities; swimming, cycling) at p-value <0.001 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) as shown in table 30.

**Table 30:** Overall test of intervention effects on practice (mean minute of recreational activities: moderate intensity activities; swimming, cycling) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of recreational activities: moderate intensity activities; swimming, cycling)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *51316.046* | *1* | *51316.046* | *21.784* | *<0.001* |
| Greenhouse-Geisser | 51316.046 | 1.000 | 51316.046 | 21.784 | <0.001 |
| Huynh-Feldt | 51316.046 | 1.000 | 51316.046 | 21.784 | <0.001 |
| Lower-bound | 51316.046 | 1.000 | 51316.046 | 21.784 | <0.001 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

The sedentary behavior (sitting at work, home, time spent with friend). At baseline, average mean hour in the control group had higher (3.12 hours per day) than the intervention group (2.14 hours per day). At follow-up after participants received the intervention program at 6 months found that average mean hour in the control group was decreased to 1.67 hours per day that higher than the intervention group (1.60 hours per day) as shown in figure 18.

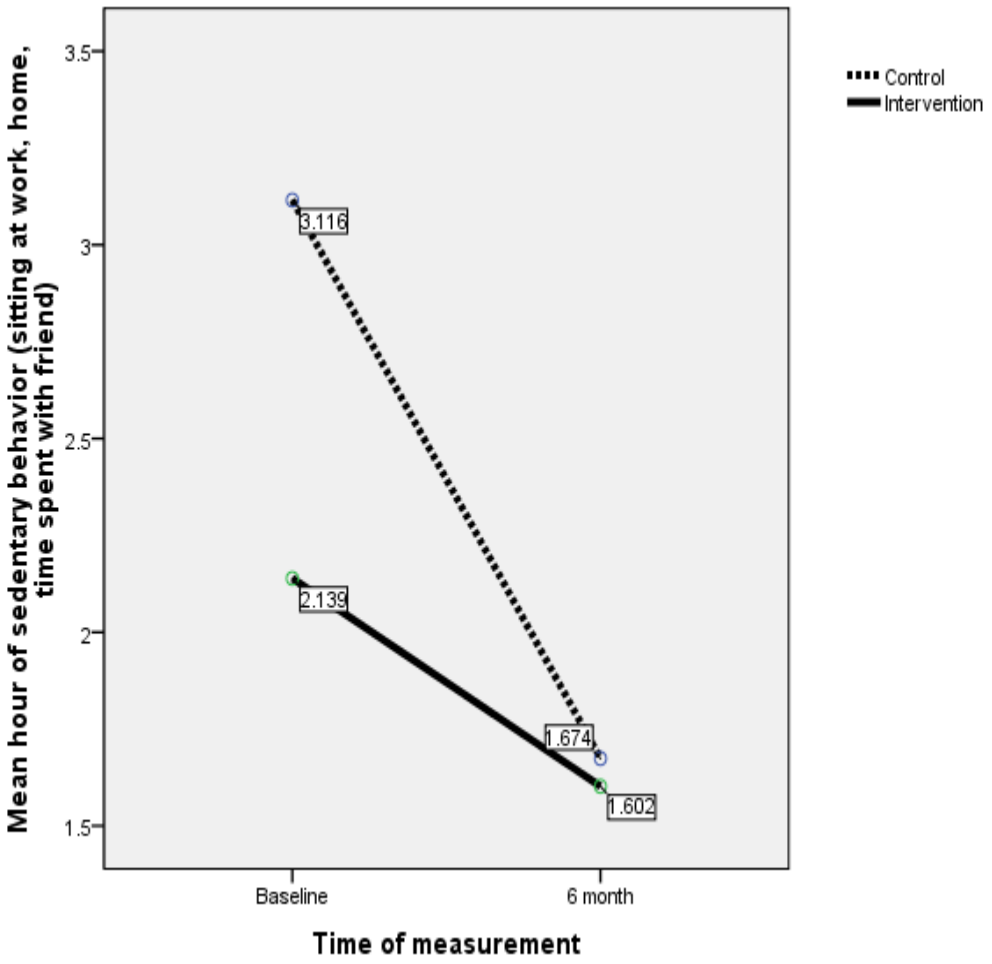


**Figure 18**: Mean hour of sedentary behavior (sitting at work, home, time spent with friend) in intervention and control groups at baseline and 6 month (adjusted for sex and income)

The overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect on practice (mean minute of sedentary behavior: sitting at work, home, time spent with friend) at p-value = 0.012 in repeated measure analysis of variance (Wilks' Lambda from multivariate test) as shown in table 31.

**Table 31**: Overall effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on practice (mean minute of sedentary behavior: sitting at work, home, time spent with friend) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| Variable | F | Hypothesis df | Error df | P-value |
|---|---|---|---|---|
| Practice (mean minute of sedentary behavior: sitting at work, home, time spent with friend) | 6.576 | 1.000 | 98.000 | 0.012 |

General Linear Model repeated-measures ANOVA, Wilks' Lambda from multivariate test

In term of the overall test effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program was statistically significant effect on practice (mean minute of sedentary behavior) at p-value = 0.012 in General Linear Model repeated-measures ANOVA (Test of within-Subjects Effects) as shown in table 32.

**Table 32**: Overall test of intervention effects on practice (mean minute of sedentary behavior: sitting at work, home, time spent with friend) in intervention and control groups at baseline and 6 month (adjusted for confounding factors)

| **Practice (mean minute of sedentary behavior: sitting at work, home, time spent with friend)** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **P-value** |
|---|---|---|---|---|---|
| *Sphericity Assumed* | *9.884* | *1* | *9.884* | *6.576* | *0.012* |
| Greenhouse-Geisser | 9.884 | 1.000 | 9.884 | 6.576 | 0.012 |
| Huynh-Feldt | 9.884 | 1.000 | 9.884 | 6.576 | 0.012 |
| Lower-bound | 9.884 | 1.000 | 9.884 | 6.576 | 0.012 |

Test of within-Subjects Effects in General Linear Model repeated-measures ANOVA

# CHAPTER V

## DISCUSSIONS, CONCLUSION AND RECOMMEDATIONS

This study used quasi-experimental, pretest-posttest with intervention and control group to evaluate the effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand. Pender's Health Promotion Model (2006) was used as the conceptual framework in the study. The participants were older persons who were 60 and over, do not had regularly exercise in last 3 months, can read and write Thai language, and announced to the participants who willing participate in this study. The studied was conducted in 2014. The total sample size was 102, divided into two groups: 1) the intervention group (52 older persons in Ban Mai sub district) received the GLPA program and 2) the control group (50 older persons in Wat Tum sub district) did not receive the intervention program. Physical activity was measured with Global Physical Activity Questionnaire-GPAQv2. Physical activities were classified into four activity domains: 1) activity at work (vigorous intensity activities: heavy loads, farming, moderate intensity activities: brisk walking, housework), 2) travel to and from places (transport activity: walking, bike), 3) recreational activities (vigorous intensity activities: jogging, aerobic, moderate intensity activities: swimming, cycling), and 4) sedentary behavior (sitting at work, home, time spent with friend). For an evaluation the effects of Group-Mediated Lifestyle Physical Activity (GLPA) program used General Linear Model repeated-measure ANOVA with adjusted confounding factors. This chapter composed of 5 parts: 1) Discussion of finding, 2) Conclusion, 3) Limitation, 4) Recommendation, and 5) Further Research Suggestion.

## 5.1 Discussion of finding

### 5.1.1 Socio-demographic characteristics and health status of older persons

The general characteristics of participants were similar with Thai elderly people in rural area. Most of participants were female and married. The majority of participants completed had primary school level education. Most of them have had enough income and have extra money, which similar to the rate of poverty in Thailand had decrease from 26.5% to 10.4 % in 2009. Majority had normal Body Mass Index (BMI) (Ministry of Public Health, 2011). Most of them were having senior citizen club membership, this can be explained by the lifestyle of the older persons in studied communities interested to join with other memberships.

In term of health problems, the findings shown that three-fifth of intervention group and two-fifth in control group knew that they have chronic disease, the most prevalent was hypertension. It was similar with the study in Thailand found that the older persons had hypertension 48 % (National Health Examination Survey Office, 2010) Moreover, most of them never smoked and drink alcohol.

### 5.1.2 Physical activities of older persons

In term of physical activities (measuring by GPAQv2 at baseline, older persons showed that less than two-third in the intervention group and half in the control group had physical activity. This is similar to the study of physical activity in South Asia people shown 60% (United Nation Population Fund. (UNFPA) Thailand, 2006).

Activity at work, older persons in the intervention group perform moderate intensity activities more than vigorous intensity activities. The control group had vigorous intensity activity more than moderate intensity activities. More than half of control group had transport activities and higher than the intervention group. Recreational activities showed that the intervention group had moderate intensity activities more than vigorous intensity activities and higher than the control group. These finding suggest that older persons perform less vigorous intensity activities because of the deterioration of musculoskeletal system (Laffrey S.C., 2000) and it can

be explained that most older persons performs moderate intensity activities such as walking, bike, and housework which is similar to elderly women in US and Southeast Serbia found that walking is the first highest physical activity, followed by gardening, swimming, and cycling (Walsh J.M.E., Rressman A.R, Cauley J.A, & Browner W.S., 2001)

**5.1.3 Effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) program on changing physical activity among older persons**

The baseline data of this study showed that both intervention and control groups had similar characteristics related to physical activities. After the GLPA intervention program the results shown the improvement of the KAP towards physical activity. The intervention program (GLPA) composed of 3 phases: 1) Group-based physical activity, 2) Group-mediated education, 3) Home-based physical activity. The results of this study me in line with the study used home-based physical activity (walking exercise program), it shown significantly improved walking endurance, physical activity, and patient perceived walking endurance (Mary M McDermott, 2013) The current study used the handbook on physical activity for all participants which were useful for learning and understanding about physical activity in the intervention program. It was similar with an Australian study which suggests that media (books, Brochures) has effects for moderate of physical activity (walking). It confirmed that walking was appropriate for older persons (Owen N, 1995). Moreover, telephone call from the researcher to remind the participants about physical activity performance was helpful. This is similar with previous studies from else no here found that phone calls designed to touch based were just as effective as contacts that were highly structure (Lombard& Winett, 1955, as cited in Marcus et al., 1998). The phone call for motivation from researcher helped older persons felt good when they knew that someone cared them. The daily record for physical activity was also useful because of this activity the subjects developed sense of self-accomplishment.

The study suggested that the Group-Mediated Lifestyle Physical Activity (GLPA) program was safe, easy to practice, successful in ageing program, and could be conducted in the rural area such as Phranakhonsiayutthaya province.

Hypothesis testing as follow:

Hypothesis 1) Group- Mediated Lifestyle Physical Activity (GLPA) program change intervention effects knowledge in physical activity score among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand

At baseline, the older persons in both groups had lower knowledge in physical activity which is similar to study of 286 Australian women who were aged 50 to 64 years old, it showed that women who were in the pre contemplation stage of motivation readiness to exercise were no interest in increasing their level of exercise and had lower exercise knowledge (Lee C, 1993).

At 6 month, after used Group- Mediated Lifestyle Physical Activity (GLPA) program. It was found that older persons in the intervention group had higher mean knowledge score than older persons in the control group. The knowledge of physical activities for all subjects is an important motivating factor for older persons to engage in the physical activities. In this study, the knowledge on physical activities was introduced to the participants through the physical activity handbook, lectures, demonstration, trainings, and group discussions in the group-mediated education stage. The Group-Mediated Education program was useful for motivating older persons to consider the effects of physical activities and how to combine physical activity with their lifestyle such as activities at work, travel to and from places, recreational activities, and sedentary behavior. The group discussion allows participants to study from each other in group who have more experience. In term of lecture, the content tended to be academic, make a short conclusion but cover all contents , and there were physical activity handbook that they can took at home to review. In addition, there were demonstration and training to help them remember how to practice well, increasing skill, and understanding in physical activity. Moreover, all participants in the intervention group had training full attention at 4 times with 4 weeks apart.

Results of this study consistent with other studies, (Piriya W., 2000). used a group discussion and provided documents with lecture on the issue of method to

promote healthy exercise for elderly in Chonburi province found that the intervention group had post-experimental knowledge significantly better than at pre-experimental and higher than the comparison group. (Paradee Sriposhang, 2005) also used holistic exercise promotion program among elderly in Nakhonpathom province and found that the intervention program had significantly increased level of knowledge on exercise and was significant.

The research finding revealed that after the participants had been introduced the knowledge regarding the physical activity, they engaged in physical activities. The finding are congruent with literature reviewed which indicated that individuals would engage in health promoting behaviors if they had knowledge and knew the benefit of those particular actions (Pender, 1996).

Hypothesis 2) Group- Mediated Lifestyle Physical Activity (GLPA) change intervention effects attitude in physical activity score among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand

At baseline, the older persons in both groups had positive attitude in physical activity. After applying intervention program at 6 month found that mean attitude score in intervention group had higher than control group. Similarly, the study about the predictive in physical activity intention and behavior in elderly at nursing home in Tehran, Iran found that affective instrumental attitude, subjective norm, and perceived behavioral control explained the variance in physical activity intention (Leila Ghahremani, 2012). However, the study about the elderly who had positive attitude in physical activity such attitude alone usually were insufficient for increasing physical activity (Mobily KE, 1997). Similarly, the study in older Thai Muslim in Mung district, Suratthani province which used health promotion model and guideline book found that the intervention group had better score on perceive benefit of exercise, perceive barrier to exercise, perceive self-efficacy for exercise, and exercise behavior than before the experiment and more than the comparison group (Wansaroat Theppipit, 2004). Also, the study in elderly club of Bangkok Metropolitan Administration Medical College and Vajra Hospital after received education program, showed that the intervention program could significantly increase knowledge,

positively perceived self-efficacy, outcome expectation, and desirable health behavior (Kidsana Sakulrang, 2002).

The results in this study revealed that the older persons who received the intervention program increased attitude in physical activity after attending the GLPA program.

Hypothesis 3) Group- Mediated Lifestyle Physical Activity (GLPA) change intervention effects practice (mean minute of total physical activity) among older persons in Phranakhonsiayutthaya district, Phranakhonsiayutthaya province, Thailand.

At baseline, the both intervention and control groups had similar mean minutes of total physical activities. After the study, 6 month follow up showed that older persons in intervention group had higher mean minutes more than participants in control group. Similarly, the studies in several rural counties in Missouri showed that a new walking and biking path on the physical activity patterns of local residents can increase physical activity among older adults (King AC, 1995). In addition a meta-analysis study found that the intervention to promote walking in group are effective in increasing physical activity (Aikaterini Kassavou, 2013). Moreover, the study on application Pender's health promotion behavior model to promote positive health behavior among elderly showed that after experiment, the elderly in intervention group had statistically higher level of mean score on exercise behavior than before the experiment (Wansaroat Theppipit, 2004).

Amount of time in physical activity in this study, minimum physical activity should be at least 30 minutes per day in 5 day or amount of time in moderate intensity physical activity at least 150 minutes per week or vigorous intensity physical activity at least 75 minutes per week as the recommendation on physical activity for health (World Health Organization, 2006).

At baseline, the intervention group had average mean minute of vigorous intensity physical activity less than the recommendation on physical activity for health. But the control group had mean minute more than the recommendation on physical activity for health. At follow-up after participants received the intervention

program at 6 months found that the control group had mean minute higher than intervention group and was not significant. Similarly the survey by IESA-CSIC, Spain in elderly who had age between 65-79 found that physical activity associated perceived health, but the sport was not found to have an important influence on self-perceive health status among the elderly (Serrano del Rosal, 2013). Moreover, there was a gap between a knowledge of the benefits of exercise in the elderly and exercise activity (Resnick B, 2001). This finding revealed that older persons had less vigorous intensity physical activity.

The moderate intensity physical activity, at baseline showed that the intervention group and control group had mean minute less than the recommendation physical activity for health. After participants received the intervention program found that average mean minute of moderate intensity physical activity in the intervention group was higher than control group. Similarly, a previous study found that elderly have declared physical activity as effective for good health (Kubota A, 2005), an a study of 2,200 Japanese-American showed that elderly who are sedentary walk less than a quarter of mile per day are nearly twice as likely to develop dementia and Alzheimer's disease compared to men who walk more than two miles per day (Taaffe DR, 2008). These findings can be stated that older persons who received the intervention program perceived health benefit on physical activity and engaged in physical activity for health and health benefit as per WHO recommendations.

In term of activities at work (vigorous intensity activities) at baseline, showed that the mean minutes in both groups were similar. After 6 month, participants received intervention program found that mean minutes in the control group was increased higher than the intervention and was not significant. From the finding showed that older persons perform less vigorous intensities activities because of the deterioration of physical and muscle (Laffrey S.C., 2000) and most of them retried from work when ageing progressed.

Activity at work (moderate intensity activities) at baseline showed that the intervention group had mean minute higher than the control group. After 6 month,

participants received intervention program showed that mean minutes in the intervention group was increased higher than the control group. This is similar to the pattern of physical activities among women aged 65 in clinical centers in Portland, Baltimore, Pittsburgh, and Minneapolis found that the most common for elderly do physical activity used walking (51%) and other common activities such as gardening (35%), swimming (16%), and bicycling (13%) (Judith ME Walsh, 2001).

In term of travel to and from places (transport activity at baseline, the control group had mean minute higher than intervention group. After follow-up at 6 month found that the mean minutes in the intervention group was increased that higher than the control group. Similarly, the studied home-based exercise with group-mediated cognitive behavioral intervention component to improve walking performance and physical activity in patients with peripheral artery disease (PAD) in Northwestern University Feinberg School of Medicine, Chicago, USA found that the participants in the intervention group had improved walking time and increased physical activity more than the control group (Mary M McDermott, 2013).

In term of vigorous intensity recreational activities at baseline, the mean minutes in the control group had higher than the intervention group. After follow-up at 6 month found that the mean minutes in the control group were decreased that higher than the intervention group. Similarly, the San Diego Medicare Preventive Health Project used experimental (preventive care intervention and regular care control). The physical activity used Lifestyle Assessment Questionnaire among 1,800 Medicare beneficiaries in HMO. The results showed that intervention participants engaging in significantly more aerobic activity (mean diff = 82.82 METs/week), stretching exercise (mean diff = 4.92min/week, and strength exercise (mean diff = 6.69 min/week) (Mayer JA, 1994). In addition to, an experimental study (long and short exercise bouts) in sedentary men aged 40-60 to engage jogging (65-75% of peak heart rate) in program duration 8 weeks found that heart rate was within or above the prescribed rage 84% of the time for long-bout group and 86% for short-bout group (DeBusk RF, 1990). This finding revealed that older persons cannot do vigorous

intensity activities (jogging, aerobic) for a long time because of the weakness and fatigue easily.

Moderate intensity recreational activities mean minutes in the intervention group had higher than the control group at baseline. After follow-up at 6 month the mean minutes in the intervention group was increased than the control group. This is similar to the studied form cohort (N=7,097) in Minnesota Heart Health Program that used the quasi-experimental to increase physical activity from leisure time by intervention program such as mass media, screening and education, environmental change, and training for health professionals found that all communities had increased leisure time physical activity (63.6% compare with last survey 58.6%) (Luepker RV, 1994).

In term of sedentary behavior (sitting at work, home, time spent with friend) at baseline, the mean hour in the control group had higher than the intervention group. After follow-up at 6 month found that the mean hour in the control group was decreased that higher than the intervention group and was statistically significant. Similarly, the studied experimental (intervention used volunteers recruited through telephone call, local newsletters, fliers, and presentation at clinic) among 128 sedentary ethnic minority women (no vigorous exercise or walking more than 90 minutes/week) showed that both intervention and control groups increased minutes walked per week from baseline to post-test intervention, and decreased from post-test to follow-up (Castro CM, 1998). Overall increase was 51.53 minutes per week. The finding stated that most of participants in the control group had total time in vigorous intensity activity more than the intervention group may be due to duration of time in physical activity they can do only short time because of the type in physical activity so high intensity made them tired easily thus the time of sedentary behavior in the control group decreased more than the intervention group.

This finding research support the hypothesis that older persons in the intervention group had positive participation to practice physical activity with GLPA program at increasing the mean minutes in physical activity (moderate intensity

activities) and decreasing the sedentary behavior (sitting at work, home, time spent with friend) after attending the intervention program .

**5.2 Conclusion**

The summary of finding as follow:

1. Most of participants were female. Mean age of older persons in the intervention group was 69 and 68 in the control group. Health problems showed that three - fifth of intervention group and two-fifth in control group knew that they have chronic disease, hypertension was most prevalence.

2. The physical activities showed that less than two-third of intervention group and half in the control group had physical activities. Most of participants in the intervention group had activities at work (moderate intensity activities) and recreational activities (moderate intensity activities) more than the control group. Most of them in the control group had activities at work (vigorous intensity activities), transport activities, and recreational activities (vigorous intensity activities) more than the intervention group. Most of them have had sedentary behavior.

3. The Group- Mediated Lifestyle Physical Activity (GLPA) program can be improved the knowledge of physical activities, attitude of physical activities, and practice of physical activities. Participants in the intervention group had higher knowledge score, positive attitude score, and practice (mean minute of total physical activity) than the control group and were statistically significant. The finding revealed that the project was effective to improve knowledge of physical activities, attitude of physical activities, and practice of physical activities. The results indicated that GLPA program was appropriated to promote physical activity among older persons in rural area.

4. The effects of GLPA program on moderate intensity physical activity, activities at work (moderate intensity activity; brisk walking, housework), transport activities (walking, bike), and recreational activities (moderate intensity activity; swimming, cycling) in the intervention group had mean minutes more than the control group and was statistically significant. The finding indicated that daily lifestyle

physical activity (moderate intensity activities such as walking, stretching, cycling, and housework) was appropriate for older persons and can promote at least 30 minutes in most day (5 days a week) or moderate intensity physical activity at least 150 minutes per week as the recommendation physical activity for health in the rural community. Because the older persons can do every day and these types were easy, convenient, safe, and no need to use many tools.

**5.3 Limitation**

The study got its limitations as follow:

1. The findings and suggestions cannot be generalized to all existing provinces. Because the sample size small, and study was conducted at only one place in rural area of Phranakhonsiayutthaya district, the generalization of the finding may be limited.

2. This study used self-report (Global Physical Activity Questionnaire-GPAQv2) to know about physical activity among older persons may be the value had error. Because the older persons cannot remember the time and frequency of physical activity in each day for long time after finish intervention program at 6 month.

3. This study use daily physical activity calendar for recording physical activity every day for 6 month the recording may be under or over reported.



**5.4 Recommendation**

1. This study used muscle stretching muscle in warm-up and cool-down session, and walking in daily lifestyle program. The type of physical activities especially moderate intensity activities were easy, convenient, safe, and no need to use many tools. Moderated physical activities should be promote in daily lifestyle for older persons in rural community.

2. The GLPA program used group discussion for participants about how to engage in physical activity and can help participants plan the goal and share the opinion of physical activities in each group, they could be practiced and small group

discussion should be facilitate in the elderly citizen club membership to promote physical activity among older persons in rural community.

3. The GLPA program can maintain sustainable physical activity especially moderate intensity activities such as walking, cycling, and housework among older persons because they can do it in daily life every day, health policy maker should be informed for promoting physical activity in rural community.

4. The Group-Mediated Lifestyle Physical Activity (GLPA) program were appropriated to increase physical activities for older persons. For instance, the GLPA program should be included in the guideline of elderly in community for promoting better physical activity in Thailand.

**5.5 Further Research Suggestion**

1. The study should be explored or modified to investigate physical activities among older persons who stay in urban areas where had different cortex of community.

2. This study evaluated the effect of practice in physical activities in term of mean minutes in physical activity and only the mean hour of sedentary behavior among older persons, other studies should study the factors associated with sedentary behavior in physical activity for planning and managing about inactivity behavior among older persons and the target of sample should be studied in older persons who have sedentary behavior.

3. The qualitative research studies should be conducted for understanding and evaluating physical activity among older persons in rural community.

4. This research, only studied the effects of intervention program on change knowledge, attitude, and practice in physical activity among older persons, other studies should study about the cost effectiveness of GLPA program for physical activity among elderly people

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# APPENDIX

# APPENDIX A

# ENGLISH QUESTIONNAIRES

**Physical activity Screening Form**

**Section 1**: Rate your health

1. Has your doctor or other health care professional told you not to exercise, or told you that you must restrict your activity

( ) yes

( ) no

2. Is pain preventing you from exercising?

( ) yes

( ) no

| |
|---|
| If you answered yes to any of the questions in section 1, you may not be ready to start or return to an exercise program. Please discuss exercise with your doctor. |
| If you answered no to all of the questions in section 1, please go to section 2 |

**Section 2**: Rate your abilities

Are you able to do the following activities?

5. Can you dress and bath/shower without the help of another person?

( ) yes

( ) no

6. Can you prepare or obtain your own meals?

( ) yes

( ) no

7. Can you do your usual household chores? (such as cleaning, laundry, gardening)

( ) yes

( ) no

8. Can you use the telephone by yourself ? (including looking up numbers, dialing, and answering)

( ) yes

( ) no

9. Can you do your own errands and shopping?

( ) yes

( ) no

| |
|---|
| If you answered yes to at last three of the questions in section2, please go to section 3 |
| If you answered no at least to three of the questions in section 2 because of your health, you may not be ready to start or return to an exercise program. Please discuss exercise with your doctor. |

**Section 3:** Rate you do activity ability

10. Can you walk without the help of another person? (It's okay to use a walker or cane)

( ) yes

( ) no

11. Can you get up alone from a chair without armrest ? (It's okay to use a walker or cane)

( ) yes

( ) no

12. Can you drive or arrange your own transportation when needed?

( ) yes

( ) no

13. Can you leave your home for one hour or more for an activity other than a doctor's appointment? (This includes social activities like visiting friends, going to a movie or restaurant, shopping etc.)

( ) yes

( ) no

| |
|---|
| If you answered yes to all questions in section 3, it is safe for you starting or returning to regular exercise practice, at your own pace. |
| If you answered no to any of the questions in section 3, you may not be ready to start or return to a regular exercise program yet. Please talk to your doctor about kinds of exercise you can do to get stronger safely. |

**Source**: Apply from Ilene F.Silver, Washington State Department of Health, America, 2006.

**Effectiveness of Group-Mediated Lifestyle Physical Activity (GLPA) Program for Physical Activity among Older Persons in Phranakhonsiayutthaya District, Phranakhonsiayutthaya Province, Thailand**

.....

**Section 1**: General Characteristics

**Instruction**: Please answer each statement by putting / in the bank or filling the answer that is best suit you describe

ID of questionnaires _ _ _

Date of interview

Date.....month.....year.....

Convenient days and time to contact

( ) weekday..... time.....

( ) weekend..... time.....

Contact phone number

( ) home phone number.....

( ) mobile phone number.....

Member in family/friend help record physical activity

( ) no

( ) yes

1.Sex

1 ( ) male 2 ( ) female

2.Age .....years

3.Marital status

1 ( ) single

2 ( ) married

3 ( ) divorce

4 ( ) separate

4.Education level

0 ( ) never

1 ( ) primary school

2 ( ) first 3 years of secondary school

3 ( ) second 3 years of secondary school

4 ( ) a diploma

5 ( ) Bachelor

6 ( ) higher than bachelor

5.Which of the following categories best describes your income?

1 ( ) not enough

2 ( ) enough but no saving

3 ( ) having some extra money to save

4 ( ) I have more than I need

6.You are being senior citizen club member ship

0 ( ) no

1 ( ) yes ( put the name of club member) .....

7. Weight.....Kg

8. Height.....cms

For researcher only: Body Mass Index = .....Kg/m²

9. Do you have chronic health conditions?

| Chronic health conditions | Yes (1) | No (1) | Number of time for having chronic health condition |
|---|---|---|---|
| 9.1 Heart | ..... | ..... | ...months ..... years |
| 9.2 Diabetes | ..... | ..... | ...months ..... years |
| 9.3 Hypertension | ..... | ..... | ...months ..... years |
| 9.4 Cancer | ..... | ..... | ...months ..... years |
| 9.5 Arthritis | ..... | ..... | ...months ..... years |
| 9.6 COPD | ..... | ..... | ...months ..... years |
| 9.7 Asthma | ..... | ..... | ...months ..... years |
| 9.8 Mental disorder | ..... | ..... | ...months ..... years |
| 9.9 Other | ..... | ..... | ...months ..... years |

10. You are smoking

0 ( ) no

1 ( ) yes but now cancel

2 ( ) yes (put the time and amounts for smoking).....months.....years

Amounts.....per day

11. You are drinking alcohol

0 ( ) no

1 ( ) yes but now cancel

2 ( ) yes (put the time for drinking).....months.....years

Amounts.....per day

12. Last 3 moth, do you have exercise ?

0 ( ) no

1 ( ) yes (put the frequency and time for exercise) frequency .....time per week total per time.....minutes

**Section 2**: KAP of Physical activities

2.1 Knowledge of physical activities

| **Knowledge of physical activities** | **Yes (1)** | **No (0)** |
|---|---|---|
| **Are the correct of physical activities?**<br>1.Walking to the hill quickly | | |
| 2. Washing the car | | |
| 3. Talking with friend | | |
| 4. Decorating the tree | | |
| 5. Watching TV | | |
| 6. Sucking the dust in home | | |
| 7. Listening the radio | | |
| 8. Playing with children | | |

| **Knowledge of physical activities** | **Slight level** | | **Moderate level** | | **Heavy level** | |
|---|---|---|---|---|---|---|
| | **Yes (1)** | **No (0)** | **Yes (1)** | **No (0)** | **Yes (1)** | **No (0)** |
| **Are the correct level of physical activities?** 9.Walking to the hill quickly | | | | | | |
| 10. Washing the car | | | | | | |
| 11. Talking with friend | | | | | | |
| 12. Decorating the tree | | | | | | |
| 13. Watching TV | | | | | | |
| 14. Sucking the dust in home | | | | | | |
| 15. Listening the radio | | | | | | |
| 16. Playing with children | | | | | | |

| **Knowledge of physical activities** | **Yes (1)** | **No (0)** |
|---|---|---|
| 17. Physical activity is the bodily movement that requires energy expenditures | | |
| 18. Vigorous-intensity activity that causes large increases in breathing or heart rate (walking) for at least 10 minutes continuously is physical activity. | | |
| 19. Moderate-intensity that causes small increase in breathing or heart rate (playing with children) for at least 10 minutes continuously is physical activity. | | |

| Knowledge of physical activities | Yes (1) | No (0) |
|---|---|---|
| 20.More moderate physical activity (housework) can increase heart vitality and decrease cardiovascular diseases. | | |
| 21. Physical activity can not help to maintain the weight. | | |
| 22. Physical activity can help to strengthen muscles and bones. | | |
| 23. Physical activity does not improve mental health. | | |
| 24. Physical activity improves the ability to do daily activity and prevents falls. | | |
| 25. Walking is activities that can be done by older persons every day. | | |
| 26.Recreational activities (dancing and painting) are not physical activities. | | |
| 27. Older persons who have chronic disease should not consult the medical doctor before do physical activity. | | |
| 28. If older persons are tired they must stop physical activity. | | |
| 29. Jogging as physical activity is suitable for older persons. | | |
| 30. Travels in daily life (waking for business) is the physical activity. | | |
| 31. Housework (mopping) does not improve health. | | |
| 32. Activity at work (farming) is not physical activity. | | |

2.2 Attitude of physical activities

1= agree

0= not sure

0= disagree

| **Attitude of physical activities** | **agree (1)** | **Not sure (0)** | **disagree (0)** |
|---|---|---|---|
| 1.Chronic health conditions prevents you from doing physical activity. | | | |
| 2.Physical activity can help you to suffer from heart disease. | | | |
| 3.Physical activity can improve your loneliness. | | | |
| 4.Your family can not help you to be more active physically active. | | | |
| 5.Reading a book on how to start being more active can help you on being physically more active. | | | |
| 6.Advice from a health professional can help you on being physically more active. | | | |
| 7.A group of friends can not help you on being physically more active. | | | |
| 8.Shops or other places to buy things can motivate you to walk from your home. | | | |
| 9. The walk tracks in or near your local area can help you to practice physical activity. | | | |

| Attitude of physical activities | agree (1) | Not sure (0) | disagree (0) |
|---|---|---|---|
| 10. A park or nature reserve in your local area cannot help you to practice physical activity. | | | |
| 11. Physical activity makes you waste time. | | | |
| 12. Physical activity make your bad mood. | | | |
| 13. Physical activity is not essential for you. | | | |
| 14. Healthy people don't practice physical activity. | | | |
| 15. Housework (sweeping) can help to strengthen your muscles. | | | |
| 16. Physical activity makes your tired. | | | |

2.3 Practice of physical activities (WHO, 2006 ) If you answer yes, you write frequency

| **Physical activities** | **Yes** (1) | **No** (0) | **Frequency** | | |
|---|---|---|---|---|---|
| | | | Day/wk | Time/day | Min/time |
| **A. Activity at work**<br>1. Does you work involve vigorous-intensity activity that increase breathing or heart rate for at least 10 minutes continuously (carrying or lifting heavy loads, digging, farming, gardening or construction work) ? | | | | | |
| 2.Does your work involve moderate-intensity activity that causes small increase in breathing or heart rate (such as brisk walking, housework, or carrying light loads) for at least 10 minutes continuously? | | | | | |
| **B. Travel to and from places**<br>3. Do you walk or use a bicycle<br>(pedal cycle) for at least 10 minutes continuously to get to and from places? | | | | | |
| **C. Recreational activities**<br>4. Do you practice any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing and heart rate (like running, aerobic )for at least 10 minutes continuously? | | | | | |
| 5. Do you practice any moderate-intensity sports, fitness or recreational ( leisure) activities that causes a small increase in breathing or heart rate (such as brisk walking cycling, swimming, volleyball) at least 10 minutes continuously? | | | | | |
| **D.Sedentary behavior**<br>The following question is about sitting or reclining at work, at home, getting to and from places, or time spent with friends ( including sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television). Do not include time spent sleeping.<br>6. How much time do you usually spend sitting or reclining on a typical day? | | | | | |

**Section3:** Planning of physical activities ( Pender et al, 2006)

Direction: Please think carefully about each statement below and indicate how often you do each of the following activities related to physical activity (never, sometimes, or often)

| **Planning of physical activities** | Never (0) | Sometimes (1) | Regular (2) |
|---|---|---|---|
| 1.Do you plan specific time for physical activity in your weekly schedule. | | | |
| 2.Do you keep written records of your physical activity? | | | |
| 3.Do you reward yourself for practicing physical activity? | | | |
| 4.Do you post a diary calendar and check your physical activity? | | | |
| 5.Do you vary your physical activity routine to avoid boredom? | | | |
| 6.Do you work toward physical activity goals that are progressively more challenging? | | | |
| 7.Do you consider physical activity so important in your life that you allocate time for it? | | | |
| 8.Do you let people know about your commitment for physical activity? | | | |
| 9.Do you encourage your friends to practice physical activity? | | | |
| 10.Do you practice physical activity in a specific location or facility. | | | |

# APPENDIX B

## QUESTIONS IN THAI

เลขที่แบบสอบถาม[ ] [ ] [ ]

**ประสิทธิผลของโปรแกรมกระบวนการกลุ่มในการทำกิจวัตรประจำวันต่อการจัดกิจกรรมทางกายในผู้สูงอายุอำเภอพระนครศรีอยุธยา จังหวัดพระนครศรีอยุธยา ประเทศไทย**

.....

คำชี้แจง: กรุณาตอบคำถามโดยใส่เครื่องหมาย / ลงในช่องว่าง หรือกรอกข้อความให้สมบูรณ์

วันที่สัมภาษณ์ .....เดือน.....พ.ศ.....

วันและเวลาที่สะดวกในการติดต่อ

วันปกติ.....เวลา.....

วันหยุด.....เวลา.....

หมายเลขโทรศัพท์ติดต่อ

โทรศัพท์บ้าน.....

โทรศัพท์มือถือ.....

การมีสมาชิกในครอบครัว/เพื่อนให้คำแนะนำ/ช่วยบันทึกการทำกิจกรรมทางกาย

( ) ไม่มี ( ) มี

**แบบคัดกรองการทำกิจกรรมทางกาย**

| ข้อ | คำถาม | ไม่ใช่ (0) | ใช่ (1) | สำหรับนักวิจัย |
|---|---|---|---|---|
| 1 | **การวัดระดับสุขภาพ** แพทย์หรือเจ้าหน้าที่สาธารณสุขได้ห้ามไม่ให้ท่านออกกำลังกาย หรือท่านต้องควบคุมการออกกำลังกายตามคำแนะนำของแพทย์หรือไม่ | | | S1[ ] |
| 2 | ท่านมีความเจ็บปวดจนไม่สามารถออกกำลังกายได้ใช่หรือไม่ | | | S2[ ] |
| 3 | **การวัดระดับความสามารถ** ท่านสามารถแต่งตัวและอาบน้ำ โดยไม่ต้องมีคนช่วยได้หรือไม่ | | | S5[ ] |
| 4 | ท่านสามารถเตรียมอาหารได้ด้วยตนเองหรือไม่ | | | S6[ ] |
| 5 | ท่านสามารถทำงานบ้านได้หรือไม่ เช่น การทำความสะอาดบ้าน การซักผ้า และการทำสวน | | | S7[ ] |
| 6 | ท่านสามารถใช้โทรศัพท์ได้หรือไม่ (รวมถึงการหาหมายเลขโทรศัพท์ การกดหมายเลขโทรศัพท์ และการพูดคุยตอบโต้ทางโทรศัพท์) | | | S8[ ] |

| ข้อ | คำถาม | ไม่ใช่ (0) | ใช่ (1) | สำหรับนักวิจัย |
|---|---|---|---|---|
| 7 | ท่านสามารถไปทำธุระ และไปซื้อของได้หรือไม่ | | | S9[ ] |
| 8 | **การวัดความสามารถในการทำกิจกรรม**<br>ท่านสามารถเดินได้ด้วยตนเองโดยไม่ต้องใช้ไม้เท้า หรือไม้ค้ำยัน ได้หรือไม่ | | | S10[ ] |
| 9 | ท่านสามารถลุกจากเก้าอี้ที่นั่งโดยไม่ต้องให้คนอื่นช่วย และไม่ต้องใช้ไม้เท้า หรือไม้ค้ำยันได้หรือไม่ | | | S11[ ] |
| 10 | ท่านสามารถขับรถหรือเดินทางไปไหนมาไหนได้ด้วยตนเองหรือไม่ | | | S12[ ] |
| 11 | ท่านสามารถไปทำกิจกรรมนอกบ้าน เช่น การไปเยี่ยมเพื่อน การดูหนัง ไปซื้อของ หรือไปทำธุระอื่น ที่ไม่ได้เป็นการพบแพทย์ตามนัดได้หรือไม่ | | | S13 [ ] |
| | **รวมคะแนน** | | | |
| | **การแปลผลการคัดกรองกิจกรรมทางกาย**<br>( ) ไม่มีความพร้อมทำกิจกรรมทางกาย (0-3คะแนน)<br>( ) มีความพร้อมทำกิจกรรมทางกายอย่างปลอดภัย (4-11คะแนน) | | | |

**ตอนที่ 1**: แบบสัมภาษณ์ข้อมูลทั่วไป

| ข้อ | คำถาม | คำตอบ | สำหรับนักวิจัย |
|---|---|---|---|
| 1 | เพศ | ( ) 1 ชาย ( ) 2 หญิง | Sex[ ] |
| 2 | อายุ | ..... ปี | Age[ ] [ ] |
| 3 | สถานภาพสมรส | ( )1โสด( )2สมรส<br>( )3หม้าย/หย่า( ) 4แยกกันอยู่ | Status[ ] |
| 4 | ระดับการศึกษา | ( ) 0ไม่เคยศึกษา( )1 ระดับประถมศึกษา<br>( )2 ระดับมัธยมศึกษาตอนต้น (ม.1-ม.3)<br>( ) 3ระดับมัธยมศึกษาตอนปลาย (ม.4-ม.6)<br>( ) 4 ประกาศนียบัตร ( ) 5ปริญญาตรี<br>( ) 6 สูงกว่าปริญญาตรี | Edu [ ] |
| 5 | สถานะการเงินต่อไปนี้ใกล้เคียงกับที่ท่านได้รับมากที่สุด | ( ) 1 ไม่เพียงพอ( )2 เพียงพอแต่ไม่เหลือเก็บ<br>( )3 มีเหลือเก็บบ้าง( )4 มีเงินพอ | Inc[ ] |

| ข้อ | คำถาม | คำตอบ | สำหรับนักวิจัย |
|---|---|---|---|
| 6 | ท่านเป็นสมาชิกชมรมผู้สูงอายุหรือไม่ | ( ) 0 ไม่ได้เป็นสมาชิก<br>()1เป็นสมาชิก (ระบุ)ชื่อชมรม<br>.....ระยะเวลา.....ปี .....เดือน | Club<br>[ ][ ][ ] |
| 7 | น้ำหนักตัว | .....กิโลกรัม | Wg [ ][ ] |
| 8 | ส่วนสูง<br>**สำหรับนักวิจัย** ดัชนีมวลกาย | .....เซนติเมตร<br>..... | Ht[ ] [ ] [ ] |
| 9 | ประเมินค่าดัชนีมวลกาย | ( ) 1 น้ำน้อย/ผอม < 18.5<br>( ) 2 น้ำหนักปกติ 18.5-24.9<br>( ) 3 น้ำหนักเกิน/ท้วม 25.0-29.9<br>( ) 4 อ้วนระดับ 1 30.0-34.9<br>( ) 5 อ้วนระดับ 2 35.0-39.9<br>( ) 6 อ้วนระดับ 3 ≥40.01 | BMI[ ] |

| ข้อ | คำถาม | ไม่ใช่ (0) | ใช่ (1) | ระยะเวลาที่เป็น | สำหรับนักวิจัย |
|---|---|---|---|---|---|
| 10 | ท่านป่วยเป็นโรคเรื้อรังต่อไปนี้หรือไม่<br>10.1 โรคหัวใจ | | | .....เดือน.....ปี | D1[ ] [ ] [ ] |
| | 10.2 โรคเบาหวาน | | | .....เดือน.....ปี | D2[ ] [ ] [ ] |
| | 10.3 โรคความดันโลหิตสูง | | | .....เดือน.....ปี | D3[ ] [ ] [ ] |
| | 10.4 โรคมะเร็ง | | | .....เดือน.....ปี | D4[ ] [ ] [ ] |
| | 10.5 โรคข้ออักเสบ | | | .....เดือน.....ปี | D5 [ ][ ] [ ] |
| | 10.6 โรคปอดอุดกั้นเรื้อรัง | | | .....เดือน.....ปี | D6 [ ][ ] [ ] |
| | 10.7 โรคหอบหืด | | | .....เดือน.....ปี | D7 [ ][ ] [ ] |
| | 10.8 ปัญหาสุขภาพจิต | | | .....เดือน.....ปี | D8 [ ][ ] [ ] |
| | 10.9 อื่นๆ (ระบุ)..... | | | .....เดือน.....ปี | D9 [ ][ ] [ ] |

| ข้อ | คำถาม | คำตอบ | ระยะเวลา | จำนวน | สำหรับนักวิจัย |
|---|---|---|---|---|---|
| 11 | ท่านสูบบุหรี่หรือไม่ | ( ) 0 ไม่สูบ<br>() 1 เคยแต่เลิกแล้ว<br>( ) 2สูบ | .....เดือน.....ปี | ......มวนต่อวัน | Sk[ ][ ]<br>[ ][ ][ ] |
| 12 | ท่านดื่มสุราหรือไม่ | ( ) 0 ไม่ดื่ม<br>() 1เคยแต่เลิกแล้ว<br>( ) 2ดื่ม | .....เดือน.....ปี | ......แก้วต่อวัน | Dk[ ][ ]<br>[ ][ ][ ] |
| 13 | ในรอบ 3 เดือนที่ผ่านมา ท่านได้ออกกำลังกาย (รำไม้พลอง, รำไทเก็ก )หรือไม่ | ( ) 0 ไม่ได้ออก<br>( ) 1 ได้ออก | ความถี่.....<br>ครั้งต่อสัปดาห์ | ครั้งละ<br>.....นาที | Hpa[ ][ ]<br>[ ][ ][ ] |

**ตอนที่ 2**: แบบสัมภาษณ์ความรู้ ทัศนคติ และการปฏิบัติกิจกรรมทางกาย

2.1 ความรู้ด้านกิจกรรมทางกาย ไม่ใช่ = 0 ใช่ = 1

| **ความรู้ด้านกิจกรรมทางกาย** | **ใช่** (1) | **ไม่ใช่** (0) | **สำหรับนักวิจัย** |
|---|---|---|---|
| **กิจกรรมต่อไปนี้เป็นกิจกรรมทางกายหรือไม่** | | | |
| 1.การเดินขึ้นเนินอย่างเร็ว | | | K1 |
| 2.การล้างรถ | | | K2 |
| 3.การนั่งคุยกับเพื่อน | | | K3 |
| 4. การตัดแต่งกิ่งไม้ | | | K4 |
| 5. การดูทีวี | | | K5 |
| 6. การดูดฝุ่นในบ้าน | | | K6 |
| 7. การฟังวิทยุ | | | K7 |
| 8. การเล่นกับลูกหลาน | | | K8 |

2.2 ความรู้ด้านกิจกรรมทางกาย 0 = ไม่ใช่ 1 = ใช่

| ความรู้ด้านกิจกรรมทางกาย | เบา | | ปานกลาง | | หนัก | | สำหรับนักวิจัย |
|---|---|---|---|---|---|---|---|
| | ใช่ (1) | ไม่ใช่ (0) | ใช่ (1) | ไม่ใช่ (0) | ใช่ (1) | ไม่ใช่ (0) | |
| **ระดับความแรงของกิจกรรมทางกายที่ถูกต้องคืออะไร?** 9.การเดินขึ้นเนินอย่างเร็ว | | | | | | | K9 |
| 10.การล้างรถ | | | | | | | K10 |
| 11.การนั่งคุยกับเพื่อน | | | | | | | K11 |
| 12. การตัดแต่งกิ่งไม้ | | | | | | | K12 |
| 13. การดูทีวี | | | | | | | K13 |
| 14. การดูดฝุ่นในบ้าน | | | | | | | K14 |
| 15. การฟังวิทยุ | | | | | | | K15 |
| 16. การเล่นกับลูกหลาน | | | | | | | K16 |

| ความรู้ด้านกิจกรรมทางกาย | ใช่ (1) | ไม่ใช่ (0) | สำหรับนักวิจัย |
|---|---|---|---|
| 17.กิจกรรมทางกาย หมายถึง การเคลื่อนไหวร่างกายที่มีการใช้พลังงานในร่างกาย | | | K17 |
| 18.กิจกรรมทางกายระดับหนัก หมายถึง การทำงานออกแรงระดับหนัก (การเดิน)ทำให้หายใจเร็วกว่าปกติ และทำกิจกรรมตั้งแต่ 10 นาทีขึ้นไปในแต่ละครั้ง | | | K18 |
| 19.กิจกรรมทางกายระดับปานกลาง หมายถึง การทำงานออกแรงระดับปานกลาง (การเล่นกับบุตรหลาน) ทำให้หายใจแรงปานกลางและทำกิจกรรมตั้งแต่ 10 นาทีขึ้นไปในแต่ละครั้ง | | | K19 |
| 20.กิจกรรมทางกายระดับปานกลาง( การทำงานบ้าน)ช่วยเพิ่มความแข็งแรงให้หัวใจ ลดอัตราการป่วยด้วยโรคหัวใจ | | | K20 |
| 21. กิจกรรมทางกายไม่ช่วยลดน้ำหนัก หรือควบคุมระดับน้ำหนักให้คงที่ได้ | | | K21 |

| ความรู้ด้านกิจกรรมทางกาย | ใช่ (1) | ไม่ใช่ (0) | สำหรับนักวิจัย |
|---|---|---|---|
| 22.กิจกรรมทางกายช่วยเพิ่มความแข็งแรงของกล้ามเนื้อและกระดูก | | | K22 |
| 23.กิจกรรมทางกายไม่ช่วยให้สุขภาพจิตดีขึ้น | | | K23 |
| 24.กิจกรรมทางกายช่วยทำให้ท่านสามารถทำกิจวัตรประจำวันและช่วยป้องกันการล้ม | | | K24 |
| 25.การเดิน เป็นกิจกรรมทางกายที่ท่านสามารถทำได้ทุกวัน | | | K25 |
| 26.การทำกิจกรรมในยามว่าง เช่น การรำวง/เต้นรำ และการวาดรูป ระบายสีไม่ใช่ กิจกรรมทางกาย | | | K26 |
| 27.ผู้สูงอายุที่ป่วยเป็นโรคเรื้อรังไม่ต้องปรึกษาแพทย์ก่อนเคลื่อนไหวออกแรง/ออกกำลัง | | | K27 |
| 28.ถ้าผู้สูงอายุมีอาการเหนื่อยมากขณะเคลื่อนไหวออกแรง/ออกกำลัง ต้องหยุดออกกำลังทันที | | | K28 |

| ความรู้ด้านกิจกรรมทางกาย | ใช่ (1) | ไม่ใช่ (0) | สำหรับนักวิจัย |
|---|---|---|---|
| 29. การวิ่งเป็นการเคลื่อนไหวออกแรง/ ออกกำลังที่เหมาะสมสำหรับผู้สูงอายุ | | | K29 |
| 30.การเดินทางในชีวิตประจำวัน (การเดินไปธุระ) เป็นกิจกรรมทางกาย | | | K30 |
| 31.การทำงานบ้าน (การถูพื้น)ไม่ทำให้สุขภาพของผู้สูงอายุดีขึ้น | | | K31 |
| 32. การทำงานอาชีพ (การทำนา)ไม่เป็นกิจกรรมทางกาย | | | K32 |

2.3 ทัศนคติด้านกิจกรรมทางกาย 1= เห็นด้วย 0= ไม่แน่ใจ 0= ไม่เห็นด้วย

| ทัศนคติด้านกิจกรรมทางกาย | เห็นด้วย (1) | ไม่แน่ใจ (0) | ไม่เห็นด้วย (0) | สำหรับนักวิจัย |
|---|---|---|---|---|
| 1.การทำกิจกรรมทางกายช่วยป้องกันการป่วยด้วยโรคเรื้อรัง | | | | A1 |
| 2.การทำกิจกรรมทางกายทำให้เป็นโรคหัวใจ | | | | A2 |
| 3.การทำกิจกรรมทางกายช่วยทำให้ไม่เหงา | | | | A3 |
| 4.ครอบครัวไม่สามารถช่วยกระตุ้นให้ผู้สูงอายุทำกิจกรรมทางกาย | | | | A4 |
| 5 การอ่านคู่มือกิจกรรมทางกายช่วยทำให้ผู้สูงอายุทำกิจกรรมทางกายเพิ่มขึ้น | | | | A5 |
| 6 คำแนะนำจากเจ้าหน้าที่สาธารณสุขช่วยทำให้ผู้สูงอายุทำกิจกรรมทางกายเพิ่มขึ้น | | | | A6 |
| 7 เพื่อนไม่สามารถช่วยกระตุ้นให้ผู้สูงอายุทำกิจกรรมทางกาย | | | | A7 |

| ทัศนคติด้านกิจกรรมทางกาย | เห็นด้วย (1) | ไม่แน่ใจ (0) | ไม่เห็นด้วย (0) | สำหรับนักวิจัย |
|---|---|---|---|---|
| 8 การมีร้านค้าในหมู่บ้านช่วยทำให้ผู้สูงอายุออกกำลังด้วยการเดินจากบ้านไปยังร้านค้าได้ | | | | A8 |
| 9 การมีทางเดินเท้า ช่วยทำให้ผู้อายุทำกิจกรรมทางกายเพิ่มขึ้น | | | | A9 |
| 10 การมีสวนสาธารณะ หรือบริเวณ/ลานออกกำลังกายไม่ช่วยทำให้ผู้อายุทำกิจกรรมทางกายเพิ่มขึ้น | | | | A10 |
| 11. การทำกิจกรรมทางกายทำให้เสียเวลา | | | | A11 |
| 12. การทำกิจกรรมทางกายทำให้อารมณ์เสีย | | | | A12 |
| 13.การทำกิจกรรมทางกายไม่เป็นสิ่งจำเป็นสำหรับผู้สูงอายุ | | | | A13 |
| 14. คนที่มีสุขภาพดีไม่ต้องเคลื่อนไหวออกแรง/ออกกำลัง | | | | A14 |

| ทัศนคติด้านกิจกรรมทางกาย | เห็นด้วย (1) | ไม่แน่ใจ (0) | ไม่เห็นด้วย (0) | สำหรับนักวิจัย |
|---|---|---|---|---|
| 15.การทำงานบ้าน(การกวาดบ้าน)ช่วยทำให้กล้ามเนื้อแข็งแรงขึ้น | | | | A15 |
| 16. การทำกิจกรรมทางกายทำให้เหนื่อยง่าย | | | | A16 |

2.4 การปฏิบัติกิจกรรมทางกายไม่ใช่ = 0  ใช่ = 1(ถ้าตอบใช่ ให้ระบุความถี่ วัน/สัปดาห์, ครั้ง/วัน, นาที/ครั้ง)

| การปฏิบัติกิจกรรมทางกาย | ไม่ใช่ (0) | ใช่ (1) | ความถี่ | | | สำหรับนักวิจัย |
|---|---|---|---|---|---|---|
| | | | วันต่อสัปดาห์ | ครั้งต่อวัน | นาทีต่อครั้ง | |
| **ก กิจกรรมทางกายจากการประกอบอาชีพ**<br>1 ท่านทำงานออกแรง/ออกกำลังระดับหนักซึ่งทำให้หายใจแรงและเร็วกว่าปกติมากหรือหอบติดต่อกันเป็นระยะเวลาอย่างน้อย 10 นาทีเช่นการยกหรือแบกของหนักๆการขุดดิน การทำนา ทำสวน งานก่อสร้างเป็นต้นใช่หรือไม่ | | | | | | **P1** |
| 2 ท่านทำงานออกแรง/ออกกำลังระดับปานกลางซึ่งทำให้หายใจเร็วขึ้นพอควรไม่ถึงกับหอบติดต่อกันเป็นระยะเวลาอย่างน้อย 10 นาทีเช่นการก้าวเดินเร็วๆ การทำงานบ้าน หรือการยกถือของเบาๆเป็นต้นใช่หรือไม่ | | | | | | **P2** |

| การปฏิบัติกิจกรรมทางกาย | ไม่ใช่ (0) | ใช่ (1) | ความถี่ | | | สำหรับนักวิจัย |
|---|---|---|---|---|---|---|
| | | | วันต่อสัปดาห์ | ครั้งต่อวัน | นาทีต่อครั้ง | |
| **ข. กิจกรรมทางกายจากการเดินทาง**<br>3 ท่านเดินหรือถีบจักรยานจากที่หนึ่งไปยังอีกที่หนึ่ง( ไปทำงาน ไปตลาด ไปซื้อของ ไปวัด) ติดต่อกันเป็นระยะเวลาอย่างน้อย 10 นาทีใช่หรือไม่ | | | | | | **P3** |
| **ค. กิจกรรมทางกายในยามว่าง/ นันทนาการ**<br>4 ท่านเล่นกีฬาออกกำลังกายหรือทำกิจกรรมนันทนาการระดับหนักเช่น การวิ่งเหยาะ การเต้นแอโรบิคซึ่งทำให้หายใจแรงและเร็วกว่าปกติมากหรือหอบติดต่อกันเป็นระยะเวลาอย่างน้อย 10 นาที ใช่หรือไม่ | | | | | | **P4** |

| การปฏิบัติกิจกรรมทางกาย | ไม่ใช่ (0) | ใช่ (1) | ความถี่ | | | สำหรับนักวิจัย |
|---|---|---|---|---|---|---|
| | | | วันต่อสัปดาห์ | ครั้งต่อวัน | นาทีต่อครั้ง | |
| 5 ท่านเล่นกีฬาออกกำลังกายหรือทำกิจกรรมนันทนาการระดับปานกลางเช่นการเดิน ถีบจักรยาน ว่ายน้ำเล่น ซึ่งทำให้หายใจเร็วขึ้นพอควรไม่ถึงกับหอบติดต่อกันเป็นระยะเวลาอย่างน้อย 10 นาที ใช่หรือไม่ | | | | | | P5 |
| **ง. พฤติกรรมนั่งๆนอนๆ**<br>คำถามต่อไปนี้เป็นคำถามเกี่ยวกับการนั่งการนั่งๆนอนๆที่บ้านหรือณที่ใดๆจะเป็นการนั่งเพื่อเดินทางไปในที่ต่างๆหรือการนั่งพูดคุยกับเพื่อนนั่งทำงาน นั่งดูโทรทัศน์แต่ไม่รวมเวลาที่ใช้ในการนอน<br>6. โดยปกติในแต่ละวันท่านใช้เวลานั่งเอนกายรวมแล้วเป็นระยะเวลานาน | .....นาที.....ชั่วโมง | | | | | P6 |

**ตอนที่ 3**: แบบสัมภาษณ์การวางแผนการทำกิจกรรมทางกาย( Pender et al, 2006) ภายในรอบ 6 เดือน 0= ไม่เคย 1= บางครั้ง 2 = ประจำ

| การวางแผนการทำกิจกรรมทางกาย | ไม่เคย (0) | บางครั้ง (1) | ประจำ (2) | สำหรับนักวิจัย |
|---|---|---|---|---|
| 1.ท่านได้กำหนดวัน เวลา ในการทำกิจกรรมทางกาย | | | | PL1 |
| 2.ท่านได้จดบันทึกกิจกรรมเมื่อมีการทำกิจกรรมทางกาย (ขอดูหลักฐาน) | | | | PL2 |
| 3.ท่านได้ให้รางวัลตนเองเมื่อได้มีการทำกิจกรรมทางกาย | | | | PL3 |
| 4.ท่านได้เขียนแผนวัน เวลา และกิจกรรม ในปฏิทินที่ทำให้เห็นอย่างชัดเจน เพื่อเตือนท่านทำกิจกรรมทางกาย (ขอดูหลักฐาน) | | | | PL4 |
| 5.ท่านได้วางแผนจัดหาวิธีการทำกิจกรรมทางกายในรูปแบบต่างๆ เพื่อหลีกเลี่ยงไม่ให้เกิดความเบื่อ | | | | PL5 |
| 6.ท่านได้วางแผนให้มีการทำกิจกรรมทางกายเพิ่มมากขึ้นเพื่อให้ได้ตามเป้าหมาย(150 นาที ต่อสัปดาห์) | | | | PL6 |

| การวางแผนการทำกิจกรรมทางกาย | ไม่เคย (0) | บางครั้ง (1) | ประจำ (2) | สำหรับนักวิจัย |
|---|---|---|---|---|
| 7.ท่านคิดว่าการจัดสรรเวลาเพื่อการทำกิจกรรมทางกายเป็นสิ่งสำคัญในชีวิต | | | | PL7 |
| 8.ท่านได้บอกความมุ่งมั่นของการทำกิจกรรมทางกายให้ผู้อื่นได้รับรู้ | | | | PL8 |
| 9.ท่านได้ชักชวนเพื่อนๆให้มาร่วมทำกิจกรรมทางกาย | | | | PL9 |
| 10.ท่านใช้สถานที่/ลานออกกำลังกายเฉพาะเพื่อทำกิจกรรมทางกาย | | | | PL10 |



-ขอขอบพระคุณในความร่วมมือมา ณ โอกาสนี้-

# APPENDIX C

## TIMETABLE OF TRAINING

# ตารางการอบรมให้ความรู้กิจกรรมทางกายของผู้สูงอายุ

| วัน เวลา | กิจกรรม |
|---|---|
| **วันศุกร์ สัปดาห์ที่ 1**<br><br>**10.00-12.00 น** | ลงทะเบียนผู้เข้าร่วมโครงการ<br><br>ชี้แจงวัตถุประสงค์ และการดำเนินงานโครงการ<br><br>**การปฏิบัติกิจกรรมทางกายแบบกลุ่ม (Group-Based Physical Activity)**<br><br>การก้าวเดินเพื่อสุขภาพในการปฏิบัติกิจวัตรประจำวัน มีขั้นตอน ดังนี้<br><br>1 เดินช้า 5 นาที และยืดเหยียด (ดนตรีประกอบ)<br><br>ก่อนเริ่มต้นเดินเพื่อสุขภาพผู้สูงอายุควรอบอุ่นร่างกาย โดยการยืดเหยียดร่างกาย และไม่ควรกระตุกในขณะที่ยืดเหยียด ให้ทำช้าๆ และยืดเหยียดให้มากที่สุด จนรู้สึกตึง แต่ไม่เจ็บแต่ละท่าทำข้างละ 5 ครั้ง ประกอบด้วย<br><br>1.1 เหยียดลำตัวด้านข้าง ยกแขนตรงขึ้น เหนือศีรษะ เอียงตัวไปด้านข้าง ไม่ก้ม หรือแอ่นหลังค้างไว้ 10 วินาที แล้วเปลี่ยนข้าง<br><br>1.2 เหยียดสะโพก ยืนหลังชิดกำแพง/ฝาบ้าน ให้ศีรษะ สะโพก และเท้าอยู่ในแนวเดียวกัน ยกเข่าข้างหนึ่งขึ้นมา แล้วดึงเข้าหาลำตัวแล้วค้างไว้ 10 วินาที แล้วเปลี่ยนข้าง<br><br>1.3 เหยียดน่อง ใช้มือทั้งสองข้างยันกำแพง/ฝาบ้านโดยวางเท้าไว้ห่างกำแพง/ฝาบ้านประมาณ 2-3 ก้าว ก้าวขาข้างหนึ่งไปข้างหน้า และงอเข่าขาหลัง เหยียดตรงปลายเท้า ชี้ตรงไปข้างหน้า ส้นเท้าแนบพื้นค้างไว้ 10 วินาที แล้วเปลี่ยนข้าง<br><br>1.4 เหยียดต้นขา ใช้มือขวาดึงเท้าขวาไปชิดก้นให้เข่าชี้ตรงลงพื้น ค้างไว้ 10 นาที แล้วเปลี่ยนข้าง<br><br>2 เดินเร็ว 5 นาที (ดนตรีประกอบ)<br><br>3 เดินช้า 5 นาที และยืดเหยียด (ดนตรีประกอบ) |

| วัน เวลา | กิจกรรม |
|---|---|
| วันศุกร์ สัปดาห์ที่ 2<br><br>10.00-12.00 น | **การให้ความรู้กิจกรรมทางกายแบบกลุ่ม (Group-Mediated Education)**<br><br>-การให้ความรู้เรื่อง ความหมายและความสำคัญ ของการเคลื่อนไหว/ออกกำลัง<br><br>โดย นักวิจัย/ผู้ช่วยนักวิจัย<br><br>การอภิปรายกลุ่ม การกำหนดเป้าหมาย การวางแผนเพื่อการเคลื่อนไหว/ออกกำลัง<br><br>โดย แกนนำผู้ออกกำลังกาย<br><br>**การปฏิบัติกิจกรรมทางกายแบบกลุ่ม (Group-Based Physical Activity)**<br><br>การก้าวเดินเพื่อสุขภาพในการปฏิบัติกิจวัตรประจำวัน (ดนตรีประกอบ)<br><br>1 เดินช้าๆ 5 นาที และยืดเหยียด<br><br>1 เดินเร็ว 8 นาที<br><br>2 เดินช้าๆ 5 นาที และยืดเหยียด<br><br>**การให้ความรู้กิจกรรมทางกายแบบกลุ่ม (Group-Mediated Education)**<br><br>-การให้ความรู้เรื่อง ประโยชน์และข้อควรปฏิบัติในการเคลื่อนไหว/ออกกำลัง<br><br>โดย นักวิจัย/ผู้ช่วยนักวิจัย<br><br>การอภิปรายกลุ่ม แนวทาง/ กลยุทธ์เพื่อการเคลื่อนไหว/ออกกำลังอย่างมีประสิทธิภาพ<br><br>โดย แกนนำผู้ออกกำลังกาย |

| วัน เวลา | กิจกรรม |
|---|---|
| วันศุกร์ สัปดาห์ที่ 3<br><br>10.00-12.00 น | **การปฏิบัติกิจกรรมทางกายแบบกลุ่ม (Group-Based Physical Activity)**<br>การก้าวเดินเพื่อสุขภาพในการปฏิบัติกิจวัตรประจำวัน (ดนตรีประกอบ)<br>1 เดินช้าๆ 5 นาที และยืดเหยียด<br>3 เดินเร็ว 11 นาที<br>4 เดินช้าๆ 5 นาที และยืดเหยียด<br>**การให้ความรู้กิจกรรมทางกายแบบกลุ่ม (Group-Mediated Education)**<br>-การให้ความรู้เรื่อง หลักการเคลื่อนไหว/ออกกำลังและการใช้แรงกายในชีวิตประจำวัน<br>โดย นักวิจัย/ผู้ช่วยนักวิจัย<br>การอภิปรายกลุ่ม ความก้าวหน้าและปัญหาอุปสรรคการเคลื่อนไหว/ออกกำลัง<br>โดย แกนนำผู้ออกกำลังกาย |
| วันศุกร์ สัปดาห์ที่ 4<br><br>10.00-12.00 น | **การปฏิบัติกิจกรรมทางกายแบบกลุ่ม (Group-Based Physical Activity)**<br>การก้าวเดินเพื่อสุขภาพในการปฏิบัติกิจวัตรประจำวัน (ดนตรีประกอบ)<br>1 เดินช้าๆ 5 นาที และยืดเหยียด<br>5 เดินเร็ว 13 นาที<br>6 เดินช้าๆ 5 นาที และยืดเหยียด<br>**การให้ความรู้กิจกรรมทางกายแบบกลุ่ม (Group-Mediated Education)**<br>การให้ความรู้ เรื่อง การกำหนดเป้าหมาย วางแผน และการบันทึกกิจกรรมทางกาย<br>การอภิปรายกลุ่ม แนวทางและเตรียมการวางแผนการเคลื่อนไหว/ออกกำลังที่บ้าน<br>โดย แกนนำผู้ออกกำลังกาย |

| วัน เวลา | กิจกรรม |
|---|---|
| เดือนที่ 2-7 | **การปฏิบัติกิจกรรมทางกายที่บ้าน ( Home-Based Physical Activity)**<br>การก้าวเดินเพื่อสุขภาพในการปฏิบัติกิจวัตรประจำวัน ปฏิบัติเหมือนตอนที่อบรมและค่อยๆเพิ่มระยะเวลาช่วงการเดินเร็วอีกสัปดาห์ละ 3 นาทีในแต่ละสัปดาห์ จนถึง 30-60 นาทีต่อวัน อย่างน้อย 5 วันต่อสัปดาห์<br>1 เดินช้าๆ 5 นาที และยืดเหยียด<br>2 เดินเร็ว 30-60 นาที<br>3 เดินช้าๆ 5 นาที และยืดเหยียด<br>4 จดบันทึกการทำกิจกรรมทางกายลงสมุดบันทึกกิจกรรมทางกายทุกวัน<br>5 แกนนำผู้ออกกำลังกายติดตามเยี่ยมบ้านในช่วงที่ผู้สูงอายุทำกิจกรรมทางกายด้วยตนเองที่บ้านเดือนละครั้งเป็นระยะเวลา 6 เดือน<br>6 นักวิจัย/ผู้ช่วยนักวิจัยโทรศัพท์กระตุ้นและคำปรึกษาแก่ผู้สูงอายุจำนวน 3 ครั้ง ในเดือนที่ 2 , 4 , และ 6 ในช่วงที่ผู้สูงอายุทำกิจกรรมทางกายด้วยตนเองที่บ้าน |

# APPENDIX D

# TIMETABLE OF TEACHING

**แผนการสอน** เรื่อง กิจกรรมทางกายสำหรับผู้สูงอายุ

**ผู้เรียน**: ผู้สูงอายุที่เข้าร่วมกิจกรรมทางกาย ตำบลบ้านใหม่ จำนวน 42 คน

**วัตถุประสงค์ทั่วไป**

เพื่อให้ผู้เรียนมีความรู้ ความเข้าใจ เกี่ยวกับกิจกรรมทางกายสำหรับผู้สูงอายุและสามารถทำกิจกรรมทางกายที่บ้านได้ด้วยตนเอง ประกอบด้วย

1 การปฏิบัติกิจกรรมทางกายแบบกลุ่ม (Group-Based Physical Activity) โดยผู้เรียนฝึกปฏิบัติโปรแกรมการเดินเพื่อสุขภาพ เป็นระยะเวลา 30 -60 นาที

2 การให้ความรู้กิจกรรมทางกายแบบกลุ่ม (Group-Mediated Education) โดยผู้เรียนสามารถบอกถึงความหมาย ความสำคัญ ข้อควรระวังของการเคลื่อนไหวออกแรง/ออกกำลัง การใช้แรงกายในชีวิตประจำวัน ฝึกปฏิบัติการกำหนดเป้าหมาย วางแผน และการบันทึกกิจกรรมทางกาย เป็นระยะเวลา 30 นาที

3 การทำกิจกรรมทางกายที่บ้าน (Home – Based Physical Activity) โดยผู้เรียนสามารถทำกิจกรรมทางกายได้ด้วยตนเองที่บ้านตามที่ได้รับการอบรมมา เป็นระยะเวลา 6 เดือน

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| สัปดาห์ที่ 1<br>1.1เพื่อให้ผู้เรียนมีความรู้ความเข้าใจและสามารถบอกถึงความหมายของกิจกรรมทางกายและความสำคัญของการมีกิจกรรมทางกายต่อสุขภาพของผู้สูงอายุ | กิจกรรมทางกาย หมายถึงการเคลื่อนไหวร่างกายโดยกล้ามเนื้อลายที่มีการใช้พลังงานในร่างกาย โดยหลักสำคัญของกิจกรรมทางกาย ในผู้สูงอายุท่านควรเคลื่อนไหวออกแรง/ออกกำลังในระดับปานกลางที่ทำให้หายใจแรงขึ้น (ไม่จำเป็นต้องถึงขั้นหายใจหอบ) สะสมให้ได้อย่างน้อยวันละ 30 นาที อย่างน้อยสัปดาห์ละ 5 วัน อาจออกกำลังรวดเดียว 30 นาที หรือแบ่งเป็นช่วงๆช่วงละ 15 นาที รวมทั้งวันให้ได้อย่างน้อย 30 นาทีก็ได้ ถ้าท่านออกกำลังเบาๆ เช่นการเดินเล่น ทำงานบ้าน รำมวยจีนควรทำอย่างน้อยวันละ 45-60 นาที | -บรรยาย<br>-ถาม ตอบ | -สไลด์<br>-คู่มือกิจกรรมทางกาย | -สังเกตจากความสนใจ<br>-การซักถาม |

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| 1.2เพื่อให้ผู้เรียนได้มีส่วนร่วมในการแสดงความคิดเห็นในกลุ่มเกี่ยวกับการกำหนดเป้าหมาย การวางแผนกิจกรรมทางกาย | การอภิปรายกลุ่มให้แบ่งกลุ่มผู้สูงอายุเป็น 4 กลุ่มๆละ 10-11 คน และให้แต่ละกลุ่มเลือกแกนนำผู้ออกกำลังกาย และผู้บันทึกผลการประชุมกลุ่ม พร้อมทั้งตั้งชื่อกลุ่มของแต่ละกลุ่ม และดำเนินการอภิปรายกลุ่มในหัวข้อเรื่อง การกำหนดเป้าหมาย การวางแผนกิจกรรมทางกาย | -การอภิปรายกลุ่ม | -กระดาษคลิปชาร์ด<br>-ปากกา | -การมีส่วนร่วมในการแสดงความคิดเห็นในกลุ่ม |
| สัปดาห์ที่ 2<br>2.1เพื่อให้ผู้เรียนมีความพร้อม มีความรู้ ความเข้าใจและสามารถบอกถึงประโยชน์ และข้อควรปฏิบัติในการมีกิจกรรมทางกายสำหรับผู้สูงอายุ | การเคลื่อนไหวออกแรง/ออกกำลังทุกอย่างมีประโยชน์ต่อสุขภาพมากน้อยแตกต่างกัน ได้แก่ การชะลอไม่ให้กระดูกบางเร็ว ช่วยลดการหลัดล้ม ทำให้ทรงตัวดี ช่วยให้ระบบขับถ่ายดีขึ้น ช่วยลดโรคที่เกิดจากความเครียด ผ่อนคลายความเครียด ช่วยควบคุมน้ำหนัก และทำให้กล้ามเนื้อ เอ็น ข้อต่อ แข็งแรงและยืดหยุ่น ดังนั้นผู้สูงอายุทุกท่านต้องวางแผน และหาโอกาสให้ร่างกายมีการเคลื่อนไหวออกแรง/ออกกำลังให้มากขึ้นในชีวิตประจำวัน เมื่อเริ่มต้นได้แล้ว | -การบรรยาย<br>-ถาม ตอบ | -สไลด์<br>- คู่มือ<br>กิจกรรมทางกาย | -สังเกตจากความสนใจ<br>-การซักถาม |

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| สัปดาห์ที่ 2<br>2.1เพื่อให้ผู้เรียนมีความพร้อม มีความรู้ ความเข้าใจ และสามารถบอกถึงประโยชน์ และข้อควรปฏิบัติในการมีกิจกรรมทางกาย สำหรับผู้สูงอายุ | ให้พยายามทำตลอดไป เพราะถ้าท่านหยุดออกกำลังกายไม่นานประโยชน์ที่ได้รับจะสูญหายไป<br>ข้อควรระวังของการมีกิจกรรมทางกายในผู้สูงอายุ<br>ผู้สูงอายุควรหยุดการออกกำลังเมื่อมีอาการอย่างใดอย่างหนึ่งดังต่อไปนี้ และควรปรึกษาแพทย์ พยาบาล หรือเจ้าหน้าที่สาธารณสุข<br>1 รู้สึกเหนื่อยมาก<br>2 รู้สึกเจ็บที่บริเวณหัวใจ หรือร้าวไปที่ไหล่ซ้าย<br>3 ง่วงนอน เวียนศีรษะ ควบคุมลำตัว แขนขา ไม่ได้<br>4 เหงื่อออกมาก ตัวเย็น<br>5 รู้สึกหวั่นไหวโดยหาสาเหตุไม่ได้<br>6 มีอาการอ่อนแรง หรือเป็นอัมพาตบริเวณแขน ขา หน้า หรืออวัยวะอื่นๆ<br>7 หูดไม่ชัด ตะกุกตะกัก<br>8 รู้สึกหนื่อย หายใจไม่ทัน | -การบรรยาย<br>-ถาม ตอบ | -สไลด์<br>- คู่มือ<br>กิจกรรมทางกาย | -สังเกตจากความสนใจ<br>-การซักถาม |

| วัตถุประสงค์ | เนื้อหา | กิจกรรม | สื่อและอุปกรณ์ | การประเมินผล |
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| สัปดาห์ที่ 2<br>2.2เพื่อให้ผู้รียนได้มีส่วนร่วมในการแสดงความคิดเห็นในกลุ่มเกี่ยวกับแนวทาง/กลยุทธ์เพื่อการเคลื่อนไหว/ออกกำลังอย่างมีประสิทธิภาพ | การอภิปรายกลุ่ม เรื่อง แนวทาง/กลยุทธ์เพื่อการเคลื่อนไหว/ออกกำลังอย่างมีประสิทธิภาพ | -การอภิปรายกลุ่ม | -กระดาษคลิปชาร์ด<br>-ปากกา | -การมีส่วนร่วมในการแสดงความคิดเห็นในกลุ่ม |
| สัปดาห์ที่ 3<br>3.1เพื่อให้ผู้รียนมีความรู้เกี่ยวกับหลักการเคลื่อนไหวออกแรง/ออกกำลังที่เป็นการใช้แรงกายในชีวิตประจำวัน ได้แก่ กิจกรรมการทำงานอาชีพ งานบ้าน กิจกรรมการเดินทาง และกิจกรรมยามว่างที่ | ทางเลือกที่ดีทางหนึ่งสำหรับผู้สูงอายุ คือ ในชีวิตประจำวันในแต่ละวัน ให้ท่านเคลื่อนไหวออกแรง/ออกกำลังอย่างสม่ำเสมอโดยตั้งหมายทำกิจกรรมออกแรง/ออกกำลังที่ทำให้หายใจแรงขึ้นอย่างน้อยวันละ 30 นาทีทำครั้งเดียวหรือแบ่งเป็นช่วงๆตามความสะดวก เช่น เดินเล่น เดินไปธุระ เดินไปซื้อของ เดินขึ้นบันได ขี่จักรยานแทนการใช้รถ เดินในระยะสั้นเพื่อไปขึ้นรถประจำทางหรือไปประกอบอาชีพ ได้แก่ ทำสวน ทำนา ทำไร่ ทำงานบ้านต่างๆ และการเล่นกับลูกหลาน เป็นต้น | -บรรยาย<br>-ถาม ตอบ | -สไลด์<br>-คู่มือกิจกรรมทางกาย | -สังเกตจากความสนใจ<br>-การซักถาม |

| วัตถุประสงค์ | เนื้อหา | กิจกรรม | สื่อและอุปกรณ์ | การประเมินผล |
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| สัปดาห์ที่ 3<br>3.1เพื่อให้ผู้รับรู้ความรู้เกี่ยวกับหลักการเคลื่อนไหวออกแรง/ออกกำลังที่เป็นการใช้แรงกายในชีวิตประจำวัน ได้แก่ กิจกรรมการทำงานอาชีพ งานบ้าน กิจกรรมการเดินทาง และกิจกรรมยามว่างที่เป็นไปรแกรมการเดินเพื่อสุขภาพ | ทุกสิ่งล้วนมีประโยชน์ดังนั้นสิ่งสำคัญที่สุด คือ ขอให้ท่านเคลื่อนไหวออกแรง/ออกกำลังอย่างสม่ำเสมอ<br>การเดินเพื่อสุขภาพ<br>สำหรับการออกกำลังโดยการเดินเป็นวิธีการออกกำลังกายที่ดีที่สุดและเกิดอันตรายน้อยที่สุดสำหรับผู้สูงอายุ ซึ่งการเดินนั้นจะต้องรู้สึกเหนื่อย และมีเหงื่อออก โดยที่เดินติดต่อกันประมาณ 20-30 นาที ซึ่งการเดินเป็นวิธีหนึ่งที่ง่ายที่สุด ทำให้เกิดประโยชน์ต่อสุขภาพ และไม่เสียค่าใช้จ่ายมาก ท่านสามารถเดินได้ทุกที่ทุกเวลา สิ่งที่ต้องการมีเพียงรองเท้าคู่หนึ่งที่สวมใส่สบาย ก่อนเริ่มต้นเดินเร็วให้เดินช้าก่อนและยืดเหยียดกล้ามเนื้อโดยทำช้าๆ และยืดเหยียดให้มากที่สุดจนรู้สึกตึงแต่ไม่เจ็บ | -บรรยาย<br>-ถาม ตอบ | -สไลด์<br>-คู่มือกิจกรรมทางกาย | -สังเกตจากความสนใจ<br>-การซักถาม |

| วัตถุประสงค์ | เนื้อหา | กิจกรรม | สื่อและอุปกรณ์ | การประเมินผล |
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| สัปดาห์ที่ 3<br><br>3.2เพื่อให้ผู้เรียนได้มีส่วนร่วมในการแสดงความคิดเห็นในกลุ่มเกี่ยวกับความก้าวหน้า ปัญหาอุปสรรคที่พบในการเคลื่อนไหวออกแรง/ออกกำลัง | การอภิปรายกลุ่ม เรื่อง ความก้าวหน้า ปัญหาอุปสรรคที่พบในการเคลื่อนไหวออกแรง/ออกกำลัง | -การอภิปรายกลุ่ม | -กระดานคลิปชาร์ด<br>-ปากกา | -การมีส่วนร่วมในการแสดงความคิดเห็นในกลุ่ม |
| สัปดาห์ที่ 4<br>4.1 เพื่อให้ผู้เรียนสามารถวางแผนกำหนดเป้าหมายการทำกิจกรรมทางกาย และทำการบันทึกกิจกรรมทางกายประจำวันที่บ้านได้ด้วยตนเอง | การรู้ความต้องการของตัวของของตนเองที่ชัดเจนจะทำให้การออกกำลังประสบความสำเร็จได้มากได้แก่<br>1เดินเพื่อสุขภาพตามโปรแกรมที่ได้รับการอบรมให้ได้วันละ 30 นาทีไม่น้อยกว่าสัปดาห์ละ 5 วัน<br>2เคลื่อนไหว/ออกกำลังสะสมให้ได้สัปดาห์ละ 150 นาที<br>ถ้าสามารถทำได้ตามเป้าหมายที่กำหนดแล้ว ก็จะทำให้ | -บรรยาย<br>-ถาม ตอบ | -สไลด์<br>-คู่มือกิจกรรมทางกาย | -สังเกตจากความสนใจ<br>-การซักถาม |

| วัตถุประสงค์ | เนื้อหา | กิจกรรม | สื่อและอุปกรณ์ | การประเมินผล |
|---|---|---|---|---|
| สัปดาห์ที่ 4<br>4.1 เพื่อให้ผู้เรียนสามารถวางแผนกำหนดเป้าหมายการทำกิจกรรมทางกาย และทำการบันทึกกิจกรรมทางกายประจำวันที่บ้านได้ด้วยตนเอง | รู้สึกภาคภูมิใจเป็นรางวัลให้แก่ตัวเอง และควรตั้งเป้าหมายใหม่ต่อไป ในกรณีที่ตั้งเป้าหมายระยะยาว เช่น 6 เดือน หรือ 12 เดือน อาจทำให้ขาดแรงจูงใจเนื่องจากไม่เห็นความสำเร็จ ควรแบ่งเป้าหมายเป็นระยะๆ สั้นๆ เพื่อให้เห็นความสำเร็จบ้างจะได้มีกำลังใจ เมื่อกำหนดเป้าหมายแล้ว ควรลงมือเขียนตารางการออกกำลังกาย และจัดหาสมุดแบบบันทึกเพื่อบันทึกการเคลื่อนไหว/ออกกำลังว่าเป็นไปตามแผนที่กำหนดหรือไม่ และมีความคืบหน้าอย่างไร | -บรรยาย<br>-ถาม ตอบ | -สไลด์<br>-คู่มือกิจกรรมทางกาย | -สังเกตจากความสนใจ<br>-การซักถาม |
| 4.2 เพื่อให้ผู้ได้มีส่วนร่วมในการแสดงความคิดเห็นเกี่ยวกับแนวทางและเตรียมการวางแผนเคลื่อนไหวออกแรง/ออกกำลังด้วยตนเองที่บ้าน | การอภิปรายกลุ่ม เรื่องแนวทางและเตรียมการวางแผนการเคลื่อนไหวออกแรง/ออกกำลังด้วยตนเองที่บ้าน | -การอภิปรายกลุ่ม | -กระดานคลิปชาร์ด<br>-ปากกา | -การมีส่วนร่วมในการแสดงความคิดเห็นในกลุ่ม |

สวัสดีคะ

คุณลุง/คุณป้า/คุณตา/ คุณยาย ท่านเคยเป็นคนหนึ่งใช่ไหมที่ต้องการเคลื่อนไหวออกแรง/ออกกำลังอย่างสม่ำเสมอ แต่ไม่รู้จะเริ่มต้นทำอย่างไร

ดิฉันชื่อ เพลินตา อิทธิศานต์ กำลังศึกษาอยู่ที่วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย ดิฉันขอเชิญท่านขยับกาย เคลื่อนไหวออกแรง/ออกกำลังอย่างสม่ำเสมอ จนเป็นวิถีชีวิตประจำวัน จะทำให้ท่านมีร่างกายแข็งแรง และช่วยลดโรคที่เกิดจากความชรา

การเข้าร่วมในการศึกษาครั้งนี้ จะเป็นประโยชน์ต่อท่านและผู้สูงอายุที่ต้องการเคลื่อนไหวออกแรง/ออกกำลังจากการทำกิจวัตรประจำวัน หากท่านยินดีเข้าร่วมในการศึกษาครั้งนี้ ท่านจะต้องตอบแบบสอบถาม และเข้าร่วมโปรแกรมกระบวนการกลุ่มในการทำกิจวัตรประจำวัน และทำกิจกรรมทางกาย ณ โรงพยาบาลส่งเสริมสุขภาพตำบลบ้านใหม่ อำเภอพระนครศรีอยุธยา จังหวัดพระนครศรีอยุธยา สัปดาห์ละ 1 ครั้ง เป็นระยะเวลา 1 เดือน และทำกิจกรรมทางกายที่บ้านด้วยตัวท่านเองอีก 6 เดือน พร้อมจดบันทึกกิจกรรมที่ทำทุกวันตามตารางปฏิทินกิจกรรมทางกายทุกวัน รวมเวลาในการศึกษาทั้งสิ้น 7 เดือน ท่านสามารถขอไม่ร่วมในการศึกษาเมื่อใดก็ได้ตามต้องการ

หากท่านสนใจเข้าร่วมการศึกษาครั้งนี้ ติดต่อที่ 205/112 หมู่บ้านชัยพฤกษ์ ตำบลพิมลราช อำเภอบางบัวทอง จังหวัดนนทบุรี 11000 เบอร์บ้าน โทร 0-2924-1806 เบอร์มือถือ 08-1642-5023 อีเม็ล **plearntajoy@gmail.com เวลา** 08.00-20.00 น.

ขอขอบพระคุณในความร่วมมือ

เพลินตา อิทธิศานต์

# APPENDIX E

# INTERVENTION HANDBOOK

# คู่มือการทำกิจกรรมทางกายสำหรับผู้สูงอายุ




โดย เพลินตา อิทธิศานต์ นิสิตระดับปริญญาเอก

รศ.ดร.รัตนา สำโรงทอง อาจารย์ที่ปรึกษา

วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย

สารบัญ





## ความหมายและลักษณะกิจกรรมทางกาย

กิจกรรมทางกาย คือ การเคลื่อนไหวร่างกายโดยกล้ามเนื้อลายที่มีการใช้พลังงานในร่างกาย


กิจกรรมทางกายระดับหนัก (การขุดดิน การวิ่งเหยาะ และการเต้นแอโรบิก )

-ออกแรงระดับหนัก ขณะทำรู้สึกเหนื่อยมาก และไม่สามารถพูดคุยกับคนอื่นได้


กิจกรรมทางกายระดับปานกลาง  การเดิน การขี่จักรยาน และการทำงานบ้าน)

-ออกแรงระดับปานกลาง ขณะทำรู้สึกเริ่มเหนื่อย แต่สามารถพูดคุยกับผู้อื่นได้


ลักษณะกิจกรรมทางกาย...มีอะไรบ้าง

**1 กิจกรรมจากการทำงาน** ( ทำสวน ทำนา ทำไร่ และทำงานบ้าน )


**2 กิจกรรมจากการเดินทางในชีวิตประจำวัน** (การเดิน และ การขี่จักรยานไปทำงาน ทำธุระ)


**3 กิจกรรมยามว่างหรืองานอดิเรก** แบ่งย่อยได้ 3 ประเภท

3.1 **การทำกิจกรรมนันทนาการ** ( การเดินเล่น เดินทางไกล รำไทย รำมวยจีน)


3.2 การเล่นกีฬา

3.3 การฝึกฝนร่างกาย (การเดินเร็ว วิ่งเหยาะ เต้นแอโรบิก ว่ายน้ำ )


**การเริ่มต้นทำกิจกรรมทางกาย**

- ให้เริ่มแต่น้อยๆ ไม่หักโหม

-เพิ่มความหนักและระยะเวลาในวันต่อมา

(กายบริหารหรือเดินเร็ววันละ 10 นาที และ และทำงานบ้านทุกอย่างด้วยตนเอง)

**ความถี่และระยะเวลา...ควรเริ่มอย่างไร**

- อาจทำรวดเดียว 30 นาที
- อาจแบ่งเป็นช่วง ช่วงละ 10-15 นาที รวมทั้งวันให้ได้อย่างน้อย 30 นาที
- ถ้าเดินเล่น ทำงานบ้าน ทำอาหาร ควรทำอย่างน้อยวันละ 45-60 นาที
- ยืดเหยียดกล้ามเนื้อทุกวัน 5-10 นาที

**จะตั้งเป้าหมาย...อย่างไร**

การรู้ความต้องการของตัวเองจะทำให้การทำกิจกรรมทางกายประสบความสำเร็จได้มาก โดย...

- เดินเพื่อสุขภาพตามโปรแกรมที่ได้รับการอบรมให้ได้วันละ 30 นาทีไม่น้อยกว่าสัปดาห์ละ 5 วัน
- ทำกิจกรรมทางกายสะสมให้ได้สัปดาห์ละ 150 นาที
- บันทึกการทำกิจกรรมทางกายในแบบบันทึกประจำวันตามปีปฏิทิน

**หลักการทำกิจกรรมทางกาย**

1.ควรตรวจสุขภาพทั่วไปว่ามีโรคประจำตัวที่เป็นอันตรายหรือไม่ เช่น โรคหัวใจ โรคเบาหวาน และโรคความดันโลหิตสูง

2. เลือกกิจกรรมทางกายที่เหมาะสมกับระดับความสามารถ หรือสมรรถภาพทางกายของแต่ละบุคคล

3.ควรหยุดทำกิจกรรมทางกายเมื่อมีอาการอย่างใดอย่างหนึ่ง ดังต่อไปนี้ และควรปรึกษาแพทย์ พยาบาล หรือเจ้าหน้าที่สาธารณสุข

3.1 รู้สึกเหนื่อยมาก

3.2 รู้สึกเจ็บที่หัวใจ หรือร้าวไปที่ไหล่ซ้าย

3.3 ง่วงนอน เวียนหัว ควบคุมตัวเองไม่ได้

3.4 เหงื่อออกมาก ตัวเย็น

3.5 รู้สึกหวั่นไหวโดยหาสาเหตุไม่ได้

3.6 มีอาการอ่อนแรง หรือเป็นอัมพาต

3.7 พูดไม่ชัด ตะกุกตะกัก

3.8 รู้สึกเหนื่อย หายใจไม่ทัน

**การทำกิจกรรมทางกายในกิจวัตรประจำวัน**

การทำกิจกรรมทางกายในกิจวัตรประจำวัน ให้ทำครั้งละ 8-10 นาทีทุกวัน หรือเกือบทุกวันสะสมอย่างน้อย 30 นาทีต่อวัน หรือใช้พลังงานประมาณ 150-200 แคลอรีต่อวัน ซึ่งเกิดประโยชน์พอๆ กับการออกกำลังกาย (เล่นกีฬา)


03/04/2014 08:52


03/04/2014 09:01

**กิจกรรมทางกายในความแรงระดับต่างๆ ที่มีการใช้พลังงาน 150 แคลอรี่**

| ความแรงระดับเบา | ความแรงระดับปานกลาง | ความแรงระดับหนัก |
|---|---|---|
| -การเดินช้า<br>-การยืดเหยียดกล้ามเนื้อ<br>-การตัดแต่งกิ่งไม้<br>-การดูดฝุ่นในบ้าน | -การเดินเร็ว<br>- การขี่จักรยาน<br>-การรำมวยจีน<br>-งานบ้าน ได้แก่ การถูพื้น เช็ดล้างหน้าต่าง การล้างรถและลงยาเคลือบ ทำอาหาร และการเล่นกับลูกหลาน | -การเดินขึ้นเนิน<br>-การวิ่งเหยาะ<br>-การเต้นแอโรบิก<br>-งานบ้าน ได้แก่ การเคลื่อนย้ายเครื่องเรือน<br>- งานอาชีพ ได้แก่ ทำสวน ขุดดิน และการก่อสร้าง |

## กิจกรรมทางกายแบบไหนดีที่สุดต่อสุขภาพ

วิธีการทำกิจกรรมทางกายที่ดีที่สุด คือ วิธีใดก็ได้ตามที่สามารถทำได้สม่ำเสมอ ด้วยความแรงระดับปานกลาง เป็นประโยชน์ต่อสุขภาพทั้งสิ้น ในผู้สูงอายุไม่ควรทำกิจกรรมทางกายที่เป็นการแข่งขัน


**การเดิน**

การเดินเป็นกิจกรรมทางกายที่ดีที่สุด และเกิดอันตรายน้อยที่สุดสำหรับผู้สูงอายุ ซึ่งการเดินนั้นจะต้องรู้สึกเหนื่อย และมีเหงื่อออก โดยเดินติดต่อกันประมาณ 20-30 นาที


**การเดินเป็นทางเลือกที่ดีที่สุด...เพราะอะไร**

- สามารถเริ่มเองได้
- เป็นวิธีที่ง่าย สะดวก ทำได้ทุกสถานที่
- มีความปลอดภัยสูง
- ไม่ต้องมีอุปกรณ์
- ไม่ต้องเสียค่าใช้จ่าย
- ช่วยให้กล้ามเนื้อและกระดูกแข็งแรง

**การเดิน...เป็นยาอายุวัฒนะ**

- ลดอายุ
- ลดโรค
- ลดน้ำหนักตัว
- ลดความกังวล




**เริ่มเดินอย่างไร...เดินที่ไหน**

- เริ่มเดินระยะสั้นๆ
- เลือกสถานที่สะดวก ปลอดภัย
- หาเพื่อน หรือกลุ่มที่เดินด้วยกัน
- สวมเสื้อผ้าที่ทำให้รู้สึกสบายตัว
- ยืดเหยียดกล้ามเนื้อก่อนและหลังการเดิน


**การยืดเหยียดกล้ามเนื้อก่อน และหลังเดิน**

-ในแต่ละท่าทำข้างละ 3-5 ครั้ง

1 **เหยียดน่อง**: หลังตรง ขาที่ก้าวไปข้างหลังเหยียดตรง และดันสะโพกไปด้านหน้าจนรู้สึกตึงที่น่อง


2 **เหยียดลำตัว**: ยืนแยกขา มือสองข้างประสานกัน และโน้มลำตัวไปด้านข้างทีละข้าง


3 **เหยียดหลังส่วนบน**: ประสานนิ้วมือยื่นไปข้างหน้าระดับหัวไหล่ หันฝ่ามือออกด้านนอก และยืดแขนตึง

4 **เหยียดอก**: ประสานมือไว้ด้านหลัง และค่อยๆยกแขนขึ้นค้างไว้ แล้วปล่อยลง


**5 เหยียดต้นแขน**: งอศอกข้ามศีรษะ มือข้างหนึ่งจับศอกอีกข้างหนึ่ง และค่อยๆดึงข้อศอกลงจนรู้สึกตึงที่แขน

## การทำกิจกรรมทางกายในผู้ที่มีโรคประจำตัว

การทำกิจกรรมทางกายในผู้ที่มีโรคประจำตัว เช่น โรคหัวใจ เบาหวาน ความดันโลหิตสูง และ ข้อเข่าเสื่อม สามารถทำได้ จะเป็นประโยชน์ในการรักษาโรคนั้นๆ แต่ต้องทำอยู่ในขอบเขตและดุลยพินิจของแพทย์




## การชนะอุปสรรค

- ทำสัญญาและกำกับตัวเองว่าต้องทำทุกวัน
- กำหนดเป้าหมายการทำเป็น 30 นาทีต่อวัน
- เขียนนัดหมายการทำในปฏิทินการทำงาน
- เลือกวิธีที่ชอบและเหมาะสมกับร่างกาย
- ชวนเพื่อน/สมาชิกในครอบครัวไปทำ**กิจกรรมทางกายด้วยกัน**

- มีการรวมกลุ่มเป็นชมรมเพื่อทำกิจกรรมทางกายร่วมกัน

- ทำให้มีความสนุก เช่น เปิดเพลงฟัง ดูทีวี ขณะทำกิจกรรมทางกาย

- เลือกทำกิจกรรมทางกายในเวลา และ สถานที่ที่สะดวก

- ไม่ทำกิจกรรมทางกายทันทีหลังอาหาร หรือเมื่อมีอากาศร้อนจัด หรือหนาวจัด




**ประโยชน์**

- ช่วยให้กล้ามเนื้อ กระดูก แข็งแรง
- ช่วยชะลอการเป็นโรคกระดูกพรุน
- ช่วยให้ทรงตัวได้ดี ป้องกันการล้ม
- ช่วยให้ระบบขับถ่ายทำงานดีขึ้น
- ช่วยให้หัวใจ และปอดแข็งแรง

- ช่วยให้มีพลัง และรู้สึกสบาย มีความสุข
- ช่วยลดโรคที่เกิดจากความชรา

**ภาคผนวก**: ภาพกิจกรรมกระบวนการกลุ่มกิจกรรมทางกาย



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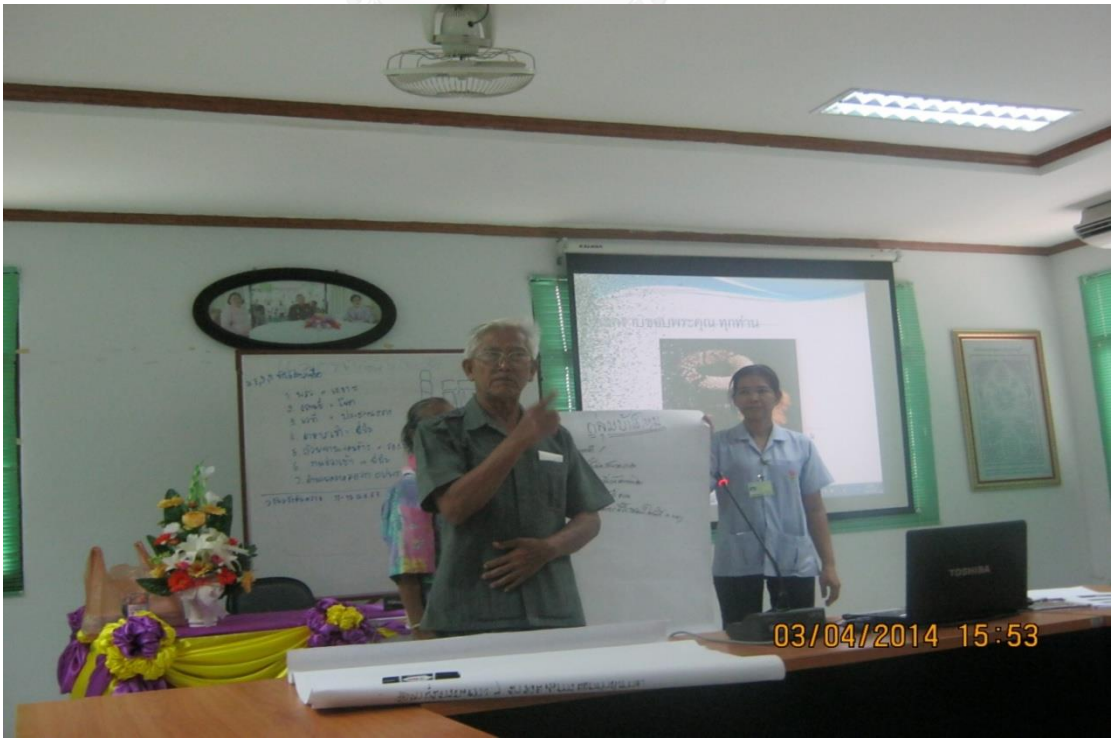
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**แบบบันทึกการปฏิบัติกิจกรรมทางกายของผู้สูงอายุประจำวันตามปีปฏิทิน**

**คำชี้แจง** : กรุณากาเครื่องหมาย / หรือเติมข้อความในช่องว่างให้สมบูรณ์

**ชื่อ**……..นามสกุล……บ้านเลขที่……หมู่…..ตำบล……..

**สัปดาห์ที่**……..เดือน…….พศ……

**เป้าหมาย** ผู้สูงอายุมีการเคลื่อนไหว/ออกกำลังวันละ 30 นาที อย่างน้อย 5 วันต่อสัปดาห์ หรือ มีการเคลื่อนไหว/ออกกำลังสะสม อย่างน้อย 150 นาทีต่อสัปดาห์

| วัน | กิจกรรมทางกาย | ความถี่ (ครั้ง) | ระยะเวลา (นาที) | ความเหนื่อย | | |
|---|---|---|---|---|---|---|
| | | | | เหนื่อยน้อย | เหนื่อยปานกลาง | เหนื่อยมาก |
| จันทร์ | | | | | | |
| อังคาร | | | | | | |
| พุธ | | | | | | |
| พฤหัส | | | | | | |
| ศุกร์ | | | | | | |
| เสาร์ | | | | | | |
| อาทิตย์ | | | | | | |
| **รวม** | | **ระยะเวลาที่ปฏิบัติกิจกรรมทางกาย…….นาทีต่อสัปดาห์** | | | | |

**แบบติดตามการเยี่ยมบ้านผู้สูงอายุประจำเดือน**

**ชื่อผู้สูงอายุ**…….นามสกุล……..

**ติดตามเยี่ยมบ้านครั้งที่**……วันที่……เดือน……พศ……

**ชื่อผู้เยี่ยมบ้าน** (แกนนำ)……

1 ท่านได้ทำกิจกรรมทางกายเป็นประจำทุกวันหรือไม่

( ) ไม่ได้ทำ (ระบุเหตุผล)……..

( ) ทำบางวัน (ระบุเหตุผล)……..

( ) ทำทุกวัน

2 ท่านได้ทำบันทึกการเคลื่อนไหว/ออกกำลังลงในสมุดบันทึกกิจกรรมทางกายหรือไม่

( ) ไม่ได้ทำ (ระบุเหตุผล)……..

( ) ทำบางวัน (ระบุเหตุผล)……..

( ) ทำทุกวัน

3 ท่านมีปัญหา/อุปสรรคในการทำกิจกรรมทางกายหรือไม่

( ) ไม่มี ( ) มี (ระบุ)…….

4 ท่านต้องการความช่วยเหลือ/คำแนะนำเพิ่มเติมหรือไม่

( ) ไม่ต้องการ

( ) ต้องการ(ระบุ)…….

# APPENDIX F

## ANALYSIS OF KNOWLEDGE, ATTITUDE, PRACTICE, AND PLANNING OF PHYSICAL ACTIVITIES BY ITEM

**ANALYSIS OF KNOWLEDGE, ATTITUDE, PRACTICE, AND PLANNING OF PHYSICAL ACTIVITIES BY ITEM**

Table: 1. showed number and percentages of correct answers of knowledge in physical activity in each item among older persons. The result show that almost of them in knowledge question werefound similar (with p-value > 0.05). But item number 5,7 (Are the correct of physical activities?) , item 12,13,14,16 (Are the correct of level in physical activities?) , item 17 (Physical activity is the bodily movement that requires energy expenditures?), item18 (Vigorous-intensity activity that causes large increases in breathing or heart rate (walking) for at least 10 minutes continuously is physical activity?), item 20(More moderate physical activity (housework) can increase heart vitality and decrease cardiovascular diseases?), item 21(Physical activity cannot help to maintain the weight?),item 22 (Physical activity can help to strengthen muscles and bones?), item 24(Physical activity improves the ability to do daily activity and prevents falls?), item 25(Walking is activities that can be done by older persons every day?), item 26 (Recreational activities (dancing and painting) are not physical activities?), item 28 (If older persons are tired they must stop physical activity?), item 30(Travels in daily life (waking for business) is the physical activity?), item 31(Housework (mopping) does not improve health?), and item 32(Activity at work (farming) is not physical activity?) were found statistically different in both groups ( with p-value <0.05).

**Table 1**: Number and percent of correct answers of knowledge in physical activities at baseline in the intervention group and the control group

| Questions | n (%) | | P-value* |
|---|---|---|---|
| | Intervention n=52 | Control n=50 | |
| Are the correct of physical activities | | | |
| 1. Walking to the hill quickly | 28 (53.8) | 36 (72.0) | 0.068 |
| 2. Washing the car | 27 (51.9) | 27 (54.0) | 0.846 |
| 3. Talking with friend | 26 (50.0) | 24 (48.0) | 0.846 |
| 4. Decorating the tree | 38 (73.1) | 27 (54.0) | 0.064 |
| 5. Watching TV | 21 (51.9) | 13 (26.0) | 0.009 |
| 6. Sucking the dust in home | 29 (55.8) | 29 (58.0) | 0.844 |
| 7. Listening the radio | 19 (36.5) | 3 (6.0) | <0.001 |
| 8. Playing with children | 38 (73.1) | 33 (66.0) | 0.520 |
| Are the correct of level in physical activities | | | |
| 9. Walking to the hill quickly | 13 (25.0) | 18 (36.0) | 0.283 |
| 10. Washing the car | 23 (44.2) | 22 (44.0) | 0.100 |
| 11. Talking with friend | 18 (34.6) | 22 (44.0) | 0.418 |
| 12. Decorating the tree | 7 (13.5) | 20 (40.0) | 0.003 |
| 13. Watching TV | 16 (30.8) | 29 (58.0) | 0.009 |
| 14. Sucking the dust in home | 9 (17.3) | 19 (38.0) | 0.026 |
| 15. Listening the radio | 26 (50.0) | 36 (72.0) | 0.027 |

| Questions | n (%) | | P-value* |
|---|---|---|---|
| | Intervention n=52 | Control n=50 | |
| 16. Playing with children | 34 (65.4) | 19 (38.0) | 0.010 |
| Are the correct of these items | | | |
| 17. Physical activity is the bodily movement that requires energy expenditures | 43 (82.7) | 24 (48.0) | <0.001 |
| 18. Vigorous-intensity activity that causes large increases in breathing or heart rate (walking) for at least 10 minutes continuously is physical activity. | 34 (65.4) | 21 (42.0) | 0.028 |
| 19. Moderate-intensity that causes small increase in breathing or heart rate (playing with children) for at least 10 minutes continuously is physical activity. | 33 (63.5) | 30 (60.0) | 0.839 |
| 20. More moderate physical activity (housework) can increase heart vitality and decrease cardiovascular diseases. | 35 (67.3) | 13 (26.0) | <0.001 |
| 21. Physical activity cannot help to maintain the weight. | 21 (40.4) | 2 (4.0) | <0.001 |
| 22. Physical activity can help to strengthen muscles and bones. | 42 (80.8) | 27 (54.0) | 0.006 |
| 23. Physical activity does not improve mental health. | 20 (38.5) | 14 (28.0) | 0.298 |

| Questions | n (%) | | P-value* |
|---|---|---|---|
| | Intervention n=52 | Control n=50 | |
| 24. Physical activity improves the ability to do daily activity and prevents falls. | 36 (69.2) | 22 (44.0) | 0.016 |
| 25. Walking is activities that can be done by older persons every day. | 49 (94.2) | 26 (52.0) | <0.001 |
| 26. Recreational activities (dancing and painting) are not physical activities. | 15 (28.8) | 30 (60.0) | 0.003 |
| 27. Older persons who have chronic disease should not consult the medical doctor before do physical activity. | 13 (25.0) | 5(10.0) | 0.068 |
| 28. If older persons are tired they must stop physical activity. | 41 (78.8) | 28 (56.0) | 0.020 |
| 29. Jogging as physical activity is suitable for older persons. | 17 (32.7) | 18 (36.0) | 0.835 |
| 30. Travels in daily life (waking for business) is the physical activity. | 44 (84.6) | 30 (60.0) | 0.007 |
| 31. Housework (mopping) does not improve health. | 20 (38.5) | 5 (10.0) | 0.001 |
| 32. Activity at work (farming) is not physical activity. | 19 (36.5) | 2 (4.0) | <0.001 |

*Chi-Square-test

Table: 2 showed the positive attitude in physical activity in each item found that the control group had highest attitude scored by 1.92 in item 15(housework (sweeping) can help to strengthen your muscles) while lowest attitude score by 0.38 in item 2 (Physical activity can help you to suffer from heart disease), in the intervention group was highest attitude score by 1.88 in item 15 (Housework (sweeping) can help to strengthen your muscles) and lowest score in item 12 (Physical activity make your bad mood). Most of them in attitude question were found similar (with p-value > 0.05) only 4 items (number 7,10,14,16) showed difference significantly between both group (with p-value <0.05), 2 items were higher in the intervention group and 2 items in the control group. These were item 7 (A group of friends cannot help you on being physically more active, p-value = 0.014, greater in the intervention), item 10 (A park or nature reserve in your local area cannot help you to practice physical activity, p-value=0.018, greater in the intervention), item 14 (Healthy people don't practice physical activity, p-value=0.023, greater in the control), and item 16 (Physical activity makes your tired, p-value=0.001, greater in the control)

**Table 2**: Mean and standard deviation of positive attitude in physical activities at baseline in the intervention group and the control group

| Questions | Mean (SD) | | P-value* |
|---|---|---|---|
| | Intervention n=52 | Control n=50 | |
| 1. Chronic health conditions prevent you from doing physical activity. | 1.77 (±0.51) | 1.82 (±0.43) | 0.607 |
| 2. Physical activity can help you to suffer from heart disease. | 0.44 (±0.70) | 0.38 (±0.73) | 0.659 |
| 3. Physical activity can improve your loneliness. | 1.77 (±0.58) | 1.78 (±0.51) | 0.921 |
| 4. Your family cannot help you to be more active physically active. | 0.87 (±0.93) | 0.62 (±0.86) | 0.169 |
| 5. Reading a book on how to start being more active can help you on being physically more active. | 1.63 (±0.66) | 1.58 (±0.76) | 0.698 |
| 6. Advice from a health professional can help you on being physically more active. | 1.85 (±0.42) | 1.74 (±0.63) | 0.317 |
| 7. A group of friends cannot help you on being physically more active. | 0.92 (±0.93) | 0.50 (±0.76) | 0.014 |
| 8. Shops or other places to buy things can motivate you to walk from your home. | 1.85 (±0.42) | 1.90 (±0.36) | 0.488 |
| 9. The walk tracks in or near your local area can help you to practice physical activity. | 1.77 (±0.55) | 1.90 (±0.36) | 0.160 |

| Questions | Mean (SD) | | P-value* |
|---|---|---|---|
| | Intervention n=52 | Control n=50 | |
| 10. A park or nature reserve in your local area cannot help you to practice physical activity. | 1.10 (±0.96) | 0.66 (±0.87) | 0.018 |
| 11. Physical activity makes you waste time. | 0.31(±0.61) | 0.42 (±0.70) | 0.391 |
| 12. Physical activity make your bad mood. | 0.23 (±0.51) | 0.42 (±0.70) | 0.131 |
| 13. Physical activity is not essential for you. | 0.65 (±0.93) | 0.40 (±0.78) | 0.139 |
| 14. Healthy people don't practice physical activity. | 0.56 (±0.90) | 0.98 (±0.96) | 0.023 |
| 15. Housework (sweeping) can help to strengthen your muscles. | 1.88 (±0.38) | 1.92 (±0.34) | 0.621 |
| 16. Physical activity makes your tired. | 0.75 (±0.88) | 1.32 (±0.87) | 0.001 |

*Independent t-test

Table: 3 showed frequency of physical activities in each item. The result showed that most of them in practice question (activity at work and travel to and from places) were found similar (with p-value > 0.05). But item number 1.2 (How many time/day do you do vigorous intensity activities at work?) was not similar with p-value 0.016. The questionnaire number 4-6 in practice (recreational activities and sedentary behavior) all items were not similar with p-value < 0.05.

**Table3**: Frequency of physical activities at baseline in the intervention group and control group

| Questions | Intervention (n=52) | | Control (n=50) | | P-value* |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| 1.Activity at work (vigorous intensity activities) | | | | | |
| 1.1How many day/week do you do vigorous intensity activities at work? | 1.21 | ±2.18 | 1.80 | ±1.88 | 0.149 |
| 1.2.How many time/day do you do vigorous intensity activities at work? | 0.38 | ±0.53 | 0.64 | ±0.53 | 0.016 |
| 1.3 How much minute/time do you do vigorous intensity activities at work? | 10.19 | ±15.72 | 10.60 | ±10.48 | 0.878 |
| 2.Activity at work (moderate intensity activities) | | | | | |
| 2.1 How many day/week do you do moderate intensity activities at work? | 2.00 | ±2.35 | 2.22 | ±2.23 | 0.629 |
| 2.2.How many time/day do you do moderate intensity activities at work? | 0.58 | ±0.57 | 0.56 | ±0.50 | 0.874 |
| 2.3 How much minute/time do you do moderate intensity activities at work? | 13.56 | ±14.26 | 9.20 | ±8.99 | 0.069 |

| Questions | Intervention (n=52) | | Control (n=50) | | P-value* |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| 3. Travel to and from places | | | | | |
| 3.1 How many day/week do you do travel to and from places? | 1.71 | ±2.39 | 2.42 | ±2.63 | 0.157 |
| 3.2.How many time/day do you do travel to and from places? | 0.56 | ±0.67 | 0.56 | ±0.54 | 0.985 |
| 3.3 How much minute/time do you do travel to and from places? | 10.29 | ±12.58 | 7.22 | ±8.67 | 0.156 |
| 4.Recreational activities (vigorous intensity activities) | | | | | |
| 4.1 How many day/week do you do recreational activities (vigorous intensity activities? | 0.73 | ±1.39 | 1.80 | ±1.80 | 0.001 |
| 4.2.How many time/day do you do recreational activities (vigorous intensity activities? | 0.33 | ±0.51 | 0.88 | ±0.82 | <0.001 |
| 4.3 How much minute/time do you do recreational activities (vigorous intensity activities? | 0.77 | ±13.04 | 13.60 | ±13.37 | 0.026 |

| Questions | Intervention (n=52) | | Control (n=50) | | P-value* |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| 5.Recreational activities (moderate intensity activities) | | | | | |
| 5.1 How many day/week do you do recreational activities (moderate intensity activities? | 0.77 | ±1.38 | 0.10 | ±0.30 | 0.001 |
| 5.2.How many time/day do you do recreational activities (moderate intensity activities? | 0.46 | ±0.61 | 0.10 | ±0.30 | <0.001 |
| 5.3 How much minute/time do you do recreational activities (moderate intensity activities? | 9.52 | ±12.46 | 2.10 | ±6.86 | <0.001 |
| Sedentary behavior | | | | | |
| 6 How much hour/day do you do sedentary behavior? | 2.19 | ±1.76 | 3.06 | ±1.13 | 0.004 |

*Independent t-test

Table: 4 showed mean and standard deviation of planning in physical activities in each item found that 2 items (1,7) of question was similar between both intervention and control group (p-value > 0.05). Most of them (8 items) were not similar between both groups (p-value < 0.05) These mean score were greater in control group, item2 (Do you keep written records of your physical activity ?, p-value<0.001), item3 (Do you reward yourself for practicing physical activity?, p-value=0.05), item4 (Do you post a diary calendar and check your physical activity?, p-value<0.001), item 5(Do you vary your physical activity routine to avoid boredom?, p-value<0.001), item 6(Do you work toward physical activity goals that are progressively more challenging?, p-value=0.001), item 8(Do you let people know about your commitment for physical activity?, p-value=0.014), item 9 (Do you encourage your friends to practice physical activity?, p-value<0.001), and item 10(Do you practice physical activity in a specific location or facility?, p-value<0.001).

**Table 4**: Mean and standard deviation of planning in physical activity at baseline in the intervention group and the control group

| Questions | Mean (SD) | | P-value* |
|---|---|---|---|
| | Intervention (n=52) | Control ( n=50) | |
| 1.Do you plan specific time for physical activity in your weekly schedule. | 0.38(±0.72) | 0.36(±0.49) | 0.840 |
| 2.Do you keep written records of your physical activity? | 0.04(±0.19) | 0.54(±0.50) | <0.001 |
| 3.Do you reward yourself for practicing physical activity? | 0.17(±0.38) | 0.42(±0.81) | 0.05 |
| 4.Do you post a diary calendar and check your physical activity? | 0.10(±0.30) | 0.58(±0.50) | <0.001 |
| 5.Do you vary your physical activity routine to avoid boredom? | 0.27(±0.53) | 1.06(±0.47) | <0.001 |
| 6.Do you work toward physical activity goals that are progressively more challenging? | 0.25(±0.59) | 0.70(±0.76) | 0.001 |
| 7.Do you consider physical activity so important in your life that you allocate time for it? | 0.79(±0.83) | 0.92(±0.40) | 0.310 |
| 8.Do you let people know about your commitment for physical activity? | 0.58(±0.67) | 0.86(±0.45) | 0.014 |
| 9.Do you encourage your friends to practice physical activity? | 0.52(±0.64) | 1.30(±0.86) | <0.001 |
| 10.Do you practice physical activity in a specific location or facility. | 0.46(±0.67) | 1.46(±0.68) | <0.001 |

*Independent t-test

**APPENDIX G**

**INFORMED CONSENT FORM**

Informed Consent Form A (English version)

Address……

Date…….

Code number of participant…….

I who have signed here below agree to participate in this research project

Title: The Lifestyle Physical Activity Program to increase Physical Activity among Older Persons in, Phranakornsiayutthaya District, Phranakornsiayutthaya Province, Thailand

Principle researcher's name: Ms. Plernta Ethisan

Contact address: The college of public health sciences, Chulalongkorn University, 10 th fl., Institute Building 3, SoiChulalongkorn 62 Phyathai Rd, Bangkok 10330, Thailand

Address of home: 205/112 Moo 1 Pimonrat sub-dostrict, Bangbuathong district, Nonthaburi province 11100, Thailand

Tel. of workplace 02-5901824 Tel. ofhome 02-9241806

Tel. of mobile 081-6425023 E-mail address: plearntajoy@gmail.com

I have been informed about rationale and objective(s) of the project, what I will be engaged with the details risk/harm and benefit of this project. The researcher has explained to me and I clearly understand with satisfaction.

I willingly agree to participate in this project and I have the right to withdraw from this research project at anytime according to my will with no need to give reason. This withdrawal will not negative impact upon me.

Researcher has guaranteed that procedure (s) acted me would be exactly the same as indicated in the information. Any of my personal information will be kept confidential. Results of the study will be reported as total picture. Any of personal information which could be able to identify me will not appear in the report.

I willingly agree to participate in this project and consent the researcher to collect data two times.

If I am not treated as indicated in the information sheet, I can report to the Ethical Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (ECCU). Institute Building 2, 4 Floor, Soi Chulalongkorn 62, Phyathai Rd 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 Email: **eccu@chula.ac.th**

I also have received a copy of information sheet and informed consent form

| | |
|---|---|
| ……. | …….. |
| Place/date | ( Name of research subject) |
| ……. | …….. |
| Place/date | ( Ms. Plernta Ethisan) |
| | ( Name of research subject) |
| ……. | …….. |
| Place/date | ( Name of research subject) |

หนังสือแสดงความยินยอมเข้าร่วมการวิจัย ( Thai Version)

หนังสือแสดงความยินยอมเข้าร่วมการวิจัย

ทำที่.....

วันที่.....เดือน.....พ.ศ. .....

เลขที่ ประชากรตัวอย่างหรือผู้มีส่วนร่วมในการวิจัย.....

ข้าพเจ้า ซึ่งได้ลงนามท้ายหนังสือนี้ ขอแสดงความยินยอมเข้าร่วมโครงการวิจัย

ชื่อโครงการวิจัย:

ชื่อผู้วิจัย นางเพลินตา อิทธิศานต์ นิสิตปริญญาเอก วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย

ที่อยู่ที่ติดต่อที่ทำงาน: วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย ชั้น 10 อาคารสถาบัน 3 ซอย จุฬาฯ 62

ถนน พญาไท แขวง วังใหม่ เขตปทุมวัน กรุงเทพ 10330

ที่อยู่ติดต่อที่บ้าน: 205/112 หมู่ที่ 1 ตำบล พิมลราช อำเภอ บางบัวทอง จังหวัด นนทบุรี 11100

โทรศัพท์ (ที่ทำงาน) 0-2590-1824 โทรศัพท์ที่บ้าน 0-2924-1806

โทรศัพท์มือถือ 081-6425023 E-mail address: **plearntajoy@gmail.com**

ข้าพเจ้า ได้รับทราบรายละเอียดเกี่ยวกับที่มา และวัตถุประสงค์ในการทำวิจัย รายละเอียดขั้นตอนต่างๆ ที่จะต้องปฏิบัติหรือได้รับการปฏิบัติ ความเสี่ยง/อันตราย และประโยชน์ซึ่งจะเกิดขึ้นจากการวิจัยเรื่องนี้ โดยได้อ่านรายละเอียดในเอกสารชี้แจงผู้เข้าร่วมการวิจัยโดยตลอด และได้รับคำอธิบายจากผู้วิจัย จนเข้าใจเป็นอย่างดีแล้ว

ข้าพเจ้าจึงสมัครใจเข้าร่วมในโครงการวิจัยนี้ ตามที่ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมการวิจัย โดยข้าพเจ้ามีสิทธิถอนตัวออกจากการวิจัย เมื่อใดก็ได้ตามความประสงค์ โดยไม่ต้องแจ้งเหตุผล ซึ่งการถอนตัวออกจากการวิจัยนั้น จะไม่มีผลกระทบในทางใดๆ ต่อข้าพเจ้าทั้งสิ้น

ข้าพเจ้าได้รับคำรับรองว่า ผู้วิจัยจะปฏิบัติต่อข้าพเจ้าตามข้อมูลที่ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมการวิจัย และข้อมูลใดๆ ที่เกี่ยวข้องกับข้าพเจ้า ผู้วิจัยจะเก็บรักษาเป็นความลับ โดยจะนำเสนอข้อมูลการวิจัยเป็นภาพรวมเท่านั้น ไม่มีข้อมูลใดในการรายงานที่จะนำไปสู่การระบุตัวข้าพเจ้า

ข้าพเจ้ายินดีเข้าร่วมการวิจัยครั้งนี้ ภายใต้เงื่อนไขที่ระบุไว้ในเอกสารข้อมูลสำหรับกลุ่มประชากร หรือผู้มีส่วนร่วมในการวิจัย และยินยอมให้เก็บข้อมูลวิจัย จำนวน 2 ครั้ง เพื่อเอาไว้ใช้ในการศึกษาวิจัยต่อไปเกี่ยวกับการจัดกิจกรรมทางกายสำหรับผู้สูงอายุ

หากข้าพเจ้าไม่ได้รับการปฏิบัติตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมวิจัย ข้าพเจ้าสามารถร้องเรียนได้ที่ คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย ชั้น 4 อาคารสถาบัน 2 ซอย จุฬาลงกรณ์ 62 ถนนพญาไท เขตปทุมวัน กรุงเทพ ฯ 10330 โทรศัพท์ 0-2218-8147 โทรสาร : 0-2218-8147 Email: **eccu@chula.ac.th**

ข้าพเจ้าได้ลงลายมือชื่อไว้เป็นสำคัญต่อหน้าพยาน ทั้งนี้ข้าพเจ้าได้รับสำเนาเอกสารชี้แจงผู้เข้าร่วมวิจัย และสำเนาหนังสือแสดงความยินยอมไว้แล้ว

ลงชื่อ..... ผู้มีส่วนร่วมในการวิจัย ลงชื่อ.....

(นางเพลินตา อิทธิศานต์) (.....)

ผู้วิจัยหลัก

# VITA

Name Plernta Ethisan

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Education

2010-2014 Doctor of Philosophy in Public Health, College of Public Health Sciences, Chulalongkorn University, Thailand

2008-2009 The Degree of General Diploma (Demography), The Demography Centre, Institute of National Planning, Cairo, Egypt

1990-1993 Master of Arts (Sociology) Concentration: Demography, Chulalongkorn University, Thailand

1985-1988 Bachelor of Public Health, Sukhothai Thammathirat University, Thailand

1981-1985 Diploma in Nursing and Midwifery: Equivalent to Bachelor of Nursing, Chonburi Nursing College, Thailand

Presentation experience

2-3 October 2014 Poster presentation " Factors Influence Physical Activities among

Elderly People in Rural, Ayutthaya Province, Thailand" in the 2nd

International Global Health, The celebration on the Auspicious

Occasion of Her Royal Highness Princess Maha Chakri Sirinthorn's

5th Cycle Birthday Anniversary 2nd April 1015, College of Public

Health Sciences, Chulalongkorn University, Thailand

17-19 October 2014 Poster presentation " Physical Activities among the Elderly People in Rural, Ban Mai Sub- District, Ayutthaya Province, Thailand" in the