AN ABSTRACT OF THE DISSERTATION OF

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Chunhuei Chi

This study was divided into three stages. The first phase of the study aimed to examine factors influencing the students' participation in physical activity. Eight female and male university students participated in the focus group. It was found that the participants' perceived benefits of physical activity were physical, psychological and social. Their perceived barriers to physical activity included both internal and external factors. Peer groups and family were found to be influential factors in the participants' decision to engage in physical activity. The second phase was designed to investigate 1,464 Thai university students' stages of change based on the Transtheoretical model (TTM) in relation to physical activity behavior. Regarding the stages of change, 19.6% of the participants were in the Precontemplation stage, 21.8% in the Contemplation stage, 44.2% in the Preparation stage, 8.9% in the Action stage, and 5.5 % in the Maintenance stage. The majority of participants' BMI statuses were normal. There were significant differences in response according to gender and BMI status, gender and stages of change, and BMI status and stages of change. The third study used a pre-post randomized control group design to determine the effectiveness of the TTM-based intervention in improving physical activity behavior among university students. 210 freshman students, who

classified in Precontemplation, Contemplation and Preparation stages, were randomly assigned to either experiment or control groups in each stage. The students in the experimental group received an eight-week stage-matched intervention, while the students in the control group participated in physical education activity classes. At the follow-up stage, the students in the experiment group significantly improved their scores compared to the baseline in all of the study variables (Stages of Change, Self-Efficacy, Pros, Cons, and Experiential and Behavioral Processes of Change). It was also found that students in the experimental group had higher improvement in Stages of Change, Self-Efficacy, Pros, Experiential and Behavioral Processes of Change, and perceived fewer Cons to physical activity. There were significant differences found in Processes of Change and Physical Activity Levels across Stages of Change, but not in other variables. The results of this study indicated that stage-matched intervention can be an effective means of increasing participation in physical activity among university students.

Effectiveness of Applying the Transtheoretical Model to Improve Physical Activity Behavior of University Students

by

Jinda Boonchuaykuakul

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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Jinda Boonchuaykuakul, Author

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Effectiveness of Applying the Transtheoretical Model to improve Physical Activity Behavior of University Students

Introduction

Sedentary lifestyles are a public health issue worldwide. According to warnings issued by the World Health Organization (WHO), a sedentary lifestyle could very well be among the ten leading causes of death and disability in the world (WHO, 2003c). Seventy-seven percent of the total number of deaths in the world caused by non-communicable diseases occurred in developing countries, and these diseases are on the rise (WHO, 2003b). These chronic diseases are influenced by multiple risk behaviors including smoking, unhealthy diets, and physical inactivity, and are the greatest public health problem in most countries in the world (WHO, 2003a).

Similar to the worldwide trends, non-communicable diseases have become the leading cause of morbidity and mortality among the Thai population. This increasing trend of the non-communicable diseases is evident in the data for hospital admissions. For heart disease, the rate of prevalence has risen from 56.5 to 285.4 per 100,000 patients from 1985 to 2000. For cancer, the rate of prevalence has risen from 34.7 to 71.1 per 100,000 patients from 1994 to 2000 (Public Health Ministry, 2000). It is hypothesized that Thailand's increasing morbidity and mortality has resulted from unhealthy food consumption behaviors and physical inactivity (Public Health Ministry, 2000).

The Thai Ministry of Public Health presented statistics of not only an increasing trend of non-communicable diseases, but also a trend of increased drug expenditures and health care costs. The amount of drug expenditure has risen from 32, 425.63 million baht

(retail price) in 1983 to 55,018.29 and 102, 400.20 million baht in 1990, and 2000 respectively. The drug expenditure was accounted for 40.52%, 28.23%, and 34.30% of health expenditures in 1983, 1990 and 2000, respectively (Vibulpolprasert, et al., 2003). The statistics show that Thai people require substantial amounts of medication, which intimates that Thai people are suffering from health problems.

A healthy lifestyle is the best prevention for most of these chronic diseases. Public health programs aimed at combating chronic diseases will have to encourage healthy lifestyle behaviors as a major focus (Lechener, et al., 1998). Physical activity has been recognized as one major component of a healthy lifestyle. Although the benefits of physical activity have been clearly proven by scientific evidence, in practice, people generally still do not meet the minimum requirements of physical activity. In Thailand, data from the National Statistics Office showed that the number of Thai people fifteen years old and above who exercise regularly were 21.3 %, 25.7 %, 30.7 % and 24.2 % in 1987, 1992, 1997, and 2001 respectively (Vibulpolprasert, et al., 2003). The data reflected that the number of Thai people who were physically active was remained low. The health statistics presented above also reflected the need to focus on promoting a healthy active lifestyle in the Thai population.

Young adults are a sub group of the population who are at risk on declining physical activity. Previous studies reported that physical activity prevalence among adults decline with increasing age (Stephens & Caspersen, 1993; Lee, 1993); the decline is especially steep between the ages of 15 to 24 years (Nigg, 1999). Most university students are within the critical years of decline in physical activity. As a health

professional, the researcher would like to explore effective interventions that could be used to enhance students' active lifestyles. The target populations of this study are university students because this subgroup of the population is at risk in declining of physical activity. Additionally, they have a potential to develop their own healthy lifestyle.

This study aims to develop and evaluate an effectiveness of interventions that focus on physical activity. The study conducted in the setting of Kasetsart University, Bangkok, Thailand at the main campus during the 2004 academic year. As a higher education institution, the university can provide a potent environment for the development of patterns that can enhance students' health and well being through health promotion activities.

The Transtheoretical Model of behavior change (TTM) is chosen as a major theoretical framework for this study. This model is selected because it incorporates important singular elements of behavior change from several other successful behavior change models. Furthermore, its constructs – stages of change, processes of change, self-efficacy and decisional balance – has been reported as being successfully used for a wide range of health behaviors, including physical activity (Veverka, 2001).

The study was divided into three phases. The first phase was a qualitative study. A focus group was conducted in order to gather in-depth information about factors that influence the students to participate and not participate in physical activity, as well as students' suggestions about health promotion program activities. The results from the qualitative study were used as baseline information to design the health promotion

intervention in the third phase of this study. In the second phrase, a survey was conducted. This study aimed to examine the students' stages of readiness to change in relation to physical activity. The results from the survey were used to set a sample frame for the final phase of the study. In the final phase, the quasi-experimental research was conducted. The TTM-based interventions were developed and implemented. The effectiveness of the intervention was determined by comparing the results from the baseline to the follow-up stage, as well as the differences between the experiment and the control groups.

This dissertation is comprised of three manuscripts (Chapter 3,4, and 5), which present the qualitative, quantitative and quasi experimental study.

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Literature Review

In this chapter, an extensive review of the literature addresses the theoretical framework, the Transtheoretical model (TTM) and its construct: stages of change, process of change, self-efficacy, and decisional balance; the relationship among the TTM constructs; limitations of the TTM; research applying the TTM on physical activity; physical activity; and research on physical activity in Thailand.

2.1 Transtheoretical model

The TTM is the major theory that will be used to guide intervention and evaluation design for this study. The model was established theoretically from a comparative analysis of leading theories of psychotherapy and behavior change (Prochaska, Redding, & Evers, 2002). Transtheoretical was the term used for this model because the constructs were systematically integrated from more than three hundred psychotherapy theories. (Prochaska, 1979). Initial research of the TTM focused on smoking and addictive behavior. For example, alcohol and substance abuse, panic disorder, anxiety, eating disorders, obesity and high fat diets (Prochaska & DiClemente, 1983, 1985).

The TTM has been applied to a board range of health promotion behaviors in retrospective and prospective studies, such as physical activity, HIV AIDS prevention, mammography screening, unplanned pregnancy prevention (Prochaska, et al., 2002). Interventions based on the model have demonstrated greater efficacy than standard interventions (Prochaska, Diclemente, Velicer, & Rossi, 1993; Rakowski, et al., 1998).

The TTM is useful for understanding the process of intentional behavior change because it incorporates both experiential cognitive processes and behavioral makers related to the change process (Nigg, 1999).

2.1.1 The Transtheoretical Model constructs

The TTM consists of four major constructs – the stages of change, processes of change, self-efficacy, and decisional balance as described in the following discussion.

2.1.1.1 Stages of Change

Prochaska and Velicer (1997) stated that the stages of change designate a temporal dimension that recognizes the dynamic nature of behavior change and the developmental sequences of movement toward change, with the concept of stages falling between temporary and ever changing states and traits in the term of tendency or disposition. The stages of change are classified into six stages, which are briefly described as follows:

1) Precontemplation – is a period in which the individual has no intention to make a change of the target behavior in terms of the foreseeable future, which is generally defined as within the next six months. And also the individuals in this stage are unaware, discouraged or defensive about the behavior change.
2) Contemplation – is a period of time in which the individual is aware of the problem and intends to make a change of the target behavior within the next six months, but have not yet taking action.

3) Preparation – is a period of time in which the individual intends to take action to change his/her behavior in the near future, which is generally defined as within the next thirty days.

4) Action – is a period of time in which the individual has successfully modified the problem behavior for a period of less than six months. Others recognize overt efforts and visible action.

5) Maintenance – is a period from six months after behavior change onward that the behavior change is maintained.

6) Termination – is a period which the individual has no temptation to resume the habit. However, Burkholder and Nigg (2002) stated that in physical activity behavior, it is unclear if a point in time exist at which a person can be defined as being in termination.

2.1.1.2 Processes of Change

The processes of change comprise the second dimension of change in the Transtheoretical Model. Processes of change involve experiential/ cognitive and behavioral coping strategies, techniques and interventions that enable individuals to successfully change or modify their behavior (Oliveira, 2002). The processes of change mediate the transition through the stages of changes (Prochaska & DiClemente, 1983).

The processes of change cluster into two higher-ordered factors as defined by Prochaska, Velicer, DiClemente and Fava (1988): Experiential/cognitive processes and Behavioral processes.

The five experiential/cognitive processes are those that rely on verbal interaction or affective activities including:

1) Consciousness raising – finding and learning new information, ideas, and tips that support the healthy behavior change.
2) Dramatic relief – experiencing the negative emotions, such as fear anxiety and worry that go along with unhealthy behavior risks.
3) Self-reevaluation – realizing that the behavior change is an important part of one's identity as a person.
4) Environmental reevaluation – realizing the negative impact of the unhealthy behavior or the positive impact of the healthy behavior on one's proximal social and physical environment.
5) Social liberation – realizing that social norms are changing in the direction of supporting the healthy behavior change.

In terms of Behavioral processes define by those that rely on behavioral manipulation and involve more specific observable behaviors including.

1) Self-liberation – making a firm commitment to change
2) Reinforcement management – increasing the rewards for the positive behavior change and decrease the rewards of unhealthy behavior.
3) Helping relationships – seeking and using social support for the healthy behavior change.
4) Counter conditioning – substituting healthier alternatives behaviors and cognitions for the unhealthy behavior.

5) Stimulus control – removing reminders or cues to engage in unhealthy behavior and adding cues or reminders to engage in the healthy behavior (Prochaska, et al., 2002).

2.1.1.3 Self-Efficacy

Prochaska et al. (2002)stated that self-efficacy is the situation-specific confidence that people have that they can cope with high-risk situation without relapsing to their unhealthy or high-risk behavior. This construct was integrated from Bandura's self-efficacy theory.

2.1.1.4 Decisional Balance

Decisional Balance reflects the individual's relative weighting of the positive aspects (pros) and negative aspects (cons) of changing a new behavior (Prochaska, et al., 2002). People in later stages – Action and Maintenance – tend to have a decisional balance favoring the positive aspects (pros) of a behavior. While people in early states – Precontemplation and Contemplation – tend to perceives more costs (cons) of a behavior than benefits. In the action stage, the cost (cons) and benefits (pros) of a behavior are in balance (Marcus & Owen, 1992; Marcus, Rakowski, & Rossi, 1992).

2.1.2 Relationships among the TTM constructs

Burkholder and Nigg (2002), explained the relationship among the TTM constructs as described in the following discussion.

2.1.2.1 Processes and Stages of Change

Burkholder and Nigg (2002), stated that Prochaska and DiClemente, the developers of the TTM, found a relationship between individual's stage and specific processes used in that stage. They later also asserted that "This relationship is very important as it forms the basis of using staging models to tailor unique, individual-specific interventions."

1. Precontemplation – Consciousness-raising, helping relationship and social liberation are the processes that may benefit most to a person in the Precontemplation stage. A Precontemplator utilizes all processes less than people who are in any other stages.
2. Contemplation – Awareness techniques that assist a person in this stage to become more profoundly aware about how problem behavior affect his/her life would be most beneficial to the contemplators. People in this stage are more likely to use consciousness raising, self-reevaluation, and dramatic relief to progress to the next stage. In addition, social liberation is also important for continuing the ways in which social pressure is applied to change the problem behavior.
3. Preparation – Assisting the person to continue self-reevaluation and continuing to offer support in the behavior change process, are the best strategies for helping a person in this stage to change his/her behavior. Self-liberation and reinforcement management also will be useful for people in this stage.

4. Action – The processes used most in this stage are self-liberation, stimulus control, reinforcement management, and counter conditioning. Altering the environments to reinforce positive behaviors, utilizing of contracts or other public demonstration of commitment to change, and rewarding people for continued successful performance are types of strategies used in this stage.
5. Maintenance – Continuing self-reevaluation, and helping relationships are valuable in assisting people in this stage to achieve the commitment of the specific behavior change. As the length of maintenance increases, the need for processes of stimulus control, counter-conditioning, and reinforcement management should decrease.

2.1.2.2 Decisional Balance and Stages of Change

The rating of pros relative to cons is most prevalent in the earlier stages of change (Precontemplation, Contemplation, and Preparation). In the Precontemplation stage, the individual would tend to rate benefits of the unhealthy behavior as far exceeding the costs. In the Preparation stage, the person tends to rate pros and cons equally. However, the pros for a healthy behavior increase and the cons decrease as the person moves from one stage to the next. The benefits of the problem behavior receive less weight and the costs of the problem behavior are weight more strongly in action and Maintenance stages. In these stages, decisional balance does not generally predict progress. The evidence suggest that decreasing pros and increasing cons of a particular unhealthy behavior would

be a practical goal in moving people through the early stages of change (Burkholder & Nigg, 2002).

2.1.2.3 Self-Efficacy and Stages of Change

Self-efficacy has been reported to have a linear relationship with stages of change. Self-efficacy increases linearly across stages of change. In other words, the Precontemplators have very low self-efficacy to change problem behavior. Self-efficacy increases to where it is at its maximum in the Maintenance stage (Prochaska & Marcus, 1993).

2.2 Limitations of the TTM

Although the TTM has been recognized as a powerful model for behavior change, some limitations regarding the application of the TTM in physical activity behavior have been noted.

Adams and White (2005) addressed several comments about whether the TTM is an effective model of promoting physical activity behavior. They critiqued that physical activity is not a single behavior; it involves many categories of action, such as sport activities, work-related physical activities, house-work activity, recreation activities and transportation behaviors. Therefore, individuals may perceive the TTM constructs differently. For example, individuals may have different self-efficacy, as well as pros or cons, in each category of physical activity.

Second, the validity of the stage algorithm has been critiqued. Currently, there are many versions of the stage algorithm that are used to classify individuals stages of

change based on the TTM concept. Because there is no "gold standard" of the algorithm to compare and test for validity of those various stage algorithms, the validity of these measures seem not to have been established. Additionally, stage algorithms are generally based on self-assessment, which may lead to misconception and the misclassification of the client's own performance (Adams & White, 2005; Brug, et al., 2005).

Third, the three major constructs, self-efficacy, decisional balance and processes of change, were proposed by the model as the important determinants of stage transition. However, experts criticized that there are a number of determinants regarding physical activity behavior, which are not addressed by the TTM (Adams & White, 2005).

Fourth, the TTM focuses on stage progression which the experts argue that it is not actual behavior change (Joseph, et al., 1999; Burkholder & Nigg, 2002; Adams, & White, 2005; Brug, et al., 2005).

The limitations of the TTM are controversial; further studies are needed to verify whether the TTM–based intervention is effective in changing physical activity behavior.

2.3 Physical Activity

To date, mechanically and technologically oriented conditions allow and even promote an unprecedented sedentary lifestyle (SB & SB, 2003). These are more likely the result of people spending increasing amounts of time in sedentary behaviors such as watching television, using computers, and excessive use of "passive" modes of transportation such as cars, buses and, motorcycles (WHO, 2003c). Non- activity lifestyle may cause many health problems.

Physical inactivity behavior is a primary risk factor that impacts health. To increase people physical activity participation has become a global concern (Neff, 2001). Cumulative evidence has demonstrated that regular moderate physical activity reduces the risk of developing numerous chronic diseases, such as cardiovascular diseases, hypertension, non-insulin-dependent diabetes mellitus and colon cancer. Additional benefits of adult physical activity are to reduce obesity, alleviate depression and anxiety and increase bone density. Moreover the benefits to health of regular physical activity include enhanced cardiorespiratory endurance, flexibility, and muscular strength and endurance (Martinez, 1998; CDC, 2004).

With regard to young adult population, numerous of benefits due to physical activity have been demonstrated. Enhancement of cognition, attitude, motivation, strength, flexibility, VO2 Max , fitness pulse rate, mathematics and reading ability, have all been illustrated with various exercise program (Nigg, 1996).

Physical activity has been defined as "any bodily movement produced by skeletal muscles those results in energy expenditure" (Pate, et al., 1995). The energy expenditure is measured in units of kilocalories, kilojoules, or metabolic equivalents of oxygen consumed per body weight in kilograms (Neff, 2001). Caspersen (1989) suggested that in order to assess the relationship between physical activity and health outcomes, the type of activity performed, the frequency of performance, the intensity level and the duration for each event are need to be considered . The experts defined intensity levels using the ratio of exercise metabolic rate (METs) as follows:

- light intensity as activities are < 3 METs
- moderate intensity as activities are between 3 METs and 6 METs
- vigorous intensity as activities are > 6 METs

One MET is defined as the energy expenditure for sitting quietly, which for an average adult is approximately 3.5 ml of oxygen uptake per kilogram of body weight per minute, or 1.2 kcal/minute for 70 kg person (Center for Disease Control Prevention, 2003).

The Center of Disease Control and Prevention (CDC) and The American College of Sports Medicine (ASCM) proposed new recommendations for physical activity that every American adults should accumulate 30 minutes or more of moderate – intensity physical activity on most days of the week For example, an individual may perform brisk walking of at least moderate intensity (3-6 METs), 3 time a day for 10-15 minutes each session, 5-7 days of the week. (Pate, et al., 1995).

2.4 Research applying the Transtheoretical Model on Physical Activity

Recently, various studies have shown strong applicability of the TTM in positive desired behavior. The application of the TTM to exercise was initially conducted by Sonstroem at the University of Rhode Island in 1988 . Participants in this study, 220 males thirty years and older, were placed into four stages of change based on the self-report exercise histories over the past four years. Sixty-nine belief statements were administered. Nine belief statements correlated with the stages of exercise adoption, and

produced canonical correlation of .75, together with a correct overall classification of 67.9 percent.

Marcus and colleagues were one of pioneer researchers who investigated how the TTM had promise in the adoption of exercise behavior. The following are some of their initial studies in exercise aspects.

Marcus, Rossi, Selby, Niaura, and Abrams (1992) developed a questionnaire measuring stages of change and self-efficacy for exercise using two separate samples (n_1 =1063 and n_2 =429). Two worksite samples were used to investigate the prevalence rates using stages of change and to examine the relationship between stages of change and self-efficacy. The study results revealed that the total scores on self-efficacy items differentiate participants at most stages. The proportion of variance accounted for was .23 and .28. Precontemplators were significantly different from participants in all other stages. The self-efficacy scores were lowest in Precontemplators and highest in Maintainers.

Marcus, Rakowski, and Rossi (1992) developed a decisional balance measure for exercise. The participants were asked to answer a 40-item questionnaire consisting of items reflecting positive and negative aspects of exercise. The analysis of variance revealed that Pros and Cons, and a decisional balance measure (Pros minus Cons) were significantly associated with stages of change adoption. The results exhibited that participants in Maintenance and Action stages showed significantly higher Pro scores than those in Precontemplation and Contemplation stages. Pro scores were also significantly higher for participants in Action compared to Preparation, and in

Preparation and Comtemplation compared to Precontemplation. Con scores were reduced throughout the stages of change from the highest scores in the Precontemplation stage to the lowest scores in the maintenance stage.

Marcus and Owen (1992) examined the relationship between the stages of change, decisional balance and self-efficacy. Two sample groups of employees were compared, the American (n=1093) and Australian (n=801). Self-report questionnaire were used to assess subjects' stage of exercise behavior, decisional balance and self-efficacy. The results revealed that scores on self-efficacy items were significantly related to stages of change in both studies. Tukey's post hoc comparisons revealed that in most cases, Precontemplation scores were significantly different from those in all other stages. People in the Precontemplation stage had the lowest score in self-efficacy while people in the Maintenance stage had the highest score. The same pattern was shown on the decisional balance scale; people in the Precontemplation stage had lower pro and higher con scores, while people in the Maintenance stage had higher pro and lower con scores.

Marcus, Banspach, Lefebvre, Rossi, Carleton, and Abrams (1992) advocated the use the stages of change model in designing exercise interventions. "Imagine Action", a community based health promotion campaign, was used in the study. The subjects of the study were categorized into one of three stages of change – Comtemplation, Preparation or Action. The intervention materials were distributed to 610 subjects based on the stage that they were in. The follow up was conducted after the six-week intervention. The result found that subjects were significantly more active compared with baseline data.

However, there were some limitations in the study as identified by the researcher such as no random selection and control group as well as short period of the follow up.

Many studies investigated the application of the TTM with regard to physical activity and exercise behavior in worksite population. However, there were relatively few studies have been investigating the application of the TTM and its constructs in physical activity in the young adult population. Some studies that focused on examining the TTM in physical activity and exercise behavior in adolescent populations will be briefly discussed as follows.

Nigg (1996) examined all constructs of the TTM for its applicability with regard to exercise behavior in the adolescent population. The study was aimed to differentiate adolescent stages of exercise behavior using the processes of change, self-efficacy and decisional balance, and to quantify the contributions of these constructs to the explained variance in the model. Eight hundred and nineteen students in grades nine to twelve, from five community high schools, were asked to complete self-administered questionnaires of all the TTM constructs. Results of the study found that all of the TTM constructs differed differently across stages. The authors suggested the combined results of the TTM constructs lead to the implications for designing interventions geared towards an adolescent population as follows:

Increasing the use of all processes of change, Self-Efficacy, and Pros of exercise is needed for assisting people in progress from the precontemplation stage to the Contemplation stages. Some of the Processes of Change components – Self-reevaluation, Counter-conditioning, Reinforcement Management, Self-Liberation and Stimulus Control

– along with Self-Efficacy and the Pros of exercising, need to be increased in order to move people from the Contemplation stage to the Preparation stage. On the other hand, decreasing the Cons of exercise is also needed in this stage. To advance from the preparation stage to the action stage, the use of Consciousness Raising, Environmental Reevaluation, Self-Reevaluation, Social Liberation, Counter Conditioning, Helping Relationship, Reinforcement Management, Self-Liberation, Stimulus Control and the Pros of exercising need to be raised, while the Cons of exercising need to be decreased. Increasing the use of Counter Conditioning and Self-Efficacy is needed to move the actors to be the maintainers. However, the investigator suggested that more research examining the application of the TTM to exercise in adolescents is needed to confirm his conclusions.

Cooney (1996) investigated the TTM and its application to adolescent physical activity behavior. The relationships among all constructs of the TTM, and self-reported exercise behavior were examined. They were five hundred and forty four participant in this study all students from eight urban secondary schools. The study results found that eight out of ten processes of change, self efficacy, decisional balance, and self-reported physical activity significantly contributed to discrimination between the stages. Self-efficacy increased from the Precomtemplation to the Maintenance stages. Precomtemplators scored lowest and those who were Maintainers scored highest on the self-efficacy. Clear differentiation between the stages was not apparent and the balance between pros and cons did not change from the Precomtemplation stage to that of the preparation. With regard to amount of self report activity, the Maintainers participated in

the most, while the Precontemplators participated in the least. However, the use of the processes of change fluctuated across the stages though clear differentiation was not as apparent in this study as in previous literature.

Martinez (1998) conducted a study to determine the contribution of determinants, perceived barrier, and stages of exercise behavior change, as predictors of physical activity status. To predict categories in the stages of exercise behavior change model using physical activity, perceived barrier and determinants as discriminant predictors was also another purpose of the study. There were 534 university undergraduate students participated in the study. The important findings were: self-efficacy was found as the most significant determinant predictor; lack of motivation was found to be the most significant barrier predictor; and stages of exercise behavior change variable assisted to explain more of the variance than all of the determinants and barriers variables combined.

Nigg (1999) conducted a three-year longitudinal study with regard to exercise behavior in adolescents. The purpose of his study was to increase the understanding of adolescent exercise behavior. Eight hundred and nineteen Canadian adolescents were approached data collection for a three-year longitudinal follow-up study. Stages of exercise, ten processes of exercise, self-efficacy and pros and cons of the TTM and Gobin's Leisure Time Exercise questionnaire were included as variables in this study. The main conclusion of the results of Nigg's study, in terms of the TTM and its constructs, were: self-efficacy and the behavioral processes of change contributed to the prediction of adolescent exercise adoption and maintenance; niether did the processes of change lead to exercise behavior, nor did the exercise behavior lead to processes of

change; exercise behavior lead to an increasing in self-efficacy, and the pros of exercise behavior, as well as a decrease in the perception of the cons of exercise behavior. The researcher suggested that further studies are needed to maximize the explanatory power of the TTM.

Self-efficacy is an important variable in predicting behavior change (Sullum, Clark, & King, 2000). Previous research has shown that self-efficacy has consistently been positively correlated with adult physical activity. Several studies found that in general, self-efficacy increased across the stages (Nigg, 1999). Sullum et al. found university students who were exercise releasers scored lower on self-efficacy a baseline compared with the exercise maintainers.

From the studies above, the relationships between stages of change and the others of the TTM constructs were found in most studies. Stages of change, self-efficacy and decisional balance (Pros and Cons) were found to be significant predictors with regard to physical activity and exercise behavior. The research findings that self-efficacy is predictive of exercise adherence supports the application of the model to a university population. However, the processes of change seem to be inconsistent with the results in this subgroup population. Therefore investigating the utilization of the processes of change in physical activity domain of adolescents is needed.

2.5 Research on Physical Activity in Thailand

The application of the TTM in relation to physical activity in young adults in Thai literature is limited. The following are some studies related to physical activity among Thai adolescents and young adults.

Tungrungvongthana (1997) examined the knowledge, attitude and practices of exercise and sport in upper secondary education students (high school students) in the Bangkok metropolis. 1,440 students completed the questionnaires, of which 90.42% were returned. It was found that students had knowledge and attitudes at the good level and practiced at the very good level in exercise and sport. The boys' knowledge and the practice of exercising and sports was significantly different from those of the girls, but attitudes were not significantly different.

Nakhanakhup (1999) investigated physical activity and energy expenditure in Thai children in Bangkok, aged 9-12 years. The subjects were comprised of 21 obese and 26 nonobese children. The results showed that weight, body mass index, relative weight, percent body fat, and fat mass, as well as activity energy expenditure, and sedentary energy expenditure, were significantly higher ($p < 0.01$) in the obese children when compared to the nonobese group. The mean values of respiratory quotient were 0.91 ± 0.06 in the obese and 0.89 in nonobese group. The obese and nonobese children's physical activity levels were 1.48 ± 0.17 and 1.51 ± 0.22, respectively, which were lower than that recommended by the World Health Organization (1.7). It is concluded that this group of obese and nonobese children had a low level of physical activity and high carbohydrate intake, which might increase the risk of obesity at a later age.

Polin (1999) studied exercise behaviors of nursing students, and investigated the relationship between personal factors, self-efficacy in exercise, perceived benefits of exercise, and the college environment and exercise behaviors of nursing students. The total of 366 nursing students selected by stratified random sampling completed the questionnaires. The response rate was 94.57%. The results found that the mean scores of exercise behaviors of nursing students were at low level. The researcher concluded that all of the study variables were significantly related to exercise behaviors of nursing students.

Sem (1999) examined and compared the cognitive, affective and psychomotor domains of exercise and sporting behaviors of public university students. 250 male and 250 female students were asked to respond to the questionnaires. 94.6 % of the questionnaires were returned. The results found that public university students had cognitive behaviors in relation to exercise and sport at the middle level, while they had affective and psychomotor behaviors at the good level. There were no significant differences found in psychomotor behaviors with regard to exercise and sport between male and female students, but differences were found in affective behaviors. The cognitive, affective and psychomotor behaviors in exercise and sport of the public university students among different regions were significantly different.

Ardvichai (2000) determined the cognitive, affective and psychomotor domains of exercise and sporting behaviors of mathayom suksa students (middle school and high school student) in schools under the jurisdiction of the General Education Department. 1,755 male and 1,755 female students were asked to respond to the questionnaires, of

which 91.11% were returned. The results revealed that the students had cognitive behaviors at the middle level, and affective and psychomotor behaviors at the good level in exercise and sport. The cognitive behaviors of exercise and sport of males were not significantly different from those of the females, but affective and psychomotor behaviors were significantly different. The cognitive, affective and psychomotor behaviors in exercise and sport of the mathayom suksa students among class level 1, 2, 3, 4, 5 and 6 were significantly different.

Krachaechandra (2001) studied the cognitive, affective and psychomotor behaviors on exercise and sport of regular technical students of Rajamangala Institude of technology (RIT) and regular undergraduate students of Rajabhat Institude (RI) under the Department of General Education. 1000 students were asked to complete the questionnaires, of which 92.4% were returned. It was found that the cognitive, affective and psychomotor behaviors regarding exercise and sport of students of RIT and RI were at the good level. Cognitive and psychomotor behaviors on exercise and sport between male and female students of RIT were significantly different. Affective and psychomotor behaviors on exercise and sport between male and female students of RI were significantly different. Cognitive on exercise and sport of the 1st to 4th year students of RIT were not significantly different. Cognitive, affective and psychomotor behaviors on exercise and sport of the 1st to 4th year students of RI were not significantly different.

Sumkaew (2002) studied the physical activity behaviors for health in nursing students in Bangkok Metropolis. The subjects were 700 nursing students in 13 institutions, under seven different jurisdictions in Bangkok Metropolis. Those nursing

students were asked to respond to the questionnaires constructed by the researcher. Questionnaires were sent to the respondents and 89.0% were returned. The results revealed that most nursing students in Bangkok Metropolis had moderate knowledge, good attitudes and fair practices in physical exercise for health. The Thai Red Cross nursing students had the best knowledge and attitude, while the police nursing students had the best practice. The knowledge, attitudes and practices in physical exercise of nursing students among different nursing institutions were found significantly different; the nursing students from private institutions had less knowledge and attitudes than nursing students from the Ministry of University Affairs, Ministry of Defense, Bangkok Metropolis and Thai Red Cross. It was also found that nursing students from the Ministry of University Affairs had less practice than nursing students from the Ministry of Defense and the National Police Department.

Overall Thai adolescents and young adults have cognitive and affective behavior in relation to exercise and sport in the good and/or middle level. However, psychomotor behavior varied among the study subjects.

From the literature reviewed, there are some important points that the researcher has to keep in mind in order to develop an effective intervention. With regard to the TTM and the relationships between its constructs, Self-efficacy and Decisional balance were found to have positive relationships with the stages of change. Therefore, in order to move people from the early stages to the next stages, strategies and activities that enhance and maintain participants' self-efficacy, decisional balance and processes of change should be integrated into the intervention programs. The processes of change are

inconsistently reported with the component used with stages of change in physical activity behavior in adolescent and young adult populations. Therefore, the researcher should carefully determine in order to properly utilizing each component of the processes of change to assist participants to move into the next stage.

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Factors Influencing Participation in Physical Activity Behavior among University Students: A Focus Group Study

Abstract

This study was designed to examine university students' perceived benefits of physical activity and barriers to physical activity and factors influencing them to participate in physical activity. It also aims to gather students' suggestions about which activities should be used as strategies in a health promotion program to increase university students' participation in physical activity. A total of eight male and female students, either physically active or inactive, participated in the focus group session. The session was audiotaped, transcribed, and translated from Thai to English. It was found that the participants' perceived benefits of physical activity were: 1) physical benefits – physical health benefit and maintaining body shape; 2) psychological benefits – enjoyment, using time efficiently, stress reduction and feeling good; 3) sociological benefits – social reasons such as spending enjoyable time with friends, and meeting new people. Their perceived barriers to physical activity included both internal factors such as inertia and health condition and external factors such as time constraints, lack of social support, and environment constraints. Peer groups and family were found to be influential factors to the participants' decision to engage in physical activity. Participants suggested that a variety of strategies could be used as strategies in a health promotion program designed for university students, such as providing information about benefits associated with physical activity, having a demonstration of the physical activity for a particular session, using role models to influence behavior, organizing sport

competitions, and providing free access to physical activity facilities. Findings of this study have implication for health and exercise professionals designing health promotion interventions to increase physical activity participation of young adults in university settings.

Introduction

Being insufficient in regular physical activity, along with increasing tobacco use and unhealthy diets, are related to the rapid rise of non-communicable diseases world wide such as cardiovascular diseases, chronic respiratory diseases, diabetes, and obesity (WHO, 2003c). Unhealthy lifestyle, including insufficient physical activity, poor dietary choices and other patterns, are formed during childhood and the early adult years, and may set up health conditions that increase the risk for certain chronic diseases later in life (Evans & Sawyer-Morse, 2002). Chronic diseases caused by these risk factors are now a global burden.

Research supports the benefits of physical activity for health both during youth and in later adulthood (Center for Diseases Control and Prevention [CDC], 1996; 1997, U.S. Department of Health and Human Services [USDHHS], 1996; 2000). Regular physical activity, along with fruit and vegetable consumption, are associated with improved lipoprotein and blood pressure profiles in at-risk youth, as well as with improved immune system function, prevention of obesity, and positive psychological health (Alpert & Wilmore, 1994; Van Duyn, 1999; Calfas & Taylor, 1994; CDC, 1997).

Although the benefits of physical activity have been clearly proven by scientific evidence, in practice, people, especially young adults, generally still do not meet the minimum requirements of physical activity. The World Health Organization estimated that nearly two-thirds of children around the world are insufficiently active (WHO, 2003b). Some previous studies found that low levels of physical activity remain steady from adolescence into adulthood (Malina, 1996; Lefevre, et al., 2000). Stephens, Caspersen (1993), and Lee (1993) revealed that physical activity prevalence among adults declines as age increases, this decline is especially steep between the ages of 15 to 24 years (Nigg, 1999). Furthermore, one of the barriers to physical activity identified through research on the elderly, was poor exercise habits acquired in youth. Sedentary lifestyle may be rooted in behaviors learned during adolescence (Nigg, 1996). Accordingly, youth who are able to adopt regular physically active behavior may be more likely to continue in adulthood (Prochaska, 2002). Because of the positive effect physical activity has on one's health these lower levels of physical activity among adolescents are of concerned (Kim & Glynn, et al., 2003).

Due to these studies that indicated that a majority of young adults do not meet health guidelines for physical activity. There is the need to obtain a better understanding of psychosocial and perceptual factors related to physical activity in young adult. This information may help in developing a more effective intervention for this specific population, and ultimately, to increase their level of physical activity participation (Lees, Clark, Nigg, & Newman, 2005).

The purposes of this study were to (1) explore university students' perceived benefits and barriers to participating in physical activity, (2) examine factors influencing university students to participate in physical activity and (3) gather students' suggestions in which activities should be used as strategies in a health promotion program to increase students' participation.

Theoretical framework

The Transtheoretical Model of behavior change was used as the theoretical framework for this study. The model consists of four main constructs – stages of change, processes of change, self-efficacy and decisional balance. The decisional balance is the only one main construct from the model used for this study because it is considered a mediator of behavioral change. Decisional balance is the individual's relative weighing of the positive aspects (pros) and negative aspects (cons) of changing a new behavior (Prochaska, Redding, & Evers, 2002). Additionally, social support, one subscale of the processes of change construct is also used as a framework in this study.

The TTM has been applied to physical activity behavior in Caucasians in various age groups, and has been extended to other ethnic groups, such as Africans and Asians. However, there is a lack of studies in Thailand have been used the model to explore factors that influence participation in physical activity, especially in university students. Therefore, there is a need for more research to verify the model in Thai culture.

Research Method

A focus group discussion was used to explore issues surrounding physical activity participation among university students. A focus group is a qualitative research method that has been shown to be effective for generating a rich understanding of the participants' individual beliefs and attitudes on particular topic (Krueger, 2000). Because of its potential for increasing the quality of data through the disclosure that often happens in group discussion (Nies, Vollman & Cook, 1998). A focus group is used in order to obtain rich information that may not be able to be gained by using questionnaire or other quantitative methods. Using small number of participants allows the researcher to achieve in-depth information focusing on quality rather than on quantity, further supporting the decision to use a focus group in this study.

Participants

Eight university students were chosen as representatives to participate in focus group session. Participants consisted of three male and five female university students who were 19-23 years old. Four of them were physically active, and four of them were physically inactive. Participants who engaged in moderate activity for at least 30 minutes a day for five days or more a week were considered "active." Participants who engaged in less than 30 minutes of moderate activity for less than five days a week were considered "inactive" for the purpose of this study.

Measurement Instruments

A structured focus group guide was used during the group session. Discussions focused on four main topics. First, participants were asked to discuss what benefits of physical activity motivated them to participate in physical activity. Second, they were asked to discuss the barriers to physical activity that made it difficult for them to participate in physical activity. Third, they were asked about who influenced them to participate in physical activity. Last, they were asked to suggest what would help them, or other students, increase or maintain their physical activity level.

Before the focus group was conducted, the participants were asked to complete an informed consent form and background information survey. The participants were questioned about their sex, weight, and height. Prospective participants were also asked about how they viewed their own body weight and their health status, and how others viewed their weight as well. They were also asked about how important physical activity was to them in general.

Procedures

Approval for this project was obtained from the Oregon State University Institutional Review Board, and additional permission was obtained from Kasetsart University, Thailand, where the actual research took place. The Office of University Housing at Kasetsart University cooperated in the recruiting process. The research study was added to the dormitory leaders' meeting agenda, and the researcher described the study to the students who were dormitory leaders and asked for volunteers to participate

in the focus group session. Contact information of volunteers was then collected. The student leaders were asked to recommend other students who might be interested in participating in the study. The researcher's contact information was distributed to the dormitory leaders.

Interested students were contacted by phone a week later to set up a schedule for the focus group. Eight interested students were selected as potential participants to ensure that the group was diverse in age, sex, university of study, and level of physical activity.

A week before the focus group session, the participants were contacted again by telephone to inform them when the session would be held. A reminder telephone call was made the day before the session.

During the session with dinner provided, a 90-minute focus group was conducted at the office of Kasetsart University Dormitory Clubs. The researcher was the moderator and facilitator of the sessions. An assistant audiotaped, took field notes, and photographed the event with the permission of the participants.

The focus group began with a short warm up period of about 10 minutes. The researcher welcomed the participants; introduced herself, and an assistant; explained briefly about the research project, the topic, and the purposes of the discussion; and asked the participants to introduce themselves to the group. A structuring session was conducted following the introduction period. An informed-consent form and a short survey were distributed to all the participants, and when completed, were then collected

by the researcher. The focus group session consisted of both individual and group responses.

Data Analysis

Following the conclusion of the focus group, the moderator and assistant moderator discussed the group, noting common themes and group dynamics. The audiotapes were independently transcribed verbatim by two transcribers, and were then compared and reviewed by the researcher. The transcriptions were translated from Thai to English by the researcher and a graduate student who is fluent in both Thai and English, and who did not participate in the focus group. Due to divergences with in the two languages the translation is content-oriented rather than a word-for-word translation. The final transcript was the primary data used in content analysis. The thematic content analysis was conducted by the researcher. The participants' discussions were identified, categorized and coded systematically; major themes were then constructed (Nies, et al., 1999). Frequencies of responses also were noted. In addition, the frequency distributions are presented to summarize demographic data.

Results

Demographic data

Three male and five female students, having an age range from 19 to 23 years with an average age at 21 years old, participated in the focus group session. Four of them were physically active and four of them were physically inactive. The Body Mass Index

of seven of the participants fell in the normal range, and one in the underweight range. Regarding self-perception of their own body weight, one participant reported being highly satisfied with his own weight, while six reported feeling normal, and only one reported not feeling satisfied with her body weight. When asked to hypothesized what others perceived to be their body weight, two participants reported that they believed others thought their weight to be good, four of them reported that they believed others thought that their weight required only a slight amount of improvement, and two of them reported that they believed others thought that their weight required a significant amount of improvement. With regard to their self-perception toward their health status, six participants thought that they were healthy, while two were unsure about their health status. Most of participants reported that physical activity was highly important to them.

Decisional Balance

Perceived Benefits of Participating in Physical activity

Perceived benefits of physical activity were discussed by the focus group participants. Content analysis identified three major categories pertaining to perceived benefits of physical activity that motivated the participants to engage in physical activity: physical, psychological and sociological benefits.

1. Physical Benefits

Two major themes emerged, which were physical health benefit and maintaining body shape.

Some participants reported that they engaged in physical activity to achieve physical health benefits. A comment offered by a female participant included:

"because of my personal illness, I tried to push myself to swim."

Consistently, female participants engaged in physical activity to maintain an attractive appearance. They wanted to appear physically attractive in order to attract male attention. An example of this was provided by a female participant:

> "I want to have one [a boyfriend], so I do physical activity because it makes me attractively shaped."

Another female participant noted:

> "If my friends say 'Hey you are getting fat' or something like that, I will say 'Really?' and I'll go to exercise."

For this participant, she was motivated differently by her female versus male friends. She stated that:

" if the male friend told me [you are getting fat]. I'd go [exercise] rapidly."

2. Psychological Benefits

Four major themes associated with psychological benefits of physical activity were identified from the transcripts, which were enjoyment, using time efficiently, stress reduction and feeling good.

Participants reported that they engaged in physical activity because it was enjoyable. For example, one participant mentioned that he enjoyed both the challenge of competition and the act of engaging in physical activity itself. Comments reflecting this theme included:

> "[I engage in physical activity because] it's fun, ...there are other reasons. I want to win the race...[I am] very proud [when I win a race]."

In addition, the participants reported that participating in physical activity helped them use their time more efficiently. One participant mentioned that physical activity helped him to practice meditation.

The participants mentioned stress reduction as a psychological benefit of participating in physical activity. This sentiment is summarized by the comment of one participant:

> "sometimes we study hard and then we are looking for an outlet through exercise."

One participant reported that she participated in physical activity to help her feel content. An example of this phenomenal was reflected in the explanation of a female participant:

> "when I was a child, I liked to play and run because I didn't like to stay still. I wanted to do something that would make me break a sweat, because it felt good. If I didn't do physical activity, I'd feel uncomfortable and want to do something physical. Just walking was ok. I felt good."

3. Sociological Benefits

Social reason were the major theme coded in this category such as spending enjoyable time with friends, and meeting new people.

Some participants mentioned that they engaged in physical activity for social reason. This was exemplified by the comments:

> "participating in physical activity will help people make new friends and have more interactions with others,"

Another participant said he engaged in physical activity:

> "to go looking for more friends by exercising.....".

The participants concluded that engaging physical activity helped them to spend enjoyable time with friends, meet new people, and establish relationships with others.

Perceived Barriers to Physical Activity

Participants cited a number of barriers that kept them from participating in physical activity. Content analysis identified two major categories pertaining to perceived barriers to physical activity – internal and external barriers.

1. Internal barriers

Inertia and health condition were major themes identified in this category.

Inertia was characterized by passivity, including being lazy, tired and bored (Lees, et al., 2005). Participants discussed psychological attributes such as laziness, boredom and tiredness as barriers that prevented them from participating in physical activity. These attributes represented inertias. This theme can be seen in the participants' comments:

> "today, I intended to go exercise at 5 pm. I was going to go jogging, but when it turned 5 pm, I thought I'd go at 6 pm instead. When it was 6 pm, there were many other things to do……, so I didn't go."

> "I do some physical activity, but I get bored."

> "I get tired from exercising. I am afraid I will feel sleepy at night, and I have to study."

Health conditions were also found to be one barrier to physical activity. Comments reflecting this theme included:

> "like if people were to get sick or injured, so they became uncomfortable enough to do physical activity."

2. External barriers

Three major themes were coded in this category – time constraints, lack of social support, and environment constraints.

Participants reported that they lacked sufficient time to participate in physical activities, other commitments such as assignments and social relationships vied for their time. The following statements exemplified time constraints for physical activity:

> "....people do not have time. This might be because we are living in a competitive society, so it seems to be that people have less time in general."
> "There were many other things to do. It was time to chat with friends, or to watch TV. There were many other things to do, so I didn't go [to do physical activity]."

> "In the past, I went to aerobics everyday. However, I was too tired when I come back from work. The aerobics class started at 6.30pm. After I had dinner, I wanted to sleep. I also have a lot of work to do, and also work meetings... I don't have time."

Another barrier to physical activity came from a lack of social support. Some female participants mentioned that they did not engage in physical activity because they don't have friend to go with, and they feel not confident enough to do physical activity alone. This was evident from the statements made by two female participants:

> "We don't have friends to go with... we can't go alone...we are not able to dance [aerobics] by ourselves. We are too afraid and shy something like this."

> "I want to do it [physical activity], but sometimes I don't have friends to go with."

Environment constraints were another barrier to physical activity, which included lack of place to do physical activity and weather conditions.

Participants explained that they sometimes did not engage in physical activity because they lacked a place to do physical activity. A representative statement of this theme was:

> "We don't have places to go, such as some of us live far away from places to exercise."

Participants mentioned weather conditions as barrier to physical activity. One participant stated,

> "...If it's rainy or too hot, people don't want to do physical activity."

Table 3.1 Frequency of responses of perceived benefits in participating physical activity

Benefits	Active Participants	Inactive Participants	Group Responses
Stay in shape and weight control	1	2	2*
Improved physical Health	1	1	2*
Enjoyment	2	0	2*
Be with friend	1	0	2*
Stress Reduction	0	0	2*
Use time efficiently and in positive way	0	0	2*
Feel good	1	0	0
Win the race	1	0	0
Meditation	0	0	1

N = 8 (Physical active = 4, Physical inactive = 4), 2 groups

* Group consensus

Table 3.2 Frequency of responses of perceived barriers to physical activity

Barriers	Active Participants	Inactive Participants	Group Responses
Lacked of available time	1	3	2*
No friend to go with	0	2	2*
No places	0	0	2*
Tired	0	2	0
Laziness	0	2	0
Weather conditions	0	0	2*
Health conditions	0	0	2*
Fear of injury	0	0	2*
Boredom	0	1	0

N = 8 (Physical active = 4, Physical inactive = 4), 2 groups

* Group consensus

Social support

The participants mentioned that besides their own motivation, social networks such as their peers and family influenced their decision to engage in physical activity. The following statements exemplified the influence that friends have toward the participants' decision to engage in physical activity. One participant said:

> "For me, I exercise because there are friends around me. When I was a freshman, my friends forced me to exercise. We went to exercise together in a big group. Then, we seldom went and now I don't go anymore."

When they were asked whether their boyfriends or girlfriends influence them to engage in physical activity, most of the participants reported that their boyfriends and girlfriends also influenced them. One male participant said:

> "[boyfriend or girlfriend influences] very much...it depends on how influential he/she is."

The participants' family was also found to be an influential factor to their decision to engage in physical activity. For example, one male participant who did physical activity regularly explained:

> " [I have participated in physical activity] since I was a child", and "When I was a child, I did physical activity with my dad. He forced me to do physical activity"

The participant's father was an athlete, so his father forced him to engage in physical activity since he was a child.

Suggestions to Increase Participation in Physical Activity

Participants provided several suggestions about what they needed in a health promotion program to increase the physical activity level amongst university students. First, they suggested that program should provide information about benefits associated with physical activity in general, along with its specific purpose; such as how to do physical activity to help certain ailments. Second, they noticed that successful athletes and people who were in good shape could be role models for them; therefore, strategies should be used to have these role models discuss the benefits of being physically active.

Third, they recommended having a trainer who is in good shape to demonstrate and lead physical activity sessions. Fourth, they advised that organizing sports competitions amongst students would be motivational. And last, participants suggested that an environment more supportive of physical activity was needed. For example, they suggested that free activities should be provided at the university.

Discussion

Decisional Balance

Based on the focus group results, we found that the participants perceived the benefits of physical activity to be in three categories – physical, psychological and sociological. Some participants acknowledged the physical and psychological health benefits as a reason for participating in physical activity. Physical activity appeared to provide a direct benefit by contributing to physical appearance through maintaining good body shape and weight control. Focus on the appearance of their body, particularly in relation to attracting attention and developing relationships with the opposite sex represents a major concern of young adults during this stage of life.

In addition, the findings related to the benefits of participating in physical activity revealed that it provided a positive means of enhancing psychological health and reducing stress.

Some participants reported that they engaged in physical activity because they enjoyed it and also for social reasons. This finding is consistent with other literature in this field, which found that enjoyment and the opportunity to socialize are major reasons

of male adolescent for participating in physical activity (Allison, et al., 2005). According to Yan and McCullagh (2004) social affiliation and wellness were main participation reasons to physical activity for both male and female Chinese adolescents. Physical activity has been recognized for its contribution to spending time with friends, meeting new people, and building relationships. Enjoyment and social reasons brought by physical activity encourage university students to begin or continue to engage in physical activity.

With regard to barriers to participating in physical activity, the participants reported both internal and external barriers. The internal barrier reported by the participants was inertia. Lack of sufficient time was one of the major external barriers to participating in physical activity. Many of the participants mentioned that both academic and social matters vied for their time. This result reflected less importance that the participants placed on physical activity compared with other matters, such as chatting with friends or watching television. The students prioritized these kinds of activities; it seemed that many would rather spend their time with friends or watching television than using the time for participating in physical activity. This finding showed that time-management skills need to be an area of focus for the students.

The participants also reported that not having friends to go with was another major barrier to physical activity. This finding is supported by related previous study, which concluded that participation in physical activity was lowest among Thai adolescents who reported that none or only some of their friends participate in physical activity (Page, Torlor & Suwanteerangkul, 2005). Peer support can function as a

facilitator or barrier to physical activity. Support from friends encourages university students to start or continue their participation in physical activity. On the other hand, without supportive peers, physical activity was either not attempted or abandoned.

Lack of places to do physical activity was also found to be a barrier to physical activity. This finding is backed by previous literature, which found that perceived inconvenience is a reason for dropping out of activity programs (Sallis, Hovel & Hofstetter, 1992). Individuals who lived close to exercise facilities were less likely to drop from a physical activity program than participants from more distant points (Tersalina, 1969). Supportive environments in a university setting should be taken into consideration in order to maximize participation in physical activity of university students.

It was found that the participants who were physically inactive were more likely to mention barriers to physical activity during the discussion than were the participants who were physically active. This study finding supports the assumption of the Transtheoretical model and concurs with previous studies, which reported that people in later stages (physically active) tend to have a decisional balance favoring the positive aspects (pros) of a behavior, while people in earlier states (physically inactive) tend to perceive more costs (cons) of a behavior than benefits (Marcus & Owen, 1992; Marcus, Rakowski, & Rossi, 1992).

In the focus group discussions, many statements were made that showed many of the participants seemed to be having low confidence that they would be able to participate in physical activity in a high risk situation. For example, many participants

reported that they would not participate in physical activity if they did not have friends to go with or the weather conditions were not good. Based on the findings, topics addressing self-efficacy should be considered for inclusion in a health promotion intervention to raise students' confidence toward this particular behavior.

Social Support

The study results found that the participants' decision to engage in physical activity was influenced by their respective social networks, such as friends and family. This finding concurs with previous studies, which have reported that peer and parental support was significantly related to self-reported physical activity (Prochaska, Rogers, & Sallis, 2002). Doing exercise with friends and parents supports made female adolescents improved their weight reduction (Chen, Chou & Hsu, 2005). However, peer groups were more likely to influence adolescents than were their families. In this focus group study, many participants reported that their friends influenced them to engage in physical activity; only one participant mentioned that he was influenced by his father. According to Prochaska, Rogers and Sallis (2002) physical activity behavior during adolescence is increasingly influenced by peers, while the influence of parents is expected to diminish.

Based on the focus group results, we found that some key issues that should be addressed in the intervention to increase students' physical activity behavior are: 1) motivation through role models and social support; 2) emphasizing the positive outcomes of physical activity, especially for maintaining students' body shape and other health benefits; 3) the demonstration of physical activity; 4) providing low cost or free

access to physical activity facilitaties; 5) encouraging self-efficacy in physical activity behavior.

The results found in this study harmony with some previous studies. According to De Bourdeaudhuji et al.(2005) self-efficacy, perceive benefits and perceive barriers were found to be determinant of physical activity. Additionally, self-efficacy, attitude or beliefs, family or friend support and perceived benefits and barriers were found as predictors of physical activity in adolescence (De Bourdeaudhuji, et al.,1998; Sallis, et al., 2000).

The study results were consistent with the TTM regarding decisional balance and self-efficacy constructs, as well as social support with respect to physical activity behavior.

Study Limitations

Although this focus group data provide some useful insights into influencing factors to physical activity behavior of university students, there are some limitations that are worthy of attention. The single focus group and small sample size may be considered as a limitation. Even so, this study intended to gain in depth understanding of factors influencing participation in physical activity among adolescents, rather than to generalize the results. Due to the hectic schedules of the participants, the focus group discussion could be conducted only in one 90-minute session; the researcher intended to explore the responses in more detail but was limited by time. This may be regarded as another limitation.

Policy Implication

A small study made limitation and conservative policy recommendation. However, the policy maker may consider the following suggestions. First, School-Based Health Promotion Programs should be encouraged and facilitated in universities. Health promotion interventions that foster perception of self-efficacy and developing self-regulation skills such as goal setting and overcome barriers strategies should be initiated and implemented to the students in order to encourage them to increase their participation in physical activity. The Sports department or other organizations, which take responsibility for students' health at university should gather and distribute information about available resources that may be beneficial for students in improving their physical activity behavior. Examples of these resources include, physical activity courses offered in school, exercise programs, and sport facilities available both in university and community.

Secondly, supportive environments for physical activity should be promoted in university. The universities should provide supportive environments for physical activity in order to encourage the students to be physically active. This includes low-cost or free access to physical activity facilities, for example, exercises programs, special sport events, and enjoyable physical activities. Because many students felt that they lack of places to participate in physical activity, extended hours of the gym or sports facilities could make more convenient to the students. These changes may motivate students to increase their physical activity level.

Recommendations for Further Research

Finally, the researcher makes some recommendations for further research in this subject.

First of all, health and exercise researchers should consider about conducting multiple focus group sessions of university students based on gender in order to examine whether factors influencing participation in physical activity differ between genders. Secondly, large scale studies are needed to explore university students' knowledge, opinion, attitude, and perception in physical activity domain in order to gain a better understanding of the physical activity behavior of young adult. Thirdly, the Stages of Change construct of the Transtheoretical model should be examined whether factors influencing participation in physical activity differ in students across stages of change. These studies may be useful for health and exercise practitioners to understand influential factors toward this particular behavior among university students. This also may help to develop tailored interventions to improve physical activity level among university students.

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Examining Physical Activity in University Students: A Stage of Change Approach

Abstract

This study was designed to investigate the proportion of university students' in each stage of change with regard to physical activity behavior. It also aims to investigate the differences of the students' demographic and psychosocial characteristics related to physical activity behavior across the stages of change. A total of 1,464 freshmen students from Kasetsart University, Thailand completed a survey and stage algorithm questionnaire. It was found that 57.8% (846) of the participants were female and 42.2% (618) were male freshmen students, the age of all ranged from 17 to 26. A majority of the participants lived with their families (63.2%). The Body Mass Index of the participants fell into four different categories: 32.4% (473) fell in the underweight range, 58.5 % (856) in the normal range, 6.8% (100) in the overweight range, and 2.0% (30) in the obese range. Regarding stages of change with respect to physical activity, 19.6% (287) of the participants reported being in the Precontemplation stage (PC), 21.8% (319) in the Contemplation stage (C), 44.2% (647) in the Preparation stage (P), 8.9% (130) in the Action stage (A), and only 5.5 % (81) in the Maintenance stage (M).

There were significant differences in response according to gender and BMI status (χ^2 (3, n = 1459) = 113.234, p < .000), gender and stages of change (χ^2 (4, n = 1464) = 81.026, p < .000), and BMI status and stages of change with respect to physical activity (χ^2 (12, n = 1459) = 26.078, p < .010). However, there were no significant

differences found in response according to type of living and the stages of change with respect to physical activity (χ^2 (4, n = 1450) = 7.938, p < .094).

The findings of this study have implication for health and exercise professionals designing stage-matched interventions to increase physical activity participation of young adults in school settings.

Introduction

The potential benefits of being sufficient in regular physical activity have been proven by copious amounts of scientific evidence. Participating in regular physical activity has both physical and psychological benefits for people in all age groups, including young adults. Research studies have revealed that there are many physical benefits of physical activity for young adults, such as improving cardiovascular endurance, improving lipoprotein and blood pressure profiles in at-risk youth, as well as improving immune system function. There are also positive psychological health benefits, such as enhancing self-esteem, and reducing anxiety and depression (United States Department of Health and Human Services [USDHHS], 1996, 2000; Alpert & Wilmore, 1994; Armstrong & Simon-Morton, 1994; Calfas & Taylor, 1994; CDC, 1997; Blair, Kohl & Gordon, 1992). On the other hand, insufficient physical activity may cause negative effects to health such as increasing the risk of cardiovascular disease, diabetes, and obesity, and greatly increasing the risks of colon cancer, high blood pressure, osteoporosis, lipid disorders, depression and anxiety (WHO, 2003c). Despite the fact that the health benefits of regular physical activity have been proven, a prevalence of inactive

people in various age groups, including young adults, were reported around the world. For instance, the USDHHS (2000) reported that approximately 35% of children and adolescents in the United States were not successful in meeting the minimum guidelines of physical activity. The World Health Organization (WHO) also estimated that nearly two-thirds of children were inadequately active (WHO, 2003c).

Research studies have reported that participation in physical activity is associated with age. Stephens, Caspersen (1993) and Lee (1993) reported that physical activity prevalence among adults declines with increasing age. King and colleagues (1992) also reported that physical activity has been found to reduce with age after late adolescence or early adulthood. Accordingly, youth who are able to adopt regular physical activity may be more likely to be active in adulthood (Prochaska, 2002). Furthermore, one of the barriers to physical activity identified through research on the elderly was poor exercise habits acquired in youth.

Numerous research studies consistently reported that youth are in a critical age of physical activity inclination and many of them were insufficient to meet a minimum requirement of participating in physical activity. Remaining physically inactive may lead to negative consequences of health in later life. Therefore, persuading inactive young adults to become more active and preventing active young adults from relapsing is one of the important goals for health professionals.

The Transtheoretical Model has been used widely in the areas of physical activity in various age groups in many countries. However, little empirical evidence is available to describe the application of stage of change paradigms to physical activity in the Thai

context. Additionally, there is no published literature found about the application of the Transtheoretical Model of university students in Thailand. Examining the physical behavior of university students using the stages of change construct of the Transtheoretical Model will provide important information which will assist the researcher to accurately understand where the students are in the stages of change, and then be able to design and match the appropriate intervention needed for treatment (Hausenblas, Nigg, Downs & Connaughton, 2002, Veverka, 2001). "One of the basic principles of the stage-matched intervention is to attract the attention of individuals by exposing them to messages that are specific to their levels of predisposition and motivation to act" (Godin, Lambert, Owen, Nolin & Prud'homme, 2004). Therefore, implementation of a strategy that uses stage-specific interventions based on Prochaska's Transtheoretical Model of Behavior Change is one of the most effective approaches (Cardinal, 1997) in order to help the students to adopt physical activity.

The purposes of this study were to: 1) investigate the proportion of university students across the Stages of Change construct of the Transtheoretical Model and 2) examine the relationship of demographic and psychosocial variables and the Stages of Change.

Theoretical framework

The Transtheoretical Model of behavior change (Prochascha & Norcross, 1997) was used as the theoretical framework for this study. The model consists of four main constructs – stages of readiness to change, processes of change, self-efficacy and

decisional balance. The stages of readiness to change is the only construct from the model used for this study. Prochascha and DiClemente (1983) recommended that individuals who adopt new behaviors move through six stages of change: Precontemplation, Contemplation, Preparation, Action, Maintenance and Termination.

Precontemplation is a period in which the individual has no intention to make a change of the target behavior in terms of the foreseeable future, which is generally defined as within the next six months. Contemplation is a period of time in which the individual is aware of the problem and intends to make a change of the target behavior within the next six months, but has not yet taken action. Preparation is a period of time in which the individual intends to take action to change his/her behavior in the near future, which is generally defined as within the next thirty days. Action is a period of time in which the individual has successfully modified the problem behavior for a period of less than six months. Maintenance is a period from six months after behavior change onward that the behavior change is maintained. Termination is a period in which the individual has no temptation to resume the habit. However, in physical activity behavior, "it is unclear if a point in time exist at which a person can be defined as being in termination" (Burkholder, & Nigg, 2002), therefore, only the first five stages of the stages of change constructs were examined in this study.

One of the major problems of recent health promotion programs is that "most programs are action-oriented and focus on immediate behavior change" without concern for the stages of readiness to change that people are in (Riebe, 1997). The major strength of the Transtheoretical Model of behavior change is that it accounts for where people are

and how people will change their behavior. This study aimed to assess the readiness to change in the physical activity behavior of university students. The result of this study may help health and physical practitioners to gain better understanding of the stages of readiness to change in the physical activity behavior of young adults.

Research Methods

The survey method was used to collect data in this study. Multistage sampling was used to recruit the participants. A purposive sampling was used to select certain classes offered by Kasetsart University during the first semester of the 2004 academic year. The classes "Health for Life" and "Physical Education Activity" were chosen because large numbers of freshmen students were enrolled, as the classes were often a requirement for students from all university majors. Willing cooperation from the instructors was an additional reason for these classes being selected.

Five sessions of "Health for Life", and 51 sessions of "Physical Education Activity" were offered in the first semester of the 2004 academic year at Kasetsart University, Bangkhen campus where the actual research took place. All five sessions of "Health For life" were selected, and 26 sessions of "Physical Education Activity" were selected by convenience sampling for data collection. After completing the purposive and convenience sampling for selecting the classes and the sessions, convenience sampling was used to select the participants in this study. The freshmen students who registered for "Health for Life" and "Physical Education Activity" in the first semester of the 2004 academic year and attended the class during of the first week of August 2004 were

selected as potential participants in this study. There were 1,500 questionnaires distributed to the students who met the criteria described above.

Participants

The participants of this study consisted of 1,464 freshmen university students from Kasetsart University, Bangken Campus, Bangkok, Thailand, They were 846 female and 618 male freshmen students. The participants included representatives from eleven out of twelve colleges (know as faculties in Thailand) – Agriculture, Business Administration, Fisheries, Education, Forestry, Humanities, Social Science, Agro-Industry, Economics, Engineering, and Science. Only the Veterinary College had no student representatives in this study.

Measurement Instruments

A two-page questionnaire was used to implement this study. The questionnaire consisted of two sections: the demographic survey and the stages algorithm. The demographic survey developed by the researcher aimed to examine participants' demographic, biological and psychosocial variables. The demographic and biological survey consisted of eight checklist and fill in the blank questions examining age, sex, weight, and height. The psychosocial variables of interest in this study were self-perception of the participant's own body weight and how the participants hypothesized other people's perception toward their body weight; the survey consisted of two questions on a three point Likert scale.

The stages algorithm, a previously validated measure, (Reed, et al., 1997) addressed stages of readiness to change with regard to physical activity behavior. This defined the five stages of behavior change based on the Transtheoretical Model: Precontemplation, Contemplation, Preparation, Action, and Maintenance. The participants were asked whether or not they have been regularly participating in physical activities of moderate intensity. (Regular physical activity = 5 days or more per week for 30 minutes or more daily). Then they were classified according to the stages of readiness to change by selecting one statement among five that best described their current situation with respect to physical activity behavior. The statements were:

- ○ Yes, I have been for more than 6 months.
- ○ Yes, I have been, but for less than 6 months.
- ○ Not regularly, but I engage in such activities occasionally and plan to start on a regular basis within the next month.
- ○ No, but I'm thinking of starting in the next 6 months.
- ○ No, and I am not thinking of starting in the next 6 months.

For validity testing, the stages algorithm was translated into the Thai language by the researcher and a university research faculty member who is fluent in both languages. The translated stages algorithm was then reviewed by a panel of experts. The panel consisted of two experts in physical activity and exercise science and one expert in health behavior. The panel determined content validity and appropriateness of items in the domain of stages of change and also the instruction and definitions used in the questionnaire. After completing the review, the researcher revised the stages algorithm following the feedback given by the expert panel. The questionnaire was then backward translated from Thai to English by an U.S. doctoral student and a Thai university faculty

member with a Ph.D. from the U.S. who is proficient in both Thai and English. The two versions of the questionnaire backward translations were then compared with the original stages of change questionnaire and reviewed again by the panel of experts. The minimal revision of language used in the stages algorithm was made in order to make the questionnaire more suitable and understandable in the Thai context.

Procedures

Approval for this project was obtained from the Oregon State University Institutional Review Board, and additional permission was obtained from Kasetsart University, Thailand, where the actual research took place.

The researcher requested permission and cooperation for data collection from the "Health for Life" committee, and the chair of the Physical Education department. Once the research protocol was approved, the researcher contacted the instructors to schedule the data collection. The instructors of both classes introduced the researcher to the students in each session. There, the researcher briefly discussed the research study with the students and asked for the students' cooperation in filling out the questionnaire. Primarily, the researcher conducted the survey; however due to the conflicting schedule of the researcher, the instructors conducted the survey by themselves in some sessions of the Physical Activity class.

There were 1,479 questionnaires collected, yielding a response rate of 98.6 %. The questionnaires were screened by the researcher. Ineligible participants, such as students who were not freshmen, were excluded. Missing data was screened and coded

systematically before the data was entered into the statistics program. A total of 1,464 eligible questionnaires were used in this study.

Data Analysis

The Statistics Package for Social Science (SPSS) for Windows version 13 was used to analyze the data. Frequency count, percentage, arithmetic mean and standard deviation were employed to determine the participants' demographic distribution. Frequency count was also used to determine the distribution of the participants across stages of change in physical activity behavior. The Chi-square statistic was used to test the association between gender, BMI status, and living status across stages of change. The Chi-square was also used to test the association between the students' self-perception of their own body weight and BMI status, and the students' self-perception of their own body weight and the students' hypothesis of other people's perception of the student's body weight.

Results

Demographic Characteristics

Of the 1,464 eligible participants, 57.8% (846) were female and 42.2% (618) were male freshmen students. The age of participants ranged from 17 to 26, and the average age was 19 (SD = .89). A majority of the participants lived with their families (62%), and the rest of the participants (36%) did not.

Psychosocial Characteristics

Body Mass Index (BMI) of the participants ranged from 14.8 to 37.9. The BMI of the participants fell into four different categories: 32.4% (473) were in the underweight range, 58.5% (856) in the normal range, 6.8% (100) in the overweight range, and 2.0% (30) in the obese range.

Regarding self-perception of their own body weight, 53.5% (783) of the participants reported that they wished that their body weight would be reduced, 27.3% (399) of the participants reported that they wished that their body weight would stay the same, while the rest, 19.1% (279) of the participants, reported that they wished that their body weight would be increased. When asked to hypothesize what others think about their body weight, 21.2 % (310) of the participants reported that they believed others thought they were underweight, 46.2% (677) of them reported that they believed others thought that their weight was normal, and 32.2% (462) of them reported that they believed others thought that they were overweight.

With regard to self-perception of their own body weight by gender, 63.9 % of the female participants reported that they wished that their body weight would be reduced, 24.8% of the participants reported that they wished that their body weight would stay the same, while the rest, 11.2% of the participants, reported that they wished that their body weight would be increased. With regard to other perception of the female students body weight, 16.8% of the participants reported that they believed others thought they were underweight, 47.6% of them reported that they believed others thought that their weight

was normal, and 35.6% of them reported that they believed others thought that they were overweight.

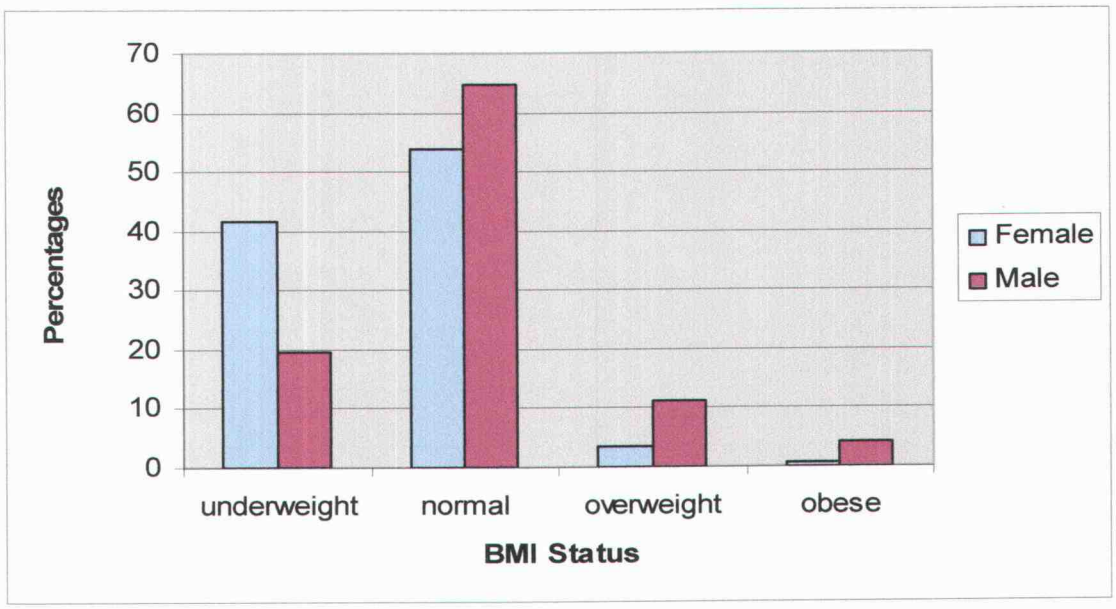
On the other hand, 39.3% of the male participants reported that they wished that their body weight would be reduced, 30.7% of the participants reported that they wished that their body weight would stay the same, while the rest, 29.9% of the participants, reported that they wished that their body weight would be increased. With regard to other perception of the male students body weight, 27.4% of the participants reported that they believed others thought they were underweight, 44.8% of them reported that they believed others thought that their weight was normal, and 27.9% of them reported that they believed others thought that they was overweight

Table 4.1 Mean scores and standard deviation of the participants' age, and also frequency and percentage of the studentss' BMI, and their self-perception of their body weight

Variables	Gender	
	Female	Male
Age	$\bar{\chi}$ 18.94 (*SD* = 0.78)	$\bar{\chi}$ 19.30 (*SD* = 0.99)
BMI status (n=1459)		
Underweight (n = 473)	352 (41.66%)	121 (19.60%)
Normal (n = 856)	456 (53.96%)	400 (64.72%)
Overweight (n = 100)	30 (3.55%)	70 (11.36%)
Obese (n = 30)	5 (0.59%)	25 (4.05%)
Self-Perception of their body weight (n = 1461)		
Reduce (n = 783)	541 (63.9%)	242 (39.3%)
No Change (n = 399)	210 (24.8%)	189 (30.7%)
Increase (n = 279)	95 (11.2%)	184 (29.9%)

With regard to gender and BMI status, there were significant differences in response according to gender and BMI status (χ^2 (3, n = 1459) = 113.234, p < .000). The results showed that male students were more likely to be overweight (BMI 25-29.9) or obese (BMI > 30.0) than female students.

Figure 4.1 Distribution of gender classified by BMI Status



Stages of Change

With regard to the stages algorithm, 19.6% (287) of the participants reported being in the Precontemplation stage (PC), 21.8% (319) of the participants reported being in the Contemplation stage (C), 44.2% (647) of the participants reported being in the Preparation stage (P), 8.9% (130) of the participants reported being in the Action stage (A), and only 5.5 % (81) of the participants reported being in the Maintenance stage (M). The distribution of Stages of Change classified by gender showed in Table 4.2

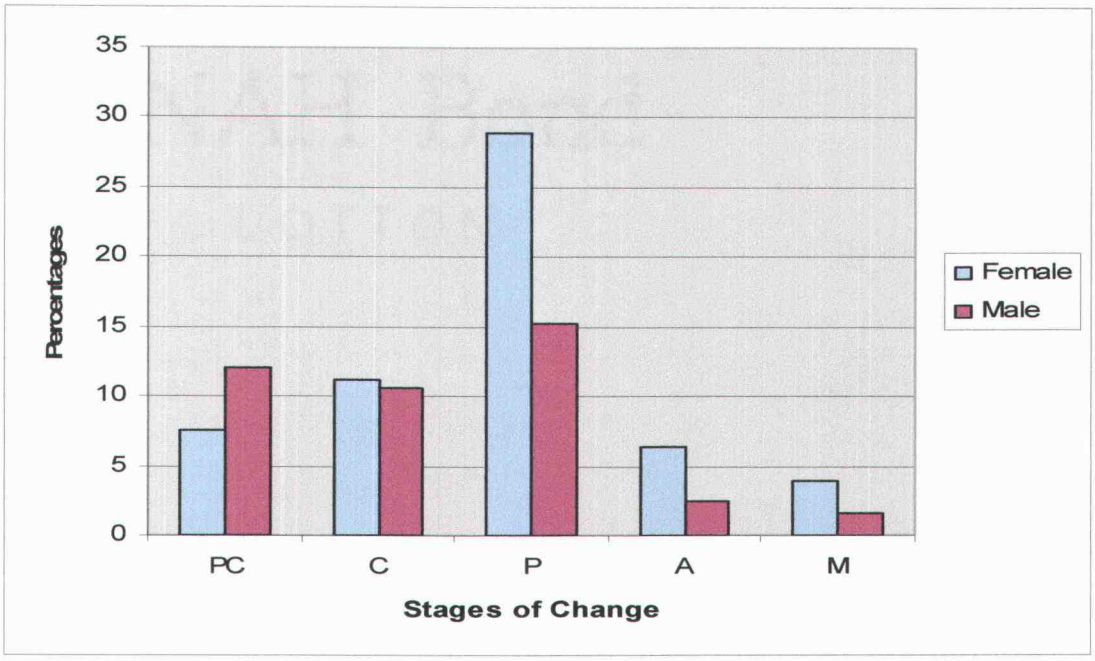
Table 4.2 Distribution of Stages of change classified by gender

Gender	Stages of Change*				
	PC n, (n %)	C n, (n %)	P n, (n %)	A n, (n %)	M n, (n %)
Female (n=846)	110 (7.51)	163 (11.13)	423 (28.89)	93 (6.35)	57 (3.89)
Male (n=618)	177 (12.10)	156 (10.66)	224 (15.30)	37 (2.53)	24 (1.63)
Total (n=1,464)	287 (19.61)	319 (21.79)	647 (44.19)	130 (8.88)	81 (5.52)

*χ^2 (4, n = 1464) = 81.02, $p < .000$)

The Chi-square test revealed that there were significant differences in response according to gender and stages of change with respect to physical activity (χ^2 (4, n = 1464) = 81.02, p < .000). The results showed that male students were more likely than female students to be in the Precomtemplation, Contemplation, and Preparation stages.

Figure 4.2 Distribution of Stages of Change classified by gender



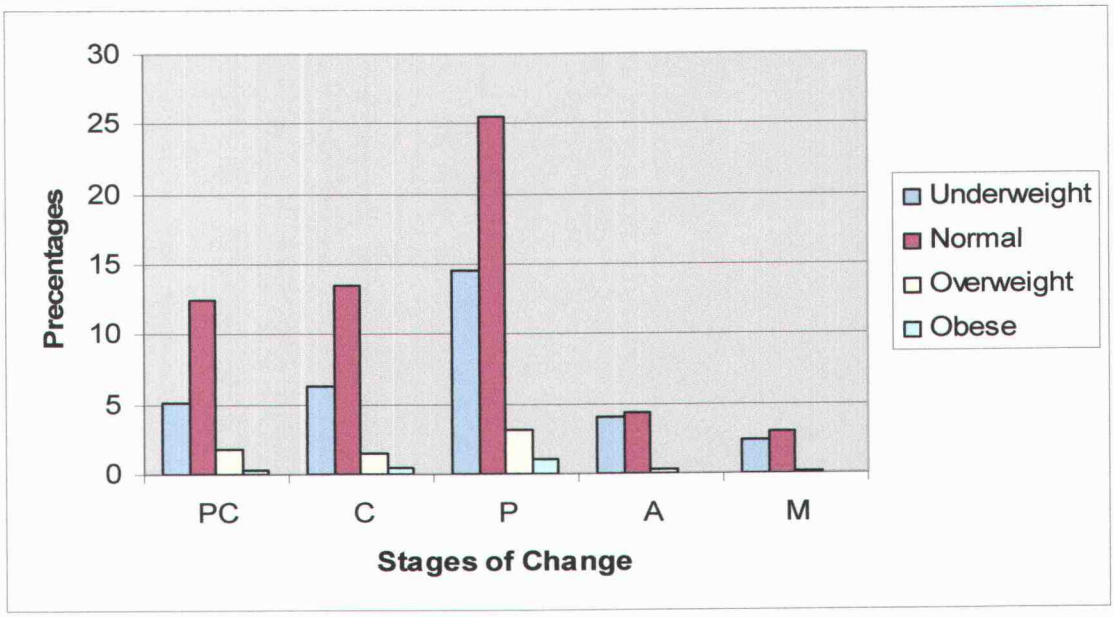
With regard to BMI status and stages of change, there were significant differences in response according to BMI status and stages of change with respect to physical activity (χ^2 (12, n = 1459) = 26.078, p < .010). The results showed that both female and male students who were classified as overweight and obese were more likely to be in the Precontemplation, Contemplation and Preparation stages rather than the Action and Maintenance stages. People in these first three stages were classified as physically inactive because they do not participate in regular physical activity.

Table 4.3 Distribution of students' BMI status and Stages of Change

BMI Status (n=1,459)	Stages of Change*				
	PC n, n (%)	C n, n (%)	P n, n (%)	A n, n (%)	M n, n (%)
Underweight (n = 473)	74 (5.07)	93 (6.37)	213 (14.60)	59 (4.04)	34 (2.33)
Normal (n = 856)	181 (12.41)	196 (13.43)	372 (25.50)	64 (4.39)	43 (2.95)
Overweight (n = 100)	26 (1.78)	22 (1.51)	45 (3.08)	4 (0.27)	3 (0.21)
Obese (n = 30)	5 (0.34)	7 (0.48)	16 (1.09)	1 (0.07)	1 (0.07)

*χ^2 (12, n = 1459) = 26.078, $p < .010$)

Figure 4.3 Distribution of Stages of Change classified by BMI Status



Regarding students' self-perception of their own body weight and their reported BMI status, The Chi-square test revealed that there were significant differences in response according to self-perception and reported BMI of their own body weight (χ^2 (6, n = 1456) = 304.20, p < .000).

Figure 4.4 Distribution of Female Students' Self-Perception of their Body weight and BMI Status

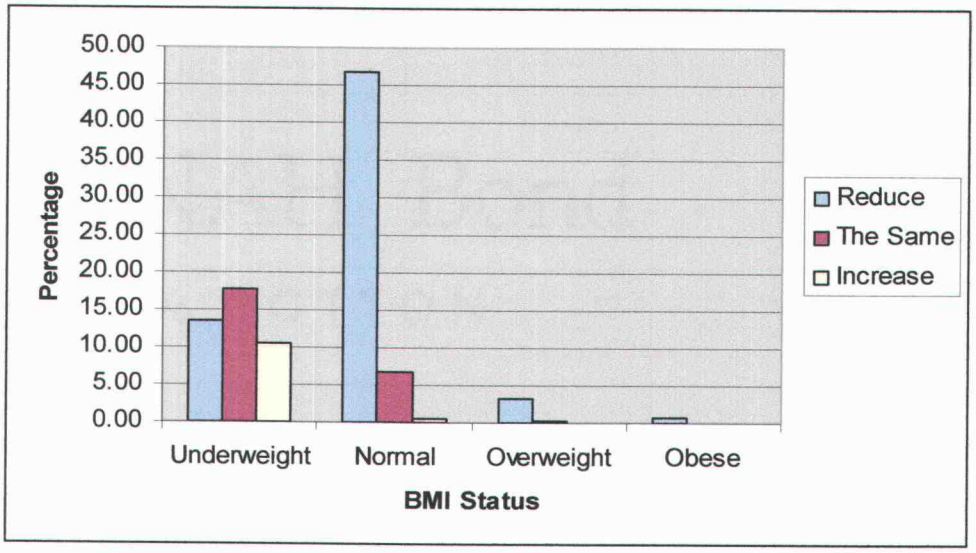
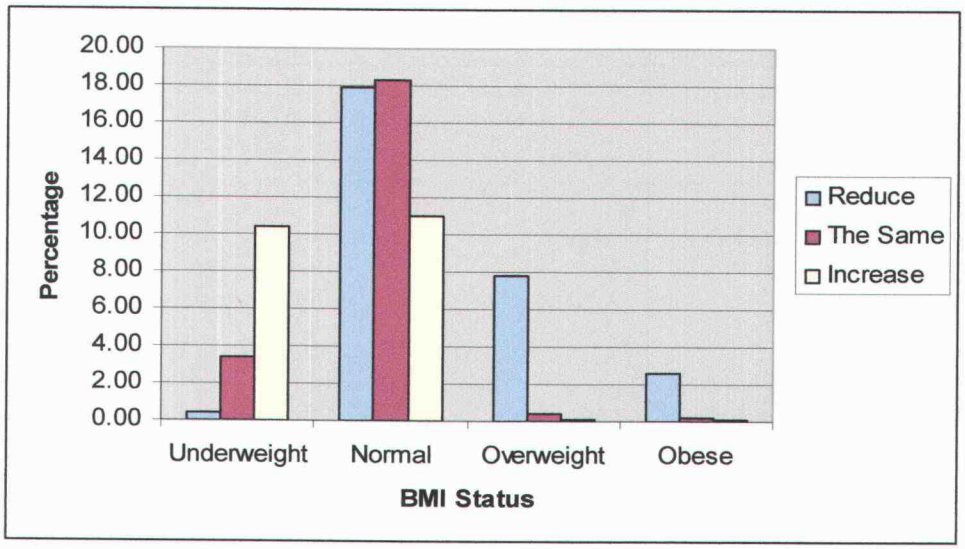


Figure 4.5 Distribution of Male Students' Self-Perception of their Body weight and BMI Status



Regarding students' self-perception and others' perception of their own body weight, The Chi-square test revealed that there were significant differences in response according to self-perception and others' perception of their own body weight (χ^2 (4, n = 1457) = 899.747, p < .000).

There were no significant differences in response according to type of living and stages of change with respect to physical activity (χ^2 (4, n = 1450) = 7.938, p < .094).

Discussion

The results of this study indicated that the majority of the participants were physically inactive because 85.5% of the students were in either the Precontemplation, Contemplation, or Preparation stages. Only 8.9% and 5.5 % of the students were in the Action and Maintenance stages, respectively, and classified as being physically active. The results of this study supported the findings of previous international research studies, which found that many young adults didn't participate in regular physical activity. A study curried out in Hong Kong reported that the majority of undergrad students (68.8%) were classified in Precontemplation, Contemplation and Preparation Stages, and only 8.7% of students reported being in Maintenance stage (Callaghan, et al., 2002). In another study, the adolescents that De Bourdeaudhuij et al., (2005) found to be classified in the Precontemplation, Contemplation and Preparation Stages totaled 41.3%. In this study, the fact that all of the participants were freshman students experiencing transitions in their lives may explain why there were a high number of students who were physically inactive. It has been hypothesized that physical activity tends to decline when students

leave high school and enter university (Pinto, 1995). A lapse in physical activity can be caused by a drastic lifestyle change, such as leaving home to pursue higher education (De Bourdeaudhuij et al., 2005). Furthermore, the data of this study was collected during the first semester of the 2004 academic year, when many additional academic and social events were required of freshmen students. Some of these activities not only consumed the students' time but were also physically strenuous, which may have prevented them from participating in physical activity. The school environments were associated with activity levels (Fein, et al., 2004).

The results of this study show that there is a need for a health promotion intervention to encourage these young adults to adopt or maintain their participation in physical activity because the number of students who were physically inactive was excessively high. Numerous research studies revealed that inactive children and adolescents are more likely to become inactive adults (Janz, Dawson, & Mahoney, 2000; Malina, 2001); a sedentary lifestyle during youth may result in negative effects to health later in life. A previous study reported that becoming physically inactive during the transition from adolescence to adulthood was associated with being overweight and obese in both males and females (Tammelin, Laitinen, & Nayha, 2004).

With regard to BMI and Stages of Change, the results from the Chi-square analysis revealed that there was significant difference between BMI and Stages of Change. Students who were overweight and obese were more likely to be in Precontemplation, Contemplation and Preparation Stages than Action and Maintenance stages. The study results concurred with previous research studies, which found that

adolescents who were in Action and Maintenance stages had the lowest BMI score compared with adolescents who were in the first three stages (Hausenblas, Nigg, Downs, Fleming, & Connaughton, 2002). Additionally, obese youth were more sedentary than non-obese youth, and they were more likely to decrease in physical activity than non-obese youth (Epstein, et al, 2005).

With regards to association between Stages of Change and demographic variables, the study results found that there were significant differences in response according to gender and Stages of Change. Female students were more likely to be physically active than male students. The results of this study did not correspond with the results of some previous research studies, which mostly found that men were more likely to be physically active than women. The potential reason for this finding may be because slim body shape is currently a major concern for female adolescents and young adults in Thailand. In practice, female students are more likely to be concerned about their diet and participate in physical activity in order to stay in good shape. The results of this study were partially supported by the focus group study conducted in the previous phase. In a focus group we conducted together with this study, the result revealed that one major reason that motivated the students to participate in physical activity was to maintain body shape. During the discussion, the female participants were more likely to address this issue than the male participants. Another potential reason that females were more physically active than male students may be because males were more likely to report participating in vigorous activities, such as weight lifting or sports, which require sport facilities and equipment; without access to the appropriate equipment, it is more

difficult for male students to participate in physical activity. On the other hand, moderate activities such as walking or aerobics were more popular among females (Pinto, 1995), which made it easier for them to participate in physical activity. Availability and accessibility of the university's sport facilities need to be taken into account with participation in vigorous physical activity.

As far as the BMI status is concerned, the BMI status of most students (58%) fell into the normal range; only 6.8% and 2.1% of the students fell into the overweight and the obese ranges respectively. Although the majority of the students' BMI status fell into the normal range, remaining physically inactive may still result in becoming overweight or obese later in adulthood.

With regard to gender and BMI status, the results showed that male students were more likely to be overweight or obese than female students. This result concurred with some previous international studies which found that Australian male university students were more likely to be overweight or obese compared to female students, 25% versus 9% (O'Dea, 1999). This result was also supported by this study's findings that male students were more likely to be sedentary than female students because they were more likely to be in the Precomtemplation, Contemplation, and Preparation stages.

Regarding self-perception of their own body weight, although the majority of the students (58.8%) were in the normal range, and 32.4 % of the students were reported in the underweight range, more than half of the students (53.5%) reported that they wished that their weight would be reduced. Female students (63.9%) were more likely to want to lose weight than male students (39.3%). The results from this study reflect that the

students seemed to be over-concerned with their weight. Despite not being overweight, they felt overweight and wanted to reduce it. Wardle, Haase and Steptoe (2005) found that women students from Asia reported extremely high levels of weight concern. Additionally, the researchers also reported that compared with university students in other regions, Asian university students had the highest perception of themselves as overweight, and these students attempt to lose weight even though their body weights are generally low. Misperception of weight may lead these young adults to engage in unhealthy behavior, such as meal skipping, improper diet, and other unhealthy weight loss strategies, which may lead to negative consequences to their health. To prevent unnecessary weight loss efforts in students who are not overweight, there is a need for health promotion programs addressing healthy diets along with physical activity to promote healthy self-perception toward body weight among university students. On the other hand, current health promotion messages or campaigns for promoting weight control have to be considered carefully because they may cause negative side effects and increase risk for women in this age group such as increasing weight loss efforts in women who are not overweight and developing behavior associated with eating disorders (Zabinski, et al., 2001, Wardle; Haase, & Steptoe, 2005).

Study Limitations

Some limitations of this study were addressed as follows:

First, even though the questionnaires used in this study were validated, the data relied on self-reported demographics, biological and psychosocial variables, and stages of

readiness to change in physical activity. No other source of data was used to confirm the results. Therefore, some errors may have occurred, such as misclassification of the stages of change or inaccurately self-reported body weight and height. Secondly, due to the conflicted schedule of the researcher during the data collection process, some questionnaires were distributed to the university students by the teachers who were in charge in each class session. This might have caused some differences in the way that the project was explained.

Policy Implication

First, the study revealed that the cumulative number of the students who were in the Precontemplation, Contemplation, and Preparation stages was 85.5%. There is a need for stage-matched intervention in order to motivate the students to participate more in physical activity behaviors on a regular basis. Additionally, the university should mobilize university resources to improve students' physical activity behavior. For example, "Physical Education Activity", one of the courses required for most curriculum offered by Kasetsart University, might be one possible resource for improving students' physical activity behavior. Additionally, a research study related to "Physical Education Activity" class should be done in order to improve the effectiveness of the course. Secondly, there are many reasons for students to not regularly participate in physical activity. Many researches have concluded that physical environmental factors are one category of determinants of physical activity (Sallis & Owen, 1999). Availability and accessibility of physical activity facilities, such as exercise gyms and equipment for

students, should be supported by the university in order to motivate university students to increase their participation in physical activity. However, due to the limitation of budgets, increasing physical activity hardware facilities may not be easy or possible in a short time period. Therefore, other strategies, which are less expensive but able to motivate the students to increase their physical activity participation such as providing a variety of physical activity options, should be also available for the students. Lastly, Previous studies consistently found that enjoyment and social reasons are the most popular reasons for adolescents and young adults to engage in physical activity (Allison, Dwyer, Goldenberg, Fein, Yoshida, & Boutilier, 2005). Therefore, a health promotion program introducing and demonstrating a variety of fun physical activities should be promoted in universities and university settings in order to motivate university students to increase their participation in physical activity.

Recommendations for Further Research

Finally, the researcher makes some recommendations for further research in this subject.

First, this study aimed to examine only first year students' stages of readiness to change with regard to physical activity, so the results are not a generalization of all university students. Freshmen students have some differences in lifestyle during their first academic year because they are in the transition from high school to university. Therefore, further research investigating students' stages of readiness to change with regards to physical activity throughout university should be done in order to see the large

picture of the students' behavior. Secondly, additional data collection related to physical activity behavior should be conducted in future research. In this study, data relied on self-reported demographics, biological and psychosocial variables, and also self-evaluated stages of readiness to change in physical activity. Therefore, misclassification of stages of readiness to change and/or other errors may occur. Thirdly, although 91.2 % of the students' BMI reported in normal and underweight range, more than half of the students (53.5%) wished to reduce their weight, further qualitative research such as focus group study should be done to gather in-depth information in the self-perception of young adults in this age group. Lastly, Examining negative side effects of health messages and media campaigns related to promoting weight control, especially in young adults, should be considered by health and nutrition professionals because the messages and campaigns may increase a risk of developing unhealthy eating behaviors in this age group.

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Effectiveness of Applying the Transtheoretical Model to improve Physical Activity Behavior of University Students

Abstract

The study used a pre-post randomized experimental design to determine whether the Trantheoretical Model-based (TTM) interventions were effective for improving physical activity behavior among university students. There were 210 freshman university students, who were classified in Precontemplation, Contemplation and Preparation stages, randomly assigned to either experiment or control groups for each stage. The students in the experimental group received eight-week stage-matched interventions and participated in regular physical activity classes, while the students in the control group participated in regular physical activity classes only. After finishing the interventions, physical activity level, and all of the TTM constructs (self efficacy, perceived benefits of physical activity (pros), perceived barriers to physical activity (cons), experiential and behavioral processes of change) were compared to the baseline. The students in the experiment group significantly improved their TTM construct scores compared to the baseline in all of the study variables: stages of change, self efficacy, pros, cons, and experiential and behavioral processes of change with regard to physical activity. The significant differences between groups were also found in all of the TTM constructs, but no significant difference was found between groups in physical activity level. The students who received the TTM-based intervention had greater improvement in stages of change, self-efficacy, pros, experiential and behavioral processes of change in relation to physical activity, but perceived fewer cons of physical activity. There were

significant differences found in processes of change and physical activity behavior across stages of change, but no significant difference found between stages of change and self-efficacy, pros and cons in relation to physical activity behavior.

The results of this study indicated that stage-matched intervention can be an effective means of increasing participation in physical activity among university students. However, because the current study findings partially supported the assumption of the TTM; there is a need for further research to validate whether the TTM is applicable for non-western cultures, including Thai culture.

Introduction

Non communicable diseases (NCDs) have been recognized as one of the global public health problems. The World Health Organization (WHO) reported that NCDs cause 60% of global deaths, of which 66% occur in developing countries (WHO, 2002). Additionally, these estimates are anticipated to increase to 73% by 2020. (WHO, 2005).

In Thailand, non-communicable diseases have become the leading cause of morbidity and mortality among the Thai population. The mortality rate from Cardiovascular Disease (CVDs) among Thai people has risen from 58.5% in 1993 to 65.4 % in 1998 (Panidchakul, 2003). Additionally, the increasing trend of the non-communicable diseases is evident in the data for hospital admissions. For example, a prevalence of heart diseases has risen from 56.5 to 285.4 per 100,000 patients from 1985 to 2000 and a prevalence of cancer has risen from 34.7 to 71.1 per 100,000 patients from 1994 to 2000 (Public Health Ministry, 2000). As a result, the economic cost for NCDs

treatment has become one of the largest expenditure in national health care budgets (Panidchakul, 2003).

Physical inactivity is a major risk factor of NCDs. Insufficient physical activity increases the risk of coronary heart disease and various cancers, and all cause of morbidity and mortality (U.S. Department of Health and Human Services, 1996). Benefits of regular physical activity for health have been proven by many scientific studies. Despite the fact the benefits of physical behaviors, WHO indicated at least 60% of the global population fails to achieve 30 minutes moderate intensity physical activity daily (WHO, 2005).

The Thai National Statistics Office reported the number of Thai people fifteen year old and above who exercise regularly were 21.3%, 25.7%, 30.7% and 24.2% in 1987, 1992, 1997, and 2001 respectively (Vibulpolprasert, et al., 2003). Research studies carried out in Thailand revealed consistent results that exercise behaviors among Thai people in various age groups remain low (Polin, 1999; Sumkaew, 2002; Intorn, 2003).

Participating in physical activity has immediate health benefits for people in all age groups. However, experts hypothesized that physical activity prevalence among adults declines with increasing age (Stephens, & Caspersen, 1993; Lee,1993) the decline is especially steep between the critical ages of 15 to 24 years (Nigg, 1999). Most university students are typically between the critical ages of declining physical activity. Numerous studies indicated that transition from high school to university is a complex phenomenon and may cause the change in the physical activity pattern. This period has been recognized as a key point for intervention to assist the students adopt and maintain

an active lifestyle (Dishman 1994). Additionally, helping the students to adopt their active lifestyle early of their university careers will help the young adults to set a pattern of physical activity behavior that can be carried over into adulthood (Sallis & Patrick, 1994; Anderson, et al, 1998). Furthermore, freshmen students are the ones who will become the leaders tomorrow. Through adopting and maintaining a physically active lifestyle, these young adults will become positive role models for school peers, family members, and eventually workforce colleagues (Gyurcsil, Bray, & Brittain, 2004). The ultimate result of this would be the founding of more healthy communities.

The Transtheoretical model is a comprehensive theory of behavior change. It has been investigated extensively in physical activity behavior. Many studies have proven that the TTM-based interventions are effective in assisting the individual to adopt and maintain physical activity behavior. However, the model was originally developed in western cultures. Although the model has been tested for validity in many countries such as the United States, Canada, England, Australia (Omar-Fauzee, Pringle, & David, 1999), there is still insufficient information to validate this model in developing countries (Marcus & Simkin, 1993), particularly in Thailand. The purpose of this study was to examine whether the TTM-based intervention was effective in improving the physical activity behavior of university students in Thailand.

Theoretical framework

The Transtheoretical Model of Behavior Change (Prochaska & DiClemente, 1983) was used as a theoretical framework to guide this study. The model consists of

four core constructs: (a) stages of change; (b) self-efficacy; (c) decisional balance; and (d) processes of change. All of the TTM constructs were utilized in this study. A general description of the core constructs of the TTM are described as follows.

The Stages of Change

The stages of change are perhaps the most well known construct of the model. It refers to the temporal, motivational and constancy aspects of change in problem behavior (Cardinal, Engels, & Zhu, 1998). In the model, an individual can be classified into one of six stages of change: Precontemplation (P), Contemplation (C), Preparation (P), Action (A), Maintenance(M), and Termination (T) (Burkholder, & Evers, 2002).

In Precontemplation, an individual is not thinking about the prospect of participating in physical activity behavior, generally defined as within the next six months. In Contemplation, an individual has the intention to start participating in physical activity within the next six months. Preparation is characterized by an intention to participate in physical activity within 30 days, and the individual in this stage may begin participating in physical activity. Action is when an individual regularly participates in physical activity at a recommended level, but for less than six months. Maintenance is when an individual has maintained participation in a recommended level of physical activity for at least six month. Termination is characterized by a permanent end to the individual's original, sedentary lifestyle. However, in physical activity behavior, "it is unclear if a point in time exist at which a person can be defined as being in termination" (Burkholder, & Nigg, 2002). The stage of change movement is cyclical, and not has to be linear;

therefore in changing behavior, the individual may move advance and/or regress through the stages of change (Burkholder, & Evers, 2002). In this study, only the first three stages of the stages of change constructs were examined.

The Processes of Change

This construct helps to explain how shifts in behavioral occur when the individual attempts to change his or her problem behavior. The ten processes of change involve two categories of coping strategies that the individual can use to modify his or her problem behavior: cognitive/experience and behavioral processes. The cognitive/experience category consists of five processes of change: (1) consciousness raising – gathering information to increase understanding and knowledge about physical activity; (2) dramatic relief – expressing feelings about the problems encountered with participating in physical activity and the solutions; (3) environment reevaluation – assessing how physical inactivity affects society and the environment; (4) self-reevaluation – assessing how physical inactivity affects one's health; (5) social liberation – increasing available alternatives to physical activity. The behavioral processes are comprised of: (1) self-liberation – making a commitment to participate in physical activity; (2) reinforcement management – rewarding oneself for achieving a physical activity goal; (3) helping relationship – seeking support to participate in physical activity from other people; (4) counter-conditioning – substituting physical activity for sedentary behavior; and (5) stimulus control – avoiding sedentary behavior.

Self-Efficacy

Prochaska et al. (2002) stated that self-efficacy is the situation-specific confidence that people have to cope with high-risk situations without relapsing to their unhealthy or high-risk behavior. This construct was integrated from Bandura's self-efficacy theory.

Self efficacy is considered a mediator, which can help the students to change their physical activity (Marcus & Forsyth, 2003). Previous studies indicated that self-efficacy is the best predictor of physical activity behavior (Sallis, Hovell, Hofsteter, & Barrington, 1992).

Decisional Balance

Decisional Balance reflects the individual's relative weighting of the positive aspects (pros) and negative aspects (cons) of changing a new behavior (Prochaska & Redding, et al, 2002). People in later stages – Action and Maintenance – tend to have a decisional balance favoring the positive aspects (pros) of a behavior. While people in early states – Precontemplation and Contemplation – tend to perceives more costs (cons) of a behavior than benefits. In the Preparation stage, the cost (cons) and benefits (pros) of a behavior are in balance (Marcus & Owen, 1992; Marcus, Rakowski, & Rossi, 1992).

Research Methods

Research design

A pre-post randomized experimental design was used in this study. The study outcomes were measured using pre-test and post-test. Two groups of students were included in this study: an experiment and a control group. The research was carried out in a Kasetsart University, Bangken Campus in Bangkok, Thailand.

Participants

The study sample consisted of 210 freshman students of Kasetsart University. The inclusion criteria for recruiting the study subjects included (a) voluntary participation in the study; (b) being a first year student during the 2004 academic year; and (c) being registered for any "Physical Activity" class in the second semester of the 2004 academic year. Students who majored in physical education were excluded because the nature of their majored may alter the study results.

Procedures

Approval for this project was obtained from the Oregon State University Institutional Review Board, USA, and additional permission was obtained from Kasetsart University in Thailand, where the actual research took place. Prior to the beginning of this research project, a pre-screening survey was conducted to create a sampling frame – 1,500 questionnaires were distributed to first year students to examine students' stages of change with regard to physical activity, of which there were 1,464 returned

questionnaires eligible in the pre-screening study. Based on self-report of stages of change, the students were then classified into one out of five stages of change base on the Transtheoretical model: Precontemplation, Contemplation, Preparation, Action and Maintenance. Only the students who were in the Precontemplation, Contemplation and Preparation stages were eligible for the current study. The participants for this study come from two different types of recruitments. First, the students in each stage were randomly selected and contacted in person by the researcher asking for their cooperation to participate in the study. There were 46 students recruited by simple random sampling method. Due to the low response rate of the recruitment, secondly, the researcher actively recruited volunteers by visiting first year classes. Interested students signed up and gave their contact information to the researcher. Once adequate numbers of the students in each stage were recruited; the students in each stage of change were randomly assigned to either control or experiment group, based on their self-reported stages of change – Precontemplation, Contemplation or Preparation stages. There were thirty five students in each stage of change in each group. A total of 210 students were contacted by telephone to arrange an appointment time. The researcher briefly introduced the research study to the students.

The pre-test was conducted during the first week of intervention. Self-reported stages of change with respect to physical activity behavior showed that four students in the experiment group had changed their stages from the pre-screening survey. One moved from the Precontemplation to Contemplation, two moved from Contemplation to Preparation, and one regressed from Preparation to Contemplation. In the control group,

two students had changed stages, one moved from Precontemplation to Contemplation and one moved from Contemplation to Preparation stage. Therefore, there were 34, students who participated in the Precontemplation stage in both control and experiment group, and 35 students in Contemplation stage, and 36 students in Preparation stage, respectively, in both control and experiment group.

Measurement Instruments

Self-administrated questionnaires were used as the methods to gather data. The questionnaires consisted of six parts (a) Student's Demographic and Psychosocial Characteristic; (b) Physical Activity Stages Algorithm; (c) International Physical Activity; (d) Physical Activity Self-Efficacy; (e) Physical activity Decisional Balance; and (f) Physical Activity Processes of Change.

Demographic and Psychosocial Characteristic Questionnaire

This questionnaire contained questions including gender, age, weight, height, type of resident, self-perception of the students' body weight, and hypothesized other people's perception of the students' body weight.

Physical Activity Stages Algorithm (PA_SA)

The PA_SA (Reed, et al., 1997) was used to categorized the participants and track their physical activity movement through the five stages. The questionnaire consisted of five statements representing each stage of change. The participants were asked whether or not they have been regularly participating in physical activities of moderate intensity. (Regular physical activity = 5 days or more per week for 30 minutes

or more daily). Then they were classified according to the stage of readiness to change by selecting one statement among five that best described their current situation with respect to their physical activity behavior. The statements were:

- ○ Yes, I have been for more than 6 months.
- ○ Yes, I have been, but for less than 6 months.
- ○ Not regularly, but I engage in such activities occasionally and plan to start on a regular basis within the next month.
- ○ No, but I'm thinking of starting in the next 6 months.
- ○ No, and I am not thinking of starting in the next 6 months.

The Physical Activity Self–Efficacy Questionnaire (PA_SEQ)

The PA_SCQ (Godin, & Shephard, 1986), was used to measure the participant's confidence in the ability to persist with physical activity in various situations. Participants were instructed to response on a five-point Likert Scale from 1, not at all confident, to 5, very confidents to each item out of eighteen items.

The Physical Activity Decisional Balance Questionnaire (PA_DBQ)

The PA_DBQ (Plotnikoff, Blanchard, Hotz, & Rhodes, 2001), was used to access participants' Decisional Balance. The questionnaire consists of 10 items on a five-point Likert Scale, which categorized into two subscales representing the positive (Pros, N = 5 items) and negative aspects of physical activity (Cons N = 5 items) (Callaghan, et al., 2002). The participants were asked to indicate how important each statement is with respect to their decision whether to participate in physical activity. The scale ranked from 1, not at all important, to 5, extremely important.

The Physical Activity Processes of Change Questionnaire (PA_PCQ)

The PA_PCQ was comprised of 30 items on a five point of Likert Scale (Nigg & Riebe, 2002). The questionnaire consisted of 10 subscales measuring 10 processes of change. The participants were asked to recalled the past month and rate the frequency of occurrence of each of the thirty items with respect to physical activity. The scale ranked from 1, never, to 5 repeatly.

The International Physical Activity Questionnaire (IPAQ)

The IPAQ was used to collect information about the physical activity level of the participants (IPAQ, 2005). The questionnaire consists of twenty seven fill in the blank and checklist items. The participants were asked to recall the past seven days and state on how many days per week they participated in various type of physical activities – vigorous, moderate, walking and sitting; and how many minutes approximately they participated in physical activities each time. The total minutes of physical activity per week were calculated as the number of days per week multiplied by the average time per day. The metabolic equivalent (MET) of physical activity per week of each type of activity computed as the number of total minutes of physical activity per week multiplied by the constant MET value of each activity. The total MET of physical activity was then computed as the summation of number of MET of each activity.

Instrument Testing

Test for Validity

To ensure the content validity of the instruments, the translation and back translation of the instruments was performed. The cultural adaptation translation suggested by the IPAQ committee (2002) was used as guidelines for the translations of the questionnaires. The process of translations will be discussed in detail as follows.

1. The PA_SA, The PA_SEQ, The PA_DBQ, The PA_PCQ and the IPAQ were translated into Thai language by the researcher and a Thai research faculty member who is proficient in both Thai and English language. Some words were changed to match words with a similar concept in Thai culture.

2. The translation instruments were reviewed by a panel of experts. The panel consisted of two experts in physical activity and exercise science and one in health behavior. All three experts were Thais and received their Ph.D. from the United States and have worked in the professional field more than 30 years. The panel reviewed the instrument to determine whether or not the questionnaires were relevant to the objectives and represented the content domain of the study. They also evaluated whether or not the translation of the instrument will be suitable and acceptable to Thai people.

3. Two different translators, one was an U.S. doctoral student and one of Thai university faculty, who is proficient in both Thai and English, translated the Thai version of the questionnaire back into English.

4. A panel of experts reviewed the back translation and decided on the final version. The greatest concern was whether the meanings of the English and Thai versions were comparable.

5. Upon finishing the review and the feedback was given, The researcher revised the questionnaire following the panel expert suggestions.

Test for Reliability

To ensure the reliability of the Thai versions of the questionnaire, a pilot study was conducted. A sample of 60 Kasetsart University students, Bangken Campus, Bangkok, was recruited by convenience sampling in the pilot study. In the data collection process, the participants were asked to fill in the questionnaires and given their feedback about the questionnaire such as the clarity of definitions, instructions, and questions.

Cronbach's alpha coefficients were used to examine the internal consistency of the TTM constructs questionnaires. From the pilot study (n=59), the alpha coefficients were .85 for the PA_SEQ; .74 for PA_DBQ (pros) and .76 for PA_DBQ (cons); .83 for PA_PCQ (experiential processes of change), and .88 for PA_PCQ (behavioral processes of change).

Additionally, two-week test-retest reliability was determined. The test–retest correlation coefficients were .69 (n = 33) for of the PA_SA and .63 (n = 33) for the IPAQ.

Some words and instructions were added and changed for clarity of the questionnaire as the students suggested.

Interventions

The four major constructs of the TTM – Stages of Change, Self-Efficacy, Decisional Balance and Process of Change were used to guide the 8-week intervention design. The interventions were designed based on the works of Blair, Andrea, Marcus, Carpenter and Jaret (2001) as found in ***Active Living Every Day,*** and *Motivation People to be Physically Active* ***by*** Marcus and Forsyth (2003). The interventions designed to increase students' self-efficacy, decisional balance and processes of change with respect to physical activity. The lessons designed to help the students' recognize value of healthy lifestyle and physical activity; encourage them in starting and staying with physical activity by learning healthy lifestyle practices, benefits of physical activity, goal setting strategies; overcome barriers; seeking social support; and rewarding themselves when achieving the goal. A combination of classroom lectures by the researcher and professional guess speakers, individual and group activities, video, physical activity demonstration, worksheets and self-study materials were used to facilitate learning (Elbel, Aldana, Bloswick, & Lyon, 2003). The weekly interventions in all three stages have the same lesson titles, subject matters and theoretical basis, but slightly differ in some activities and assignments that were designed to match the students' stages of readiness to change. The weekly summary of lessons titles, subject matters and their theoretical basis were shown in table 5.1.

Table 5.1 Weekly summary of Experiment Group lesson titles, content matters and their Theoretical basis

Week	Title	Description	Theoretical Basis
I	"Assessing readiness to change"	Assessing the Stages of Readiness to Change, Self- Efficacy, Decisional Balance, Processes of Change and Physical Activity Level.	Stages of Changes, Self-efficacy, Decisional Balance, Processes change
II	"Healthy Lifestyle"	Reviewing the benefits of healthy lifestyles. Explaining risk factors and consequences of unhealthy lifestyles. Encouraging participants to change their unhealthy behaviors to healthy behavior.	Decisional Balance, Consciousness Raising Self-Reevaluation Environmental-Reevaluation,
III	"Getting Start"	Identifying participant's stage of readiness to change. Reviewing health related to physical activity and the benefits associated with regular physical activity. Recommendations of regular physical activity for young adults.	Self-Efficacy, Decisional Balance, Consciousness raising, Dramatic Relief, Self-Evaluation, Social Liberation
IV	"Making Change"	Identifying the participant's daily activities. Conducting a personal time study. Determining participant's active and inactive minutes used in daily life. Motivating the participant to become physically active. Learning how to set short-term and long-term goals.	Self-Efficacy Consciousness raising Counter-Conditioning Self-Liberation
V	"Overcome Barriers"	Identifying the barriers to physical activity that participants have faced. Learning problem solving skills. Finding ways to get around barriers.	Self-Efficacy Consciousness raising Dramatic Relief Self Reevaluation Self-Liberation

Table 5.1 (continue) Weekly summary of Experiment Group lesson titles, content matters and their Theoretical basis

Week	Title	Description	Theoretical Basis
VI	"Enlisting Social Support"	Identifying kinds of support that the participants needs. Identifying key source of support. Learning how to make a plan to recruit supporters.	Self-Efficacy Helping Relationship Counter-Conditioning
VII	"Rewarding Yourself"	Creating a lists of rewards that will keep participants motivated. Identifying creative rewards that participants need. Linking physical activity goal to specific rewards.	Reinforcement Management Counter-Conditioning Stimulus Control
VIII	"Assessing Accomplishment"	Reviewing key concepts of physical activity. Reviewing negative consequences for being physically inactive. Identifying the strategies that work best for increasing physical activity. Making commitment in participating physical activity to the future. Assessing participants' accomplishments.	Stage of Change Self-Efficacy Decisional Balance Processes of Change. Self-reevaluation Environmental reevaluation

Students in the experimental group voluntarily attended health promotion sessions once a week; each session lasted for approximately sixty minutes. Students were encouraged to attend all sessions and make up any missed materials by rescheduling with the researcher.

Data Analysis

The Statistics Package for Social Science (SPSS) for Windows version 13 was used to analyze the data. For descriptive analysis, frequency count, percentage, arithmetic mean and standard deviation were employed to determine the participants' demographic distribution. Frequency count was also used to determine the distribution of the participants across stages of changes in physical activity behavior. For correlation analysis, Chi-square statistic was used to test the association between groups and stages of change. Multivariate analysis of variance (MANOVA) Repeated-Measure, and univariate analysis of variance (ANOVA) were used to determine changes in the physical activity level and the TTM variables with regard to physical activity behavior between baseline and follow-up and between the experiment and control groups.

Another statistical model, standard multivariate analysis of variance (MANOVA) also used to analyze the data in order to compare the mean difference (using pot-test scores minus pre-test scores in each group, and then comparing the difference between groups). The results from the two statistics models were then compared. Overall, the two statistics model yielded comparable results, except the two variables: pros and physical activity levels. The pros variable was found significant difference in MANOVA repeated

measure, but not in standard MANOVA. Conversely, the physical activity level variable was found significant difference in standard MANOVA, but not in MANOVA repeated measure.

Results

Response Rate

The baseline questionnaire was completed by 220 study subjects and the follow up questionnaire after the 8-week of intervention was distributed to the same group of the subjects. There were 220 questionnaires retuned in both baseline and follow up of data collection yielding a response rate of 100 % and no attrition.

Participants Characteristics

The participants in the study were 182 female and 28 male freshman students, of which 97 female and 8 male participated in the experiment group, and 85 female and 20 male students participated in the control group. The average age of the participants was 19.35 (SD = .65), and the mean body mass index was 20.12 (SD = 2.84). 54.1% of the participants lived with their family, and 45.9% did not. With regard to self-perception of their own body weight, 67.6% reported that they wish their weight to be lower, 18.1% reported that they wish their weight to be the same, and 14.3 % reported that they wish their weight to be higher.

Baseline Comparisons

Multivariate analysis of variance (MANOVA) was used to observed significant difference between the experiment and control groups at baseline for physical activity levels, and also the TTM constructs: self-efficacy, decisional balance (pros and cons), and processes of change (experiential and behavioral process). A MANOVA showed significant differences between the experiment and the control group at baseline (Wilks' $\lambda = 0.874$, approximate $F(1, 208) = 4.90, p < .034$). Follow up univariate ANOVAs indicated that the significant differences found between group at baseline was in self-efficacy, approximate $F(1, 208) = 4.84, p < .029$), and experiential processes of change. No significant differences between groups were found in physical activity levels, decisional balance, and behavioral processes of change at baseline. However, the researcher performed standard MANOVA to analyze the mean difference (using pot-test scores minus pre-test scores in each group, then comparing the difference between groups), and then compared the results with MANOVA repeated-measure analysis. The results at the follow up stages from the two statistics models in the two variables were consistent, so the differences score from baseline did not bias the results of comparison.

The Transtheoretical Model Constructs

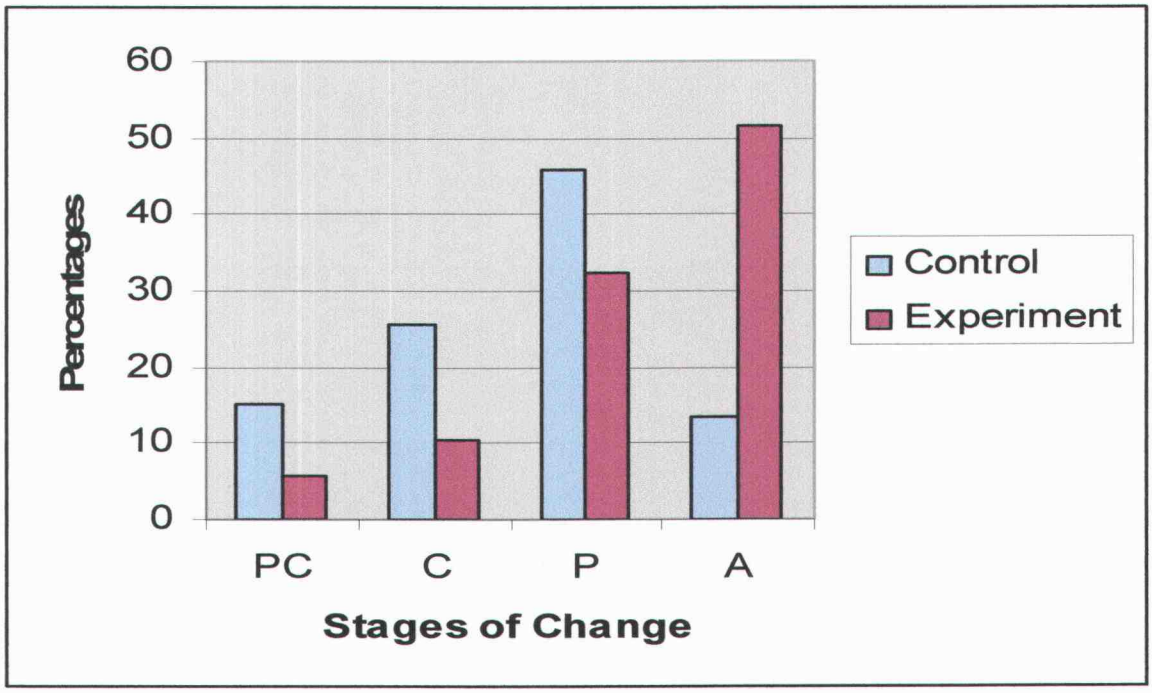
There were 34, 35, and 36 students in the Precontemplation, Contemplation and Preparation stages, respectively in both the control and experiment groups at baseline. After an eight-week intervention, the experimental group reported they had improved their stage of change from baseline significantly more than the control group. ($\chi^2(3$, n =

210) = 37.202, P<.000). The distribution of the subjects in each stage of change at baseline and follow-up was shown in Table5.2 and Figure 5.1. At the follow-up stage, 51% percent (n = 54) of the subjects in the experimental group progressed into the Action stage compared to 13.3 % (n= 14) of the control group.

Table 5.2 Pre-and Post-Intervention Distributions of the students'Stages of Change by Groups

Group			Post-Test Stage of Change				Total
			PC	C	P	A	
Control	Pre Test Stage of Change	PC	9	7	13	5	34
		C	6	18	10	1	35
		P	1	2	25	8	36
	Total		*16*	*27*	*48*	*14*	*105*
Experiment	Pre Test Stage of Change	PC	6	7	12	9	34
		C	0	2	14	19	35
		P	0	2	8	26	36
	Total		*6*	*11*	*34*	*54*	*105*

Figure 5.1 Post Intervention Distributions of the Students' Stages of Change by Groups

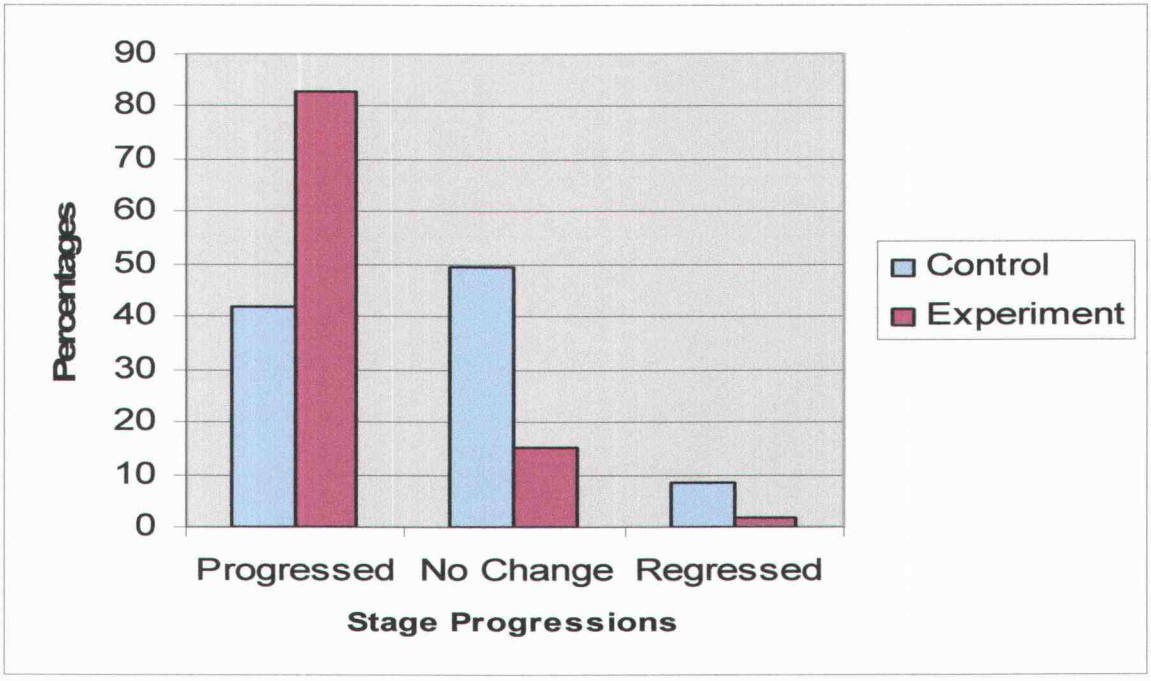


The percentage of participants who progressed from baseline in the experimental group was 82.9% (n = 87) compared to 41.9% (n = 44) in the control group. 15.2% (n = 16) of the participants in the experiment group had no change, compared to 49.5% (n = 52) in the control group, and 1.9% (n = 2) of the participants in the experiment group regressed compared to 8.6% (n = 9) in the control group (see Table 5.3 and Figure 5.2).

Table 5.3 Distributions of the Students' Stage Movements by Groups

	Experimental				Control			
	Stages of change				Stages of change			
	PC (n=34) n(n%)	C (n=35) n(n%)	P (n=36) n(n%)	Total (n=105) n(n%)	PC (n=34) n(n%)	C (n=35) n(n%)	P (n=36) n(n%)	Total (n=105) n(n%)
Progress	28 (82.35)	33 (94.29)	26 (72.22)	87 (82.85)	25 (73.53)	11 (31.43)	8 (22.22)	44 (41.91)
Stable	6 (17.65)	2 (5.71)	8 (22.22)	16 (15.24)	9 (26.47)	18 (51.43)	25 (69.45)	52 (49.52)
Regress	-	-	2 (5.56)	2 (1.91)	-	6 (17.14)	3 (8.33)	9 (8.57)
Total (105)	34 (100)	35 (100)	36 (100)	105 (100)	34 (100)	35 (100)	36 (100)	105 (100)

Figure 5.2 Percentages of the Students' Stage Progressions by Group



The TTM variables and physical activity level

Multivariate analysis of variance (MANOVA) with repeated measures revealed that within subjects effects, a significant differences was found in main effects for times (Wilks' $\lambda = 0.804$, approximate F (2, 204) = 8.11, $p < .000$, and interaction effects between times and groups (Wilks' $\lambda = 0.821$, approximate F (2, 204) = 7.23, $p < .000$). There were no significant differences in interaction effects between times and stages (Wilks' $\lambda = 0.948$, approximate F (2, 204) = 0.89, $p < .491$), or times, stages and groups (Wilks' $\lambda = 0.949$, approximate F (2, 204) = 0.88, $p < .355$).

Follow up univaraite ANOVAs was performed to determine which of the study variables across times that the mean difference existed. Tukey's honestly post-hoc tests revealed that the significant differences were found in all variables of the TTM constructs, and also the physical activity level.

There were a significant differences in interaction effects between times and groups in self efficacy approximate, F (1, 204) = 7.49, $p < .007$; cons, approximate F (1, 204) = 20.08, $p < .000$; experiential processes, approximate F (1, 204) = 17.19, $p < .000$; behavioral processes, approximate F (1, 204) = 13.19, $p < .000$; and physical activity level, approximate F (1, 204) = 7.44, $p < .007$. There were no significant differences found between time and group in pros, approximate F (1, 204), $p < .267$.

The results demonstrated that at the follow up stage, the participants in the experimental group had significant improvement in all of the TTM constructs and the physical activity level, and a decrease in the cons scores in relation to physical activity, from baseline. The participants in the control group had slightly increased in pros and

behavioral processes scores, and physical activity level. However, it was found that the cons scores in the control group had increased compared with the scores at baseline. In other words, overall, the participants in the experiment group had significantly higher improvement in all of the TTM constructs scores and physical activity level compared to those in the control group. Only the pros scores reported no significant difference compared between baseline and follow-up stages in both the experiment and the control groups.

According to between subjects effects, A MONOVA repeated measures revealed significant differences in main effects for groups (Wilks' $\lambda = 0.738$, approximate F (2, 204) = 11.80, $p < .000$) and stages (Wilks' $\lambda = 0.803$, approximate F (2, 204) = 3.83, p <.000). There were no significant differences in interaction effects between groups and stages (Wilks' $\lambda = 0.941$, approximate F (2, 204) = 1.80, $p < .434$).

Regarding to the Stages of Change, follow-up univaraite ANOVAs was performed to determine in which of the study variables that the mean difference across groups existed. The Tukey's honestly post-hoc tests showed that there were significant differences between groups in all of the TTM variables. There were no significant differences found between groups in physical activity levels. Table 5.4 shows the mean scores and standard deviations, and also summarizes the univariate ANOVAs by group, for each of the TTM constructs and physical activity level. Conversely, in the MANOVA mean difference analysis, a significance was found between groups in physical activity level (Wilks' $\lambda = 0.78$, approximate F (2, 204) = 9.28, $p < .000$). Table 5.5 presented the statistics values in each construct compare between the two models.

Table 5.4 The mean scores , standard deviation, and summarize the univariate ANOVAs of each variable by group

Variable		Experiment (n=105)		Control (n=105)		*F* ratio	*p*	η^2
		Mean	SD	Mean	SD			
TTM constructs								
Self-efficacy	Baseline	2.92	0.49	2.79	0.44	16.15	0.000	0.073
	Post-test	3.10	0.53	2.78	0.48			
Pros	Baseline	3.76	0.55	3.64	0.58	5.83	0.017	0.028
	Post-test	3.92	0.54	3.71	0.60			
Cons	Baseline	1.99	0.66	2.10	0.59	14.19	0.000	0.065
	Post-test	1.92	0.55	2.41	0.68			
Experiential Processes	Baseline	2.94	0.51	2.93	0.56	46.48	0.000	0.186
	Post-test	3.22	0.47	2.97	0.39			
Behavior Processes	Baseline	3.41	0.37	3.20	0.45	5.46	0.020	0.026
	Post-test	3.62	0.39	3.17	0.45			
Physical Activity Level	Baseline	22.74	18.68	25.66	26.67	0.94	0.334	0.005
	Post-test	33.57	27.90	27.48	26.83			

Table5.5 Comparison of the statistic results between MANOVA-Repeated Measure and Standard MANOVA

Variable	MANOVA (Repeated Measure)			MANOVA (Standard)		
	F ratio	*p*	h^2	*F* ratio	*p*	h^2
TTM Constructs						
Self-Efficacy	16.15	0.000	0.073	7.63	0.006	0.036
Pros	5.83	0.017	0.028	0.92	0.340	0.005
Cons	14.19	0.000	0.065	20.67	0.000	0.093
Experiential Processes	46.48	0.000	0.186	17.75	0.000	0.081
Behavioral Processes	5.46	0.020	0.026	13.24	0.000	0.062
Physical activity Levels	0.94	0.334	0.005	7.30	0.007	0.035

Follow-up comparisons using Tukey tests were conducted to determine in which of the study variables the mean difference existed across the stages of change. The results showed that there were significant differences between stages and experiential processes of change, stages and behavioral processes of change, stages and physical activity level. The participants in the Preparation stage showed significantly higher score in behavioral processes of change, as well as physical activity level, than the participants in the Contemplation and Precontemplation stages. There were no significant differences found between the Precontemplation and Contemplation stages in both variables. In relation to experiential processes of change, there were significant differences found between the Preparation and Precontemplation stages. However, there were no significant differences found between the Preparation and Contemplation stages, as well as Contemplation and Precontemplation stages. Table 5.6 and 5.7 shows the mean scores, and standard deviations, and also summarize the univariate ANOVAs by group for each of the processes of change. There were no significant differences found between stages and self efficacy, stages and pros, and stages and cons.

Table 5.6 The mean scores , standard deviation, and summarize the univariate ANOVAs of experiential processes of change by group

Variable		Experiment (n=105)		Control (n=105)		*F* ratio	*p*	h^2	Tukey's test
		Mean	SD	Mean	SD				
Experiential Processes									
Conciousness raising									
	Baseline	2.56	0.72	2.45	0.71	8.692	0.004	0.042	PC = C = P
	Post-test	2.81	0.63	2.55	0.60				
Dramatic relief									
	Baseline	2.93	0.59	2.73	0.71	6.207	0.014	0.030	PC = C = P
	Post-test	3.30	0.62	2.85	0.60				
Environmental reevaluation									
	Baseline	3.41	0.53	3.10	0.81	9.263	0.003	0.044	PC = C = P
	Post-test	3.71	0.58	3.14	0.66				
Self-reevaluation									
	Baseline	3.64	0.45	3.47	0.76	11.559	0.001	0.055	PC = C
	Post-test	3.95	0.49	3.38	0.76				P>C, P>PC
Social liberation									
	Baseline	3.94	0.61	3.72	0.61	2.362	0.126	0.012	PC = C =P
	Post-test	4.03	0.53	3.69	0.76				

Table 5.7 The mean scores , standard deviation, and summarize the univariate ANOVAs of behavioral processes of change by group

Variable		Experiment (n=105)		Control (n=105)		*F* ratio	*p*	h^2	Tukey's test
		Mean	SD	Mean	SD				
Behavioral Processes									
Counter conditioning									
	Baseline	2.43	0.57	2.63	0.82	10.373	0.001	0.049	PC = C
	Post-test	2.92	0.59	2.70	0.62				P>C ,P>PC
Helping relationship									
	Baseline	2.49	0.70	2.73	1.01	9.889	0.002	0.047	PC = C =P
	Post-test	2.95	0.73	2.86	0.63				
Reinforcement management									
	Baseline	3.53	0.47	3.36	0.77	4.923	0.028	0.024	PC = C = P
	Post-test	3.69	0.59	3.34	0.75				
Self-liberation									
	Baseline	3.23	0.69	3.03	0.86	8.849	0.003	0.042	PC = C = P
	Post-test	3.61	0.58	3.21	0.63				
Stimulus control									
	Baseline	2.08	0.73	2.18	0.86	2.998	0.085	0.015	PC = C = P
	Post-test	2.46	0.81	2.36	0.72				

Discussion

This study used stage-matched intervention based on the constructs of the TTM designed to promote physical activity behavior in university students. The study also aimed to explain the impact of the intervention in relation to the TTM constructs and physical activity level.

The results of this study indicated that stage-matched interventions can be an effective means of increasing participation in physical activity among university students. Students in the experiment group who participated in eight-week stage-matched interventions were more likely to progress across the stages of change than participants in the control group. They also increased their physical activity levels, as well as their self efficacy, and used more processes of change to develop their physical activity behavior. The results found in this study will be discussed in detail as follows.

Stages of Change

After an eight-week intervention, the students in the experiment group reported they had improved their stages of change from baseline significantly more than those in the control group. The percentage of participants who progressed from baseline in the experimental group was 82.9% compared to 41.9% in the control group. Additionally, 51% percent (n = 54) of the subjects in the experimental group progressed into the Action stage, compared to 13.3 % (n= 14) of the control group.

To examine practical significance, the researcher compared the current study's findings of stages of change movement with previous study in similar settings. The

results of present study found that, at the follow-up, 82.5% of the students in the experiment group had stage movement progression from the baseline. There was 51.42% of the students reported being in the action stage, which is defined as physically active, compared with 13.33% of the students in the control group. A study conducted at a university in Scotland using a Transtheoretical Model-based intervention designed for the first year undergraduate students in Precontemplation and Contemplation stages. A self-instructional intervention focused on stages of change and processes of change was used in the study. The result found that at post intervention, 80% of the students in the experiment group improved their stage of change compared with 68% in the control group; and 44.5% of the experiment group were in active stage compared with 33% in the control group (Woods, Mutrie, & Scott, 2002). It was found that there was a slightly higher shift in stages of change and higher improvement in physical activity levels among study samples who received the intervention in the current study, compared to those in previous research. A potential reason is because the intervention used in the current study was comprised of various activities and was more interactive than the self-instructional intervention used in the previous study. In addition, before designing the stage-matched intervention, the researcher conducted a focus group study (see chapter III) in order to gather in-depth information regarding factors influencing university students in participating in physical activity. The focus group results were used as a part of baseline information to design the intervention sessions to match the students' need, therefore the intervention enable to assist students progress across the stages of change.

Physical Activity Level

At baseline, the study subjects were not physically active. However, post-intervention showed that the students in both the experiment and the control groups improved in physical activity level. At the follow up stage, students in the experiment group reported having higher participation in physical activity (measured by energy expenditure in MET-hours), compared to the baseline and compared to students in the control group. The results showed that the stage-matched intervention was more efficient in assisting the university students to adopt physical activity behavior than the regular physical activity course. One of the potential reasons to explain why the stage-matched intervention was more effective was its concern with what stage of readiness to change the students were in and then designing the intervention, using strategies that matched their need. For example, the researcher designed activities that motivated students in the Precontemplation stage to participate in physical activity by starting with a small change, such as adding a two-minute walk into their daily lifestyle, and then later increasing the intensity of physical activity. Beginning with a small change was more likely to be easy to achieve, which will encourage and make the students feel more confident.

However, it was found that there was a large variation in reported physical activity levels in both experiment and control groups. Therefore, the mean value should be interpreted carefully (Blissmer, & MacAuley, 2002).

Self Efficacy

At the follow-up stage, the participants in the experiment group reported significantly improved their scores from the baseline, more than those who were in the control group. To determine the degree of improvement, Cohen's effect size was calculated. It was found that the magnitude of the differences was moderate ($d = .40$). The plausible reason to explain the difference is that, in the present study, the intervention was comprised of various strategies to improve the students' self efficacy. For example, the intervention activities encouraged students to think and share their successful experiences in changing unhealthy behavior to healthy behavior with their peers. It also introduced strategies for overcoming barriers. Engaging in the session activities, along with gaining knowledge provided in the intervention sessions, helped the students to increase their self-efficacy. Conversely, the regular physical activity class emphasized introducing sport activity to improve physical health rather than focusing on cognitive process.

Self-efficacy is considered a mediator, which can help the students to change their physical activity (Marcus & Forsyth, 2003). Previous studies indicated that self-efficacy is associated with physical activity behavior (Dishman & Sallis, 1994). Because self-efficacy was reported as the most significant determinant predictor of physical activity among university students (Martinez, 1998), increasing self efficacy in the experiment group assisted students to enhance their physical activity levels.

Decisional Balance

At the follow-up stage, the participants in the experiment group reported significantly improving their pros scores, and decreasing their cons scores from baseline. They also showed greater improvement in the pros scores, and lower in cons scores compared to the participants in the control group. However, only small effect sizes were found in both subscales of the decisional balance (pros, d =.23; cons, d = .37). The plausible explanation of these findings was that the benefits of physical activity may also be addressed in the physical activity classes. Therefore, during the study period, the participants in the control group also perceived the benefits of physical activity because of the physical activity classes.

In this study, only the pros variable in the statistical models standard MANOVA and MANOVA repeated measure yielded the differently results. This might be because the magnitude of the difference was small, therefore; there was no significance found in the mean difference of the pros score in the standard MANOVA analysis.

Processes of change

At the follow-up, the improvement in utilizing the processes of change was observed. It was found that students in the experiment group reported significantly improving their scores in both experiential and behavioral processes from the baseline, and greater than those who were in the control groups. In experiential processes, students in the experiment group significantly improved their scores in four out of five subscales in conciousness raising, dramatic relief, environmental reevaluation, and self-

reevaluation. In behavioral processes, students in the experiment group also significantly improved their scores in four out of five subscales in counter conditioning, helping relationship, reinforcement management, and self-liberation. Only social liberation and stimulus control processes had no significant differences found. The strength of the differences in experiential processes of change was medium (d =.66), and in behavioral processes of change was small (d = .33).

The plausible explanations as to why the students significantly improved most of the processes of change scores were because the interventions incorporate a variety of activities to encourage students to participate in physical activity. For example, in each session, students had an opportunity to share their progress and learn different experiences from the others group members. The lecture slides and worksheets were understandable, easy to follow and used catchy images and designs. Furthermore, the students were motivated by the guest speakers who share their direct experiences and their personal stories about the benefits of physical activity.

The plausible explanation why the students did not significantly improve in the social liberation and stimulus control scores was because these two processes of change were less likely to be an area of focus in the intervention compared to the other processes. The study's findings concurred with previous studies that were conducted in a university setting, which found that stimulus control was the process that was least frequently used by the students (Woods, Mutrie, & Scott, 2002).

With regard to association between stages of change and the other constructs of the TTM, the results of this study showed partial support for the TTM theory. The

significant difference between stages was only found in processes of change constructs. The participants in the Preparation stage used more behavioral processes of change than the participants in Contemplation and Precontemplation stages; they also used more experiential processes of change than the participants in the Precontemplation stage. The results were consistent with a previous international study in Hong Kong, which found that, overall university students in the Preparation stage had higher scores in experiential and behavioral processes than those who were in the Contemplation and the Precontemplation stages (Callaghan, et al., 2002). Rodgers and colleagues (2001) also reported that undergraduate students who were in the Precontemplation stage used all the processes of change significantly less than students in other stages. Furthermore, the processes of change construct were also found to be a predictor of exercise stage transition among New Zealand adolescents (Prapavessis, Maddison, & Brading, 2004).

However, the current study results did not fully support the TTM because there was no significant difference found in relation to self-efficacy and decisional balance across the stages of change. This could be due to the fact that the TTM was primarily developed in western culture. Although empirical evidence has proven the internal validity of the TTM with regard to physical activity behavior in many countries, research studies validating the TTM in developing countries are limited. Because the TTM was developed in western culture, there is a need for further research to validate whether the TTM is applicable for non-western cultures, particularly in the Thai context.

Study Limitations

Some study limitations were evident.

First, the data used in this study was self-reported and no additional data sources were used to verify the results. Therefore, some error may have occurred. For example, a high variability in physical activity levels among the students was observed. This variability may either represent students' actual activity pattern or it could also represent reporting error (Elbel, et al., 2003). Secondly, participants in the study were voluntary, and the participants were randomly assigned to either the experiment or control group regardless of their demographic characteristics. Therefore, recruited participants were disproportionate in demographic characteristics. Once they were randomly assigned to groups, distribution of demographic characteristics of the students in the experiment and control groups were relatively unequal. These problems made it difficult for the researcher to examine whether the intervention worked differently under different demographic variables such as gender, or BMI status. Thirdly, because participation in this study was voluntary, a random assignment method was used to prevent selection bias, this may cause another confounding issue. For example, some of the volunteer students were friends, and they might be randomly assigned to be in different groups (experiment versus control). Therefore, contamination effects such as transmission of information from the interveners to the controller may occur and alter the results of the study. Lastly, because the participants in this study were volunteers, the generalization of the study findings may be limited.

Policy Implications

The results of this study indicated the effectiveness of the TTM-based intervention in enhancing students' physical activity behavior. Currently, Kasetsart University has offered some health-related classes such as Physical Education Activity and Health for Life classes. Therefore, introducing and/or integrating the TTM concepts to design some of the class activities may be possible and inexpensive strategies that mobilize and maximize university resources to promote students' physical activity behavior.

Recommendations for Further Research

Finally, the researcher makes some recommendations for further research in this subject.

First, the result of this study demonstrates that the TTM-based intervention was effective in assisting university students to adopt physical activity behaviors. However, future research needs to consider controlling the biases and confounders that may have occurred in the current study. For example, using the actual measured weight and height to calculate students' BMI status may help prevent the bias rather than using reported weight and height. Secondly, regarding the current study's findings, the students in all three pre-adoption stages, Precontemplation, Contemplation and Preparation, did not differ from one another in their composite score in relation to self-efficacy and decisional balance constructs in physical activity behavior. There is a need for further research to validate whether the TTM is applicable in the Thai context.

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Conclusions

Physical activity has been recognized as one major component of a healthy lifestyle for people in all age groups, including young adults. Motivating individuals to adopt and maintain an active lifestyle is one challenge of the health education professional. This study used the Transtheoretical Model to guide designed health promotion intervention to promote physical activity behavior in freshman students. The results of the study found that the TTM-based interventions are an effective means of improving physical activity behaviors in the students.

Results of this study provide partial support for the hypothesized relationship between constructs derived from the TTM. The study findings indicated that processes of change were significantly different across the stages of change in relation to physical activity. However, the results regarding self-efficacy and decisional balance constructs were not consistent with the TTM assumptions. The results from the current study were in line with previous research carried out in non-western cultures to test the application of the TTM. These studies also only partially supported the TTM assumptions (Callaghan et al., 2002; Wakui, et al., 2002; Tung, Gillett, & Pattillo, 2003; Prapavessis, Madison, & Brading, 2004). Because the TTM was originally developed in the west, the lack of consistency may be due to social norms and cultural differences, and cause the patterns to differ from the results observed in western cultures. Further research is needed to sufficiently determine the application of the TTM in relation to physical activity in non western cultures, including Thai culture.

Contributions of the Study

First, the TTM has been widely applied to physical activity behavior in many countries. However, only limited studies have applied the TTM in Thailand. This study is the first to use all of the TTM constructs in relation to physical activity behavior in university students. Recently, most health promotion interventions in Thailand have been action oriented, which focus on immediate behavior change without concerning the individual differences in readiness to change. The intervention program, which was developed based on clients' readiness to change, is more likely to achieve its goals than a program that does not take this aspect into account. If health educators or health professionals try to change people who are not ready to change, this may make them less likely to achieve their goal because they may experience low participation rate or high drop-out and relapse rate (Riebe, 1997). This study demonstrated the effectiveness of the stage-matched intervention, which may motivate health educators in Thailand to expand current practices and take into account where their clients are and how people will change their behavior and develop more effective and successful health promotion intervention. Second, in this study, the physical activity Self-Efficacy, Decisional Balance, and Processes of Change Questionnaires were translated into the Thai language and tested for content validity and reliability. The results found that the physical activity Self-Efficacy, Decisional Balance, Processes of Change Questionnaires yielded relatively high reliability, which showed that they were applicable for use in the Thai culture. However, the Stages Algorithm and the International Physical Activity Questionnaires did not yield

result as high as the others, therefore, there is a need for further study to verify the quality of the instruments.

Limitations of the Study

This dissertation was limited by several factors which are addressed as follows: First, in the qualitative study, due to the hectic schedules of the participants, only a single focus group was conducted. The small sample limited generalization and policy implication. Second, the data used in this study was self-reported, and no additional data sources were used to verify the results. Therefore, some error may have occurred. Third, because participation in this study was voluntary, although a random assignment method was used to prevent selection bias, this may cause other confounding issues such as the contamination effects. Lastly, because the participants in this study were volunteers, the generalization of the study findings may be limited.

Recommendations

First, health and exercise researchers should consider conducting multiple focus group sessions of university students in order to examine whether factors influencing participation in physical activity among students are consistent. Second, if applicable, some measure should be used to control the biases and confounders that may have occurred in the current study. For example, the researcher should measure the participants' weight and height rather than using self-reported measurements, which could be inaccurate. Third, it was hypothesized that many interventions that used

cognitive behavioral management strategies have resulted in only short-term increases of physical activity participation; therefore, longitudinal studies to determine long-term effects should be considered. Fourth, it was found that physical education courses also assisted students to increase their physical activity levels. Although the courses were less effective compare to the stage-matched intervention, they are available to students with fewer resources. To maximize the effectiveness of the courses will be useful in assisting students to achieve a healthier lifestyle.

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APPENDICES

APPENDIX I

HIMAN SUBJECTS IRB APPROVAL

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Project Title: Effectiveness of the Applying the Transtheoretical Model to Improve Physical Activity Behavior of University students.

Principal Investigator: Chunhuei Chi, MPH, Sc.D. Department of Public Health, Oregon State University.

Research Staff: Jinda Boonchauykuakul, Ph.D. (Candidate). Department of Public Health, Oregon State University.

PURPOSE

This is a research study. The purpose of this research study is to determine an effectiveness of the application of the Transtheoretical Model in improving physical activity behavior of university students. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask any questions about the research, what you will be asked to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When all of your questions have been answered, you can decide if you want to be in this study or not. This process is called "informed consent". You will be given a copy of this form for your records.

We are inviting you to participate in this research study because you are a student of Kasetsart University.

PROCEDURES

If you agree to participate, as a subject in the experimental group your involvement will last for an hour per week for eight weeks, and as a subject in the control group your involvement will last for 20 minutes each time for two times. The following procedures are involved in this study. Self-administered questionnaire will be used to obtain your background information, your readiness to change, self efficacy, decisional balance and processes of change with regard to physical activity before and after health promotion

OSU IRB Approval Date: 12-02-04
Approval Expiration Date: 12-01-05

interventions implemented. If you serve as a subject in an experimental group, you will receive eight weeks health promotion interventions. Lecture, group discussion,

demonstration, presentation, and personal study will be the strategies used in health promotion intervention.

RISKS

There are no foreseeable risks to participating in this study

BENEFITS

There is no direct benefit for participating in this study. The researchers anticipate that society may benefit from this study because the participants will be able to identify their readiness to change, physical activity level, self-efficacy, decisional balance and processes of change with regard to physical activity behavior. The participants may also have an opportunity to participate in health promotion interventions, which may motivate the participants to improve their physical activity behavior.

You **will not** have any costs for participating in this research project.

You **will not** be compensated for participating in this research project.

CONFIDENTIALITY

Records of participation in this research project will be kept confidential to the extent permitted by law. However, federal government regulatory agencies and the Oregon State University Institutional Review Board (a committee that reviews and approves research studies involving human subjects) may inspect and copy records pertaining to this research. It is possible that these records could contain information that personally identifies you. The gathered information will be kept in a secure location accessible only to the research investigators. This information will be kept secure for a year and then destroyed. In the event of any report or publication from this study, your identity will not be disclosed. Results will be reported in a summarized manner in such a way that you cannot be identified.

VOLUNTARY PARTICIPATION

Taking part in this research study is voluntary. You may choose not to take part at all. If you agree to participate in this study, you may stop participating at any time. You are free to skip any questions that you would prefer not to answer. If you decide not to take part, or if you stop participating at any time, your decision will not result in any penalty or loss of benefits to which you may otherwise be entitled. Any data collected prior to your withdrawal will be destroyed.

QUESTIONS

Questions are encouraged. If you have any questions about this research project, please contact: Chunhuei Chi, at (541) 737-3836 or by email at Chunhuei.Chi@orst.edu OR Jinda Boonchuaykuakul, at (662) 942-8671-2, or by email at boonchuj@onid.orst.edu. If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-3437 or by e-mail at IRB@oregonstate.edu.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Participant's Name (printed):

_____

_____ _____

(Signature of Participant) (Date)

OSU IRB Approval Date: 12-02-04
Approval Expiration Date: 12-01-05

RESEARCHER STATEMENT

I have discussed the above points with the participant or, where appropriate, with the participant's legally authorized representative, using a translator when necessary. It is my opinion that the participant understands the risks, benefits, and procedures involved with participation in this research study.

_____ _____

(Signature of Researcher) (Date)

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December, 2004

Dear Students

I am a graduate student from the Public Health Department, Oregon State University, USA. I am working on my dissertation entitle " The Effectiveness of Applying the Transtheoretical Model to Improve Physical Activity Behavior of University Students", and I would like to ask you to participate in health promotion program as you are selected to be a subject in this study.

By volunteering, you will be able to access your readiness to change, physical activity level, self-efficacy, decisional balance and processes of change with regard to physical activity behavior. You will be also having the opportunity to contribute to research on health promotion. You may be randomly assigned to group of participants who will receive an innovative eight-week health promotion intervention. This will provide an opportunity to learn and practice some important skills and improve your health.

If you decide to volunteer for this study, please complete an informed consent form and a questionnaire, which are enclosed with this letter. This should take about fifteen minutes. The gathered information will be kept confidential.

Your help is needed and will be greatly appreciated.

Sincerely,

Jinda Boonchuaykuakul
Researcher

OSU IRB Approval Date: 12-02-04
Approval Expiration Date: 12-01-05

APPENDIX II

CONSENT FORM IN THAI

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หนังสือให้ความยินยอมการเข้าร่วมโปรแกรมสุขศึกษา

ชื่อโครงการ: ประสิทธิผลของการประยุกต์ใช้ทรานทริโอเรทติคอลโมเดลในการปรับปรุงพฤติกรรมการประกอบกิจกรรมทางกายของนิสิตนักศึกษา

หัวหน้าโครงการวิจัย: ดร.ชุนฮุยฉี, MPH, Sc. D. ภาควิชาสาธารณสุข, มหาวิทยาลัยแห่งมลรัฐโอเรกอน

ผู้วิจัย: จินดา บุญช่วยเกื้อกูล Ph.D.(Candidate) ภาควิชาสาธารณสุข, มหาวิทยาลัยแห่งมลรัฐโอเรกอน

วัตถุประสงค์

วัตถุประสงค์ของการศึกษาวิจัยครั้งนี้คือเพื่อศึกษาประสิทธิผลของการประยุกต์ใช้ทรานทริโอเรทติคอลโมเดลในการปรับเปลี่ยนพฤติกรรมการประกอบกิจกรรมทางกาย วัตถุประสงค์ของแบบฟอร์มให้ความยินยอมนี้คือเพื่อให้ข้อมูลที่จำเป็นแก่ท่านเพื่อช่วยในการตัดสินใจเข้าร่วมหรือไม่เข้าร่วมในการวิจัยครั้งนี้ กรุณาอ่านแบบฟอร์มนี้อย่างละเอียด ท่านสามารถตั้งข้อคำถามเกี่ยวกับการวิจัยครั้งนี้ทั้งในเรื่องเกี่ยวกับท่านจะต้องทำอะไรบ้าง มีความเสี่ยงหรือมีผลประโยชน์อะไรบ้างที่ท่านจะได้รับ รวมทั้งสิทธิของท่านในฐานะอาสาสมัคร รวมทั้งเรื่องอื่น ๆ ที่เกี่ยวข้องกับการวิจัย หรือหากแบบฟอร์มนี้ไม่มีความชัดเจนเพียงพอ เมื่อท่านได้รับคำตอบจนเป็นที่พอใจแล้ว ท่านสามารถตัดสินใจในการจะเข้าร่วมหรือไม่เข้าร่วมในการวิจัยครั้งนี้ได้ กระบวนการนี้เรียกว่า "การให้คำยินยอม" ท่านจะได้รับสำเนาแบบคำยินยอมนี้ด้วย

ท่านได้รับเชิญให้เข้าร่วมในการวิจัยครั้งนี้ เนื่องจากท่านเป็นนิสิตของมหาวิทยาลัยเกษตรศาสตร์

วิธีการ

หากท่านเข้าร่วมในการวิจัยในฐานะเป็นกลุ่มทดลองการวิจัย ท่านจะใช้เวลาประมาณ 1 ชั่วโมงต่อสัปดาห์ เป็นเวลา 8 สัปดาห์ในการเข้าร่วมโปรแกรมส่งเสริมสุขภาพด้านการประกอบกิจกรรมทางกายซึ่งผู้วิจัยสร้างขึ้น รวมทั้งตอบแบบสอบถามก่อนและหลังการทดลองใช้โปรแกรมส่งเสริมสุขภาพโดยแบบสอบถามจะมีข้อคำถามเกี่ยวกับข้อมูลส่วนตัวของท่าน ความพร้อม และระดับของการประกอบกิจกรรมทางกาย ความเชื่ออำนาจในตน การตัดสินใจและและการใช้กระบวนการการเปลี่ยนแปลงในการปรับเปลี่ยนพฤติกรรมการประกอบกิจกรรม

OSU IRB Approval Date: 12-02-04
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ทางกาย รวมเวลาที่เข้าร่วมในการทำกิจกรรมทั้งสิ้นเป็นเวลาประมาณ 8 ชั่วโมง การบรรยาย การอภิปรายกลุ่ม การสาธิต การนำเสนองาน และการศึกษาด้วยตนเองเป็นวิธีการที่ใช้ในการวิจัยครั้งนี้

หากท่านเข้าร่วมในการวิจัยในฐานะเป็นกลุ่มควบคุมการวิจัย ท่านจะใช้เวลาประมาณ 20 นาที ในการตอบแบบสอบถามก่อนและหลังการทดลองใช้โปรแกรมส่งเสริมสุขภาพ โดยแบบสอบถามจะมีข้อคำถามเกี่ยวกับข้อมูลส่วนตัวของท่าน ระดับของการประกอบกิจกรรมทางกาย ความเชื่ออำนาจในตน การตัดสินใจ และการใช้กระบวนการการเปลี่ยนแปลงในการปรับเปลี่ยนพฤติกรรมการประกอบกิจกรรมทางกาย รวมเวลาที่ใช้ในการตอบแบบสอบถามทั้งสิ้นเป็นเวลาประมาณ 40 นาที

ความเสี่ยง

ยังไม่มีความเสี่ยงใด ๆ ในการเข้าร่วมในการศึกษาวิจัยครั้งนี้เท่าที่เห็นในขณะนี้

ผลประโยชน์

ไม่มีผลประโยชน์ใด ๆ โดยตรงต่อท่านในการเข้าร่วมในการศึกษาวิจัย อย่างไรก็ตาม ผู้วิจัยคาดว่าสังคมอาจได้รับผลประโยชน์ในการศึกษาวิจัยครั้งนี้ เพราะผู้วิจัยคาดว่าผู้เข้าร่วมวิจัยจะมีโอกาสทราบถึงของความพร้อม และระดับของการประกอบกิจกรรมทางกาย ความเชื่ออำนาจในตน การตัดสินใจ ตลอดจนการใช้กระบวนการเปลี่ยนแปลงในการปรับเปลี่ยนพฤติกรรมการประกอบกิจกรรมทางกาย รวมทั้งอาจถูกคัดเลือกให้เข้าร่วมในโปรแกรมส่งเสริมสุขภาพด้านการประกอบกิจกรรมทางกายซึ่งอาจกระตุ้นให้ผู้เข้าร่วมวิจัยมีการปรับปรุงพฤติกรรมการประกอบกิจกรรมทางกายของตนเอง

ท่านจะไม่เสียค่าใช้จ่ายใดๆ และไม่ได้รับค่าตอบแทนใด ๆ ในการเข้าร่วมการวิจัยในครั้งนี้

การรักษาความลับ

ข้อมูลของท่านในการศึกษาครั้งนี้จะถูกเก็บเป็นความลับตามที่กฎหมายกำหนด อย่างไรก็ตามหน่วยงานทางกฎหมายของรัฐบาลกลาง และคณะกรรมการสิทธิมนุษยชนของมหาวิทยาลัยแห่งมลรัฐโอเรกอนอาจจะทำการตรวจสอบหรือขอคัดลอกข้อมูลของการวิจัยครั้งนี้ได้ ซึ่งมีความเป็นไปได้ว่าข้อมูลเหล่านี้อาจมีข้อมูลส่วนตัวที่บ่งบอกว่าเป็นท่าน ข้อมูลที่เก็บไปจะถูกเก็บรักษาไว้ในที่ที่ปลอดภัยและมีเพียงผู้วิจัยเท่านั้นที่จะใช้ข้อมูลนี้ได้ ข้อมูลที่เก็บรวบรวม

ไปจะถูกเก็บไว้เป็นเวลาหนึ่งปีหลังจากนั้นจะถูกทำลาย หากมีการรายงานหรือเผยแพร่ผลการวิจัยครั้งนี้การรายงานจะอยู่ในรูปของการสรุปผลการวิจัยซึ่งจะไม่มีการเปิดเผยข้อมูลที่บ่งชี้ว่าเป็นตัวท่าน

การอาสาสมัครเข้าร่วมการวิจัย

การเข้าร่วมในการศึกษาครั้งนี้ขึ้นอยู่กับความสมัครใจของท่าน ท่านสามารถเลือกที่จะไม่เข้าร่วมในการศึกษาครั้งนี้ก็ได้ หากท่านเลือกที่จะเข้าร่วมในการศึกษาท่านก็ยังสามารถตัดสินใจที่จะยุติการเข้าร่วมในการศึกษานี้ได้ทุกเวลา การตัดสินใจของท่านไม่มีผลทำให้ท่านต้องเสียผลประโยชน์หรือต้องถูกปรับใด ๆทั้งสิ้นและข้อมูลที่ถูกเก็บไว้ก่อนหน้าที่ท่านจะถอนตัวจะถูกทำลายทิ้ง

ข้อคำถามเกี่ยวกับการวิจัย

หากท่านมีข้อสงสัยใด ๆ เกี่ยวกับโครงการวิจัยนี้ โปรดติดต่อ ดร.ชุนฮุย ฉี ที่โทร. 0011(541) 737-3836 หรือทางอีเมล์ที่ chunhuei.chi@orst.edu หรือที่ ผศ.จินดา บุญช่วยเกื้อกูล ที่โทร. 0-2942-8671 หรือทางอีเมล์ที่ boonchuj@onid.orst.edu หากท่านมีข้อสงสัยเกี่ยวกับสิทธิของท่านในการเข้าร่วมโครงการ โปรดติดต่อคณะกรรมการปกป้องสิทธิมนุษยชนมหาวิทยาลัยแห่งมลรัฐโอเรกอน ที่โทร 0011 (541) 737-3437 หรือทางอีเมล์ที่ IRB@oregonstate.edu การลงนามในเอกสารฉบับนี้แสดงว่าท่านได้รับการชี้แจงเกี่ยวกับการศึกษาวิจัยครั้งนี้เป็นที่ชัดเจนแล้ว ข้อสงสัยต่าง ๆ ของท่านได้รับการอธิบายให้เข้าใจเรียบร้อยแล้วและท่านเห็นชอบที่จะเข้าร่วมเป็นส่วนหนึ่งของการศึกษาวิจัยนี้ และท่านจะได้รับสำเนาของเอกสารฉบับนี้จำนวน 1 ชุดเพื่อเก็บไว้เป็นหลักฐาน

ลงนามผู้เข้าร่วมโครงการวิจัย (ตัวบรรจง)

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(ลายเซ็นต์ผู้เข้าร่วมโครงการวิจัย) (วันที่)

OSU IRB Approval Date: 12-02-04
Approval Expiration Date: 12-01-05

ข้อความสำหรับผู้วิจัย

ข้าพเจ้าได้อธิบายชี้แจงประเด็นข้างต้นกับผู้เข้าร่วมโครงการวิจัยเป็นที่เรียบร้อยแล้ว ในความคิดเห็นของข้าพเจ้าผู้เข้าร่วมโครงการวิจัยเข้าใจถึงความเสี่ยง ผลประโยชน์ และวิธีการที่จะเข้าร่วมในโครงการศึกษาวิจัยครั้งนี้แล้ว

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(ลายเซ็นต์ผู้วิจัย) (วันที่)

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10 ธันวาคม 2547

นิสิตที่รัก

ดิฉันเป็นนิสิตปริญญาเอก สาขาวิชาสาธารณสุข มหาวิทยาลัยแห่งมลรัฐโอเรกอน ประเทศสหรัฐอเมริกา ขณะนี้กำลังทำวิทยานิพนธ์ในระดับปริญญาเอกเรื่อง "ประสิทธิผลของการประยุกต์ใช้ ทรานทริโอเรทติคอลโมเดล ในการปรับปรุงพฤติกรรมการประกอบกิจกรรมทางกายของนิสิต" และดิฉันต้องการอาสาสมัครเข้าร่วมงานวิจัย ในขั้นตอนการใช้โปรแกรมส่งเสริมสุขภาพในการปรับปรุงพฤติกรรมการประกอบกิจกรรมทางกายของนิสิต ซึ่งนิสิตเป็นผู้ที่ได้รับการคัดเลือกจากการสุ่มตัวอย่างเพื่อเป็นตัวแทนของนิสิตมหาวิทยาลัยเกษตรศาสตร์ในการวิจัยครั้งนี้

หากนิสิตอาสาสมัครเข้าร่วมงานวิจัย นิสิตจะสามารถประเมินความพร้อมระดับของการประกอบกิจกรรมทางกาย ความเชื่ออำนาจในตน การตัดสินใจ และการใช้กระบวนการเปลี่ยนแปลง ในการปรับเปลี่ยนพฤติกรรมการประกอบกิจกรรมทางกายของตัวนิสิต รวมทั้งมีส่วนร่วมในการวิจัยด้านการส่งเสริมสุขภาพ นิสิตอาจได้รับการคัดเลือกให้เข้าร่วมในโปรแกรมนวัตกรรมการส่งเสริมสุขภาพเป็นเวลา 8 สัปดาห์ ซึ่งจะเป็นโอกาสให้นิสิตได้เรียนรู้และฝึกปฏิบัติทักษะที่สำคัญบางประการและปรับปรุงสุขภาพของนิสิตให้ดีขึ้นด้วย หากนิสิตตัดสินใจที่จะเข้าร่วมการวิจัยในครั้งนี้ โปรดลงนามในเอกสารการให้คำยินยอมและที่ได้แนบมาพร้อม จดหมายฉบับนี้ ซึ่งจะใช้เวลาประมาณ 15 นาที ข้อมูลที่เก็บไปจะถูกรักษาไว้เป็นความลับ

การวิจัยในครั้งนี้ต้องการความช่วยเหลือของนิสิตอย่างยิ่ง ผู้วิจัยรู้สึกซาบซึ้งและขอขอบคุณในความร่วมมือของนิสิตเป็นอย่างสูง

ขอแสดงความนับถือ

(นางสาวจินดา บุญช่วยเกื้อกูล)

ผู้วิจัย

OSU IRB Approval Date: 12-02-04
Approval Expiration Date: 12-01-05

Focus Group Transcription

Abbreviations used in the transcription

- R = researcher
- F = a female participant
- N = a female participant
- Y = a female participant h
- L = a female participant
- D = a female participant
- T = a male participant
- S = a male participant
- A = a male participant

The researcher introduces herself and the research assistance, asks the participants to introduce themselves to the group, and then starts the focus group discussion.

R: You may have been heard the word "Health". In your opinion, when you use the word, what is you concept on its whole meaning?

Please feel free to answer or not at your convenience. If you want to skip just say "pass". Don't feel uncomfortable.

A: I think of physical and mental health.

R: Physical and mental health... How do you define physical health?

A: Being strong.

R: Strong... And how about mental health?

A: Being in a good mood.

R: What does anyone else think about health, besides physical and mental health?

Y: Mostly, there are only these two aspects of health.

R: Have you ever heard about social health?

A: Social health… Never.

R: Never? In fact, there are many aspects of health. Mainly, there is physical health and that is being strong. Mental health is being in a good mood and not having a lot of stress. Social health is being able to get along well with others to have good relationships, and to accept social regulations. For example, if you are in a setting where blue jeans are not acceptable, and you do not follow the rules, this means your social health is not quite healthy because you cannot accept the regulations that other find acceptable. Maybe, your physical and mental health is normal but your social is not. If we talk about health, you say that to be healthy depends on physical and mental health but now we've added social health to this definition. In your opinion, what are the factors that make you healthy, if we define health in these three ways.

F: Environments.

R: Environments, what do you mean by this?

F: A place to live, and our surroundings like friends…like……(she did not give other examples) Living in the city reduces mental health.

R: So your focus is more on mental health. Does it affect physical health?

F: In my opinion, I think it does not… because it depends on the individual.

R: Depend on the individual… are there any other factors?

A: It might be pollution in the environment that affects health. If there is a lot of pollution peoples' physical health will not be good.

R: So it also affects the physical health of city inhabitants, then the environment also affects both physical and mental health… anything else?

N: Food… Eating…it is about having sufficient nutrients to make us healthy, and then our physical and mental health will also be good.

R: So it makes our bodies and mind strong. Anything else besides foods, and environments that will make us healthy?

Y: Exercising.

R: Exercising, when we talk about "Exercising" what does it mean?

S: Any activity that causes sweat.

R: Any activity that causes sweat… Have you heard the phrase "Physical Activity"?

S: "Physical Activity".... Never.

R: You have heard the word exercise and the now the phrase physical activity", do you know how they are the same and how they differ?

Y: I think I know. Physical activity is sort of like doing house work... washing clothes.... the sort of activities that burn calories, but exercise is kind of like running, aerobics, or something like these.

R: Are they different or the same, how?

Y: I think they are different.

R: Different.... How?

A: Exercise is kind of like a sports activity, but physical activity" might not be fun.

R: So... "Physical Activity" might not be fun. In fact, "Physical Activity" is any kind of bodily movement. If our muscles contract then energy is used. They are all considered to be "Physical Activity". When we "Exercise", we also have bodily movements, right? So "Exercising" is a part of "Physical Activity". If we talk about the difference, "Exercising" is the physical activity that has a specific purpose or goal. For example, if we to do an aerobic exercise, the goal for this body movement is to develop our body system. The goal for lifting weights is to increase muscle strength. These are considered "Exercising", but "Physical Activity" is anything that uses bodily movements.

One male particiapnt enters the room

If I have 10 points, the most important being ten and the least important being zero, how much would you rate the importance of "Physical Activity"? Please answer based on your real thoughts. Please don't answer based on other reasons, such as what you think I want to hear or what you think based on society the answer should be. Give your real feelings. A, how much do you score this behavior?

A: eight

R: eight ... how about you Y?

Y: eight

R: eight ...(look at the next person)

L: ninth

R: ninth...(look at the next person)

D: eight

R: eight

T: sixth

R: sixth...(look at the next person)

S: seventh

R: seventh...(look at the next person)

F: seventh

R: seventh...(look at the next person)

N: seventh

R: seventh... Those who gave eights and nines, do you exercise everyday?

Y: It seems that we have to try. It is not necessary to exercise everyday, but I try to make myself move all the time because I don't like to stay still. But sometimes when I move too much, I want to stay still. So the rest two points are for when I want to stay quiet and not do anything, just stay still.

R: L, you also gave an eight, do you always exercise?

L: Hardly, but I try to walk and run.

R: Why you do exercise rarely?

L: I want to exercise... I don't know if this is an excuse but I don't have time.

R: Don't have time...

L: Something like that... doing house work....

R: D, you give it nine points, do you always exercise or do physical activity?

D: I walk.

R: Walk... what is your purpose for walking? Do you intend to move your body or do you walk because of other reasons; such as, you are waiting for the bus, but it doesn't come?

D: Many reasons.

R: Mostly you walk because you want to do physical activity or is it for other reasons?

D: The bus didn't come.

R: T, you are an athlete. Why did you score it at only six points?

T: I think physical activity uses a small amount of energy.

R: Did you include exercise?

T: No, I did not include exercise.

R: Remember that exercise is a part of physical activity. Exercising, and playing sports are both a subset of physical activity.

T: I'll change it then from six to ten

R: Ten... so you misunderstood and you thought that they were separate, right? ....S, what score did you give it?

S: Seven

R: Why seven?

S: Uhh... mostly, because I like to sleep.

R: F, you also give it a seven... why?

F: I don't like to stay still, so I gave a seven. The remaining three points are for when I'm wanting to rest and stay still... I gave it a seven for the importance of physical activity.

R: And how about you N?

N: I think also seven is about right; it's not too high or low. The remaining points are for resting, reading book or other activities.

R: Now, I would like to divide you into two teams. Could you take about 10 minutes to help me think about what the strengths of physical activity are? What makes people want to do physical activity? And what are the barriers that keep them from participating in physical activity.

Students are separated into two teams.

R: Anyone can give me an example?

N: Like women...they want to loss weight.

R: Yes, to control weight or something like this. What is an example of a barrier to physical activity?

N: Eating again and again.

R: Is that a barrier to physical activity itself or a barrier faced by the individual involved?

F: Time.

R: Yes, ..another barrier to physical activity is fatigue or something like that?

A: Do we need to do one of each?

R: No, you can discuss them together.

Y: I mean do we have to do both strengths and weaknesses in each group.

R: Yes, list both strength and weaknesses. What are the most important weaknesses that keep people from doing physical activity? What are the most important strengths that encourage people to do physical activity"? After brainstorming, please select five strengths and weaknesses that you think they are the most important from your lists.

Students participate in the activity

R: Now, let's see what the strengths are that make people want to do physical activity.

Y: For the first strength, I think we exercise because we want to be physically strong...nowadays, it seems that people try to make themselves healthier by exercising and dieting. People should take better care of themselves. Secondly, body shape... both men and women want to be in shape. Women want to have attractive bodies and good posture. Men want to have bigger muscles. Third, it is for fun and to reduce stress. Fourth, participating in physical activity will help people make more friends and have more interactions with others. Last, it is using time in an efficient way. Regarding weaknesses, the first reason is that people do not have time. This might be because we are living in a competitive society, so it seems to be that people have less time in general. Second, people lack places or the equipments needed for exercise activity. Third, health conditions... for example, people get sick or injured, so they are not comfortable enough to do physical activity. Fourth, they don't have someone to

exercise with them, and the last reason is the weather, for example, if it's rainy or too hot, people don't want to do physical activity.

R: Great! And how about this team?

S: I'll start with strengths. The first is to create strong and healthy bodies. Second is for weight control, especially for women. This might be because currently there are less guys than girls, so it is highly competitive. Therefore, women tend to take better care of their bodies. The third reason is for fun. The fourth reason is to reduce stress, sometimes we study hard and then we are looking for an outlet through exercise. The fifth reason is to use time efficiently. The sixth is to go looking for more friends by exercising. The last is to practice meditation.

R: And what are the weaknesses?

F: About the weaknesses. The first one is because of laziness. Second, we don't have enough time. Third, we don't have places to go, such as some of us live far away from places to exercise. Fourth reason is the fear of injury. Fifth, health conditions such as being too fat. Sixth, is the environment...for example, it's too hot or raining, and last is that we don't have friends to go with... we can't go alone...we are not able to dance by ourselves. We are too afraid and shy something like this.

R: Now, some of you exercise regularly like T. Beside Ta-Kor practice (a Thai traditional sport), do you do any other physical activities?

T: Yes.

R: How long have you been doing physical activity, is it more than six months?

T: More, many years longer.

R: What is the motivation that makes you change from not doing physical activity to doing physical activity?

T: It's fun.

R: It's fun by the activity itself or because you are playing with friends or what?

T: Fun by itself and also with friends.

R: So, this makes you keep doing it... Do you have another reason?

T: Yes, there are other reasons. I want to win the race.

R: You're proud when you win a race.

T: Very proud.

R: So you keep exercising. S, do you participate in physical activity regularly? The word "regular" here means you do vigorous physical activity at least three days a week, and not less than 20 minutes a day OR you do moderate physical activity at least five days a week, and not less than 30 minutes a day. You can add up all the activities you participate in each day, that are done at least in a ten minute increment. For example, you can do it 2 times for 15 minutes a day. So I ask, are you regularly doing physical activity?

S: Not always.

R: How about in the past?

S: Not then either.

R: Why not? What makes you not want to exercise or do physical activity?

S: Actually, I've wanted to, but in reality, I don't. This might be because.....I don't know... how to say....

R: It is not important to you?

S: Maybe something like that.

R: Does this mean that you didn't realize the importance of doing physical activity in order to make you healthy?

S: No, I know that exercise helps to make me strong.

R: But why? What are the barriers that keep you from doing physical activity?

S: I didn't want to... I didn't go.

R: Is it because of your laziness? Can I say that?

S: Yes.

R: Still lazy, right?

S: Yes. For example, today, I intended to go exercise at five pm. I was going to go jogging, but when it turned 5 pm, I thought I'd go at 6 pm instead. When it was 6 pm, There were many other things to do. It was time to chat with friends, or to watch TV. There were many other things to do, so I didn't go.

R: It seems to be you don't realize the importance of doing physical activity.

S: Yes, I don't really see the importance.

R: How about F, do you exercise regularly?

F: I feel like I do.

R: Regularly, means more than 3 times a week.

F: Yes, I exercise everyday.

R; How long does it take? Is it more than 30 minutes?

F: Yes, I do Yoka more than 30 minutes a day.

R: What inspires you to do Yoga?

F: Because of my health. Previously, I exercised regularly by swimming. Because of my personal illness, I tried to push myself to swim. But lately, I don't swim anymore, so I had to look for another activity. Then I tried Yoga.

R: What made you change from swimming to not swimming for exercise?

F: The most popular excuse is because I don't have time.

R: Don't have time... so then why do you do Yoga?

F: Maybe because it's convenient and I don't need to carry a towel and swimming suit to the pool, I can do it at home.

R: Convenience... so you can do it at anytime and that is convenient? And how about you, N?

N: I hardly exercise.

R: Currently, you rarely exercise. How about in the past?

N: In the past, I went to aerobics everyday. However, I was too tired when I come back from work. The aerobics class started at 6.30pm. After I had dinner, I wanted to sleep. I also have a lot of work to do, and also work meetings everyday... I don't have time.

R: How long did you regularly do physical activity, A?

A: Since I was a child.

R: Why?

A: When I was a child, I did physical activity with my dad. He forced me to do physical activity.

R: Is your father an athlete?

A: Yes.

R: Your father is an athlete so he forced you?

A: Yes, I played basketball.

R: He supported you to play basketball. When he didn't, would you do physical activity by yourself? Is your father forcing you now?

A: No.

R: What was the reason that kept you doing physical activity? Are you getting any benefit from it or are you get used to it?

A: Not get used to, it's fun.

R: It's fun so you keep doing it, at what age did you start to play?

A: Oh! (Pauses to thinks)

R: Did you remember, when?

A: When I was twelve years old

R: How old are you now?

A: 21

R: Are you getting old (smile)?

A: Not old (smile).

R: Y, do you exercise regularly?

Y: By exercise do you mean to play a sport?

R: I mean physical activity.

Y: Yes, always.

R: Everything that is bodily movement?

Y: Always.

R: How about in the past?

Y: Always then too.

R: How long?

Y: When I was a child, I liked to play and run because I didn't like to stay still. I wanted to do something that would make me break a sweat, because it felt good. If I didn't do physical activity, I'd feel uncomfortable and want to do something physical. Just walking was ok. I felt good.

R: You felt good when you did it.

Y: I feel content or something like that.

R: You feel content ... How about you, L?

L: I do some physical activity, but I get bored.

R: How about in the past?

L: I did it when I was home on holiday during the school break; I physically played with my brothers like played basketball something like that,

R: Why do you get bored now?

L: I don't have friends to go with and I get tired from exercising. I am afraid that I will feel sleepy at night, and I have to study.

R: You're afraid that if you are tired from exercising that you may not be able to finish your homework and to study because you will be sleepy, right? How about you, D?

D: I don't exercise.

R: Why? Did you exercise in the past?

D: When I was a freshman, I attended Physical Education classes

R: It seems that you didn't exercise for very long time, right? Why? What factors make you not want to exercise?

D: I want to do it, but sometimes I don't have friends to go with.

R: (Addresses to the class) If you want to change yourself from not doing physical activity to doing physical activity, what is the most important factor that may influence you to do so? I think T is now reliably doing physical activity. Although you don't have friends, relatives, or anyone else to go with, you still keep doing physical activity by yourself, right? D.., what may influence you to increase your level of physical activity?

D: Myself.

R: But besides yourself,... is there anything else, like friends, or relatives?

D: I may ask my friends to go with me.

R: If your friends ask you to go?

D: I'll go.

R: So friends also influence you. Who else?

D: If my friends say "Hey you are getting fat" or something like that," I will say "Really?" and I'll go to exercise.

R: What if your friends don't want to go, but they just told you that you're fat.

D: I can go alone.

R: Is there the same feeling if you are told this by a male or female friend?

D: No, if a male friend told me this, I'd go rapidly.

R: So, friends influence you. Do your parents influence you?

D: No, because my mom and dad want me to be fat; they want me to eat a lot so that I'll have a bright mind or something like that.

R: Same as my mom. She wants me to eat a lot. How about you, Y? What influences you?

Y: Myself.

R: Yourself. Your friends or anyone else don't influence you at all?

Y: I think that if I don't want to make myself better or healthier, that friends are not effective at all. It should be about myself.

R: How about you, L ?

L: Myself and also my friends. If my friends ask me to, I will find a time to go exercise.

R: How about other people, such as your parents, relatives, leaders or teachers?

L: Not much.

R: So, friends come first? F?

F: There are many things, including myself because I'm not quite healthy, I have a personal health problem. If I feel weak, I will ask my friend to go exercise. If my friends ask me to go that's great

R: Oh! I forgot to ask... beside your friends, does your boy/girlfriend influence you?

S: Very much. (some of other students also said at the same time)

R: Very much?

S: It depends on how influential he/she is.

R: How about you, Y?

Y: No.

R: No? What do you mean by this? Does it mean that you don't have a boyfriend or that your boyfriend doesn't influence you?

Y: I want to have one, so I do physical activity because it makes me attractively shape.

R: So your boy/girlfriend also influences you. T already exercises regularly. S, does your girlfriend influence you? Who influences you the most?

S: For me I exercise because there are friends around me. When I was a freshman, my friends forced me to exercise. We went to exercise together in a big group. Then, we seldom went and now I don't go anymore.

R: I would like to ask for your opinion. If I were to develop a health promotion program to encourage students to exercise, what kind of programs would you want? What kind of activities or information will help you to do more exercise? How would you like the program to be?

F: If there are examples telling us how we can have stronger and better muscles, as well as how exercise can help certain ailments or something like this, it might be interesting.

R: So, information about the benefits of each activity. Is there anything else?

N: Having a trainer with a good body shape who's good looking, so that they'll be an inspiration would help too.

R: What kind of inspiration? Do you mean, for example, that if a person was overweight but now they're in good shape?

N: Yes, because of she exercise or something like that.

R: If the trainer is not beautiful, and she was very fat, but is now in good shape, is it still interesting for you? Remember she is not beautiful.

N: It's okay.

R: So, you would like to have information and a role model. I will keep this in mind when I design the program. Maybe I will invite a person who used to be overweight. She is an average woman who is an example of healthy weight loss. She lost twenty kilograms in three months. She did this without taking pills, and just through diet and exercise.

R: What do you think will help people who do not exercise to start exercising?

T: Having a trainer to lead activities.

R: Leading an activity such as aerobics, right? Do you think the one who will be a trainer should be in your age group? Or don't you care?

A: I think having someone in my age would be better.

R: If he/she is old but still in a good shape, this won't influence you?

Y: It's Okay. Even if they are older, if they still look good because of doing physical activity, then it's fine.

R: Ok, is there anything you want to suggest to help your friends exercise more? T, as you exercise regularly, please feel free to give your suggestions.

F: The program should have a variety of activities, such asYoga or something like that. We normally we have to pay for it, but if you develop the program, I would like you to offer it for free.

R: So, you want me to offer more activities that you can participate in without having to pay for them, such as aerobics, right. I am not sure if I am able to do it; however, I will keep this in mind, and if I have a chance I will inform the university fitness coordinator. Anyway, if there anything else that I can do, such as to invite a role model, produce fliers, or distribute free books that are related to physical activity, I will do it. Anything else?

A: Invite a superstar, like Paradorn.

R: Oh! How can I do that?

D: Someone like Paradorn.... Anyone.

R: Can it be some who's popular individual, such as Somrak Kamsing? Paradorn, I am afraid is not possible for us to get..

T: That's okay.

F: I think that we should set up competitions and have rewards for participating in them.

R: Do you mean like a weight control competition?

F: No. It should be sports competition, such as tragor (a Thai traditional sport), basketball or some kind of race. It can also be an aerobic competition or something like that, which will be motivational.

R: Okay, we've gone a little over our time limit, so are there any other concerns or comments? I would like to thank you all for coming. I greatly appreciate your time and your input. Your opinions will be used as base line data to help me develop a health promotion program as I described my project to you last week when we first met. Thank you again for coming and have a good evening.

APPENDIX IV

FOCUS GROUP TRANSCRIPTION IN THAI

บทสนทนาการประชุมกลุ่มย่อย

อักษรย่อที่ใช้ในเอกสารนี้

- ต, ส, อ หมายถึงนิสิตชายที่เข้าร่วมประชุมกลุ่ม
- ฝ, น, ย, ล, ด หมายถึงนิสิตหญิงที่เข้าร่วมประชุมกลุ่ม

ผู้วิจัยให้แนะนำตัวและแนะนำผู้ช่วยวิจัยต่อกลุ่ม และให้นิสิตแนะนำตัวเอง และเริ่มการประชุมกลุ่ม

ผู้วิจัย: นิสิตคงเคยได้ยินคำว่าสุขภาพมานานแล้ว ในความเข้าใจของนิสิตสุขภาพหมายถึงอะไรบ้าง ถ้าพูดคำว่าสุขภาพนิสิตคิดถึงอะไรก่อน ใครอยากพูดก็พูด ถ้าใครอยากผ่านก็บอกว่าผ่าน ขอผ่านก่อน ไม่ต้องอึดอัด นิสิตทำตัวตามสบายนะคะ

อ: ผมว่าสุขภาพกาย สุขภาพใจ

ผู้วิจัย: สุขภาพกาย สุขภาพใจ สุขภาพกายว่าเป็นไง

อ: ก็แข็งแรง

ผู้วิจัย: สุขภาพใจล่ะคะ

อ: ก็ต้องดี อารมณ์ดี

ผู้วิจัย: คนอื่นล่ะคะ, มีสุขภาพกาย สุขภาพใจ มีสุขภาพอื่นอีกไหม

ย: ส่วนใหญ่ก็มีแค่สองอย่าง

ผู้วิจัย: ส่วนใหญ่ก็มีแค่สองอย่าง เคยได้ยินคำว่า "สุขภาพสังคม"ไหม

ย: สุขภาพสังคม ไม่เคย

ผู้วิจัย: ไม่เคยหรอคะ จริง ๆ แล้วสุขภาพมีหลายด้าน โดยหลัก ๆ ก็มีสุขภาพกายก็คือแข็งแรง สุขภาพใจก็คือจิตใจร่าเริง แจ่มใส ไม่เครียด สุขภาพสังคมก็คือเข้ากับคนอื่นได้ มีมนุษยสัมพันธ์ ยอมรับกฎระเบียบของสังคม เช่น ถ้าสมมติว่า
นิสิตไปในที่บางที่ที่เขาห้ามไม่ให้ใส่กางเกงยีนส์ขึ้นตึกแล้วนิสิตรู้สึกอึดอัดกับกฎที่ออกมา ในขณะที่คนอื่นเค้ารับได้แต่เรารับไม่ได้ อันนั้นแปลว่าสุขภาพสังคมของเรานั้นไม่ค่อยจะดี ถ้าพูดว่าสุขภาพเนี่ย เราบอกว่าสุขภาพดี ต้องมีกาย, ใจ และตอนนี้ก็มีสังคมแล้ว
นิสิตว่าองค์ประกอบอะไรบ้างที่จะช่วยทำให้เรามีสุขภาพดี ไม่ว่ากายหรือใจ

น: สภาพแวดล้อม

ผู้วิจัย: สภาพแวดล้อม หมายถึงอะไรคะ

น: ก็ที่อยู่ สภาพแวดล้อมอย่างเพื่อนฝูง อย่างเช่นอยู่ในเมืองก็ทำให้สุขภาพจิตเสียบ้าง

ผู้วิจัย: ก็คือเน้นไปทางสุขภาพจิต สิ่งแวดล้อมส่วนใหญ่ก็จะเน้นไปทางสุขภาพจิตใช่ไหม สุขภาพกายมีส่วนไหม

ฝ: ถ้าเป็นหนู หนูว่าไม่เกี่ยวค่ะ เพราะมันขึ้นอยู่ที่แต่ละบุคคลมากกว่า

ผู้วิจัย: คิดว่ามีองค์ประกอบอื่นอีกไหม

ฝ: น่าจะมีเกี่ยวกับมลพิษ เกี่ยวกับสิ่งแวดล้อม ถ้ามีมลพิษมาก สุขภาพก็จะไม่ค่อยดี

ผู้วิจัย: ก็ส่งผลถึงสุขภาพด้วย งั้นสิ่งแวดล้อมก็ส่งผลถึงกายและใจด้วย มีอย่างอื่นอีกไหม

ส: อาหารการกิน เกี่ยวกับได้รับอาหารที่ ครบห้าหมู่ หรือสารอาหารครบ ก็ทำให้สุขภาพกายแข็งแรง ใจก็ดีด้วย

ผู้วิจัย: หมายถึงทำให้ร่างกายแข็งแรง จิตใจก็ดีด้วย เพราะว่าอย่างเวลาที่เรากินอาหารเพียงพอ มีสารอาหารครบถ้วน ก็จะทำให้เรามีสุขภาพดี อย่างอื่นมีไหมคะ นอกจากอาหาร นอกจากสิ่งแวดล้อมที่จะทำให้สุขภาพเราดี

ย: การออกกำลังกาย

ผู้วิจัย: การออกกำลังกาย, พูดถึงการออกกำลังกาย แปลว่าอะไร การออกกำลังกาย

ส: การออกกำลังกาย ก็ทำกิจกรรมอะไรที่ให้ได้เหงื่อ

ผู้วิจัย: กิจกรรมอะไรที่ให้ได้เหงื่อ เคยได้ยินคำว่า"กิจกรรมทางกาย"ไหมคะ

ส: "กิจกรรมทางกาย" ไม่เคย

ผู้วิจัย: การออกกำลังกาย ภาษาอังกฤษคือคำว่า "exercise" เคยได้ยินใช่ไหม exercise กิจกรรมทางกายคือคำว่า "Physical activity" นิสิตรู้ไหมว่าสองคำนี้มันเหมือนกันหรือต่างกันยังไง

ย: ถ้ากิจกรรมทางกาย คิดว่าอาจจะถ้าอย่างสมมติว่า ทำงานอะไรอย่างนี้ค่ะ ทำงานซักผ้า อะไรอย่างเงี้ย อาจจะเป็นกิจกรรมทางกายได้ ทำให้เหมือนแบบว่าเผาผลาญได้ แต่ถ้าออกกำลังกายเหมือนกับวิ่งแอโรบิก อะไรอย่างเงี้ย เหมือนกับอะไรแบบนี้ ก็คือ exercise

ผู้วิจัย: แล้วต่างกันตรงไหน เหมือนกันหรือเปล่า นิสิตว่าเหมือนกันหรือต่างกัน

ย: คิดว่าต่างกันนะคะ

ผู้วิจัย: ต่างกัน ต่างกันตรงไหน

อ: ก็ออกกำลังกายจะเป็นพวกกีฬา แต่กิจกรรมทางกายอาจจะไม่สนุกก็ได้

ผู้วิจัย: อ้อ..กิจกรรมทางกายอาจไม่สนุกก็ได้ จริง ๆ
แล้วกิจกรรมทางกายเนี่ยมันหมายถึงการเคลื่อนไหวของร่างกายทุกอย่าง
ถ้ากล้ามเนื้อเราหดตัวแล้วมีการใช้พลังงานมันถือเป็นกิจกรรมทางกายหมดเลย
การออกกำลังกายเราก็ต้องเคลื่อนไหวใช่ไหมคะ
เพราะฉะนั้นการออกกำลังกายเป็นส่วนหนึ่งของกิจกรรมทางกาย แต่ถามว่าต่างกันตรงไหน
ต่างกันตรงที่ว่า อะไรก็ตามที่เราเคลื่อนไหวร่างกายและกล้ามเนื้อมีการหดตัว
มีการเผาผลาญเป็นกิจกรรมทางกายหมดเลย
แต่ถ้าเป็นการออกกำลังกายนี่ก็คือว่าเรามีการเคลื่อนไหวร่างกายโดยมีจุดประสงค์ เช่น เราไป aerobic exercise
นั่นก็คือเราเคลื่อนไหวร่างกายโดยมีจุดประสงค์เพื่อต้องการพัฒนาของระบบร่างกาย
เราไปยกน้ำหนักเป็นการเคลื่อนไหวร่างกายโดยมีจุดประสงค์เพื่อจะเพิ่มความแข็งแรงของกล้ามเนื้อ
อันนี้เรียกว่าเป็นการออกกำลังกาย ก็คือมีจุดประสงค์ในการทำ
แต่กิจกรรมทางกายก็คืออะไรก็ตามที่ทำให้ร่างกายได้เคลื่อนไหวและใช้พลังงาน

ผู้เข้าร่วมการประชุมคนหนึ่งเดินเข้ามาในห้อง

ผู้วิจัย: ถ้าเกิดครูมีคะแนน 10 คะแนน สำคัญที่สุดคือเต็ม 10 สำคัญน้อยเนี่ยเท่ากับ 0 นิสิตให้ความสำคัญของการประกอบกิจกรรมทางกายเท่าไหร่ คือคำตอบที่ตอบเนี่ย เอาความรู้สึกเราจริง ๆ ไม่ต้องตอบเพื่อให้ครูพอใจ หรือว่าเพราะเหตุผลอื่น เอาความรู้สึกเราจริง ๆ นะคะ อ ให้เท่าไหร่คะ

อ: 8

ผู้วิจัย: 8 ย ล่ะ

ย: 8 ค่ะ

ผู้วิจัย: 8

ล: ให้ 9

ผู้วิจัย: 9

ด: 8

ผู้วิจัย: 8

ต: 6

ผู้วิจัย: 6

ส: 7

ผู้วิจัย: 7

ฝ: 7

ผู้วิจัย: 7

น: 7

ผู้วิจัย: 7 เอ้า พวก ที่ให้ แปด หรือ เก้า ตอนนี้ออกกำลังกายทุกวันหรือเปล่า

ย: ก็เหมือนว่าจะต้องพยายาม ไม่จำเป็นจะต้องไปออกกำลังกายทุกวัน พยายามที่จะให้ตัวเองขยับตัวตลอดเวลา เพราะว่าไม่ชอบที่จะอยู่นิ่ง ๆ น่ะค่ะ คือแต่บางครั้งบางครั้งที่เราขยับตัวอะไรอย่างเงี้ยมากเกินไป ทำให้เรารู้สึกอยากจะอยู่เฉยบ้าง บางครั้งอยากจะแบบขอเงียบ ๆ ขอแบบไม่ต้องใช้อะไรเลยอย่างเงี้ยะค่ะ เหลือสองคะแนนไว้อยู่เฉย ๆ

ผู้วิจัย: ล ให้ 8 เหมือนกัน ออกกำลังกายเป็นประจำหรือเปล่า

ล: ไม่ค่อยออกน่ะค่ะ แต่ว่าก็จะแบบพยายามเดินอะไรอย่างเงี้ยค่ะ ไปไหนนู่น นี่ ก็วิ่ง

ผู้วิจัย: ทำไมไม่อยากออกกำลังกายล่ะคะ

ล: อยากจะทำแต่มันแบบ เหมือนไม่รู้เป็นข้ออ้างหรือเปล่า แต่ไม่ค่อยมีเวลาอะไรอย่างเงี้ยค่ะ

ผู้วิจัย: ไม่ค่อยมีเวลา

ล: ก็คือทำงานบ้านหรืออะไรอย่างเงี้ยค่ะ ถูห้อง กวาดห้อง

ผู้วิจัย: ด ให้ 8 ออกกำลังกายเป็นประจำไหม หรือทำกิจกรรมทางกายเป็นประจำไหม

ด: ก็เดินเหมือนกันค่ะ

ผู้วิจัย: เดินเหมือนกัน คือ

คือในการที่เราเดินเนี่ยเรามีจุดประสงค์เพื่อให้เราได้เคลื่อนไหวหรือว่าเดินเพราะว่ารถเมล์ยังไม่มาหรือยังไง

ด: ก็หลายอย่าง

ผู้วิจัย: ส่วนใหญ่เป็นเพราะว่า เดินเพราะว่าอยากให้ร่างกายได้เคลื่อนไหวหรือว่าเหตุผลอื่นมากกว่า

ด: รถไม่มา

ผู้วิจัย: รถไม่มา ต เป็นนักกีฬา ให้หกหรอคะ ทำไมล่ะ ทำไมให้หก

ต: กิจกรรมทางกาย ผมว่ามันค่อนข้างจะใช้พลังงานน้อยไงฮะ

ผู้วิจัย: หมายถึงคุณรวมถึงการออกกำลังกายอะไรด้วยไหม

ต: ไม่ฮะ ไม่รวมการออกกำลังกาย

ผู้วิจัย: จำได้ไหมคะการออกกำลังกายเป็นส่วนหนึ่งของกิจกรรมทางกายไง

ต: เปลี่ยนจาก 6 เป็น 10 ครับ

ผู้วิจัย: ให้ 10 เลย อ๋อ แต่เมื่อกี้เข้าใจผิดว่า ว่ามันแยกกันใช่ไหม ส ให้เท่าไหร่ 7

ส: ให้ 7

ผู้วิจัย: ทำไมให้ 7 ล่ะ

ส: ก็เอ่อ....ส่วนใหญ่ชอบนอน

ผู้วิจัย: ส่วนใหญ่ชอบนอน ฝ ให้ 7 เหมือนกันเพราะ.....

ฝ: ก็เป็นคนชอบ ไม่ชอบอยู่นิ่งอยู่แล้วน่ะค่ะ 3 เนี่ยก็คือชอบอยู่เฉย ๆ อะไรเงี้ยค่ะ อีกซัก 1 หรือ 2 ก็นอน คืออย่างน้อยก็ระดับ 3 เนี่ยต้องมีการพักผ่อนของตัวเองแล้วก็อยู่เฉย ๆ บ้าง อะไรเงี้ยค่ะ ก็เลยให้ความสำคัญกิจกรรมทางกาย ระดับ 7

ผู้วิจัย: แล้ว น ล่ะ

น: ก็ เหมือนกัน คิดว่าระดับ 7 ก็คือน่าจะเพียงพอ ไม่มากไม่น้อยไป กับ 3 ก็คือให้พักผ่อนหรือว่าปฏิบัติไปทางอื่น

ผู้วิจัย: ทีนี้เดี๋ยวครูแบ่งขอแบ่งนิสิตเป็น 2 กลุ่มได้ไหม ครูขอเวลาสัก 10 นาที ช่วยครูคิดนิดนึงว่าในความคิดของนิสิตคิดว่ากิจกรรมทางกายมีจุดแข็งอะไรที่ทำให้คนอยากจะเข้าร่วม แล้วก็คิดว่ามีอะไรที่เป็นอุปสรรคที่ทำให้คนไม่อยากจะประกอบกิจกรรมทางกาย นึกออกไหมคะ

ผู้วิจัย: ไหนลองยกตัวอย่างให้ฟังสิว่า ที่ว่าเป็นจุดแข็งที่ทำให้คนอยากประกอบกิจกรรมทางกาย

น: พวกผู้หญิงลดความอ้วน

ผู้วิจัย: ลดความอ้วน อะไรอย่างเงี้ยนะ อย่างอุปสรรคก็อย่างเช่นอะไร

น: กินอีกแล้ว

ผู้วิจัย: นี่เป็นอุปสรรคของการประกอบกิจกรรมทางกาย หรือว่าด้วยตัวเราเอง

ฝ: เวลา

ผู้วิจัย: เวลาหรือว่ามันเหนื่อยอะไรทำนองนี้

อ: ทำคนละแผ่น?

ผู้วิจัย: ไม่ ๆ คิดรวมกันก็ได้

ย: หมายถึงว่ามีทั้งจุดแข็ง - จุดอ่อน

ผู้วิจัย: ค่ะจุดแข็ง – จุดอ่อน แล้วลองเรียงมาซัก 5 ตามลำดับความสำคัญ
อะไรคือจุดอ่อนที่สุดที่ทำให้คนไม่อยากประกอบกิจกรรมทางกาย
อะไรเป็นจุดแข็งที่คนอยากประกอบกิจกรรมทางกายบ้าง

นิสิตทำกิจกรรมกลุ่ม

ผู้วิจัย: ตอนนี้เราลองบอกความคิดเห็นสิคะว่าอะไรเป็นจุดแข็งที่สุดในเมื่อมันทำให้คนอยากออกกำลังกาย

ย: ก็อันดับ 1 นะคะ คิดว่าอันดับแรกก็คืออยากให้มีสุขภาพร่างกายที่แข็งแรง เพราะว่าเหมือนกับว่าในโลกปัจจุบันเนี่ยค่ะ ผู้คนหันมาทำให้ร่างกายแข็งแรงมากขึ้น ทั้งการออกกำลังกายและการรับประทานอาหารเพราะว่าควรจะดูแลตัวเองมากขึ้นอะค่ะ ก็อันดับที่ 2 ก็คืออยากให้รูปร่างดี ทั้งผู้หญิงและผู้ชายคิดว่าทุกคนอยากที่จะให้ตัวเองมีรูปร่างที่ดีขึ้น ผู้หญิงก็อยากให้มีสัดส่วนที่ดี ผู้ชายก็อาจจะแบบกระชับให้กล้ามเนื้อมีกล้ามเนื้ออะไรอย่างเงี้ยค่ะ และก็อันดับที่ 3 ค่ะ เพื่อความสนุกสนานเพลิดเพลิน คลายเครียดด้วยอะค่ะ และก็อันดับที่ 4 คือทำให้การออกกำลังกายทำให้มีเพื่อนค่ะ ได้เข้ากับสังคม ได้ร่วมกับผู้อื่น อันดับที่ 5 ก็คือใช้เวลาว่างให้เป็นประโยชน์ค่ะ ส่วนเรื่องจุดอ่อนนะคะ อันดับ 1 ก็คือไม่มีเวลาค่ะ อาจจะเป็นเพราะว่าคนเราต้องอยู่ในสังคมที่เร่งรีบอะไรอย่างเงี้ยค่ะ ก็คือทำให้เวลานั้นมีน้อย อันดับที่ 2 คือสถานที่ ขาดสถานที่และอุปกรณ์ในการออกกำลังกาย อันดับที่ 3 ก็คือสภาพร่างกายไม่เหมาะสมก็พวกเช่นว่าตอนนี้ไม่สบายแล้วก็ได้รับบาดเจ็บก็ไม่เอื้ออำนวยต่อการออกกำลังกาย อันดับที่ 4 ก็คือไม่มีเพื่อนไปร่วมออกกำลังกาย อันดับที่ 5 ก็คือสภาพอากาศไม่เอื้ออำนวย เช่น ฝนตกหรือไม่ก็แบบอากาศร้อนจัดเกินไป แบบนี้ค่ะ ก็คือคนก็ไม่ออก

ผู้วิจัย: ดีมากค่ะ กลุ่มนี้มีอะไรเห็นว่าสำคัญที่สุดคะ

ส: ก็เอาจุดแข็งก่อนนะครับ จุดแข็งก็คืออยากให้ร่างกายแข็งแรง สุขภาพดี อันดับที่ 2 ก็คืออยากลดความอ้วนอันนี้เป็นของผู้หญิงอาจจะเป็นเพราะว่าการแข่งขันสูงในยุคนี้พวกผู้ชายน้อยกว่าโดยผู้หญิงก็หันมาสนใจรูปร่างมากขึ้น อันดับที่ 3 ก็เพื่อความสนุกสนาน อันดับที่ 4 ก็คลายเครียดบางทีเราเรียนหนักแล้วก็หาวิธีแก้ด้วยการออกกำลังกาย อันดับที่ 5 ก็ใช้เวลาว่างให้เป็นประโยชน์ อันดับที่ 6 ก็ต้องการหาเพื่อน การออกกำลังกายก็ทำให้หาเพื่อนได้ 7 ก็ฝึกสมาธิ

ผู้วิจัย: จุดอ่อนล่ะคะ

ฝ: ก็ถ้าเป็น จุดอ่อนใช่ไหมคะ อันดับแรกก็อาจจะเกิดจากตัวเองขี้เกียจ ข้อ 2 ก็คือไม่มีเวลา ไม่ค่อยมีเวลา ข้อ 3 ก็คือสถานที่ไม่เอื้ออำนวย อาจจะอยู่ไกลจากที่ออกกำลังกาย ข้อที่ 4 ก็คือกลัว กลัวว่าจะเกิดการบาดเจ็บ ข้อที่ 5 ก็คือสุขภาพของตัวเองมันอ้วนไป ข้อ 6 ก็คือสภาพแวดล้อม

อย่างเช่น แดดร้อนเกินไป ฝนตกอะไรอย่างเงี้ยค่ะ ข้อ 7 ก็คือไม่มีเพื่อนคือไปคนเดียวไม่ได้เ
เล่นไม่ได้ เต้นไม่ค่อยออก ข้อ 8 ก็คือไม่กล้า กลัว เขิน อะไรอย่างเงี้ยค่ะ

ผู้วิจัย: ที่นี้ขณะนี้เนี่ยนิสิตบางคนเนี่ยก็ออกกำลังกายเป็นประจำอยู่แล้ว อย่าง ต ถ้าไม่ซ้อมตะกร้อ ต
ออกทำกิจกรรมทางกายอย่างอื่นด้วยไหม

ต: ครับ

ผู้วิจัย: เป็นมานานเท่าไหร่คะ เกินหกเดือนไหม

ต: เกิน หลายปีแล้ว

ผู้วิจัย: อะไรที่เป็นตัวทำให้ ต เปลี่ยนจากการที่ไม่ออกกำลังกายมาออกกำลังกาย

ต: มันสนุกครับ

ผู้วิจัย: มันสนุก สนุกด้วยตัวกิจกรรมเอง หรือสนุกเพราะว่ามาเจอเพื่อน หรือว่าอะไร

ต: สนุกที่ตัวกิจกรรมแล้วก็เพื่อนด้วยฮะ

ผู้วิจัย: มันสนุกก็เลยทำให้เราออกอยู่เรื่อย ๆ มีเหตุผลอื่นไหมคะ

ต: เหตุผลอื่น อย่างไปแข่งอย่างเงี้ยฮะก็เพื่อที่จะชนะ

ผู้วิจัย: ชนะเราก็มีความรู้สึกว่าเราภาคภูมิใจ

ต: ภูมิใจ

ผู้วิจัย: ก็เลยทำต่อไปเรื่อย ๆ ส ตอนนี้ออกกำลังกายหรือทำกิจกรรมทางกายเป็นประจำไหม
คำว่า"เป็นประจำ" ของครูก็คือกิจกรรมทางกายระดับหนัก อาทิตย์ละอย่างน้อย 3 วัน
วันนึงไม่ต่ำกว่า 30 นาที หรืออาจทำกิจกรรมทางกายระดับปานกลาง อย่างน้อย 5 วัน
วันละไม่ต่ำกว่า 30 นาที หรือจะสะสมรวมกันก็ได้อย่างน้อยครั้งละ 10 นาที
ตัวอย่างเช่นอาจทำวันละสองครั้ง ครั้งละ 15 นาทีต่อวันก็ได้ เมื่อกี้ที่ครูถามว่า ประจำ ประจำไหม

ส: ไม่ประจำ

ผู้วิจัย: ไม่ประจำ เมื่อก่อนล่ะ

ส: เมื่อก่อนก็ไม่

ผู้วิจัย: ก็ไม่ประจำ ทำไมถึงไม่ประจำ
มีอะไรที่ทำให้เราไม่ได้ออกกำลังกายหรือว่าไม่ได้ทำกิจกรรมทางกาย

ส: อย่างออกกำลังกายในตัวผมแล้วมันก็คิดอยากจะออกนะครับ แต่พอเอาเข้าจริงมันไม่ได้ออก
อาจจะเป็นเพราะว่า ก็บอกไม่ถูกก็คือมันไม่.....

ผู้วิจัย: ไม่มีความสำคัญจริง ๆ

ส: ก็อาจจะเป็นอย่างนั้น

ผู้วิจัย: ก็คือยังไม่เห็นความสำคัญว่าจะต้องออกกำลังกายเพื่อทำให้ร่างกายแข็งแรง

ส: ไม่ ก็รู้นะครับว่าออกกำลังกายก็คือทำให้ร่างกายแข็งแรง

ผู้วิจัย: แต่ทำไม่ล่ะ อะไรมันมาเป็นอุปสรรคขัดขวางไม่ให้เราไปออก

ส: มันไม่อยาก มันไม่ไป

ผู้วิจัย: ขี้เกียจ สรุปได้หรือเปล่า สรุปอย่างนี้ได้ไหม

ส: ครับ

ผู้วิจัย: ยังขี้เกียจอยู่ ได้ไหม

ส: ครับ ก็อย่างแบบวันนี้ก็คิดแบบว่าตอนเย็นจะต้องไปออกกำลังกาย พอถึงเวลาไปอย่างที่ตั้งใจไว้ 5 โมงเดี๋ยวเราจะไปวิ่ง แต่พอถึงเวลาปุ๊บ 5 โมงแล้วเอาไว้ก่อนดีกว่า เดี๋ยวซัก 6 โมงแล้วพอ 6 โมง มันก็จะติดโน่น ติดไรก็ติด ติดคุยกับเพื่อน ติดดูทีวี อะไรอย่างเงี้ยก็เลยไม่ไป

ผู้วิจัย: ก็คือยังไม่เห็นความสำคัญจริง ๆ

ส: ครับไม่เห็นความสำคัญ

ผู้วิจัย: แล้ว ฝ ล่ะ ออกไหม ตอนนี้ออกประจำไหม

ฝ: ก็ รู้สึกว่าก็ออกอ่ะค่ะ

ผู้วิจัย: ประจำ ก็คืออาทิตย์นึงเกิน 3 วัน

ฝ: ค่ะ ทำทุกวัน

ผู้วิจัย: นานเท่าไหร่คะ ทำเกิน วันละ 30 นาทีไหม

ฝ: เกินค่ะ ทำโยคะเกิน 30 นาทีต่อวัน

ผู้วิจัย: ทำไมเมื่อก่อนจากไม่ได้ทำโยคะถึงเปลี่ยนมาทำ

ฝ: อาจเป็นเพราะสุขภาพตัวเองด้วย คือแต่ก่อนก็ออกกำลังกายประจำ คือว่ายน้ำ แล้วตัวเองมีโรคประจำตัวแล้วมาว่ายน้ำ แล้วทีนี้พอช่วงหลัง ๆ ก็คือไม่ได้ว่ายแล้วก็เลยหาอย่างอื่นทำ ลองทำโยคะ

ผู้วิจัย: แล้วช่วงที่จากว่ายน้ำ มาไม่ว่ายเพราะอะไรถึงทำให้เปลี่ยนเป็นไม่ว่าย

ฝ: ก็คือเป็นข้ออ้างที่ทุกคนชอบอ้าง ไม่มีเวลา

ผู้วิจัย: อ้อไม่มีเวลา แล้วทำไมถึงเปลี่ยนมาทำโยคะคะ

ฝ: อาจเป็นเพราะ เพราะว่ามันสะดวกด้วย เพราะว่าเราไม่จำเป็นต้องถือผ้าขนหนู ถือชุดว่ายน้ำไปสระ อะไรอย่างเงี้ยค่ะ อยู่ที่บ้านเราก็ทำได้

ผู้วิจัย: อืม สะดวก ทำเมื่อไหร่ก็ได้ เมื่อเราสะดวกใช่ไหมคะ แล้วของ น

น: เป็นคนไม่ค่อยออกกำลังกาย

ผู้วิจัย: เมื่อก่อนล่ะ ตอนนี้ไม่ค่อย แต่ว่าเมื่อก่อนออกประจำ

น: แต่ก่อนไปแอโรบิคเกือบทุกเย็น ทำงานมาแล้วก็กลับมาถึงก็เหนื่อยค่ะ เพราะแอโรบิคเค้าจะเริ่มหกโมงเย็น ก็จะแบบพอกินข้าวเสร็จก็อยากนอน มีงานต่อเยอะ งานประชุมแล้วก็ไม่มีเวลา

ผู้วิจัย: อ ล่ะคะ นานเท่าไหร่ล่ะคะที่ออกกำลังกายเป็นประจำ

อ: ตอนเด็ก ๆ

ผู้วิจัย: เพราะอะไร ทำไมคะ

อ: ก็ตอนเด็ก ๆ พ่อบังคับครับ

ผู้วิจัย: พ่อเป็นนักกีฬาหรือเปล่า

อ: ครับ

ผู้วิจัย: พ่อเป็นนักกีฬา อ้อโดนพ่อบังคับหรอคะ

อ: เล่นบาสครับ

ผู้วิจัย: พ่อสนับสนุนให้ทำ แล้วหลังจากที่พ่อไม่บังคับนี่ทำเองหรอ ตอนนี้พ่อยังบังคับอยู่ไหม

อ: ไม่ครับ

ผู้วิจัย: แล้วทำไมถึงทำ หรือว่ามันได้ผลอะไรกับตัวเอง ยังไง หรือว่ามันติด

อ: ไม่ติดครับ ก็สนุกดี

ผู้วิจัย: ก็สนุก ก็เลยทำเลยเรื่อย ๆ ทำมาตั้งแต่อายุเท่าไหร่

อ: โห

ผู้วิจัย: จำได้ไหมคะ

อ: 12

ผู้วิจัย: แล้วตอนนี้เท่าไหร่แล้ว

อ: 21

ผู้วิจัย: แก่หรือยัง

อ: ไม่แก่ครับ

ผู้วิจัย: แล้ว ย ออกกำลังกายเป็นประจำหรือเปล่า

ย : เป็นการออกกำลังกายที่เป็นกีฬาหรือว่าอะไร

ผู้วิจัย: หมายถึงอย่างกิจกรรมทางกายเนี่ย

ย : ค่ะ ทำเป็นประจำ

ผู้วิจัย: คืออะไรก็ได้ที่มีการเคลื่อนไหวร่างกายนะคะ

ย : ประจำ

ผู้วิจัย: ประจำเมื่อก่อนล่ะ

ย : ประจำเหมือนกัน

ผู้วิจัย: นานเท่าไหร่ล่ะ

ย : ตั้งแต่เด็กเลยค่ะ เพราะรู้ว่าเป็นคนที่ชอบวิ่งเล่นอะไรอย่างเงี้ยค่ะ
ก็ชอบอยู่ไม่สุขเป็นประจำรู้สึกว่าได้ทำ อยากทำอะไรก็ได้ให้เหงื่อตัวเองออกมา รู้สึกมันสบายค่ะ
เพราะว่าไม่ได้ออกกำลังไม่ได้ทำไรเลยแล้วรู้สึกแบบว่าอึดอัด
รู้สึกแบบว่าอยากที่จะต้องทำอะไรซักอย่าง ไปเดิน แค่เดินก็ได้แล้ว ก็รู้สึกตรงนั้นอะค่ะ
ว่ามัน.....

ผู้วิจัย: พอทำแล้วรู้สึกว่ามัน มันสบาย

ย : มันมีความสุขอะไรอย่างเงี้ยค่ะ

ผู้วิจัย: มีความสุข ล ล่ะคะ

ล: ก็ออก แต่มันเบื่อ

ผู้วิจัย: เมื่อก่อนล่ะคะ

ล: เมื่อก่อนก็ออกตอนอยู่ที่บ้าน ปิดเทอมไรเงี้ยก็ไปเล่นกับน้อง เล่นบาส อะไรอย่างเงี้ยค่ะ

ผู้วิจัย: แล้วทำไมถึงเบื่อล่ะ

ล: มันไม่มีเพื่อนแล้วก็คิดว่าก็ไปออกกำลังมันก็เหนื่อย กลางคืนง่วงนอนก็กลัวแบบ busy อ่านหนังสืออะไรเงี้ย

ผู้วิจัย: กลัวการบ้านไม่เสร็จ จะหลับไปจนอ่านหนังสือไม่ได้ แล้ว ด ล่ะคะ

ด: ไม่ได้ออก

ผู้วิจัย: ไม่ได้ออก เพราะอะไรคะ เมื่อก่อนออกไหม

ด: ตอนปีหนึ่ง ก็เรียนพละอะไรเงี้ยค่ะ

ผู้วิจัย: ก็คือไม่ได้ออกมานานแล้ว เพราะอะไร ทำไมปัจจัยอะไรทำให้เรารู้สึกไม่อยาก

ด: ก็อยากออกเหมือนกัน แบบบางทีไม่มีเพื่อนอะไรเงี้ย

ผู้วิจัย: ถ้าครูถามว่า ถ้าสมมติเราจะเปลี่ยนแปลงตัวเองให้เป็นคนออกกำลังกายนี่นะ นิสิตว่าอะไรมีอิทธิพลกับเรามากที่สุด สมมติเราจะเปลี่ยนแปลงตัวเองให้ออกกำลังกายมากขึ้น ต คงอยู่ตัวแล้วนะ คือไม่ต้องมีเพื่อน ไม่ต้องมีญาติ ไม่ต้องมีใครมานั่นเราก็ออกอยู่แล้ว นิสิตคิดว่าใครมีอิทธิพลที่ทำให้เราเกิดการเปลี่ยนแปลงได้ตอนนี้ หรือว่าพรุ่งนี้ มะรืนนี้ หากจะเพิ่มการออกกำลังกาย ใครมีอิทธิพลที่ทำให้เราเปลี่ยนได้

ด: ตัวเอง

ผู้วิจัย: ตัวเอง เพื่อน ญาติ อะไรอีกมีไหม

ด: ก็ชวนเพื่อนไปด้วย

ผู้วิจัย: ถ้าเพื่อนชวน

ด: ไป

ผู้วิจัย: ก็คือเพื่อนมีอิทธิพลต่อ ถ้าเพื่อนชวนเราก็ไป ใครอีก

ด: ไม่ถ้าเพื่อนไม่ไป เพื่อนทักแค่แกเนี่ยอ้วนแล้วนะอะไรเงี้ย เฮ้ยจริงหรอ เอองั้นเราไปออกกำลังกาย

ผู้วิจัย: ถ้าเพื่อนทักแกอ้วนแล้วนะ แต่เพื่อนไม่ไปออกกำลังกายด้วย

ด: ไปคนเดียวก็ได้ค่ะ

ผู้วิจัย: แล้วถ้าผู้ชายทักกับผู้หญิงทักนี่ได้ผลเหมือนกันไหม

ด: ไม่เหมือนถ้าผู้ชายนี่รีบไปเลย

ผู้วิจัย: ก็คือเพื่อน แล้วถ้าพ่อแม่ล่ะ มีอิทธิพลกับเราไหม

ด: ไม่อะค่ะ เพราะ? พ่อแม่ พ่อแม่หนูเค้าอยากให้อ้วน ๆ อะค่ะ กินเยอะ ๆ เดี๋ยวหัวไม่ดี อย่างเงี้ยค่ะ

ผู้วิจัย: เหมือนแม่ครูเลย กินเยอะ ๆ แล้วเป็นเถ้าแก่เนี้ย ย ล่ะคะใครเป็นคนมีอิทธิพลมากที่สุด

ย: ตัวเองค่ะ

ผู้วิจัย: ตัวเอง เพื่อน หรือคนอื่น ๆ อะไรไม่มีอิทธิพลเลย

ย: ก็คิดว่าถ้าเกิดตัวเองไม่คิดที่จะทำให้ตัวเองดีขึ้น สุขภาพดีขึ้นอะไรเงี้ยก็จะบอกเป็นเพื่อนก็คงไม่ได้อยู่แล้วค่ะ น่าจะเป็นแค่ตัวเรามากกว่า

ผู้วิจัย: ล ล่ะคะ

ล: ตัวเองด้วย แล้วก็เพื่อนด้วยเพื่อนชวนก็บางทีก็จะพยายามหาเวลาไป

ผู้วิจัย: คนอื่นล่ะคะ พ่อแม่ ญาติ หัวหน้า หรือครู

ย: ไม่ค่อยค่ะ

ผู้วิจัย: ไม่ค่อย เพื่อนมาก่อน ฝ ล่ะคะ

ฝ: ก็รวม ๆ ตัวเองด้วยอะค่ะ เพราะว่าสุขภาพตัวเองไม่ค่อยดี มีโรคประจำตัวอะไรเงี้ย ก็รู้สึกว่าตัวเองไม่ไหว รู้สึกอ่อนแอ ก็จะไปหาเพื่อน ยิ่งถ้าเพื่อนชวนด้วยก็ดี

ผู้วิจัย: ครูลืมถามว่านอกจากเพื่อนเนี่ย แฟนมีอิทธิพลไหม

ส: สูง

ผู้วิจัย: สูงหรอ

ส: ก็แล้วแต่จะเชื่อแฟนแค่ไหน

ผู้วิจัย: ก็แล้วแต่จะเชื่อ แล้ว ย ล่ะ

ย: ไม่มี

ผู้วิจัย: ไม่มีแฟน หรือไม่มีผล

ย: อยากมีแฟนก็เลยต้องออกอ่ะค่ะ เพราะทำให้รูปร่างดี

ผู้วิจัย: แสดงว่าแฟนมีอิทธิพลเหมือนกัน ของ ต เค้าออกอยู่แล้ว ส ล่ะคะแฟนมีส่วนไหม ใครมีอิทธิพลต่อ ส มากที่สุด

ส: สำหรับผมก็คือเพื่อน เพื่อนรอบข้าง ถ้าเกิดอย่างที่เพื่อนที่หอน่ะครับ อย่างเงี้ยครับตอนปี 1 ก็เคยเหมือนกันครับที่รวมกลุ่มกันไปอันนั้นก็มีผล ดึงผมไปบ้างเหมือนกัน แต่พอหลังจากปี 2 ,3 เริ่มจะเพลาไป คือหลังจากตอนนั้นก็ไม่ได้มาออก

ผู้วิจัย: ทีนี้ถ้าสมมติว่าครูจะจัดโปรแกรมพัฒนาโปรแกรมเพื่อส่งเสริมให้นิสิตได้ออกกำลังกายนะคะ นิสิตคิดว่านิสิตอยากได้อะไร กิจกรรมลักษณะไหน ที่จะช่วยให้นิสิตออกกำลังกายได้ เข้าใจคำถามไหมคะ
หมายถึงว่าครูจะพัฒนาโปรแกรมเพื่อส่งเสริมให้นิสิตได้ออกกำลังกายของเนี่ยนิสิต นิสิตคิดว่าในโปรแกรมครูเนี่ยน่าจะมีลักษณะยังไงถึงจะช่วยทำให้นิสิตเนี่ยเกิดความกระตือรือร้นให้ออกกำลังกาย

ฝ: ถ้าเกิดมีตัวอย่างบอกว่าถ้าทำอย่างงี้แล้วได้อย่างงี้ จะให้ช่วยแบบว่าทำให้กล้ามเนื้อส่วนนี้ดีขึ้น จากการปวดท้องบ่อยอะไรอย่างเงี้ย ทำให้อาจจะสนใจ

ผู้วิจัย: บอกประโยชน์ของกิจกรรมแต่ละประเภทว่ามันได้ประโยชน์ยังไงแล้วอย่างอื่นล่ะคะ นอกจากข้อมูลทางด้านประโยชน์ของการออกกำลังกาย

น: ก็มีแบบว่าเป็นแบบพรีเซ็นเตอร์อะไรแบบเนี้ย หุ่นดี ๆ สวย ๆ หล่อ ๆ แล้วมันจะแบบว่าเป็นแรงบันดาลใจ

ผู้วิจัย: เป็นอะไรบันดาลใจ สมมติเมื่อก่อนคนนี้น่ะอ้วนปุ๊ก ขณะนี้ดีขึ้นสวยขนาดนี้

น: เพราะพี่ออกกำลังกายนะ อะไรแบบเนี้ย

ผู้วิจัย: แล้วถ้าเกิดไม่สวย แต่เมื่อก่อนเค้าอ้วนมากเลยแต่ตอนนี้หุ่นดี ยังสนใจอยู่นะ แต่เค้าไม่สวยนะ

น: ได้ ๆ ได้ค่ะได้

ผู้วิจัย: ก็คือมี มี role model มีให้ข้อมูลข่าวสารเกี่ยวกับประโยชน์ มีเพื่อช่วยพวกเราได้
ครูได้เอาพวกนี้ไปใส่ในกิจกรรม เช่น เชิญพวกที่เมื่อก่อนอ้วนมาก ตอนนี้ได้เจอแล้ว surprise มาก
ลดไป 20 กก. ในเวลา 3 เดือน ไม่ใช้ยาเลย อาหารกับออกกำลังกาย 2 อย่าง
แต่เค้าก็ไม่ได้สวยมากนะ แต่ว่าดูได้
นิสิตว่าอะไรจะช่วยทำให้คนแบบไม่ออกกำลังกายมาออกกำลังกายได้

ต: น่าจะมีคนเป็นตัวอย่าง

ผู้วิจัย: มีคนเป็นตัวอย่าง มานำกิจกรรม

ผู้วิจัย: มานำแบบสาธิต ทำกิจกรรม เช่น เต้นแอโรบิกใช่ไหม
คนที่มาสาธิตต้องเป็นคนวัยเดียวกับพวกนิสิตไหม

อ: น่าจะเอาเป็นวัยเรา

ผู้วิจัย: น่าจะวัยนี้ใช่ไหม สมมติว่าถ้าแก่แล้วแต่ว่าหุ่นดีก็ไม่สน

ย: ก็สนอะค่ะก็เผื่อว่า นี่ขนาดแก่แล้วแสดงว่าแสดงว่าเค้าออกกำลังกายยังดูดีอยู่เลยอะไรอย่างเนี้ยค่ะ

ผู้วิจัย: แล้วมีอะไรที่นิสิตอยากให้ครูทำแล้วคิดว่าจะช่วยเพื่อน ๆ ให้ออกกำลังกายมากขึ้นได้
คิดอะไรออกพูดเลยนะ

ฝ:

รูปแบบกิจกรรมเหมือนกับว่ามีให้เลือกให้หลากหลายขึ้นแบบโยคะอะไรอย่างเงี้ยค่ะจากต้องแบบเ
สียเงินตรงนั้นด้วยค่ะ คืออยากให้ถ้าเกิดจัดจริง ๆ
ก็อยากให้แบบเหมือนกับว่าไม่ต้องมีค่าใช้จ่ายในการที่เราจะต้องไปทำตรงนั้นอะค่ะ

ผู้วิจัย: ก็คืออยากให้เปิดช่องทางให้นิสิตได้เข้าไปใช้บริการแบบไม่ต้องเสียค่าใช้จ่ายมากขึ้น
อย่างเช่นที่เต้นแอโรบิค อะไรอย่างเงี้ยใช่ไหมคะ อันนี้ไม่แน่ใจว่าจะทำได้หรือเปล่า
แต่ว่าก็จะรับไว้แล้วยังไงก็เสนอมหาวิทยาลัย แต่ว่าอะไรที่ครูทำได้ด้วยตัวเองเนี่ย
คืออย่างเงี้ยอย่างเชิญ role model มา ทำแผ่นพับ
หรือว่าหาหนังสือมาแจกเกี่ยวกับกิจกรรมทางกายอย่างเงี้ย อันนี้ครูทำได้ก็จะทำเอง มีอะไรอีกไหม

อ: แล้วก็พวก superstar อย่างภราดร

ผู้วิจัย: โห แล้วจะได้ไหมเนี่ย

ด: อย่าง ภราดร หรือคนอื่น ๆ

ผู้วิจัย: อ้อ คือพวกที่มีชื่อเสียงใช่ไหม แบบสมรักษ์ คำสิงห์พอไหวไหม ภราดรสงสัยจะไม่ถึง

ต: ก็ได้ครับ

ฝ: หนูว่าเราอาจจะจัดออกมาเป็นรูปแบบว่าแข่งขันอะไรอย่างเงี้ยค่ะ

ผู้วิจัย: ลดความอ้วนอย่างเงี้ยหรอ

ฝ: ไม่ใช่ค่ะ อาจจะแบบว่าแข่งตะกร้อ แข่งบาส อะไรอย่างเงี้ยก็ได้

ย: ประกวดเต้นแอโรบิค อะไรอย่างเงี้ยจูงใจหน่อย

ผู้วิจัย: ประกวดเต้นแอโรบิค มีอะไรอีกไหมคะ ก็เลยเวลามานิดนึงแล้วนะคะ
สุดท้ายนี้มีข้อเสนอแนะอะไรเพิ่มเติมครูไหม เพิ่มเติมเสริมสั้น ๆ อะไรก็ได้ มีไหมคะ .....
สุดท้ายครูขอขอบคุณทุกคนนะคะที่สละเวลามาให้ข้อคิดเห็น
ครูจะนำความคิดของนิสิตไปใช้เป็นข้อมูลพื้นฐานในการพัฒนาโปรแกรมการส่งเสริมสุขภาพในงานวิจัยของครู ตามที่ครูได้ชี้แจงตอนที่เราเจอกันสัปดาห์ที่แล้วนะคะ ขอบคุณนิสิตอีกครั้งค่ะ
ขอให้ทุกคนโชคดีค่ะ

APPENDIX V

QUESTIONNAIRE

Section 1: Background Information

1. What is your gender/sex? [ ] Female
   [ ] Male

2. How old are you? _____ (Age to nearest year)

3. How do you live? [ ] Live with family
   [ ] Do not leave with family

4. How much do you weigh? _____ (Weight in kilograms)

5. How tall are you? _____ (Height in centimeters)

6 How other people mention about your weight? [ ] Lower
   [ ] No change
   [ ] Higher

7. How other people mention about your weight? [ ] Too low
   [ ] About right
   [ ] Too high

Section 2: Active stage

Directions: Have you been *regularly* participating in physical activities of *moderate intensity* (such as walking, recreational swimming, cycling, dancing and other similar activities)? Activities that are primarily sedentary, such as bowling, playing golf with a cart, and passive stretching, would not be considered physical activity. REGULAR PHYSICAL ACTIVITY = 5 DAYS OR MORE PER WEEK FOR 30 MINUTES OR MORE DAILY.

Note: the accumulation of 30 minutes of daily activity can be obtained *consecutively* or in an *additive manner* of two separate 15-minute activity sessions.

Please indicate the statement that most closely applies to your activity level.

- ❑ Yes, I have been for more than 6 months.
- ❑ Yes, I have been, but for less than 6 months.
- ❑ Not regularly, but I engage in such activities occasionally and plan to start on a regular basis within the next month.
- ❑ No, but I'm thinking of starting in the next 6 months.
- ❑ No, and I am not thinking of starting in the next 6 months.

Section 3: Physical Activity Level

1a. During the last 7 days, on how many days did you do **Vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?
Think about *only* those physical activities that you did for at least 10 minutes at a time.

_____ **days per week** ⇨ 1b. How much time in total did you usually spend on one of those days doing vigorous physical activities?

or _____**hours**_____**minutes**

❑ **None**

2a. Again, think only about those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

_____ **days per week** ⇨ 2b. How much time in total did you usually spend on one of those days doing moderate physical activities?

or _____**hours**_____**minutes**

❑ **None**

3a. During the last 7 days, on how many days did you **walk** for at least 10 minutes at a time? This includes walking in school, at work and at home, walking to travel from place to place, and any other walking that you did solely for recreation, sport, exercise or leisure.

_____ **days per week** ⇨ 3b. How much time in total did you usually spend walking on one of those days?

or _____**hours**_____**minutes**

❑ **None**

The last question is about the time you spent sitting on weekdays while in school, at work, at home, while doing course work and during leisure time. This includes time spent sitting at a desk, visiting friends, reading traveling on a bus or sitting or lying down to watch television.

4. During the last 7days, how much time in total did you usually spend sitting on a week days?
_____**hours**_____**minutes**

Section 4: Self-efficacy

Directions: Listed below are 18 statements designed to assess your beliefs in your ability to engage in physical activity under various circumstances or conditions. Please rate each statement as it applies to you and your situation by circling the appropriate number.

The following stem precedes each question: *I am confident I can participate in regular physical activity when…*

1. I am under a lot of stress.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

2. I am depressed.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

3. I am anxious.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

4. I feel I don't have the time.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

5. I don't feel like it.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

6. I am busy.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

7. I am alone.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

8. I have to exercise alone.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

9. My exercise partner decides not to exercise that day.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

10. I don't have access to exercise equipment.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

11. I am traveling.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

12. My gym is closed.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

13. My friends don't want me to exercise.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

14. My significant other does not want me to exercise.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

15. I am spending time with friends or family who do not exercise.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

16. It's raining or snowing.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

17. It's cold outside.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

18. The roads or sidewalks are snowy.

Not at all Confident	Not Confident	Uncertain	Confident	Very Confident
1	2	3	4	5

Section 5: Decisional Balance

Directions: This section looks at positive and negative aspects of physical activity. Please read the following items and indicate how important each statement is with respect to your decision to be physically active or not to be physically active in your leisure time. Please rate each item by circling the appropriate number.

1. Physical activity would help me reduce tension or manage stress.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

2. I would feel more confident about my health by getting physical activity.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

3. I would sleep better.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

4. Physical activity would help me have a more positive outlook.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

5. Physical activity would help me control my weight.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

6. I am too tired to get physical activity because of my other daily responsibilities.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

7. Physical activity would take too much of my time.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

8. I would have less time for my family and friends if I participated in physical activity.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

9. I'd worry about looking awkward if others saw me being physically active.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

10. Getting physical activity would cost too much money.

Not at All	Somewhat	Moderately	Very	Extremely
1	2	3	4	5

Section 6: Processes of Change

Directions: The following experiences can affect the physical activity habits of some people. Think of similar experiences you may be currently having or have had during the past month. Please rate how frequently the event occurs by circling the appropriate number.

1. I read articles to learn more about physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

2. I get upset when I see people who would benefit from physical activity but choose not to be active.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

3. I realize that if I don't do physical activity regularly, I may get ill and be a burden to others.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

4. I feel more confident when I do physical activity regularly.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

5. I have noticed that many people know physical activity is good for them.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

6. When I feel tired, I make myself do physical activity anyway because I know I will feel better afterwards.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

7. I have a friend who encourages me to do physical activity when I don't feel up to it.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

8. One of the rewards of regular physical activity is that it improves my mood.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

9. I tell myself that I can keep doing physical activity if I try hard enough.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

10. I keep a set of physical activity clothes with me so I can do physical activity whenever I get the time.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

11. I look for information related to physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

12. I am afraid of the results to my health if I do not do physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

13. I think that by doing physical activity regularly I will not be a burden to the health care system.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

14. I believe that regular physical activity will make me a healthier, happier person.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

15. I am aware of more and more people who are making physical activity a part of their lives.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

16. Instead of taking a nap after work, I do physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

17. I have someone who encourages me to do physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

18. I try to think of physical activity as a time to clear my mind as well as a workout for my body.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

19. I make commitments to do physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

20. I use my calendar to schedule my physical activity time.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

21. I find out about new methods of being physically active.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

22. I get upset when I realize that people I love would have better health if they did physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

23. I think that regular physical activity plays a role in reducing health care costs.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

24. I feel better about myself when I do physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

25. I notice that famous people often say they do physical activity regularly.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

26. Instead of relaxing by watching TV or eating, I take a walk or do physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

27. My friends encourage me to do physical activity.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

28. If I engage in regular physical activity, I find that I get the benefit of having more energy.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

29. I believe that I can do physical activity regularly.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

30. I make sure I always have a clean set of physical activity clothes.

Never	Seldom	Occasionally	Often	Repeatedly
1	2	3	4	5

Additional comments are welcome
THANK YOU!

APPENDIX VI

QUESTIONNAIRE IN THAI

แบบสอบถามเกี่ยวกับพฤติกรรมการประกอบกิจกรรมทางกายของนิสิต

มหาวิทยาลัยเกษตรศาสตร์

คำชี้แจง **แบบสอบถามชุดนี้แบ่งออกเป็น 6 ตอน โปรดอ่านคำชี้แจงในการตอบแบบสอบถามแต่ละตอน อย่างละเอียดและกรอกข้อมูลลงในแบบสอบถามนี้ให้สมบูรณ์**

ตอนที่ 1: ข้อมูลพื้นฐาน

คำชี้แจง โปรดทำเครื่องหมาย X ลงหน้าข้อความที่ตรงกับท่าน และเติมข้อความลงในช่องว่างที่กำหนดให้

1. เพศของนิสิตคือเพศใด?

   [ ] หญิง [ ] ชาย

2. นิสิตอายุเท่าใด? _____ (อายุที่กำลังจะเต็ม)

3. นิสิตพักอาศัยอย่างไร?

   [ ] พักอยู่กับครอบครัว [ ] ไม่ได้พักอยู่กับครอบครัว

4. นิสิตมีน้ำหนักเท่าใด?_____ (น้ำหนักเป็นกิโลกรัม)

5. นิสิตมีส่วนสูงเท่าใด?_____ (ส่วนสูงเป็นเซนติเมตร)

6. นิสิตปรารถนาจะให้น้ำหนักตัวของนิสิตเป็นอย่างไร?

   [ ] ลดลง [ ] เหมือนเดิม [ ] เพิ่มขึ้น

7. บุคคลอื่นกล่าวถึงน้ำหนักตัวของนิสิตว่าอย่างไร?

   [ ] น้อยเกินไป [ ] ปกติ [ ] มากเกินไป

ตอนที่ **2:** ระดับขั้นของการประกอบกิจกรรมทางกาย

คำชี้แจง คุณได้ประกอบกิจกรรมทางกายที่มีความหนัก**ปานกลาง**เป็น**ประจำ**หรือไม่)เช่น การเดิน การว่ายน้ำ**เพื่อ**การนันทนาการ การขี่จักรยาน การเต้นรำ และกิจกรรมอื่น ๆ ที่คล้ายคลึงกับกิจกรรมดังกล่าวนี้(กิจกรรม**ที่ใช้**การเคลื่อนไหวน้อย เช่น การเล่นโบว์ลิ่ง การเล่นกอล์ฟโดยการใช้รถกอล์ฟแทนการเดิน และการยืดเหยียดแบบใช้การเคลื่อนไหวน้อย **ไม่จัดว่าเป็นกิจกรรมทางกาย**

การประกอบกิจกรรมทางกาย หมายถึง การเคลื่อนไหวร่างกายหรือออกกำลังกายในรูปแบบใด ๆ ก็ตาม ซึ่งอาจรวมถึงการทำกิจกรรมอย่างมีแผนการณ์ เช่น การเดิน การวิ่ง การเล่นบาสเกตบอล หรือการเล่นกีฬาอื่น ๆ การประกอบกิจกรรมทางกายยังอาจรวมถึงกิจกรรมต่าง ๆ ในชีวิตประจำวัน เช่น การทำงานบ้าน การทำงานในสนาม การจูงสุนัขเดินเล่น เป็นต้น

การประกอบกิจกรรมทางกายเป็นประจำ หมายถึง การประกอบกิจกรรมทางกายระดับปานกลางสัปดาห์ละ **5 วัน** หรือมากกว่า โดยใช้เวลา **30 นาที** หรือมากกว่าในแต่ละวัน (เวลา **30 นาที**ของการประกอบกิจกรรมในแต่ละวันสามารถประกอบกิจกรรมในครั้งเดียวหรือสะสมเป็นช่วง ช่วงละไม่น้อยกว่า **10นาที**ก็ได้)

กรุณาเลือกข้อความข้างล่างที่ตรงกับระดับการประกอบกิจกรรมทางกายของคุณมากที่สุด

- ❑ ใช่ ฉันได้ประกอบกิจกรรมทางกายมาอย่างต่อเนื่องตั้งแต่ 6เดือนขึ้นไป
- ❑ ใช่ ฉันได้ประกอบกิจกรรมทางกายอย่างต่อเนื่องมาแต่น้อยกว่า 6เดือน
- ❑ ไม่ได้ประกอบกิจกรรมทางกายเป็นประจำ แต่เคยประกอบกิจกรรมดังกล่าวเป็นครั้งคราวและวางแผนไว้ว่าจะเริ่มทำเป็นประจำภายใน 1เดือนข้างหน้า
- ❑ ไม่เคยประกอบกิจกรรมทางกายเป็นประจำ แต่คิดที่จะเริ่มประกอบกิจกรรมทางกายใน 6เดือนข้างหน้า
- ❑ ไม่เคยประกอบกิจกรรมทางกายเป็นประจำ และยังไม่คิดที่จะเริ่มประกอบกิจกรรมทางกายใน 6 เดือนข้างหน้า

ตอนที่ *3*: ระดับของการประกอบกิจกรรมทางกาย

กรุณาอ่านข้อความข้างล่างนี้ และเติมข้อความลงในช่องว่างที่ตรงกับการประกอบกิจกรรมทางกายของคุณมากที่สุด

การประกอบกิจกรรมทางกาย **ระดับหนัก** หมายถึง การทำกิจกรรมที่ต้องออกแรง/ออกกำลังมาก และทำให้ท่านรู้สึกเหนื่อย หรือเหนื่อยมาก โดยหายใจแรงและเร็ว หรือหอบ หรือขณะออกแรง/ออกกำลังไม่สามารถพูดคุยกับคนข้างเคียงได้จนจบประโยค

1. ในช่วง 7 วันที่ผ่านมา ท่านได้ประกอบกิจกรรมทางกาย**ระดับหนัก** ยกตัวอย่างเช่น การยกของหนัก ๆ ขุดดิน เต้น แอโรบิก การวิ่งเหยาะ ๆ การเล่นกีฬา หรือถีบจักรยานเร็ว ๆ เป็นเวลากี่วัน นับเฉพาะการประกอบกิจกรรมทางกายระดับหนักที่ท่านได้ทำต่อเนื่องกันอย่างน้อย **10 นาที ขึ้นไป**

.....วันต่อสัปดาห์ *หรือ*

☐ ไม่ได้เคลื่อนไหวออกแรง/ออกกำลังอย่างหนักเลย ⟶ (ข้ามไปตอบข้อ 3)

2. ในแต่ละวันที่ท่านตอบว่าได้ใช้เวลาสำหรับการเคลื่อนไหวออกแรง/ออกกำลังระดับหนักติดต่อกันอย่างน้อย 10 นาที ต่อครั้งนั้น โดยปกติท่านใช้ทำเวลารวมทั้งสิ้นแล้วเป็นระยะเวลานานเท่าไรต่อวัน

.....ชั่วโมง.....นาที ต่อวัน

การประกอบกิจกรรมทางกาย ระดับ**ปานกลาง** หมายถึง การทำกิจกรรมที่ต้องออกแรง/ออกกำลังพอประมาณ และทำให้ท่านรู้สึกค่อนข้างเหนื่อย หรือเหนื่อยกว่าปกติพอควร โดยหายใจเร็วกว่าปกติเล็กน้อย หรือหายใจกระชั้นขึ้น หรือขณะออกแรง/ออกกำลังยังสามารถพูดคุยกับคนข้างเคียงได้จนจบประโยคและรู้เรื่อง

3. ช่วง 7 วันที่ผ่านมา ท่านประกอบกิจกรรมทางกาย ระดับปานกลาง ยกตัวอย่างเช่น การยกของที่มีน้ำหนักเบา ถีบจักรยานไปเรื่อย ๆ หรือเล่นเทนนิสคู่ **เป็นเวลากี่วัน** วัน นับเฉพาะการประกอบกิจกรรมทางกายระดับหนักที่ท่านได้ทำต่อเนื่องกันอย่างน้อย **10 นาที ขึ้นไป** ไม่รวมเรื่องของการเดิน

.....วันต่อสัปดาห์ *หรือ*

☐ ไม่ได้เคลื่อนไหวออกแรง/ออกกำลังระดับปานกลางเลย ⟶ (ข้ามไปตอบข้อ 5)

4. ในแต่ละวันที่ท่านตอบว่า ท่านได้ใช้เวลาสำหรับการประกอบกิจกรรมทางกาย ระดับปานกลางติดต่อกันอย่างน้อย 10 นาทีนั้น โดยปกติท่านใช้ทำเวลารวมทั้งสิ้นแล้วเป็นระยะเวลานานเท่าไรต่อวัน

.....ชั่วโมง.....นาที ต่อวัน

คำถามในข้อต่อไปนี้ให้ท่านคิดถึงเวลา **สำหรับการเดินทาง ในช่วง 7 วันที่ผ่านมา** โดยนับรวมทั้งหมด ตั้งแต่ช่วงที่ท่านอยู่ที่ทำงาน หรือขณะทำงาน อยู่ที่บ้าน การเดินทางจากที่หนึ่งไปยังอีกที่หนึ่ง และการเดินอื่น ๆ ที่ท่านปฏิบัติเพื่อการพักผ่อนหย่อนใจ เพื่อการออกกำลัง เพื่อกีฬา หรือเดินยามว่าง

5. ในช่วง 7 วันที่ผ่านมาท่านได้เดินติดต่อกันอย่างน้อย 10 นาที ในแต่ละครั้ง เป็นเวลากี่วัน

.....วันต่อสัปดาห์ *หรือ*

☐ ไม่ได้เดินติดต่อกันนาน 10 นาทีเลย ⟶ (ข้ามไปตอบข้อ 7)

6. ในแต่ละวันที่ท่านตอบว่า ท่านได้ใช้เวลาสำหรับการเดินติดต่อกันอย่างน้อย 10 นาทีต่อครั้งนั้น โดยปกติท่านใช้ทำเวลารวมทั้งสิ้นแล้วเป็นระยะเวลานานเท่าไรต่อวัน

.....ชั่วโมง.....นาที ต่อวัน

7. ในช่วง 7 วันที่ผ่านมาท่าน ท่านใช้เวลาสำหรับ**การนั่งในวันธรรมดา (จันทร์ ถึง ศุกร์** โดยรวมเวลาที่นั่งในขณะอยู่ที่ทำงาน ที่บ้าน และระหว่างเวลาพักผ่อนหย่อนใจรวมทั้งเวลาที่ใช้สำหรับการนั่งโต๊ะ นั่งคุยกับเพื่อน ๆ นั่งอ่านหนังสือ นั่ง หรือนอนดูโทรทัศน์) รวมแล้วเป็นระยะเวลานานเท่าไร ต่อวัน

.....ชั่วโมง.....นาที ต่อวัน

ตอนที่ 4: ความเชื่ออำนาจในตน

คำชี้แจง ข้อความ 18 ข้อ ข้างล่างนี้สร้างขึ้นเพื่อประเมินความเชื่อในความสามารถของคุณในการประกอบกิจกรรมทางกายภายใต้สิ่งแวดล้อมหรือเงื่อนไขต่าง ๆ โปรดให้น้ำหนักของข้อความแต่ละข้อที่ตรงกับคุณและสถานการณ์ของคุณโดยทำเครื่องหมาย ✓ ลงในช่องที่เหมาะสม

โปรดระลึกว่า ผู้วิจัย**มิได้**ถามว่าคุณกำลังอยู่ภายใต้สถานการณ์ในแต่ละข้อข้างล่างนี้หรือไม่ แต่ถามว่า**คุณเชื่อในความสามารถของคุณ**ในการประกอบกิจกรรมทางกายภายใต้สิ่งแวดล้อมหรือเงื่อนไขต่าง ๆ ต่อไปนี้เพียงใด

*ข้อความนี้ "**ฉันเชื่อมั่นว่าฉันสามารถเข้าร่วมในการประกอบกิจกรรมทางกายเป็นประจำเมื่อ**....."* จะนำหน้าประโยคในแต่ละข้อคำถาม

ที่	รายการ	ความเชื่อมั่นว่าคุณสามารถประกอบกิจกรรมทางกายได้				
		ไม่เชื่อมั่นอย่างมาก	ไม่เชื่อมั่น	ไม่แน่ใจ	เชื่อมั่น	เชื่อมั่นอย่างมาก
1	ฉันอยู่ภายใต้ภาวะความเครียดอย่างมาก					
2	ฉันรู้สึกหดหู่					
3	ฉันรู้สึกวิตกกังวล					
4	ฉันรู้สึกว่าฉันไม่มีเวลา					
5	ฉันไม่รู้สึกว่าชอบประกอบกิจกรรมทางกาย					
6	ฉันมีงานยุ่งมาก					
7	ฉันรู้สึกโดดเดี่ยว					
8	ฉันต้องออกกำลังกายคนเดียว					
9	คู่หูที่ออกกำลังกายด้วยตัดสินใจไม่ไปออกกำลังกายในวันนั้น					
10	ฉันไม่อาจใช้อุปกรณ์การออกกำลังกายได้					
11	ฉันกำลังเดินทาง					
12	โรงยิมปิด					

ตอนที่ 4: ความเชื่ออำนาจในตน (ต่อ)

โปรดระลึกว่า ผู้วิจัย**มิได้**ถามว่าคุณเก่ำลังอยู่ภายใต้สถานการณ์ในแต่ละข้อข้างล่างนี้หรือไม่ แต่ถามว่า**คุณเชื่อใ**ความสามารถของคุณในการประกอบกิจกรรมทางกายภายใต้สิ่งแวดล้อมหรือเงื่อนไขต่าง ๆ ต่อไปนี้เพียงใด

ข้อความนี้ ***"ฉันเชื่อมั่นว่าฉันสามารถเข้าร่วมในการประกอบกิจกรรมทางกายเป็นประจำเมื่อ....."*** จะนำหน้าประโยคในแต่ละข้อคำถาม

ที่	รายการ	ความเชื่อมั่นว่าคุณสามารถประกอบกิจกรรมทางกายได้				
		ไม่เชื่อมั่นอย่างมาก	ไม่เชื่อมั่น	ไม่แน่ใจ	เชื่อมั่น	เชื่อมั่นอย่างมาก
13	เพื่อนของฉันไม่ต้องการให้ฉันออกกำลังกาย					
14	บุคคลที่มีความสำคัญต่อฉันไม่ต้องการให้ฉันออกกำลังกาย					
15	ฉันใช้เวลาอยู่กับเพื่อนหรือคนในครอบครัวที่ไม่ออกกำลังกาย					
16	ฝนตก					
17	ข้างนอกอากาศหนาว					
18	ถนนหรือทางเดินเฉอะแฉะ					

ตอนที่ 5: ดุลยภาพการตัดสินใจ

คำชี้แจง : แบบสอบถามตอนนี้จะพิจารณาถึงผลได้หรือผลเสียของการประกอบกิจกรรมทางกาย โปรดอ่านข้อความข้างล่างนี้และชี้บ่งว่าข้อความแต่ละข้อมีความสำคัญเกี่ยวข้องกับการตัดสินใจในการที่ท่านจะประกอบกิจกรรมทางกายหรือไม่ประกอบกิจกรรมทางกายในช่วงเวลาว่างของท่านเพียงใด โปรดให้น้ำหนักของข้อความแต่ละข้อโดยการทำเครื่องหมาย ✓ ลงในช่องที่
ตรงกับความคิดเห็นของท่าน

โปรดระลึกว่า แบบสอบถามนี้**มิได้**ถามว่าท่านเห็นด้วยกับข้อความข้างล่างนี้หรือไม่ แต่ถามว่า ข้อความแต่ละข้อ**มีความสำคัญเกี่ยวข้องกับการตัดสินใจ**ในการที่ท่านจะประกอบกิจกรรมทางกายหรือไม่ เพียงใด

ที่	รายการ	ความคิดเห็น				
		ไม่อย่างแน่นอน	อาจจะ	ปานกลาง	มาก	มากที่สุด
1	กิจกรรมทางกายช่วยผ่อนคลายความตึงเครียดหรือจัดการกับความเครียดของฉัน					
2	ฉันมั่นใจในสุขภาพของตัวเองมากขึ้นด้วยการออกกำลังกาย					
3	ฉันจะนอนหลับดีขึ้น					
4	กิจกรรมทางกายช่วยให้ฉันดูดีขึ้น					
5	กิจกรรมทางกายจะช่วยให้ฉันควบคุมน้ำหนักได้					
6	ภาระหน้าที่ที่ต้องรับผิดชอบประจำวันทำให้ฉันรู้สึกเหนื่อยเกินกว่าที่จะประกอบกิจกรรมทางกาย					
7	กิจกรรมทางกายใช้เวลาของฉันมากเกินไป					
8	ฉันจะมีเวลาสำหรับครอบครัวและเพื่อนน้อยลงถ้าฉันเข้าร่วมในการประกอบกิจกรรมทางกาย					
9	ฉันกังวลว่าฉันจะดูประหลาดถ้าคนอื่นเห็นฉันออกกำลังกายอย่างกระฉับกระเฉง					
10	การประกอบกิจกรรมทางกายต้องใช้เงินมาก					

***ตอนที่ 6* กระบวนการการเปลี่ยนแปลง**

คำชี้แจง ประสบการณ์ต่อไปนี้อาจส่งผลกระทบต่อนิสัยการการประกอบกิจกรรมทางกายของบุคคลบา**งคน ให้**คิดถึงประสบการณ์ที่คล้ายคลึงที่คุณอาจจะเผชิญในอยู่**ปัจจุบันหรือที่เกิดขึ้นในช่วงเดือนที่แล้ว** โปร**ดให้น้ำหนัก**เหตุการณ์ที่เกิดขึ้นว่ามี**ความถี่**เพียงใดโดยทำเครื่องหมาย ✓ ลงในช่องที่เหมาะสม

ที่	รายการ	ความถี่ที่เกิดขึ้นในช่วงหนึ่งเดือนที่ผ่านมา				
		ไม่เคยเลย	ไม่ค่อย	บางครั้ง	**บ่อย ๆ**	เป็นประจำ
1	ฉันอ่านบทความเพื่อหาความรู้เพิ่มเติมเกี่ยวกับกิจกรรมทางกาย					
2	ฉันรู้สึกหงุดหงิดเมื่อฉันเห็นคนที่จะได้ประโยชน์จากการประกอบกิจกรรมทางกายแต่กลับไม่ทำ					
3	ฉันตระหนักดีว่าถ้าฉันไม่ประกอบกิจกรรมทางกายเป็นประจำ ฉันอาจจะเจ็บป่วยและเป็นภาระต่อคนอื่น					
4	ฉันรู้สึกมั่นใจมากขึ้นเมื่อฉันประกอบกิจกรรมทางกายเป็นประจำ					
5	ฉันสังเกตเห็นว่าคนส่วนมากรู้ดีว่ากิจกรรมทางกายเป็นสิ่งที่ดีสำหรับพวกเขา					
6	เมื่อฉันรู้สึกเหนื่อย ฉันก็จะยังประกอบกิจกรรมทางกาย เพราะฉันรู้ว่าฉันจะรู้สึกดีขึ้นหลังจากนั้น					
7	ฉันมีเพื่อนคนหนึ่งที่คอยสนับสนุนให้ฉันประกอบกิจกรรมทางกายเมื่อฉันรู้สึกไม่อยากทำ					
8	รางวัลอย่างหนึ่งของการประกอบกิจกรรมทางกายคือทำให้อารมณ์ฉันดีขึ้น					
9	ฉันบอกตัวเองว่าฉันสามารถประกอบกิจกรรมทางกายต่อไปเรื่อย ๆ ได้ ถ้าฉันมีความพยายามเพียงพอ					

ตอนที่ 6 กระบวนการการเปลี่ยนแปลง (ต่อ)

ที่	รายการ	ความถี่ที่เกิดขึ้นในช่วงหนึ่งเดือนที่ผ่านมา				
		ไม่เคยเลย	ไม่ค่อย	บางครั้ง	**บ่อย ๆ**	เป็นประจำ
10	ฉันเก็บเสื้อผ้าที่ใช้ในการออกกำลังกายไว้กับตัวชุดหนึ่งเสมอ ดังนั้นฉันสามารถประกอบกิจกรรมทางกายได้เมื่อไรก็ตามที่ฉันมีเวลา					
11	ฉันค้นหาข่าวสารที่เกี่ยวข้องกับการประกอบกิจกรรมทางกาย					
12	ฉันกลัวผลที่จะเกิดต่อสุขภาพ ถ้าฉันจะไม่ประกอบกิจกรรมทางกาย					
13	ฉันคิดว่าด้วยการประกอบกิจกรรมทางกายเป็นประจำ ฉันจะไม่เป็นภาระในการดูแลสุขภาพ					
14	ฉันเชื่อว่าการประกอบกิจกรรมทางกายเป็นประจำจะทำให้ฉันเป็นบุคคลที่มีสุขภาพดีขึ้นและมีความสุขมากขึ้น					
15	ฉันตระหนักดีว่ามีคนจำนวนมากขึ้นมากขึ้นทุกทีที่ประกอบกิจกรรมทางกายเป็นส่วนหนึ่งของชีวิตเขา					
16	แทนที่จะงีบหลับหลังทำงาน ฉันประกอบกิจกรรมทางกาย					
17	ฉันมีคนคอยส่งเสริมให้ประกอบกิจกรรมทางกาย					
18	ฉันพยายามคิดว่าการประกอบกิจกรรมทางกายเป็นเสมือนช่วงเวลาในการทำจิตใจให้ดีเช่นเดียวกันกับการทำให้ร่างกายดีขึ้น					
19	ฉันให้สัญญากับตัวเองว่าจะประกอบกิจกรรมทางกาย					

ตอนที่ 6 กระบวนการการเปลี่ยนแปลง (ต่อ)

ที่	รายการ	ความถี่ที่เกิดขึ้นในช่วงหนึ่งเดือนที่ผ่านมา				
		ไม่เคยเลย	ไม่ค่อย	บางครั้ง	**บ่อย ๆ**	เป็นประจำ
20	ฉันใช้ปฏิทินในการจัดตารางเวลาการประกอบกิจกรรมทางกาย					
21	ฉันค้นพบวิธีใหม่ในการทำให้ฉันเป็นคนกระฉับกระเฉง					
22	ฉันรู้สึกแย่เมื่อฉันได้ตระหนักว่าคนที่ฉันรักควรจะมีสุขภาพดีกว่านี้ถ้าที่ผ่านมาเขาได้ประกอบกิจกรรมทางกาย					
23	ฉันคิดว่าการประกอบกิจกรรมทางกายเป็นประจำมีส่วนสำคัญในการลดค่าใช้จ่ายทางด้านการดูแลสุขภาพ					
24	ฉันรู้สึกดีขึ้นเมื่อฉันประกอบกิจกรรมทางกาย					
25	ฉันสังเกตว่าบุคคลที่มีชื่อเสียงมักกล่าวเสมอว่าเขาประกอบกิจกรรมทางกายเป็นประจำ					
26	แทนที่จะพักผ่อนโดยการดูโทรทัศน์หรือรับประทานอาหารฉันไปเดินเล่นหรือประกอบกิจกรรมทางกาย					
27	เพื่อนหลายคนส่งเสริมให้ฉันประกอบกิจกรรมทางกาย					
28	ถ้าฉันได้ประกอบกิจกรรมทางกายเป็นประจำ จะพบว่าฉันได้ประโยชน์โดยมีกำลังมากขึ้น					
29	ฉันเชื่อว่าฉันสามารถประกอบกิจกรรมทางกายเป็นประจำ					
30	ฉันแน่ใจว่าฉันจะมีชุดประกอบกิจกรรมทางกายที่สะอาดอย่างน้อยหนึ่งชุดเสมอ					

ขอบคุณนิสิตอย่างสูงที่สละเวลาตอบแบบสอบถามนี้

APPENDIX VII

INTERVENTION PLANS

Weekly Intervention Plan
Precontemplation Stages: Week I
"Assessing readiness to change"

Objectives

1. To increase participants' understanding of the study project.
2. To complete informed consent forms.
3. To assess participants' stages of readiness to change, self - efficacy decisional balance, processes of change and, physical activity level.

Constructs

1. Stages of Change
2. Self-Efficacy
3. Decisional Balance
4. Processes of change

Intervention Description

1. Explanation of the research project. Completion of informed consent forms.
2. Assessing the participants' stages of readiness to change, self-efficacy, decisional balance, processes of change and physical activity level.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials, including informed consent forms and questionnaires.
2. The researcher explains the study project to the participants.
3. The participants sign the informed consent form.
4. The researcher explains how to complete the questionnaires: Stages Algorithm, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity Level questionnaires.
5. The participants complete the self-administered questionnaires.
6. The researcher reminds the participants of the next schedules meeting.

Materials

1. Informed consent forms.
2. Stages of Change, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity Level Questionnaires.

Weekly Intervention Plan
Precontemplation Stages: Week II
"Healthy Lifestyle"

Objectives

1. To increase participants' awareness of healthy lifestyle.
2. To motivate participants' to change unhealthy behaviors to healthy behaviors.

Constructs

1. Consciousness Raising
2. Self-Reevaluation
3. Environmental- Reevaluation

Intervention Description

1. Reviewing the benefits of healthy lifestyles.
2. Explaining risk factors and consequences of unhealthy lifestyles.
3. Encouraging participants to change their unhealthy behaviors to healthy behaviors.

Strategies/Activities

1. Participants sign an attendance sheet and pick up learning materials.
2. The researcher explains the scope and outline of today's program to the participants.
3. The researcher introduces a lecture topic and the guest speaker who illustrate the social effects of lack of physical activity.
4. The guest speaker discusses with the class about negative consequences of unhealthy lifestyle.
5. The researcher reviews lifestyle components based on the Thai Ministry of Public Health recommendations.
6. The researcher leads a discussion about relevant health behaviors such as healthy diets, and smoking cessation, and incorporates the relationships of physical activity with this behavior.
7. The researcher mentions risk factors and consequences of unhealthy lifestyles of young adults using factual information.
8. The participants work in small groups (3-4 people) and discuss how their sedentary behavior might affect them and the people around them.
9. The representatives of each group present their ideas to the class.
10. The researcher writes a list of negative consequences of unhealthy behaviors on the blackboard and encourages the participants to consider the need to change the problem behaviors.
11. The researcher reminds the participants to read materials that have been distributed at the beginning of the meeting.

Materials

1. Book
   - "10 way to promote your Health"
2. Slide
   - "Healthy Lifestyle"
3. Brochure
   - "5 component promoting quality of life"

Weekly Intervention Plan
Precontemplation Stages: Week III
"Getting Start"

Objectives

1. To increase participants' awareness toward the benefits of regular physical activity.
2. To increase participants' knowledge with regard to new recommendations of physical activity.
3. To motivate participants' to increase their physical activity.

Constructs

1. Self-Efficacy
2. Decisional Balance
3. Consciousness Raising
4. Dramatic Relief
5. Self-Reevaluation
6. Social Liberation

Intervention Description

1. Reviewing health related to physical activity and the benefits associated with regular physical activity., recommendations of regular physical activity for young adults.

Strategies/Activities

1. Participants sign an attendance sheet and pick up learning materials.
2. The researcher reviews the benefits of a healthy lifestyle that were discussed in the last week's meeting.
3. The researcher asks the participants to list a few unhealthy habits that they have dropped or good habits that they have adopted and factors that helped them to succeed or obstructed them.
4. The researcher asks volunteer to share their experiences with the class.
5. The researcher writes a list of strategies that help the volunteers to succeed in changing their unhealthy behavior on the blackboard and leads a discussion on how those strategies can be applied to change physical activity behavior.
6. The researcher gives a lecture on the benefits of an active lifestyle and regular physical activity, health related physical activity, and also introduces new recommendations for regular physical activity to the class and then discusses the topics with the participants.
7. The researcher encourages the participants to add physical activity to their dairy schedule. For example, a two-minute walk.

Materials

1. Slide
   "Physical activity and health"
2. Worksheet
   "Successful Habit Change"

Weekly Intervention Plan
Precontemplation Stages: Week IV
"Making Change"

Objectives

1. To monitor participant how spend time in their daily lives.
2. To encourage the participants to turn their sedentary behavior into physically active behavior.
3. To motivate the participants to become physically active.
4. To increase participants' knowledge about goal setting strategies.

Constructs

1. Self-Efficacy
2. Consciousness raising
3. Counter Conditioning
4. Self-Liberation

Intervention Description

1. Identifying the participant's physical activity readiness.
2. Conducting a personal time study.
3. Determining participant's active and inactive minutes used in daily life.
4. Motivating the participants to become physically active.
5. Learning how to set short-term and long term goals.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials.
2. The researcher asks some volunteers to share interesting information about physical activity that they have learned from reading materials and visiting websites.
3. The researcher asks the participants to fill out the Physical Activity Readiness (PAR-Q)" Questionnaire.
4. The researcher helps the participants to identify any health reasons which would make physical activity detrimental to their health.
5. The researcher demonstrates how to conduct a personal time study and asks the participants to record and calculate their active and inactive minutes used during any day of the week and also another day on the weekend
6. The participants consider the lists which mark their sedentary activities and select one or two of those activities that they can replace with more active activities.
7. The researcher presents a list of lifestyle physical activity that the participant can under go in order to increase their physical activity.
8. The researcher explains the tips for goals setting and demonstrates how to set a realistic and manageable short-term and long-term goals regarding physical activity.

9. The participants write down their short-term and long-term goals on the worksheets.

Materials

1. Slide.
   - "Goal Setting
2. .Work sheets.
   - "Time tracking" sheets
   - " Physical Activity Readiness(PAR-Q)"Questionnaire"

Weekly Intervention Plan
Precontemplation Stages: Week V
"Overcome Barriers"

Objectives

1. To identify the barriers of physical activity that participants have faced.
2. To increase participants' problem solving skills.
3. To motivate participants to engage in regular physical activity.

Constructs

1. Self-Efficacy
2. Consciousness raising
3. Dramatic Relief
4. Self Liberation

Intervention Description

1. Identifying the barriers of physical activity that participants have faced.
2. Learning problem solving skills.
3. Finding ways to get around barriers.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials.
2. The researcher asks volunteers to share their attempts at becoming physically active and discuss whether this experience related to recent intentions to changing physical activity behavior.
3. The researcher asks the participants to list two of their best excuses for not participating in physical activity.
4. The researcher writes the list of top ten excuses on the blackboard and leads a discussion on whether these excuses are true barriers.
5. The researcher asks the participant to list common negative thoughts concerning physical activity behavior and identify an alternative positive statement that they could use to replace it.
6. The researcher explains problem solving tips and gives some suggestions on how to overcome the legitimate excuses.
8. The researcher encourages participant to talk to someone they know who is physically active and get their advice.

Materials

1. Slide.
   - "How to overcome barriers."
2. Document
   - "Problem Solving tips"
3. Worksheet
   - "Overcome Barrier"

Weekly Intervention Plan
Precontemplation Stages: Week VI
"Enlisting Social Support"

Objectives

1. To explain kinds of support to the participants.
2. To identify key sources of support that the participants need. To make a plan to recruit supporters.

Constructs

1. Self-Efficacy
2. Helping Relationship
3. Counter Conditioning

Intervention Description

1. Identifying kinds of support that the participants needs.
2. Identifying key source of support.
3. Introducing university sport facilities.

Strategies/Activities

1. Participants sign an attendance sheet.
2. The researcher asks for some volunteers to share the advice that they got from talking with physically active people.
3. The researcher explains kinds of social support to the participants.
4. The participants identify the kind of support that they need most.
5. The researcher asks the participants to find a buddy from other group members who will be work as a supporter.
6. The participants work with their buddy to identify how to support each other in order to increase physical activity
7. The researcher introduces a guest speaker, a representative from KU. Sport office, to class.
8. The guest speaker introduces KU physical activity, sport and recreation facilities to the class.
9. The researcher encourages participants to support their buddy and use university facilities in order to improve their physical activity.

Materials

1. Slides
   - "Kinds of support."
2. Worksheet
   - "My support troop"

Weekly Intervention Plan
Precontemplation Stages: Week VII
"Rewarding Yourself"

Objectives

1. To identify creative rewards for motivating physical activity behavior.
2. To link physical activity goals to specific rewards.

Constructs

1. Reinforcement Management
2. Counter Conditioning
3. Stimulus control

Intervention Description

1. Creating a lists of rewards that will keep participant motivated.
2. Identifying creative rewards that participants need.
3. Linking physical activity goals to specific rewards.
4. Learning priority setting strategies and time-management techniques.

Strategies/Activities

1. The researcher leads a discussion about the value of rewards.
2. Participants brainstorm and create a list of creative rewards.
3. The researcher reminds participants to think about their short-term and long term goals that they had set.
4. The participants review their short-term and long-term goals and reset the goals if they want to do so.
5. The participants identify rewards that they will give themselves when they reach their goals.
6. The researcher asks the participants to write down the strategies that they will use to reach their goals along with a reward that they will give to themselves on the work sheet.
7. The researcher encourages participants to manage their time in order to reach their goals and give the desired rewards themselves.

Materials

1. Slides
   - "Kind of Rewards"
2. Worksheets
   - "My Goal"
   - "My reward worksheet"

Weekly Intervention Plan
Precontemplation Stages: Week VIII
"Assessing Accomplishment"

Objectives

1. To review key concepts about physical activity.
2. To identify the strategies for participating in physical activity that work best for the participants.
3. To assess participants' accomplishments.

Constructs

1. Stages of Change
2. Self-Efficacy
3. Decisional Balance
4. Processes of Change

Intervention Description

1. Reviewing key concepts of physical activity.
2. Identifying the strategies that work best for increasing physical activity.
3. Assessing participants' accomplishments.

Strategies/Activities

The researcher reviews key concepts about physical activity to the class.

The researcher asks the participants to think about negative consequences that will affect themselves and people around them, and also society if they are physically inactive.

The researcher leads a discussion about strategies that work best for participants' in order to increase physical activity.

The participants list the strategies that work best for them .

The researcher encourages participants to make a commitment in order to keep themselves physically activity for the future.

The researcher thanks all participants for their cooperation.

The participants complete the Stages Algorithm, Self-Efficacy, Decisional Balance and Process of Change and Physical Activity Level questionnaires.

Materials

1. Worksheet
   "Effects of Physical Inactivity"
2. Stages of Change, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity level Questionnaires.

Weekly Intervention Plan
Contemplation Stages: Week I
"Assessing readiness to change"

Objectives

1. To increase participants' understanding of the study project.
2. To complete informed consent forms.
3. To assess participants' stages of readiness to change, self - efficacy decisional balance, processes of change and, physical activity level.

Constructs

1. Stages of Change
2. Self-Efficacy
3. Decisional Balance
4. Processes of change

Intervention Description

1. Explanation of the research project. Completion of informed consent forms.
2. Assessing the participants' stages of readiness to change, self-efficacy, decisional balance, processes of change and physical activity level.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials, including informed consent forms and questionnaires
2. The researcher explains the study project to the participants.
3. The participants sign the informed consent form.
4. The researcher explains how to complete the questionnaires: Stages Algorithm, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity Level questionnaires.
5. The participants complete the self-administered questionnaires.
6. The researcher reminds the participants of the next schedules meeting.

Materials

1. Informed consent forms.
2. Stages of Change, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity Level questionnaires.

Weekly Intervention Plan
Contemplation Stages: Week II
"Healthy Lifestyle"

Objective

1. To increase participants' awareness of healthy lifestyle.
2. To motivate participants' to change unhealthy behaviors to healthy behaviors.

Constructs

1. Decisional Balance
2. Consciousness Raising
3. Self-Reevaluation
4. Environmental- Reevaluation

Intervention Description

1. Reviewing the benefits of healthy lifestyles.
2. Explaining risk factors and consequences of unhealthy lifestyles.
3. Encouraging participants to change their unhealthy behaviors to healthy behaviors.

Strategies/Activities

1. Participants sign an attendance sheet and pick up learning materials.
2. The researcher explains the scope and outline of today's program to the participants.
3. The researcher presents results from scientific studies about benefits of healthy lifestyles
4. The researcher reviews healthy lifestyle components based on the Thai Ministry of Public Health recommendations.
5. The researcher leads a discussion about relevant health behaviors such as healthy diets, and smoking cessation, and incorporates the relationships of physical activity with this behavior.
6. The researcher mentions risk factors and consequences of unhealthy lifestyles of young adults using and factual information.
7. The participants work in small groups (3-4 people) to find out how their sedentary behavior might affect them and the people around them.
8. The representatives of each group present their ideas to the class.
9. The researcher writes a list of negative consequences of unhealthy behaviors on the blackboard and encourages the participants to consider the need to change the problem behaviors.
10. The researcher introduces interesting websites and materials about physical activity that have been distributed at the beginning of the meeting to the class

Materials

2. Book
   - "10 way to promote your Health"
2 Slide
   - "Healthy Lifestyle"
3. Brochure
   - "5 component promoting quality of life"

Weekly Intervention Plan
Contemplation Stages: Week III
"Getting Start"

Objectives

1. To increase participants'awareness toward the benefits of regular physical activity.
2. To increase participants' knowledge with regard to new recommendations of physical activity.
3. To motivate participants' to increase their physical activity.

Constructs

1. Self-Efficacy
2. Decisional Balance
3. Consciousness Raising
4. Self-Evaluation
5. Counter conditioning
6. Social Liberation

Intervention Description

1. Identifying participant's stages of readiness to change.
2. Reviewing health related to physical activity and the benefits associated with regular physical activity.,recommendations of regular physical activity for young adults.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials including fliers, fact sheets, and worksheets.
2. The researcher asks some volunteers to share interesting information about physical activity that they have learned from reading materials and visiting websites.
3. The researcher asks the participants to list a few unhealthy habits that they have dropped or good habits that they have adopted and factors that helped them to succeed or obstructed them.
4. The researcher writes a list of strategies that help the volunteers to succeed in changing their unhealthy behavior on the blackboard and leads a discussion on how those strategies can be applied to change physical activity behavior.
5. The researcher encourages the participant to have more confidence to become physically active by relating their past success at behavior change with their ability to be physically active.
6. The researcher introduces a lecture topic and the guest speaker who demonstrate the long-term health benefits of physical activity to class.

7. The guest speaker gives a lecture on benefits of an active lifestyles and regular physical activity, health related physical activity, weight control, and new recommendations of regular physical activity to class and discusses the topics with the articipants.
8. The researcher asks the participants to fill out "Physical Activity Readiness(PAR-Q)" Questionnaire.
9. The researcher helps the participants identify if there is any health reason for not considering physical activity.
10. The researcher encourages participants to increase their physical activity such as five-minute walk plan into their diary schedule.

Materials

1. Fliers
   "Benefits of physical activity"
2. Work Sheets
   "" Physical Activity Readiness(PAR-Q)"Questionnaire.
3. Slide
   ""Physical activity and health."

Weekly Intervention Plan
Contemplation Stages: Week IV
"Making Change"

Objectives

1. To monitor participants' time spent in their daily life
2. To encourage the participants to turn their sedentary behavior to physically active behavior.
3. To increase participants' physical activity behaviors.
4. To increase participants' knowledge about goal setting strategies.

Constructs

1. Self-Efficacy
2. Awareness Raising
3. Consciousness raising
4. Counter Conditioning

Intervention Description

1. Identifying participant's daily activities.
2. Conducting personal time study.
3. Determining participant's active and inactive minutes used in daily life.
4. Increasing participant's physical activity behaviors.
5. Learning how to set short-term and long-term goals

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials.
2. The researcher demonstrates how to conduct a personal time study and asks the participants to record and calculate their active and inactive minutes used for one day during the week and another day on the weekend.
3. The participants consider the lists of their sedentary activities and select one or two of those activities that they can replace with more active activities.
4. The researcher explains the tips for goal setting and demonstrates how to set a realistic and manageable short-term and long-term goal regarding physical activity.
5. The participants write down their short-term and long-term goals on the worksheets.
6. The researcher presents a list of lifestyle physical activity that the participants can apply to increase their physical activity.
7. The researcher encourages the participants to increase their daily physical activity in order to reach their goals.

Materials

1. Filers.
   "Why conduct personal time study."
2. Work sheets.
   "Time tracking" sheets
   "My Goal"

Weekly Intervention Plan
Contemplation Stages: Week V
"Overcome Barriers"

Objectives

1. To identify the barriers to physical activity that participants have faced.
2. To increase participants' problem solving skills.
3. To motivate participants to engage in regular physical activity.

Constructs

1. Self-Efficacy
2. Consciousness raising
3. Dramatic Relief
4. Self Reevaluation
5. Environmental-Reevaluation

Intervention Description

1. Identifying the barriers of physical activity that participants have faced.
2. Learning problem solving skills: finding ways to get around barriers

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials.
2. The researcher leads a discussion about participants' past attempt to become physically active. Whether this experience related to recently intention in changing physical activity behavior.
3. The researcher asks the participants to brainstorm and list the top ten potential perceived barriers of physical activity on the blackboard.
4. The researcher leads a group discussion about whether these barriers are true barrier or excuses for not participate in physical activity.
5. The researcher describes the problem solving skills (IDEA) approach to class.
6. The participants identify at least two barriers of physical activity that they have faced by using the IDEA approach to overcome these barriers and write it down on the worksheet.
7. . The researcher assigns the participant to talk to someone they know who is being physically active and get their advice about how they overcome physical activity barriers.

Materials

1. Slides.
   "Overcome barriers."
2. Work Sheet
   "IDEA"

Weekly Intervention Plan
Contemplation Stages: Week VI
"Enlisting Social Support"

Objectives

1. To explain kinds of support to the participants.
2. To identify key sources of support that the participants need.
3. To make a plan to recruit supporters.

Constructs

1. Self-Efficacy
2. Helping Relationship
3. Counter-Conditioning

Intervention Description

1. Identifying kinds of support that the participants need.
2. Identifying key sources of support.
3. Learning how to make a plan to recruit supporters.

Strategies/Activities

1. Participants sign an attendance sheet and pick up learning materials.
2. The researcher leads a discussion about participants' experiences in using the IDEA approach to overcome their physical activity barriers.
3. The researcher talks about social support and explains kinds of support to participants.
4. The participants divide into small groups (2-3 persons) and work on case studies.
5. The group representatives of each group present their groups' idea to class.
6. The participants identify the kind of support that they need most.
7. The researcher explains and demonstrates how to ask for help techniques to class.
8. The participants work on " My Support Troops" worksheet.
9. The researcher asks one or two participants to share their ideas with the to class.
10. The researcher introduces a guest speaker, a representative from KU. Sport office, to class.
11. The guest speaker introduces Kasetsart University. physical activity, sport and recreation facilities to class.
12. The researcher encourages participants to use university facilities in order to improve their physical activity.

Materials

1. Sides
   "Kinds of support."
2. Work sheet
   "My Support Troops."

Weekly Intervention Plan
Contemplation Stages: Week VII
"Rewarding Yourself

Objectives

1. To identify creative rewards for motivating physical activity behavior
2. To write down physical activity goals.
3. To link physical activity goals to specific rewards.
4. To learn priority-setting strategies.
5. To learn time-management technique.

Constructs

1. Reinforcement Management
2. Counter Conditioning
3. Stimulus control

Intervention Description

1. Creating a lists of rewards that will keep participants motivated.
2. Identifying creative reward that participants need.
3. Linking physical activity goals to specific rewards.

Strategies/Activities

1. The researcher asks some participants to share their experiences about recruiting their support troop to the class.
2. The researcher leads a discussion about value of rewards.
3. Participants brainstorm and create a list of creative rewards.
4. The researcher reminds participants to think about the short-term and long term goals that they had set.
5. The participants review their short-term and long-term goals and reset the goals if they want to do so.
6. Participants write down their physical activity goals on "My Contract Worksheet".
7. The participants identify rewards that they will give themselves when they reach their goals.
8. The researcher leads a discussion about priorities setting and time-management technique to class.
9. The participants encourage the participant to set priority of their tasks.
10. The researcher encourages participants to manage their time and set priority of their activities in order to reach their goals and give desired rewards to themselves.

Materials

1. Slides
   - "Kind of Rewards"
2. Worksheets
   - "My Goal"

Weekly Intervention Plan
Contemplation Stages: Week VIII
"Assessing Accomplishment

Objectives

1. To review key concepts about physical activity.
2. To identify the strategies for participating in physical activity that work best for participants.
3. To make a commitment for participating in physical activity to the future.
4. To assess participants' accomplishments.

Constructs

1. Stages of Change
2. Self-Efficacy
3. Decisional Balance
4. Processes of Change

Intervention Description

1. Reviewing key concepts physical activity.
2. Identifying the strategies that work best for increasing physical activity.
3. Making commitment in participating physical activity to the future.
4. Assessing participants' accomplishments.

Strategies/Activities

1. The researcher reviews key concepts about physical activity to class.
2. The researcher leads a discussion about strategies that work best for participants' in order to increase physical activity.
3. The researcher asks the participants to list negative consequences if their not physically active and lost their health on worksheet.
4. The researcher encourages participants to make a commitment in order to keep physical activity for the future.
5. The researcher thanks all participants for their cooperation.
6. The participants complete the Stages Algorithm, Self-Efficacy, Decisional Balance and Process of Change and Physical Activity Level questionnaires.

Materials

1. Worksheet
   "When I lost my health"
2. Stages of Change, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity level questionnaires.

Weekly Intervention Plan
Preparation Stages: Week I
"Assessing readiness to change"

Objectives

1. To increase participants' understanding of the study project.
2. To complete informed consent forms.
3. To assess participants' stages of readiness to change, self—efficacy decisional balance, processes of change and physical activity level.

Constructs

1. Stages of Change
2. Self-Efficacy
3. Decisional Balance Processes of change

Intervention Description

1. Explanation of the research project.
2. Completion of informed consent forms.
3. Assessing the participants' Stages of readiness to change, Self-efficacy, Decisional Balance, Processes of Change and Physical Activity Level.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials, including research proposal summary, informed consent forms and questionnaires.
2. The researcher explains the study project to the participants.
3. The participants signformed consent form.
4. The researcher explains how to complete the questionnaires: Stages Algorithm, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity level questionnaires.
5. The participants complete the self-administered questionnaires.
6. The researcher reminds the participants of the next schedule meeting.

Materials

1. Informed consent forms.
2. Stages of Change, Self-Efficacy, Decisional Balance, Processes of Change and
3. Physical Activity level questionnaires.

Weekly Intervention Plan
Preparation Stages: Week II
"Healthy Lifestyle"

Objective

1. To increase participants' awareness of healthy lifestyle.
2. To increase participant's self-efficacy in adopting physical activity behaviors.
3. To motivate participants' to change unhealthy behaviors to healthy behaviors.

Constructs

1. Self-Efficacy
2. Decisional Balance
3. Consciousness Raising
4. Dramatic Relief
5. Self-Reevaluation
6. Environmental- Reevaluation
7. Social Liberation

Intervention Description

1. Reviewing the benefits of healthy lifestyles.
2. Explaining risk factors and consequences of unhealthy lifestyles.
3. Reminding participants to think about their unwanted habits that they have changed for better.
4. Encouraging participants to change their unhealthy behaviors to healthy behaviors.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials, including book, fliers, and work sheet.
3. The researcher explains scope and outline of today's program to the participants.
4. The researcher presents health reports and articles about people lifestyles and health statistics to the class and leads a discussion about healthy and unhealthy lifestyles.
5. The researcher briefly reviews the benefits of healthy lifestyles and explains relevant health behaviors (i.e. healthy diet, smoking cessation) and incorporates the relationships of physical activity with this behavior.
6. The researcher mentions about risk factors and consequences of unhealthy lifestyles of young adults using health statistics and factual information.
7. The researcher introduces a lecture topic and the guest speaker who illustrate the social effects of lack of physical activity and leads a discussion.
8. The researcher introduces interesting websites and materials about physical activity that have been distributed at the beginning of the class meeting .

Materials

1. Book
   - Healthy Lifestyles
2. Slide
   - "Healthy lifestyle"

Weekly Intervention Plan
Preparation Stages: Week III
"Getting Start"

Objectives

1. To increase participants' awareness toward benefits of regular physical activity.
2. To increase participants' knowledge with regard to new recommendations of physical activity.
3. To motivate participants' to increase their physical activity.

Constructs

1. Self-Efficacy
2. Decisional Balance
3. Consciousness raising
4. Dramatic Relief
5. Self-Evaluation
6. Counter conditioning
7. Social Liberation

Intervention Description

1. Identifying participant's stages of readiness to change.
2. Reviewing health related to physical activity and the benefits associated with regular physical activity.
3. Recommendations of regular physical activity for young adults. Explaining weight control strategies.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials including fliers, fact sheets, and worksheets.
2. The researcher introduces a lecture topic and the guest speaker (Physical Activity Professor) to class.
3. The researcher introduces a lecture topic and the guest speaker who demonstrate the long-term health benefits of physical activity to class.
4. The guest speaker gives a lecture and demonstrate some kind of physical activity for beginner to the class.
4. The researcher asks the participants to fill out "Physical Activity Readiness(PAR-Q)" Questionnaire.
5. The researcher helps the participants identify if there is any health reason for not considering physical activity.
6. The researcher demonstrates how to create a specific plan for increasing physical activity and encourages the participants to add physical activity to their dairy schedule such as ten minute walk plan.

7. The researcher asks the participants to create a specific plan for increasing physical activity in each day of the week and bring to class in the next meeting.
8. The researcher encourages participants to follow their physical activity plan.

Materials

1. Work Sheets
   - " Physical Activity Readiness(PAR-Q)"Questionnaire.
   - " My physical activity plan."
2. Slide
   - "Physical activity and health."

Weekly Intervention Plan
Preparation Stages: Week IV
"Making Change"

Objectives

1. To monitor participants' time spent in their daily life
2. To encourage the participants to turn their sedentary behavior to physically active behavior.
3. To increase participants' physical activity behaviors.
4. To increase participants' knowledge about goal setting strategy.

Constructs

1. Self-Efficacy
2. Awareness Raising
3. Consciousness raising
4. Counter Conditioning

Intervention Description

1. Identifying participant's daily activities.
2. Conducting personal time study.
3. Determining participant's active and inactive minutes used in daily life. Increasing participant's physical activity behaviors.
4. Learning how to set short-term and long-term goals.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials.
2. The researcher asks two or three volunteers to present their physical activity plan to class and lead a discussion on how the plans work for them.
3. The researcher mentions about weight management and demonstrates how to balance calories taken in via foods versus calories burned In activity.
4. The researcher demonstrates how to conduct a personal time study and asks the participants to record and calculate their active and inactive minutes used for one day during the week and another day on the weekend.
5. The participants consider the lists of their sedentary activities and select one or two of those that activities that they can replace with more active activities.
6. The researcher explains the tips for goal setting and demonstrates how to set a realistic and manageable short-term and long-term goal regarding physical activity.
7. The participants write down their short-term and long-term goal on the worksheets.
8. The researcher presents a list of lifestyle physical activities that the participant can apply to increase their physical activity.
9. The researcher encourages the participants to increase their daily physical activity in order to reach their goals.

Materials

1. Filers.
   - "Why conduct personal time study."
2. Work sheets.
   - "Time tracking" sheets
   - "My Goal"

Weekly Intervention Plan
Preparation Stages: Week V
"Overcome Barriers"

Objectives

1. To identify the barriers of physical activity that participants have faced.
2. To increase participants' problem solving skills.
3. To motivate participants to engage in regular physical activity.

Constructs

1. Self-Efficacy
2. Consciousness raising
3. Dramatic Relief
4. Self Reevaluation
5. Environmental-Reevaluation

Intervention Description

1. Identifying the barriers of physical activity that participants have faced.
2. Learning problem solving skills.
3. Finding ways to get around barriers.

Strategies/Activities

1. Participants sign an attendance sheet and pick up materials including fliers, worksheet.
2. The researcher lead a discussion about participants' past attempt to become physically active. Whether this experience related to recently intention in changing physical activity behavior.
3. The researcher asks the participants to brainstorm and list the top ten potentialy perceived barriers of physical activity on the blackboard.
4. The researcher leads a group discussion about whether these barriers are true barriers or excuses to not participate in physical activity.
5. The researcher describes problem solving skills (IDEA) approach to class.
8. The participants identify at least two barriers of physical activity that they have faced by using the IDEA approach to overcome these barriers, and write it down on the work sheets.
9. The researcher encourages the participants to use problem-solving skills to overcome other physical activity barriers that they have faced.

Materials

1. Slides.
   - "How to overcome barriers."
2. Work Sheet
   - "IDEA"

Weekly Intervention Plan
Preparation Stages: Week VI
"Enlisting Social Support"

Objectives

1. To explain kinds of support to the participants.
2. To identify key sources of support that the participants need.
3. To make a plan to recruit supporters.

Constructs

1. Self-Efficacy
2. Helping Relationship
3. Counter Conditioning

Intervention Description

1. Identifying kinds of support that the participants need.
2. Identifying key source of support. Learning how to make a plan to recruit supporters.

Strategies/Activities

1. Participants sign an attendance sheet and pick up learning materials.
2. The researcher lead a discussion about participants' experiences in using the IDEA approach to overcome their physical activity barriers.
3. The researcher talk about social support and explains kinds of support to participants.
4. The participants identifying the kind of support that they need most.
5. The researcher talks about social support and explains kinds of support to participants, and also demonstrates how to recruit support troop.
6. The participants divide into small groups (2-3 persons) and work on case studies.
7. The group representatives of each group present their groups idea to class.
8. The researcher encourage to participants to recruit their support troop.

Materials

1. Slides
   - "Kinds of support."
2. Work sheet
   - "My Support Troop."

Weekly Intervention Plan
Preparation Stages: Week VII
"Rewarding Yourself

Objectives

1. To identify creative rewards for motivating physical activity behavior
2. To write down physical activity goals.
3. To link physical activity goals to specific rewards.
4. To learn priority setting strategies.

Constructs

1. Reinforcement Management
2. Counter Conditioning
3. Stimulus control

Intervention Description

1. Creating a lists of rewards that will keep participant motivated.
2. Identifying creative rewards that participants need.
3. Linking physical activity goals to specific rewards.
4. Learning priority setting strategies and time-management techniques.

Strategies/Activities

1. The researcher asks some participants to share their experiences about recruiting their support troop to class.
2. The researcher leads a discussion about value of rewards.
3. Participants brainstorm and create a list of creative rewards.
4. The researcher reminds participants to think about the short-term and long term goals that they have set.
5. The participants review their short-term and long-term goals and reset the goals if they want to do so.
6. The participants identify rewards that they will give themselves when they reach their goals.
7. Participants write down their physical activity goals on "My Contract Worksheet".
8. The researcher gives a lecture on priorities setting and time-management technique to class.
9. The participants list their tasks and set priority of the tasks and write down on the "My priority worksheet"
10. The researcher encourages participants to manage their time and set priority of their activities in order to reach their goals and give desired rewards to themselves.

Materials

1. Slides
   - "Kind of Rewards"
2. Worksheets
   - "My Goal"
   - "My contract worksheet"

Weekly Intervention Plan
Preparation Stages: Week VIII
"Assessing Accomplishment"

Objectives

1. To review key concepts about physical activity.
2. To identify the strategies for participating in physical activity that work best for participants.
3. To make a commitment for participating in physical activity to the future.
4. To assess participants' accomplishments.

Constructs

1. Stages of Change
2. Self-Efficacy
3. Decisional Balance
4. Processes of Change

Intervention Description

1. Reviewing key concepts physical activity.
2. Identifying the strategies that work best for increasing physical activity.
3. Making commitment in participating physical activity to the future.
4. Assessing participants' accomplishments.

Strategies/Contents

1. The researcher reviews key concepts about physical activity to class.
2. The researcher introduces the guest speaker to the class.
3. The quest speaker demonstrates some physical activity for the beginner to the class.
4. The participants practice some physical activity as the guest speaker suggested.
4. The researcher encourages participants to make a commitment in order to keep their physically activity for the future.
5. The researcher thanks all participants for their cooperation.
6. The participants complete the Stages Algorithm, Self-Efficacy, Decisional Balance and Process of Change and Physical Activity Level questionnaires.

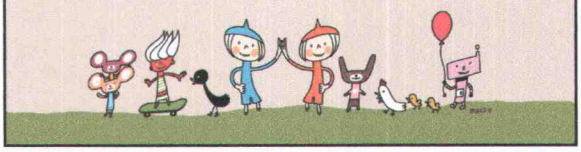
Materials

1. Stages of Change, Self-Efficacy, Decisional Balance, Processes of Change and Physical Activity level questionnaires.

APPENDIX VIII

SAMPLES OF INTERVENTION SLIDES IN ENGLISH

Healthy Lifestyle



Lifestyle

Is a lifestyle pattern that reflects the attitudes and values of an individual or group.

Top five causes of death in 1992 and 2002 out of the 10 most common causes of death

No.	1992			2002		
	Cause of death	Amount	(*00000)	Cause of death	Amount	(*00000)
1	Heart disease	32,131	56.0	All types of cancer *	45,834	73.3
2	Accidents and toxic substances*	27,811	48.5	Accidents and toxic substances*	34,566	55.3
3	All types of cancer *	24,811	43.5	High blood pressure and Cerebrovascular	16,661	26.6
4	High blood pressure and Cerebrovascular	24,951	16.9	Heart disease	16,361	26.6
5	Injury by suicide etc.	9,709	15.2	Pneumonia and lung disease	13,180	21.1

Life Expectancy of Thai People in comparison with other countries in 1998

Country	Life Expectancy at Birth
Thailand	68.9
Malaysia	72.2
Sri Lanka	73.3
Singapore	77.3
Japan	80
Canada	79.1
Switzerland	78.7

Ref: *Thailand Health Profile 1999-2000, Ministry of Public Health*

Diseases Associated with health problems of Thai People

Cardio Vascular Disease

Hypertension

Cancer

Diabetes Militus

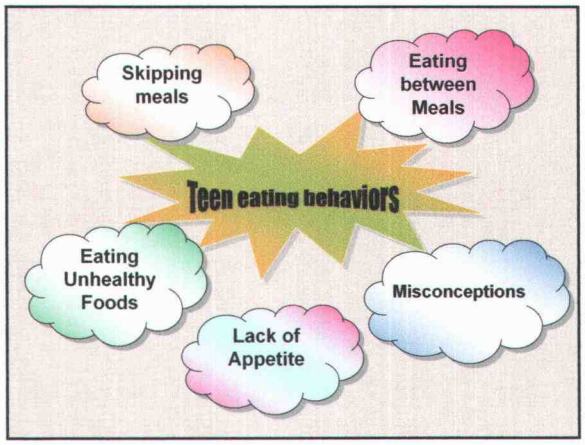
Aids

Accidents

Risk behavior in teenagers

- Tobacco Use
- Alcohol and other drug use
- Dietary behaviors
- Sexual behaviors that contribute to unintended pregnancy and STDs, including HIV
- Physical Inactivity
- Behaviors That Contribute to Unintentional Injuries

Source: http://www.cdc.gov/mmwr, 2003



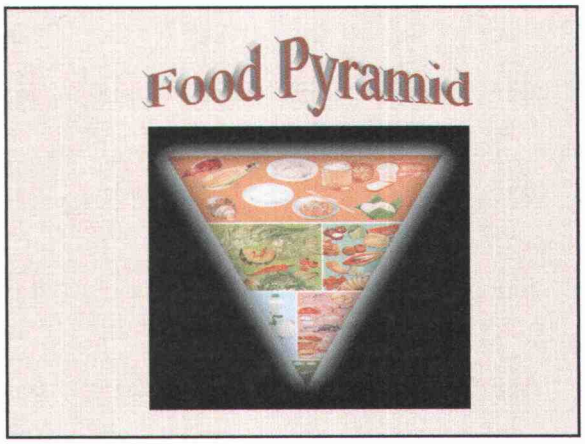
Unhealthy eating practices

for example:

- not enough home-cooked meals
- eating too few food groups
- eating too much
- not eating regularly

Result in preventable diseases

- ulcers
- nutrients deficiency
- obesity
- diabetes
- high blood pressure



Thai National Health Recommendations

1. Practice proper hygiene
2. Take good care of your teeth
3. Clean your hands after the restroom and before eating
4. Eat well-cooked food, and avoid unhealthy ingredients, food coloring and or very strong flavors
5. Avoid cigarettes, alcohol, drugs, gambling and promiscuous behavior

National Health Recommendations

6. Nurture good family relations
7. Use caution to avoid accidents
8. Exercise regularly, and get regular check-ups
9. Stay in good spirits
10. Be considerated to others and do good things for your community

5 Component for Quality of Life

Goal Setting

Tips of Goal Setting

Source: Blair, N. S., Andrea L. D., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001). **Active Living Every Day.** Champaign, IL; Human Kinetics.

1. Be specific

People who set specific goals do better than people who say " I'll try to do my better"

NOoooooo

This week I'll try to work out more

Be specific

yes....

This week I'll walk for 10 minutes before lunch and after dinner

2.Set both short term and long-term goals

A journey of thousand miles, the Chinese proverb goes , **begins with a first step.**

2. Set both short term and long-term goals

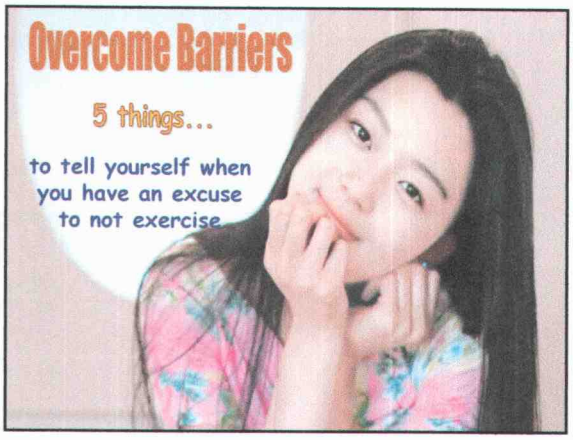
- ⇨ **Long-term goals**: to walk 1 hour per day, five days per week
- ⇨ **Short-term goals**: to walk 10 minutes every Tuesday ,Thursday and Saturday
- ⇨ **Tips**: gradually increase the number of minutes and the distance

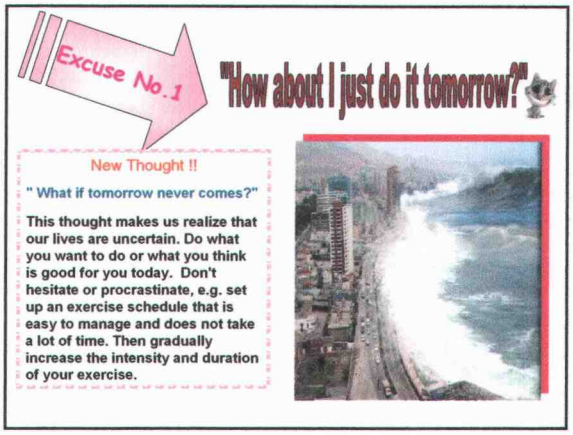
3. Give yourself feed back

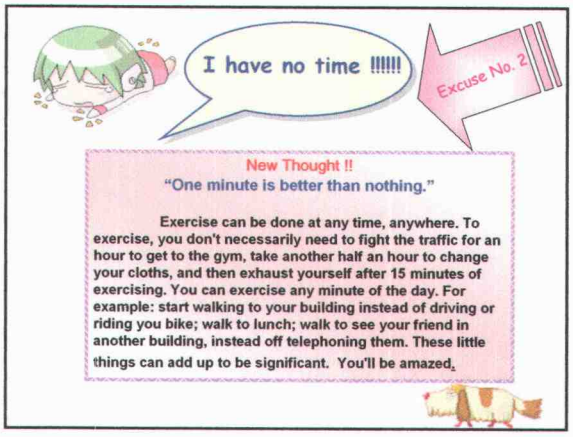
Choose a way to track your progress day by day and week by week in order to assess if you are succeeding, for example:

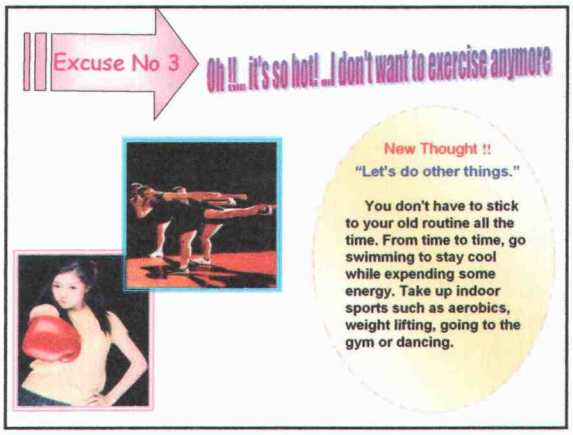
▶ **use " personal time study form" in order to check the amount of time that you think about doing something**

▶ **compare your energy expenditure when you exercise with a chart**

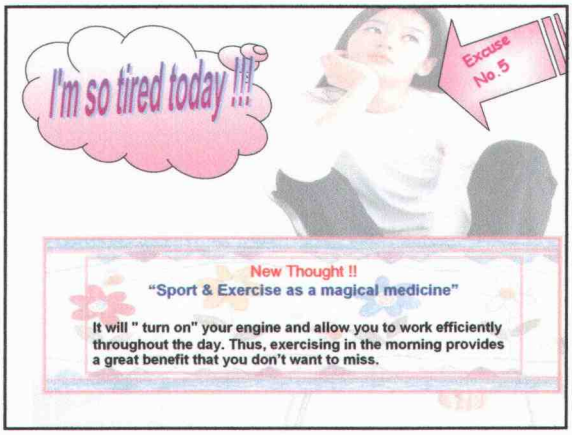

Overcome Barriers
5 things...
to tell yourself when you have an excuse to not exercise


Excuse No.1
"How about I just do it tomorrow?"
New Thought !!
" What if tomorrow never comes?"
This thought makes us realize that our lives are uncertain. Do what you want to do or what you think is good for you today. Don't hesitate or procrastinate, e.g. set up an exercise schedule that is easy to manage and does not take a lot of time. Then gradually increase the intensity and duration of your exercise.


I have no time !!!!!
Excuse No. 2
New Thought !!
"One minute is better than nothing."
Exercise can be done at any time, anywhere. To exercise, you don't necessarily need to fight the traffic for an hour to get to the gym, take another half an hour to change your cloths, and then exhaust yourself after 15 minutes of exercising. You can exercise any minute of the day. For example: start walking to your building instead of driving or riding you bike; walk to lunch; walk to see your friend in another building, instead off telephoning them. These little things can add up to be significant. You'll be amazed.


Excuse No 3
Oh !!... it's so hot!...I don't want to exercise anymore
New Thought !!
"Let's do other things."
You don't have to stick to your old routine all the time. From time to time, go swimming to stay cool while expending some energy. Take up indoor sports such as aerobics, weight lifting, going to the gym or dancing.


Excuse NO. 4
Leave me alone !!!
New Thought !!
"Seeking Peace"
Do yoga to bring peace and calm to your inner self, and help your muscles relax. It is also a good way to do soul searching.


I'm so tired today !!!
Excuse No.5
New Thought !!
"Sport & Exercise as a magical medicine"
It will " turn on" your engine and allow you to work efficiently throughout the day. Thus, exercising in the morning provides a great benefit that you don't want to miss.

Social Support

Source: Blair, N. S., Andrea L. D., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001). ***Active Living Every Day.*** Champaign, IL; Human Kinetics.

Technical Support

This usually comes from experts who can offer good advice and health information to you such as teachers and doctors as well as T.V., journals and magazines

Shared Support

This help comes from someone who is in the same boat as you are. They know what happened to you and can sympathize with your feelings because they had same experience .Therefore, they can offer helpful suggestions that benefit you .

Listening Support

This kind of help usually comes from someone who listens to your troubles without giving advice and making judgment about your behavior. In the other words, they are good listeners.

Partnering Support

This help is offered by a someone who enjoy doing physical activity with you

Motivational Support

This kind of help comes from someone who can stimulate your determination or confidence – a cheerleader who is upbeat ,energetic and enthusiastic

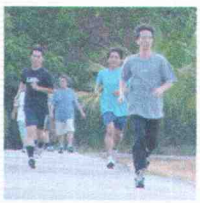
Practical Support

This includes any help, that makes it easier for you to succeed in making a lasting change in your life. It may be your friend who types your project to give you time for your walk and stretch your muscles or your sister who can iron your clothes in order to give you time to work out

Emotion Support

This help comes from someone who Knows you and is concerned about you. This emotional support often comes from close friend and relatives

Physical Activity



Physical Activity

Physical activity is any bodily movement produced by skeletal muscles that result in an expenditure of energy.

And Included: A form of leisure-time physical activity that is planned, structured and competitive such as running ,basketball and another sport

And also included household physical activity such as doing housework, working in the garden and walking with the dog

Physical Fitness

A set of attributes that are either health related or performance (or skill) related. Health related fitness comprises those components of fitness that exhibit a relationship with health status. Performance/skill related fitness involves those components of fitness that enable optimal work or sport performance.

Source : http://www.cdc.gov/nccdphp/dnpa/physical/terms/

Component of Physical Fitness

Physical Fitness

Health Related Physical Fitness

- Cardiorespiratory Endurance
- Muscular Strength
- Muscular Endurance
- Flexibility
- Body Composition

Skill Related Physical Fitness

- Agility
- Balance
- Co –ordination
- Power
- Reaction time
- Speed

Source: http://www.cdc.gov/nccdphp/dnpa/physical/components/

Health Related Physical Fitness

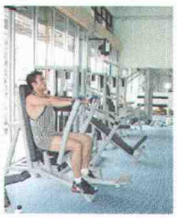
Source : http://www.thaiaerobics.com/index.php?tpid=0038&pgid=index

Cardiorespriratory endurance

Cardiorespriratory endurance is the ability of the body's circulatory and respiratory systems to supply fuel during sustained physical activity

Source : http://www.thaiaerobics.com/index.php?tpid=0038&pageno=5

Muscular strength



Muscular strength is the ability of the muscle to exert force during an activity

Source : http://www.musclebodygym.com/

Muscular endurance

Muscular endurance is the ability of the muscle to continue to perform without fatigue

Source : http://www.goodlookgoodhealth.com/s01.html

Flexibility

Flexibility is the range of motion around a joint

Source : http://www.thaihealth.info/fitness15.asp

Body composition

Body composition refers to the relative amount of muscle, fat, bone, and other vital parts of the body

Source : http://www.goodlookgoodhealth.com/page01.html

Body weight

Body weight is very important for good fitness. When body fat levels are high, the person is at a greater risk for a variety of health problems such as arthritis, back pain, heart disease, hypertension, depression and diabetes.

Source : http://www.thearc.org/faqs/fitness.html

Why do you want to control your body weight ?

- Being underweight has more risk for health problems, unhealthy and easily sick
- Being overweight increases risk for Coronary heart disease, Type 2 diabetes and some forms of cancer
- To control body weight, you must balance the amount of calories in food, consume with the amount of calories the body uses and always get exercise .
- It promotes good health and can lengthen lifespan

The measurement of body weight

$$BMI = \frac{\text{Weight in Kilograms}}{(\text{Height in Meters}) \times (\text{Height in Meters})}$$

Norm

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

Source : http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-adult-formula.htm

Skill related Physical Fitness

- Agility
- Balance
- Co –ordination
- Power
- Reaction time
- Speed

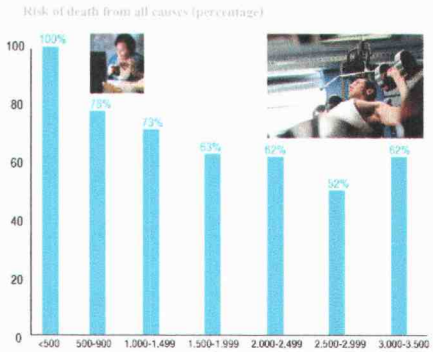
Physical Activity in Your Daily Life

Physical Activity

For….

- Health Promotion
- Disease Prevention
- Maintain Healthy
- Improve your body composition

Source : http://www.crichton.edu/student_life/images/Walking%20and%20more%20walking....jpg



Source : Corbin CB, Lindsey R, Concepts of Physical Fitness with laboratories, 9 th ed. Dubuque, IA: Brown & Benchmark publishers, 1997

The Benefits of Physical Activity

- Helps delay or prevent chronic illnesses and diseases associated with aging and maintains quality of life and longer independence
- Reduces the risk of heart disease by improving blood circulation throughout the body
- Reduces the risk of colon, colorectal, lung and breast cancers.
- reduces the risk of developing type II diabetes by 50%
- Prevent Osteoporosis
- Keeps weight under control

Source : http://www.who.int/moveforhealth/advocacy/information_sheets/benefits/en/index.html
Source : http://www.americanheart.org/presenter.jhtml?identifier=764

Risk factors of Lacking exercise

- Risk of lower body development and also low immune system
- Type of Body system will degenerate such as muscle systems
- An increased amount of fat in muscle
- Lower physical fitness
- Risk factor for coronary heart disease obesity and diabetes

Physical Activity

In the past	In the present
Exercise a minimum of 2 -3 time per week, get at least 20 - 30 minutes of moderate-intensity physical activity and keep your heart rate 65 – 80 Maximum heart rate	Get exercise of moderate –intensity every day accumulate for at least 30 minutes per day on most day of the week

Principle of Physical Activity (F.I.T.T Principle)

1. Frequency
   - Exercise between 3 and 5 times per week (vigorous intensity 3 day/week, moderate intensity 5 or more days/week).
2. Intensity
   - Maintain a heart rate of between 60 - 80% of your maximum heart rate
   - Your maximum heart rate can be calculated using a maximum heart rate test conducted by a fitness or health professional or estimated using the formula: Maximum Heart Rate (MHR) 220- Age

Principle of Physical Activity (F.I.T.T Principle)

3. Time

   Get at least of accumulate 30 minutes of moderate-intensity physical activity (at least 10-15 minutes per session)

4. Type

   Exercises that involve as many muscles as possible and allow a relatively consistent level of intensity are best. Good examples of these include: **Walking, Jogging, Cycling, Swimming**

Source : http://www.seniorfitness.com/tutorials/Planning_An_Exercise_Program_52726_Fitness-Courses_article.html

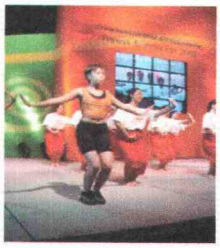
Exercise Tips for Beginners

- Something is better than noting
- Start exercising at a low intensity (especially if you've been mostly sedentary), and progress gradually
- Choose activities that are fun, not exhausting. Add variety. Develop a repertoire of several activities that you can enjoy
- Invite a friend to exercise with you on a regular basis
- Don't overdo it. Do low- to moderate-level activities, especially at first

Exercise Tips for Beginners

- Exercise at the same time of day, so it becomes a regular part of your lifestyle
- Doing several physical activity in order to develop all of the muscles in the body
- Get enough physical activities to burn energy 1000 calories per week or 150 per day and for Optimal Health should burn energy 20000 per week

Moderate Amounts of Physical Activity



Source : http://www.nfe.go.th/042103/online/exercise/section2/section2_9.html

Washing and waxing a car for 45–60 minutes
Washing windows or floors for 45–60 minutes
Playing volleyball for 45 minutes
Playing touch football for 30–45 minutes
Gardening for 30–45 minutes
Wheeling self in wheelchair for 30–40 minutes
Walking 1¾ miles in 35 minutes (20 min/mile)
Basketball (shooting baskets) for 30 minutes
Bicycling 5 miles in 30 minutes
Dancing fast (social) for 30 minutes
Pushing a stroller 1½ miles in 30 minutes
Raking leaves for 30 minutes
Walking 2 miles in 30 minutes (15 min/mile)
Water aerobics for 30 minutes
Swimming laps for 20 minutes
Wheelchair basketball for 20 minutes
Basketball (playing a game) for 15–20 minutes
Bicycling 4 miles in 15 minutes
Jumping rope for 15 minutes
Running 1½ miles in 15 minutes (10 min/mile)
Shoveling snow for 15 minutes
Stairwalking for 15 minutes

Less Vigorous, More Time

More Vigorous, Less Time

Source : http://www.umich.edu/~exphysio/mvs.240/Lectures/PhyFit.Ch.02.ppt

At Home

- Do housework yourself instead of hiring someone else to do it.
- Go out for a short walk before breakfast, after dinner or both! Start with 5-10 minutes and work up to 30 minutes
- Stand up while talking on the telephone.

At Home

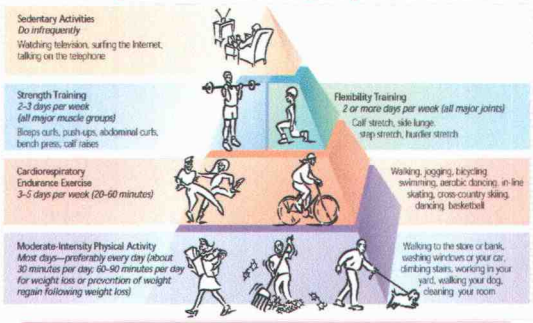
- Throw away your remote control
- Instead of asking someone to bring you a drink, get up off the couch and get it yourself.
- When watching TV, sit up instead of lying on the sofa
- Walk while talking with friend

At University

- Take the stairs instead of the elevator.
- Get off the bus a few blocks early and walk the rest of the way to study.
- Walk down the dormitory stairs to speak with someone rather than using the telephone
- Walk around your building for a break during the study day or during lunch

Source : http://www.americanheart.org/presenter.jhtml?identifier=2155

Physical Activity Pyramid



Source : http://www.umich.edu/~exphysio/mvs.240/Lectures/PhyFit.Ch.02.ppt

APPENDIX IX

SAMPLES OF INTERVENTION SLIDES IN THAI

วิถีการดำเนินชีวิต อย่างมีสุขภาพ

วิถีการดำเนินชีวิต (Lifestyle)

คือ รูปแบบการดำเนินชีวิตที่สะท้อนถึง
จิตคติ และค่านิยมของบุคคลหรือกลุ่ม

วิถีการดำเนินชีวิตที่ดี (Healthy Lifestyle)

จะช่วยป้องกันโรคภัยไข้เจ็บ

และทำให้เรามีสุขภาพดี

อัตราตาย 5 อันดับแรกปี 2535 และปี 2545 แบ่งตามกลุ่มโรคสำคัญ 10 กลุ่มโรคสำคัญ

อันดับ	ปี 2535			ปี 2545		
	สาเหตุการตาย	จำนวน	อัตราต่อแสน	สาเหตุการตาย	จำนวน	อัตราต่อแสน
1	โรคหัวใจ	32,131	56.0	มะเร็งทุกชนิด	45,834	73.3
2	อุบัติเหตุและการเป็นพิษ	27,811	48.5	อุบัติเหตุและการเป็นพิษ	34,566	55.3
3	มะเร็งทุกชนิด	24,811	43.5	ความดันเลือดสูงและหลอดเลือดสมอง	16,661	26.6
4	ความดันโลหิตสูงและหลอดเลือดสมอง	24,951	16.9	โรคหัวใจ	16,361	26.6
5.	การบาดเจ็บจากฆ่าตัวตาย ฯลฯ	9,709	15.2	ปอดอักเสบและโรคปอดอื่น	13,180	21.1

อายุคาดเฉลี่ยของประชากรเปรียบเทียบระหว่างประเทศ ปี 2541

ประเทศ	อายุคาดเฉลี่ยเมื่อแรกเกิด (Life Expectancy at Birth)
ไทย	68.9
มาเลเซีย	72.2
ศรีลังกา	73.3
สิงคโปร์	77.3
ญี่ปุ่น	80
แคนาดา	79.1
สวิตเซอร์แลนด์	78.7

ที่มา: การสาธารณสุขไทย พ.ศ. 2542-2543, กระทรวงสาธารณสุข

โรคที่เกิดจากพฤติกรรม ที่เป็นปัญหาสุขภาพของคนไทย

โรคหัวใจและหลอดเลือด
โรคความดันโลหิตสูง
มะเร็ง
เบาหวาน
โรคเอดส์
อุบัติภัย

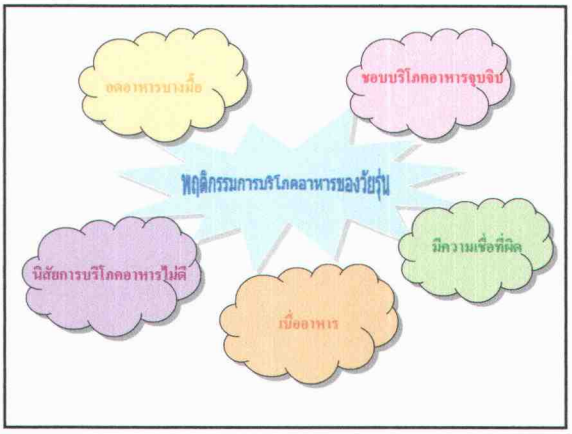
พฤติกรรมเสี่ยงของวัยรุ่น

- การสูบบุหรี่
- การเสพเครื่องดื่มที่มีแอลกอฮอลล์ และการใช้สารเสพติดอื่น ๆ
- การสำส่อนทางเพศ ซึ่งนำไปสู่การตั้งครรภ์ที่ไม่พึงประสงค์และโรคติดต่อทางเพศสัมพันธ์ รวมทั้งโรคเอดส์
- การบริโภคอาหารที่ไม่เหมาะสม
- การออกกำลังกายไม่เหมาะสม
- พฤติกรรมที่นำไปสู่การบาดเจ็บโดยไม่ตั้งใจ และความรุนแรง

ที่มา http://www.cdc.gov/mmwr

อาหาร

ภาพจาก: http://eduhealth.moph.go.th/webcontest/423/website%20contest%20Suwon/eat1.html



- การบริโภคอาหารที่ไม่ถูกต้อง เช่น
  - การบริโภคอาหารสำเร็จรูป
  - การบริโภคอาหารไม่ครบ 5 หมู่
  - บริโภคอาหารมากเกินไป
  - ไม่รับประทานอาหารเป็นเวลา
- ทำให้เกิดการเจ็บป่วยด้วยโรคต่าง ๆ ที่สามารถป้องกันได้ เช่น
  - โรคกระเพาะอาหาร
  - โรคขาดสารอาหาร
  - โรคอ้วน โรคภาวะไกซนาการเกิน
  - โรคเบาหวาน
  - โรคความดันโลหิตสูง เป็นต้น

ธงโภชนาการ

สุขบัญญัติแห่งชาติ

1. ดูแลรักษาร่างกายและของใช้ให้สะอาด
2. รักษาฟันให้แข็งแรงและแปรงฟันทุกวันอย่างถูกต้อง
3. ล้างมือให้สะอาดก่อนกินอาหารและหลังการขับถ่าย
4. กินอาหารสุก สะอาด ปราศจากสารอันตราย และหลีกเลี่ยงอาหารรสจัด สีฉูดฉาด
5. งดสูบบุหรี่ สุรา สารเสพติด การพนัน และการสำส่อนทางเพศ


สุขบัญญัติแห่งชาติ
สร้างความสัมพันธ์ในครอบครัวให้อบอุ่น
ป้องกันอุบัติภัยด้วยการไม่ประมาท
ออกกำลังกายสม่ำเสมอ และตรวจสุขภาพประจำปี
ทำจิตใจให้ราเริงแจ่มใสอยู่เสมอ
มีสำนึกต่อส่วนรวม ร่วมสร้างสรรค์สังคม


5 อ. สร้างคุณภาพชีวิต
อโรคยา
อาหาร
ออกกำลังกาย
อนามัยชุมชน
อารมณ์


จงดูแลสุขภาพของท่าน
ก่อนที่จะสายเกินไป

การตั้งเป้าหมาย

ข้อแนะนำในการตั้งเป้าหมาย

1. มีความเฉพาะเจาะจง

คนที่ตั้งเป้าหมายอย่าง เฉพาะเจาะจง
มักทำได้ดีกว่าคนที่ พูดลอย ๆ เช่น

NOoooooo

อาทิตย์นี้ฉันจะ
พยายามออก
กำลัง มากขึ้น

มีความเฉพาะเจาะจง

yes....

อาทิตย์นี้ฉันจะเดิน 10 นาที
ก่อนอาหารกลางวันและเดิน
อีก 10 นาทีหลังอาหารเย็น

2. กำหนดเป้าหมายทั้งระยะสั้นและระยะยาว

สุภาษิตจีนกล่าวไว้ว่า
"การเดินทางนับหมื่นลี้ต้อง
เริ่มต้นด้วยก้าวแรก"

การกำหนดเป้าหมายระยะสั้นและระยะยาว

- ⇨ เป้าหมายระยะยาว: ต้องเดินวันละ 1 ชั่วโมง 5 วันต่อสัปดาห์
- ⇨ เป้าหมายระยะสั้น: เดินวันละ 10 นาที ทุกวันอังคาร พฤหัส และเสาร์
- ⇨ เคล็ดลับ: ค่อย ๆ เพิ่มจำนวนวันและระยะเวลาการเดินขึ้นทีละน้อย

3. ให้ผลย้อนกลับต่อตัวเอง

ควรมีการติดตามความก้าวหน้าในการประกอบกิจกรรมทางกาย **วันต่อวัน สัปดาห์ต่อสัปดาห์** เพื่อทำให้คุณได้ประเมินตนเองว่าเราปฏิบัติบรรลุตามเป้าหมายที่ตั้งไว้หรือไม่ การให้ผลย้อนกลับต่อตนเองอาจทำได้หลายวิธี เช่น

- ▶ ใช้แบบฟอร์ม "ตารางการใช้เวลาของฉัน" เพื่อตรวจสอบการใช้เวลา
- ▶ เปรียบเทียบแคลอรี่ที่ใช้ไปจากแผนภูมิการใช้แคลอรี่ที่คุณใช้ในการประกอบกิจกรรมทางกาย


มาเอาชนะอุปสรรคกันเถอะ
5 คาถาบอกตัวเอง...
เวลาขี้เกียจออกกำลังกาย


ฉันแก้ตัว 1:
น่า..ขอเป็นพรุ่งนี้แล้วกันนะ
คิดใหม่
"ถ้าพรุ่งนี้มาไม่ถึงล่ะ"
คิดอย่างนี้จะรู้ว่าชีวิตเรานั้นไม่แน่นอน อยากทำอะไรก็ให้ทำซะวันนี้แหละแล้วก็จัดตารางออกกำลังกายที่เบาๆ ใช้เวลาไม่มากนัก พอเริ่มคุ้นก็ค่อยเพิ่มขึ้น


ไม่มีเวลาค่ะ
ฉันแก้ตัว 2:
คิดใหม่
"แค่ 1 นาทีก็ยังดี"
คุณออกกำลังกายได้ทุกที่ที่ต้องการ อย่ารวมเอาว่าออกกำลังกายหมายถึงต้องเดินทางผ่ารถรอดิศไปฟิตเนสเกือบชั่วโมง เปลี่ยนเสื้อผ้า ใส่รองเท้าอีกครึ่งชั่วโมง แล้วเริ่มต้นออกแรง 15 นาที เหนื่อย... อย่าให้มันเป็นแบบนั้นเลย แค่ให้ทุกช่วงของวันกลายเป็นที่ออกกำลังของคุณดีกว่า เริ่มตั้งแต่เดินจากหน้ามหาลัย เดินเข้าคณะ เดินออกไปกินข้าวกลางวัน และเดินเล่นไปหาเพื่อนคณะอื่นแทนโทรศัพท์...แค่นี้ก็ได้ออกกำลังกายแล้ว


ฉันแก้ตัว 3:
อากาศร้อนมาก...อย่าไปวิ่งเลยดีกว่า
คิดใหม่
"ก็ไปเล่นอย่างอื่นสิ"
เปลี่ยนไปว่ายน้ำ จะได้หายร้อนแต่ได้ออกแรง หรือจะไปวิ่งในฟิตเนส หาอะไรใหม่ ๆ ในร่มเล่นก็ได้ อย่างแอโรบิค weight หรือเต้นรำ


ฉันแก้ตัว 4:
ฉันเป็นคนขี้ร้าคาญ ไม่ชอบให้ใครมายุ่งนะ
คิดใหม่
"หาความสงบ"
เลือกคลาสโยคะ ที่จะช่วยให้จิตใจคุณสงบขึ้น ผ่อนคลายอยู่กับตัวเองมากขึ้น กล้ามเนื้อก็ยืดหยุ่นดีด้วย


วันนี้ฉันเหนื่อยจัง
ฉันแก้ตัว 5:
คิดใหม่
"ก็พา...เป็นยาวิเศษ"
เป็นตัวกระตุ้นต่อมพลังงานได้ดีนัก ยิ่งถ้าได้ออกกำลังตอนเช้า จะรู้สึกกระชุ่มกระชวย มีแรงทำงานไปตลอดทั้งวัน

ตัวช่วยของฉัน

ที่มา Blair, N. S., Andrea L. D., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001). ***Active Living Every Day.*** Champaign, IL; Human Kinetics.

ช่วยเหลือทางด้านเทคนิควิชาการ

ความช่วยเหลือชนิดนี้มาจากบุคคลที่มีความเชี่ยวชาญที่จะให้ข้อมูลหรือข้อแนะนำที่ต้องการแก่เรา เช่น อาจารย์ คุณหมอ รวมทั้งหนังสือ วารสาร นิตยสาร ทีวี

ช่วยแลกเปลี่ยนประสบการณ์

ความช่วยเหลือชนิดนี้มาจากคนที่ตกที่นั่งเดียวกันกับเรา รู้ว่าเกิดอะไรกับเรา เขาจะแสดงความเห็นอกเห็นใจ เนื่องจากเขาเคยมีประสบการณ์แบบเดียวกับเราจึงสามารถให้ข้อแนะนำที่เป็นประโยชน์กับเราได้ ทำให้เรารู้สึกว่าเราไม่ได้โดดเดี่ยว

ช่วยรับฟัง

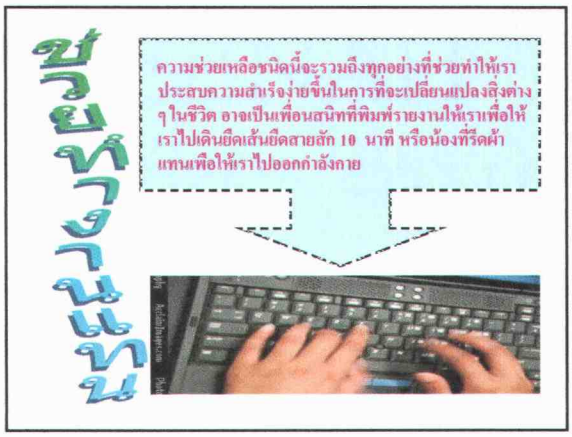
ความช่วยเหลือนี้จะมาจากคนที่คอยรับฟังปัญหาของเรา ปล่อยให้เราเล่าปัญหาโดยเขาจะไม่วิจารณ์ ตัดสิน หรือให้ข้อแนะนำเกี่ยวกับความคิดหรือการกระทำใด ๆ ของเราทั้งสิ้น เขาจะเป็นเพียงผู้ฟังที่ดี

ช่วยเป็นเพื่อนคู่หู

ความช่วยเหลือชนิดนี้มาจากคนบางคนที่ยินดีจะร่วมทำกิจกรรมออกกำลังกายกับเรา เช่น เป็นเพื่อนเดินกับเราหลังอาหารกลางวัน

ช่วยกระตุ้น

ความช่วยเหลือชนิดนี้มาจากบุคคลที่สามารถกระตุ้นความตั้งใจหรือความเชื่อมั่นของเราได้ เป็นเหมือนเชียร์ลีดเดอร์ที่มีพลังกระตือรือร้น คอยปลุกเร้าให้เราตื่นตัว


ช่วยทำงานแทน
ความช่วยเหลือชนิดนี้จะรวมถึงทุกอย่างที่ช่วยทำให้เราประสบความสำเร็จง่ายขึ้นในการที่จะเปลี่ยนแปลงสิ่งต่างๆ ในชีวิต อาจเป็นเพื่อนสนิทที่พิมพ์รายงานให้เราเพื่อให้เราไปเดินยืดเส้นยืดสายสัก 10 นาที หรือน้องที่รีดผ้าแทนเพื่อให้เราไปออกกำลังกาย


ช่วยปลอบใจ
ความช่วยเหลือนี้จะมาจากคนที่รู้จักเราเป็นอย่างดี มีความเป็นห่วงเป็นใยเรา ซึ่งมักมาจากเพื่อนสนิท ญาติหรือคนใกล้ชิด

การประกอบกิจกรรมทางกาย

การประกอบกิจกรรมทางกาย

การเคลื่อนไหวส่วนต่าง ๆ ของร่างกาย ที่เกิดจากการทำงานของกล้ามเนื้อลาย ซึ่งทำให้เกิดการใช้พลังงานเพิ่มจากภาวะปกติ

อาจรวมถึงการทำกิจกรรมอย่างมีแผนการณ์ เช่น การวิ่ง การเล่นบาสเกตบอล หรือ การเล่นกีฬาอื่น ๆ

อาจรวมถึงกิจกรรมต่าง ๆ ในชีวิตประจำวัน เช่น การทำงานบ้าน การทำงานในสนาม การจูงสุนัขเดินเล่น

สมรรถภาพทางกาย

Physical Fitness

หมายถึง ความสามารถในการควบคุม การทำงานของร่างกายได้เป็นอย่างดีและมีประสิทธิภาพในระยะเวลานาน ๆ โดยไม่เสื่อมประสิทธิภาพ

องค์ประกอบของสมรรถภาพทางกาย

สมรรถภาพทางกาย (PHYSICAL FITNESS)

- ความสมบูรณ์แข็งแรงทางกาย (HEALTH RELATED FITNESS)
  - ความทนทานของระบบหายใจและไหลเวียนโลหิต
  - ความทนทานของกล้ามเนื้อ
  - ความแข็งแรงของกล้ามเนื้อ
  - ความอ่อนตัวของกล้ามเนื้อ
  - สัดส่วนของร่างกาย
- ความสมบูรณ์แข็งแรงทางทักษะ (SKILL RELATED FITNESS)
  - ความคล่องแคล่ว
  - ความสมดุล
  - การประสานงาน
  - กำลัง
  - ปฏิกิริยาตอบสนอง
  - ความเร็ว

ดัดแปลงจาก: เว็บไซต์ของกองออกกำลังกายที่สุขภาพ
http://www.anamai.moph.go.th/dopah/static/exercise/exer01/exer02.php

สมรรถภาพทางกายที่เกี่ยวข้องกับความสมบูรณ์ทางกาย

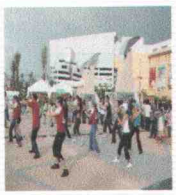
Health Related Physical Fitness

Source : http://www.thaiaerobics.com/index.php?tpid=0038&pgid=index

ความอดทนของระบบหายใจและไหลเวียนโลหิต

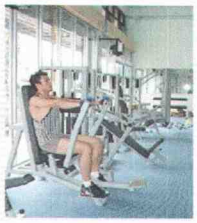
Cardiorespriratory Endurance

ความสามารถของระบบหายใจและระบบไหลเวียนโลหิตของร่างกายที่สามารถยืนหยัดต่อการทำงานหนัก ๆอย่างต่อเนื่องเป็นเวลานาน ๆ โดยไม่เหนื่อย



Source : http://www.thaiaerobics.com/index.php?tpid=0038&pageno=5

ความแข็งแรงของกล้ามเนื้อ
Muscular Strength



ความสามารถของกล้ามเนื้อในการออกแรงยก ดัน ดึง บีบ วัตถุที่มีแรงต้านให้วัตถุนั้นสามารถเคลื่อนที่ไปได้ตามแรงที่บังคับของกล้ามเนื้อนั้นได้สูงสุดเพียงครั้ง

Source : http://www.musclebodygym.com/

ความทนทานของกล้ามเนื้อ
Muscular Endurance

ความสามารถของกล้ามเนื้อมัดหนึ่ง ๆ หรือหลายมัดที่สามารถประกอบกิจกรรมติดต่อกันได้เป็นเวลานาน ๆ โดยไม่หยุดยั้ง และยังสามารถรักษาคุณภาพของกิจกรรมนั้น ๆ ได้อย่างสม่ำเสมอ

Source : http://www.goodlookgoodhealth.com/s01.html

ความอ่อนตัวของกล้ามเนื้อ
Flexibility

ความสามารถของร่างกาย หรือของกล้ามเนื้อและข้อต่อต่าง ๆ ที่สามารถพับ บิด ดัด ได้ตามธรรมชาติ

Source : http://www.thaihealth.info/fitness15.asp

สัดส่วนของร่างกาย
Body Composition

ลักษณะของร่างกายที่โครงร่างได้สัดส่วน

Source : http://www.goodlookgoodhealth.com/page01.html

น้ำหนักตัว
Body Weight

เป็นเครื่องบ่งชี้สำคัญที่บอกถึงภาวะสุขภาพของคนเราว่าดีหรือไม่ เพราะแต่ละคนจะต้องมีน้ำหนักตัวที่เหมาะสมตามวัย และได้สัดส่วนกับความสูงของตนเอง

Source : http://www.thearc.org/faqs/fitness.html

ทำไมเราต้องดูแลน้ำหนักตัวให้สมดุลย์

- ☺ ถ้าน้ำหนักต่ำกว่าเกณฑ์ปกติหรือผอมไป ก็จะทำให้ร่างกายอ่อนแอเจ็บป่วยง่ายและประสิทธิภาพในการเรียนและการทำงานด้อยลงกว่าปกติ
- ☺ หากมีน้ำหนักมากกว่าปกติหรืออ้วนไป ก็จะมีความเสี่ยงสูงต่อการเกิดโรคหัวใจและหลอดเลือด โรคเบาหวาน โรคความดันโลหิตสูง และโรคมะเร็ง บางชนิด
- ☺ การรักษาน้ำหนักตัวให้อยู่ในเกณฑ์ปกติโดยการกินอาหารให้ถูกหลักโภชนาการ และออกกำลังกายอย่างเหมาะสม
- ☺ ช่วยให้คุณมีสุขภาพดีชีวิตยืนยาวและเป็นสุข

ดัชนีมวลกาย

BMI (Body mass index)

BMI = น้ำหนักตัวเป็นกิโลกรัม / ส่วนสูงเป็นเมตรยกกำลังสอง

เกณฑ์

- ☐ ต่ำกว่า 20 กก./ตารางเมตร = ผอมไป
- ☐ 20 - 24.9 กก./ตารางเมตร = น้ำหนักตัวเหมาะสม
- ☐ 25 - 29.9 กก./ตารางเมตร = โรคอ้วนระดับกลาง
- ☐ มากกว่า 30 กก./ตารางเมตร = โรคอ้วนระดับรุนแรง

สมรรถภาพทางกายที่เกี่ยวข้องกับทักษะ

Skill Related Physical Fitness

- ⇨ ความว่องไว
- ⇨ ความสมดุลย์
- ⇨ ความสัมพันธ์ของระบบประสาทและกล้ามเนื้อ
- ⇨ กำลัง
- ⇨ เวลาปฏิกริยา
- ⇨ ความเร็ว

การประกอบกิจกรรมทางกายในชีวิตประจำวัน

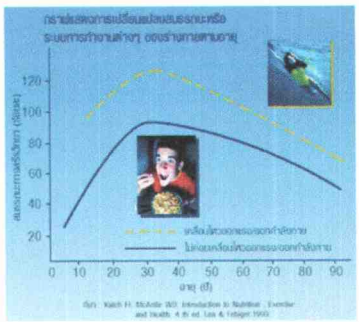
Source : http://www.ku.ac.th/e-magazine/october45/know/sport.html

การประกอบกิจกรรมทางกาย

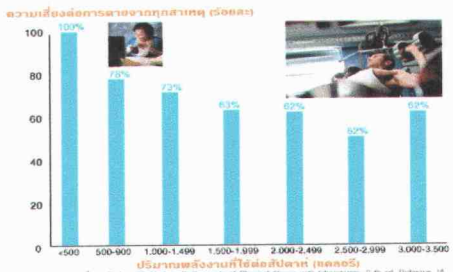
เพื่อ.....

- ➢ ส่งเสริมสุขภาพ
- ➢ ป้องกันโรค
- ➢ รักษาสุขภาพ
- ➢ ฟื้นฟูสภาพร่างกาย

แสดงการการเปลี่ยนแปลงสมรรถภาพหรือระบบการทำงานต่าง ๆ ของร่างกายตามอายุ
เปรียบเทียบระหว่างผู้ที่ออกกำลังกายและไม่ต่อออกกำลังกาย



ที่มา : กองออกกำลังกายเพื่อสุขภาพ http://www.anamai.moph.go.th/dopah/static/exercise/exer01/exer02.php



ที่มา : กองออกกำลังกายเพื่อสุขภาพ http://www.anamai.moph.go.th/dopah/static/exercise/exer01/exer02.php

ประโยชน์ของการประกอบกิจกรรมทางกาย

- เพิ่มโอกาสการมีชีวิตที่ยืนยาวขึ้นและมีชีวิตอยู่อย่างคนที่สุขภาพดีขึ้น
- ช่วยป้องกันการเกิดโรคหัวใจ รวมทั้งโรคที่เกิดขึ้นก่อนการเกิดโรคหัวใจ เช่นความดันโลหิตสูง คอเลสเตอรอลสูง
- ช่วยป้องกันการเกิดโรคมะเร็ง โดยเฉพาะมะเร็งในลำไส้ใหญ่และมะเร็งเต้านม
- ช่วยป้องกันและควบคุมการเกิดโรคเบาหวานประเภท 2 (Type II Diabetes)
- ช่วยป้องกันโรคกระดูกพรุน
- ควบคุมน้ำหนัก

Source : http://www.who.int/moveforhealth/advocacy/information_sheets/benefits/en/index.html
Source : http://www.americanheart.org/presenter.jhtml?identifier=764

โทษของการขาดการออกกำลังกาย

- การเจริญเติบของร่างกายช้า ภูมิต้านทานโรคต่ำ
- รูปร่าง หน้าที่การทำงานของอวัยวะ รวมทั้งระบบของร่างกายเริ่มเสื่อมกล้ามเนื้อน้อยลงและมีการสะสมไขมันเพิ่มขึ้น
- สมรรถภาพร่างกายด้านต่าง ๆ ต่ำลงรวดเร็วมีผลต่อบุคลิกภาพเกิดความเสื่อมของระบบอวัยวะชัดเจน
- เกิดโรคต่าง ๆ เช่น โรคประสาทเสียสมดุล โรคหลอดเลือดหัวใจเสื่อมสภาพ ความดันโลหิตสูง โรคอ้วน โรคเบาหวาน โรคของข้อและกระดูก ฯลฯ

ข้อค้นพบเกี่ยวกับการประกอบกิจกรรมทางกาย

อดีต	ปัจจุบัน
การออกกำลังกายต้องทำด้วยความแรงระดับปานกลางถึงหนัก 3-5 ครั้งต่อสัปดาห์ ต่อเนื่องเป็นเวลา 20-60 นาทีต่อครั้ง หัวใจเต้นประมาณร้อยละ 60-85 ของอัตราการเต้นของหัวใจสูงสุด	ควรเคลื่อนไหวออกกำลังกายด้วยความแรงระดับปานกลางทุกวัน หรือเกือบทุกวัน สะสมไม่น้อยกว่า 30 นาทีต่อวัน

http://www.anamai.moph.go.th/dopah/static/exercise/exer01/exer02.php

หลักในการประกอบกิจกรรมทางกาย
(F.I.T.T Principle)

1. ความถี่ของการออกกำลังกาย (Frequency)

   ออกกำลังกาย 3 ถึง 5 วัน ต่อสัปดาห์

2. ความหนักในการออกกำลังกาย (Intensity)

   รักษาอัตราการเต้นของหัวใจระหว่าง 60 - 80% ของ อัตราการเต้นของหัวใจสูงสุด อัตราการเต้นของหัวใจสูงสุดสามารถคำนวนได้จาก สูตร

   (220 - อายุ = อัตราการเต้นของหัวใจสูงสุด)

หลักในการประกอบกิจกรรมทางกาย
(F.I.T.T Principle)

3. ความนาน

   ควรออกกำลังกายครั้งละอย่างน้อย 30 นาที โดยอาจทำติดต่อกัน หรือแบ่งเป็นช่วง ช่วงละ 10-15 นาทีก็ได้ทั้งนี้ขึ้นอยู่กับรูปแบบของการออกกำลังกาย

4. ชนิด

   รูปแบบการออกกำลังกายที่ควรเลือกปฏิบัติ เพื่อให้การออกกำลังกายได้ประโยชน์สูงสุด เช่น เดิน วิ่ง ขี่จักยาน ว่ายน้ำ

Source : http://www.seniorfitness.com/tutorials/Planning_An_Exercise_Program_52726_Fitness-Courses_article.html

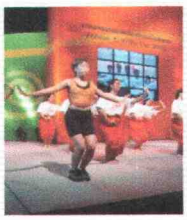
ข้อแนะนำในการประกอบกิจกรรมทางกายสำหรับผู้เริ่มต้น

- ทำดีกว่าไม่ทำ
- เมื่อเริ่มต้นใหม่ ๆอย่าหักโหม
- ในระยะเริ่มต้นหากิจกรรมที่มีความสนุกสนานเพลิดเพลิน
- หาเพื่อนไปร่วมออกกำลังกายด้วย
- ไม่จำเป็นต้องหนัก ออกแรงในระดับความเหนื่อยปานกลางก็เพียงพอ

ข้อแนะนำในการประกอบกิจกรรมทางกายสำหรับผู้เริ่มต้น

- ควรปฏิบัติให้เป็นประจำ
- ประกอบกิจกรรมทางกายที่หลากหลายเพื่อพัฒนากล้ามเนื้อให้ครบทุกส่วนของร่างกาย
- ประกอบกิจกรรมทางกายให้มีการเผาผลาญพลังงาน 1000 แคลอรีต่อสัปดาห์ หรือ 150 แคลอรีต่อวัน
- หากต้องการประโยชน์ต่อสุขภาพที่พอเหมาะ หรือ Optimal Health ควรใช้ พลังงานประมาณ 2000 แคลอรีต่อสัปดาห์

ตัวอย่างของการประกอบกิจกรรมทางกายระดับปานกลาง



Source : ttp://www.nfe.go.th/042103/online/exercise/section2/section2_9.html

ตัวอย่างการเคลื่อนไหวออกกำลังกายปานกลางที่ใช้พลังงาน 150 แคลอรีต่อครั้ง

ล้างและเช็ดมัครยนต์	45-60 นาที	เบา ใช้เวลานาน
เช็ดถูบ้าน ขน้ำต่าง	45-60 นาที	
เล่นวอลเล่ย์บอล	45 นาที	
ทำสวน ขุดดิน	30-45 นาที	
หมุนล้อรถเข็นขณะนั่งในรถเข็น	30-40 นาที	
เดิน - 2.8 กิโลเมตร	35 นาที	
ขู่ลูกบาสเกตบอล	30 นาที	
ขี่จักรยาน - 8 กิโลเมตร	30 นาที	
เต้นรำในจังหวะเร็ว	30 นาที	
คราดหญ้า โกยหญ้า กวาดหญ้า	30 นาที	
เดิน - 3.2 กิโลเมตร	30 นาที	
ออกกำลังกายแบบแอโรบิกในน้ำ	30 นาที	
ว่ายน้ำ	20 นาที	
เล่นบาสเกตบอล ล้อเล่น (ผู้ฝึกการ)	20 นาที	
เล่นบาสเกตบอล	15-20 นาที	
ขี่จักรยาน - 6.4 กิโลเมตร	15 นาที	
กระโดดเชือก	15 นาที	
วิ่ง - 2.4 กิโลเมตร	15 นาที	
เดินขึ้นบันได	15 นาที	หนัก ใช้เวลาน้อย

ที่มา : U.S. Department of Health and Human Services. Physical Activity and Health : A Report of the Surgeon General. Atlanta GA. 1996.

คัดลอกจาก: เว็บไซต์ของออกกำลังกายเพื่อสุขภาพ
http://www.anamai.moph.go.th/dopah/static/exercise/exer01/exer02.php

ที่บ้าน

- พยายามทำงานบ้านด้วยตนเอง
- ออกไปเดินเล่นหลังรับประทานอาหารเย็นแล้วสัก 5-10 นาที แล้วค่อย ๆ เพิ่มเวลาจนถึง 30 นาที
- ยืนหรือเดินไปมาขณะพูดโทรศัพท์แทนที่จะนั่งหรือนอนพูด
- พยายามไม่ใช้รีโมทควบคุมโทรทัศน์
- ลุกเดินไปหยิบของที่ต้องการแทนที่จะใช้คนอื่นหยิบให้

ที่มหาวิทยาลัย

- เดินคุยกับเพื่อนแทนการนั่งคุยอยู่กับที่
- ใช้บันไดแทนการขึ้นลิฟท์
- เดินไปเรียนแทนการขึ้นรถเมล์ หรือนั่งรถมอเตอร์ไซค์
- เดินไปหาเพื่อนที่อยู่หอพักเดียวกัน แทนการใช้โทรศัพท์พูดคุย
- เดินไปบาบนระเบียงทางเดินของตึกเรียนในช่วงพักระหว่างชั่วโมงเรียน

พีระมิดเพิ่มพลัง

คัดลอกจาก: เว็บไซต์ของออกกำลังกายเพื่อสุขภาพ
http://www.anamai.moph.go.th/dopah/static/exercise/exer01/exer02.php

APPENDIX X

SAMPLES OF INTERVENTION WORKSHEETS

Tracking your times

Name _____

Date _____ Day of the Week _____

Time Slot	Tasks/Activities	Physically Active	
		Yes	No
12.00 am to 4 am	Total		
4.01 am to 8.00 am	Total		
8.01 am to 12.00 pm	Total		
12.01 pm to 4.00 pm	Total		
4.01 pm to 8.00 pm	Total		
8.01 pm to 12.00 am	Total		

Source: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001)* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

"IDEA"
Ploblem Solving

Identify the Problem 

Develop a List of Solutions 

Evaluate Your Solution 

Analyze How Well Your Plan Work

Source: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001)* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

My Physical Activity Bariers

Please identify any barriers that prevent you from participating in physical activity during last week

_____

_____

_____

_____

_____

Benefits of Physical Activity

One way to motivate yourself to overcome barriers, is to think about the important benefits of physical activity. Please identify 1-2 special benefits of physical activity that are important to you

_____

_____

_____

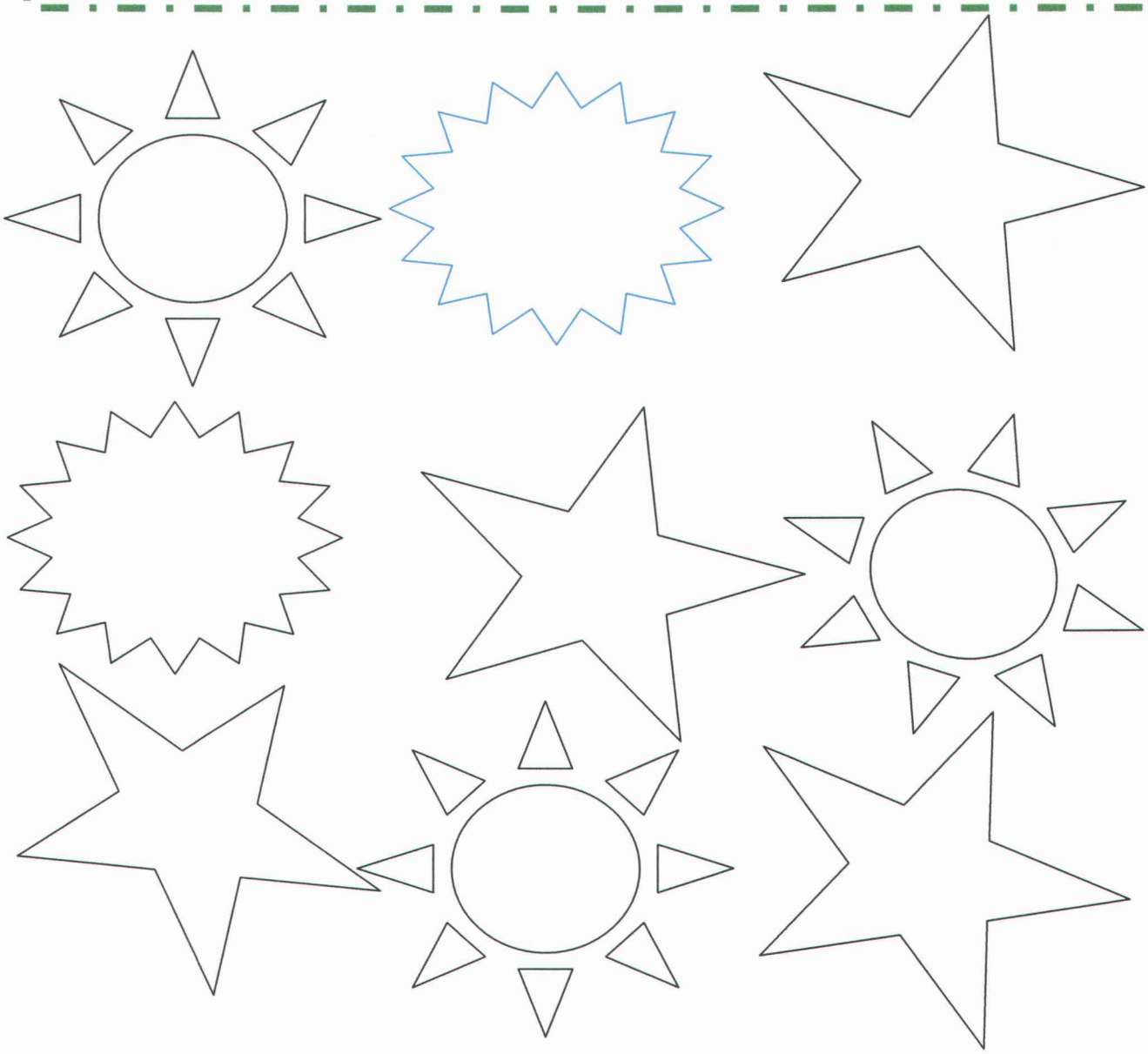
_____

_____

Source: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001)* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

Creative Rewards

List some of your desire rewards .....



My contract

When I meet my short-term goal, which is .....
.....
.....

I will reward myself with.....
.....

When I meet my long-term goal, which is.....
.....
.....

I will reward myself with .....
.....

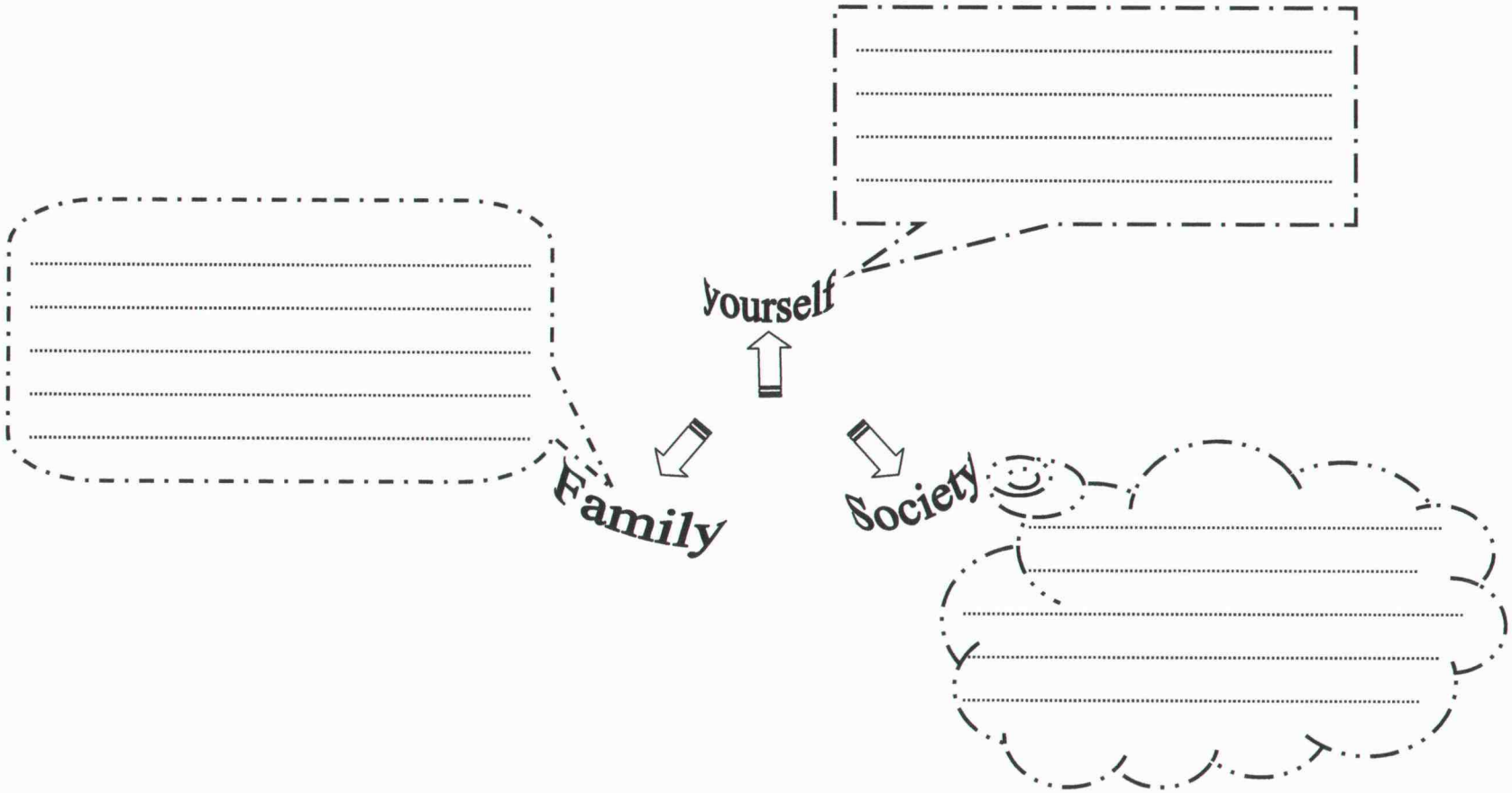
Source: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001).* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

My Support troop

What I need?	Who can help me?	How they can help?	How can I thank them?

When I lost my health

Think about negative consequences, which will be happened if you get sick



APPENDIX XI

SAMPLES OF INTERVENTION WORKSHEETS IN THAI

ตรวจสอบการใช้เวลาของคุณ

ชื่อ-นามสกุล _____

วันที่ _____ วันในสัปดาห์ _____

ช่วงเวลา	งานที่ทำ/กิจกรรม	ใช้การเคลื่อนไหว	
		ใช่	ไม่ใช่
เที่ยงคืน (24.00) ถึง ตีสี่	รวม		
4.01 ถึง 8.00	รวม		
8.01 ถึง 12.00	รวม		
12.01 ถึง 4.00	รวม		
4.01 ถึง 8.00	รวม		
8.01 ถึง เที่ยงคืน	รวม		

ที่มา: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001)* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

"IDEA"
ศิลปในการแก้ปัญหา

Identify the Problem **(ระบุปัญหา)**

Develop a List of Solutions **(เขียนรายการหนทางการแก้ปัญหา)**

Evaluate Your Solution **(ประเมินวิธีการแก้ปัญหาของคุณ)**

Analyze How Well Your Plan Work **(วิเคราะห์ว่าแผนมีความสำเร็จเพียงใด)**

ที่มา: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001).* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

อุปสรรคในการออกกำลังกายของฉัน

ให้นิสิตระบุสิ่งที่เป็นอุปสรรคในการประกอบกิจกรรมทางกายในสัปดาห์ที่ผ่านมา

_____

_____

_____

_____

_____

ประโยชน์ของการประกอบกิจกรรมทางกาย

หนทางหนึ่งในการกระตุ้นให้เราขจัดอุปสรรคได้อย่างดีประการหนึ่งคือให้คิดถึงประโยชน์ของการประกอบกิจกรรมทางกายที่มีความสำคัญต่อนิสิตพิเศษ มากที่สุดสัก 1-2 อย่าง

_____

_____

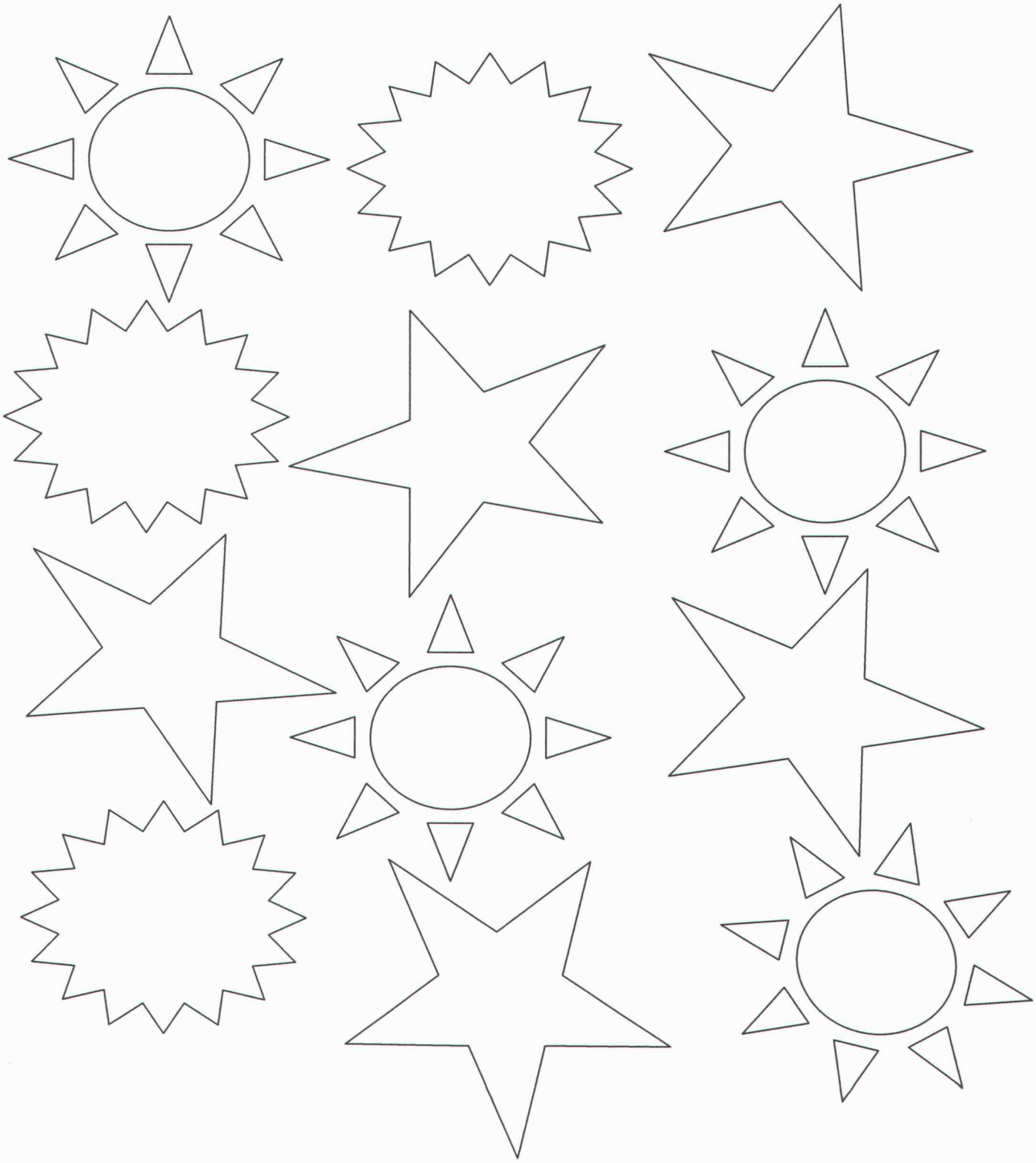
_____

_____

ที่มา: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001)* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

ค้นฟ้า..หารางวัล

หากฉันประกอบกิจกรรมทางกายได้สำเร็จตามที่ตั้งใจไว้ ฉันจะให้รางวัลแก่ตัวเองโดยการ.....



สัญญาใจ

เมื่อฉันประกอบกิจกรรมทางกายได้บรรลุเป้าหมายระยะสั้นที่ฉันตั้งไว้ ซึ่งได้แก่....

.....

ฉันจะให้รางวัลแก่ตัวเองโดย .....

.....

เมื่อฉันประกอบกิจกรรมทางกายได้บรรลุเป้าหมายระยะยาวที่ฉันตั้งไว้ ซึ่งได้แก่..

.....

ฉันจะให้รางวัลแก่ตัวเองโดย .....

.....

ที่มา: *Blair, N. S., Andrea L. D.., Marcus, H.B., Carpenter, A.R. & Jaret, P. (2001)* ***Active Living Every Day.*** *Champaign, IL; Human Kinetics.*

ตัวช่วยของฉัน

ความช่วยเหลือที่ต้องการ	บุคคลที่จะพึ่งพิง	วิธีช่วยเหลือ	หนทางตอบแทน

เมื่อฉันเสียสุขภาพไป

ให้นิสิตระบุถึงผลเสีย ตลอดจนภาระที่จะเกิดกับตนเอง ครอบครัว และสังคม หากนิสิตเกิดเจ็บป่วยหรือสูญเสียสุขภาพไป