CHAPTER II

LITERATURE REVIEW

1. Research Gaps

Defining

Although a fair amount of research has been conducted in this field, most research focuses on mental well being as a whole. These studies lack theoretical groundwork while failing to make important distinctions between affective constructs, instead taking an overly broad approach (Ekkekakis & Petruzzello, 2000). Often these studies freely use ambiguously defined terms like "mental health", "psychosocial health", "psychological health", "psychological well-being"; equating emotion, mood, affect, self-esteem and other constructs, therefore blurring the true effects of exercise (Ekkekakis & Petruzzello, 2000). Even those studies, which aimed to focus more concisely on self-esteem, incorporated definitions that varied from study to study (Shavelson, Hubner & Stanton, 1976).

Conceptual Model

More recently, studies have tried to focus their research in specific areas of mental health, including self-image and self-esteem. Some of these studies, however, still have major theoretical flaws. Many studies have been conducted on a weak theoretical foundation and have consequently used or developed ambiguous instrumentation (Fox & Corbin, 1989). Since self-esteem is itself

multidimensional and consists of various components, a test aiming to measure this affect must also be made up of components, which is in stark contrast to many of the early unidimensional instruments. Since the importance an individual places on a component of physical self may affect its weight in their overall self-perception, it is important that the participant's perceived value of each component be assessed as well. This allows one to acknowledge differential weights and relationships among the various components and sub-components of self-esteem. For example, if a particular participant is more orientated towards vanity and obsessed with appearance, a change in body shape may have a far greater effect on his or her self-esteem compared to someone who places little importance on appearance. These aspects of testing self-esteem will be examined in greater detail in a later section.

Interventions

Almost all studies looking at exercise and self-esteem use institutionalized exercise interventions. Although intervention is extremely effective for observing a change in one's physical self-esteem over time with the incorporation of regular exercise, there are four clear disadvantages. First, there is a high possibility of a placebo effect. That is when people are introduced to a gym or another exercise location and explained the purpose of the study, there is a high possibility that the participants will claim an increase in global and physical self-esteem based solely on a belief that that is what is supposed to happen. Secondly, since participants commenced an exercise program for purposes of the study, their motives cannot be wholly independent

and voluntary. They have no choice of type of exercise, frequency, intensity, or duration. This may affect their global and physical self-esteem responses and may not represent the target population. Third, such interventions are often confounded by the fact that they are inevitably social in nature, as there are interactions between participants and between participants and research organizers. Lastly, due to costs, time, and logistics these interventions are often relatively short in duration. This may not allow sufficient time for certain components of physical self-esteem to develop. For example, if physical appearance is used, as it often is in multi-dimensional self-esteem tests, a few months of exercise intervention may not be enough time to see noticeable morphological changes.

Special populations

Most research focuses on special populations including: children, those affected by disease, patients recovering from operations, pregnant women, women going through menopause, and those with initially low levels of global self-esteem or other mental issues such as depression or social anxiety. Little research has been conducted on the effects of exercise on generally physically healthy adults (U.S. Department of Health and Human Services, 1996). McDonald and Hodgdon 1991, may have published the only meta-analysis of the effect of exercise on self-image in adults. This study, however, has several limitations in that it looks at research using only global self-esteem measurements and studies limited to aerobic exercise.

Special populations aren't the only ones who can suffer from self-esteem problems. As explained earlier there are several influential risk factors that affect the general population. Additionally, most people reach their physical prime in their late twenties (Peterson, 2004). By the time people reach thirty they generally start to experience a gradual decline in physical abilities and appearance. The main reason for this decline involves the gradual loss of muscle mass and strength (Peterson, 2004). This decline in appearance and ability can cause healthy adults to suffer from self-esteem issues. Lastly, the complexities and uncertainties of modern cosmopolitan life can also cause problems in self-esteem.

Bangkok, Thailand

Self-esteem has received large amounts of attention in the west but has remained virtually untouched in Asia. Some people believe that self-esteem is not relevant in a society based around interdependency and collectivism. However, in a study conducted by Sheldon, Elliot, Kim, and Kasser, self-esteem consistently was identified as one of the main psychological needs in both individualistic and interdependent cultures (2001).

Thailand offers a completely new culture and setting in which to examine the relationship between exercise and global and physical self-esteem. Rapid social and technological change and the dichotomy between Bangkok and the rest of Thailand, puts Bangkok's residents into a potentially adverse environment. As discussed earlier, this environment may negatively impact one's self-esteem. Additionally, the fitness scene in Thailand is a

relatively new development and no research has been conducted to examine its affect on the population's mental health. This study does not attempt to examine mental health as a whole, but does attempt to examine one of its core components, self-esteem.

Although some information has been collected on the global self-esteem levels of children and adolescents in Thailand, no information has been collected on the average adult population.

2. Framework

Linkage Between Physical Activity and Self-Esteem

Although the links between physical activity and improved physical health can be defined in clear physiological terms, the possible link between exercise and global and physical self-esteem may be harder to identify. There are several plausible linkages between physical exercise and higher levels of self-esteem. Complicating the matter, however, is the fact that an individual's perceptions of himself may influence the way in which he acts, and his actions may in-turn influence the way he perceives himself. Although beyond the realm of this study, there are seven causal links between exercise and global and physical self-esteem frequently cited in the literature. First, there is the possibility of skill mastery. A sense of achievement, personal control or activity mastery may explain the psychological benefits of exercise (Cockerill,1995). Second, perceived or actual improvements in body composition, resulting from exercise, may improve self-esteem. Third, physical exercise may act as a

vehicle for social interaction, which may in-turn boost self-confidence and self-esteem (Sonstroem & Morgan, 1989). Fourth, there is the possibility of a placebo effect. People may expect exercise will benefit their overall mental well-being, so they will report higher levels of self-esteem simply due to expectations (Buckworth J & Dishman, 2002; Sarafino, 1998). Fifth, there is the chemical theory. Exercise benefits include increased levels of norepinephrine and serotonin in the brain, as well as increased production of endogenous opiods which have been found to act as a mood enhancers and antidepressants (Wattles, 2001; U.S. Department of Health and Human Services, 1996; Salmon, 2001; Columbia Encyclopedia, 2001). This increased euphoric feeling may cause an individual to be more relaxed and less self-critical. Sixth, there is the thermogenic theory, which states increased body temperature has a tranquilizing effect (Greist & Jefferson, 1992; U.S. Department of Health and Human Services, 1996; Salmon, 2001). Lastly, exercise could merely act as a distraction from anxious thoughts and negative self-evaluation (Thirlaway & Benton, 1992; Salmon, 2001).

Although these are all possible reasons, only the first four relationships were examined due to time and resource constraints.

3. Theoretical Model of Self-Esteem

Characteristics of Self-esteem

One of the leading studies in developing the concept of multi-dimensional, hierarchical self-esteem was done by Shavelson et al in 1976.

This research, which has been used in most subsequent studies in this field, identifies six major characteristics of self-esteem. First, self-esteem is organized. Individuals instinctively categorize their experiences and their perceptions about themselves in those experiences, giving them meaning through organization. Second, self-esteem is also multifaceted. Research shows that undoubtedly, people have different feelings about themselves in regard to physical aspects versus academic aspects. Third, self-esteem is hierarchical. The apex of self-esteem is general or global but as you move down towards the base it becomes more situation specific. The fourth characteristic is stability. Global or general self-esteem is rather stable but as one moves down the hierarchy it becomes less stable. Some studies refer to this general or global self-esteem as trait self-esteem, while referring to the more situation specific self-esteem as state self-esteem (Lemaire, 1997). Several situation specific instances, differing from global self-esteem are necessary to impact global self-esteem. Fifth, self-esteem is developmental. Young children don't differentiate aspects of themselves in relation to certain situations. They have more of a global self-esteem and may not begin to differentiate until the age of 7 or 8 (Harter, 1985). However, as one ages different aspects of himself and the world will carry changing significance and their self-esteem will become more differentiated. Lastly, self-esteem is evaluative in nature. An individual forms evaluations of himself in certain situations based on either an ideal standard or in comparison to his peers. In evaluation, an individual may place varying levels of importance on different situations.
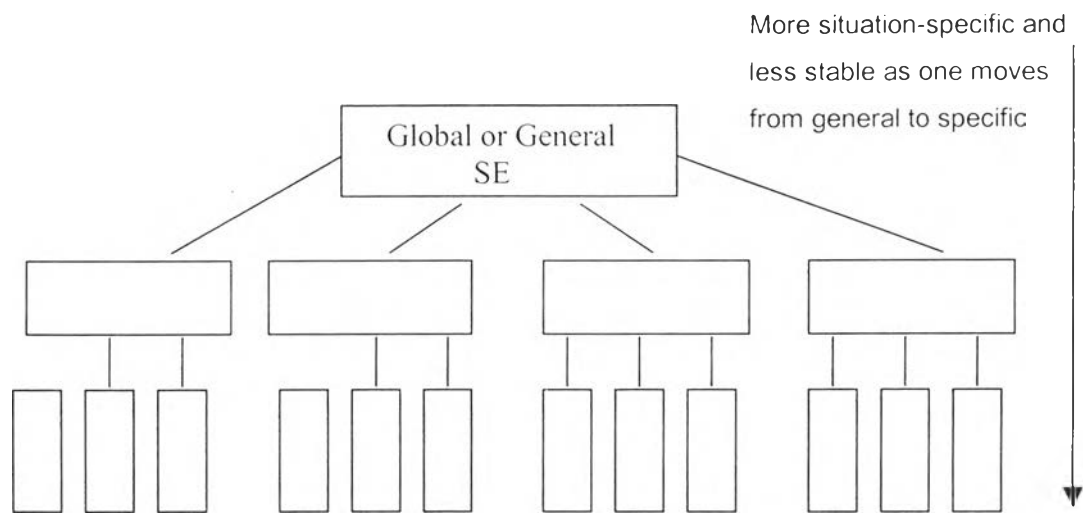
More situation-specific and
less stable as one moves
from general to specific

Global or General
SE

Figure 2.1: Hierarchy of Self-Esteem

Global or General Self-Esteem

The most frequently used global self-esteem scale in this field is the Rosenberg's Self-esteem Scale (Buckworth & Dishman, 2002). This scale was developed in 1965 and is no longer considered theoretically comprehensive as it fails to examine the components of self-esteem and instead only focuses on self-esteem as a global construct. Although it pre-dates Shavelson's multi-dimensional and hierarchical model of self-esteem, Rosenberg's scale is still, however, the most effective and relevant instrument of global or general self-esteem used today. Used in collaboration with a multi-dimensional instrument, it acts as the base for a comprehensive measurement of self-esteem.

Unfortunately, only a select few of the more recent research studies use a multidimensional model of self-esteem (Buckworth & Dishman, 2002). This is unfortunate because, global self-esteem is relatively constant and therefore trying to observe the effects of exercise on global self-esteem is difficult (Buckworth & Dishman, 2002). Additionally, self-esteem is thought by some to

be rather stable in adults (Robins, Trzesniewski, Tracy, Gosling & Potter, 2002). Therefore it is necessary to look at self-esteem both globally and as a hierarchical model in which several components make up the larger global self-esteem. This hierarchical model is useful because it outlines a route by which regular interaction in different situation specific instances might modify the more stable and permanent global self-esteem. Within its components, mainly physical self-esteem, changes due to exercise patterns may become more evident.

The Janis–Field Feelings of Inadequacy Scale divides global self-esteem into five areas: social confidence, academic ability, emotionality, physical appearance, and ability (Buckworth & Dishman, 2002). In research conducted by Epstein, global self-esteem has been divided into competence, power, normal self-approval, and love worthiness (Epstein, 1973). Here competence is divided into mental and physical. Wells and Marwell divide global self-esteem into self-love, self- acceptance, and sense of competence; which includes physical competence (Wells & Marwell, 1976). Tafarodi and Milne argue for dividing global self-esteem into two dimensions, self-competence and self-liking (Taraodi & Milne, 2002). Here self-competence consists of abilities, skills, and talents and self-liking includes character, attractiveness and other aspects of social worth. Although they differ in specific divisions, all of these theories of global self-esteem include components of physical abilities (ie. strength, endurance, competence) and physical appearance. A study by McAuley et al 1997, following Sonstroem and Morgan's hierarchical model of self-esteem, demonstrated that regular exercise improved

physical competence, subsequently impacting global self-esteem (McAuley, Mihalko & Bane, 1997). The study also shows little to no impact on other components of global self-esteem. When physical self-esteem has been controlled for in this type of model, no change has been observed in the overall global self-esteem. This indicates that regular exercise may only affect one's perceived physical self-esteem, and not social, emotional, or academic self-esteem. The specific components of global self-esteem hold mild significance to this research, as this study's aim is limited to observing global and physical self-esteem. However, for ease of understanding global self-esteem, this research divides it into four components: academic, emotional, social, and physical.

Physical Self-Esteem

In choosing a conceptual model for physical self-esteem, caution must be advised. Stone 1995, warned that creating relevant domains (components) for a particular treatment, such as exercise, doesn't necessarily provide sufficient rationale for developing a new measure (Stone, 1995, as cited in Ekkekakis & Petruzzello, 2000).

A handful of physical self-esteem measurements exist including the Physical Self-Perception Profile (PSPP) (Fox & Corbin, 1989), the Tennessee Self-Concept Scale (Fitts, 1965, as cited in Fox & Corbin, 1989), Physical Estimation Scale (Sonstroem, 1976), and the Physical Self-Description Questionnaire (PSDQ) (Marsh, Richards, Johnson, Roche, & Tremayne, 1994). However, all but the PSPP share a common developmental flaw. The

components chosen were pulled from an item pool, often times resulting in unrelated items. For example, the Tennessee Self-Concept Scale defines physical self-concept or self-esteem by the components of health, appearance, skills, and sexuality. The PSDQ consists of 70 items covering nine specific components, including strength, body fat, activity, endurance, sports competence, coordination, health, appearance, flexibility, as well as general physical self-esteem and global self-esteem (Marsh et al, 1994). Although the reliability and validity of the test have been proven by Marsh et al 1994, the test has almost exclusively been used among children in Australia (Klomsten, 2002). Additionally, the nine components and seventy questions are excessive in this field setting, not to mention the overlapping of some components (ie. body fat and appearance are two separate components).

After extensively reviewing previous research, the conceptual model used both by Fox and Corbin 1989 and Chase and Corbin 1996 will be applied in this research (Fox & Corbin, 1989). In contrast to the other available models, the PSPP was the only one developed with the combination of an extensive literature search and the use of open-ended questionnaires. Sixty-three males and eighty females responded to the questionnaires. After validating the most common responses from the respondents with the existing literature, four components were chosen. Although, it is understood that this data comes from an American and not a Thai population, this is still the most sound model of physical self-esteem available and is the most extensively used instrument for physical self-esteem (Fox, 1997, as cited in Welk & Eklund, 2003). This model expands physical self-esteem into the smaller components of physical

competence, physical appearance, physical strength, and physical endurance. Each component is then defined by six statements (three questions but each one asked in a positive statement and a negative one), covering process, product, and perceived confidence in that particular component. The respondent is then asked to rate the statement in its applicability to them. However, for the sake of this research, each component of physical self-esteem was defined by only three statements; one for process, one for product, and one for perceived confidence. These were all positive statements aiming to avoid further complications in translation and understanding. It also aimed to ease the time restraint of the questionnaire as well as avoid unnecessarily duplicated items.
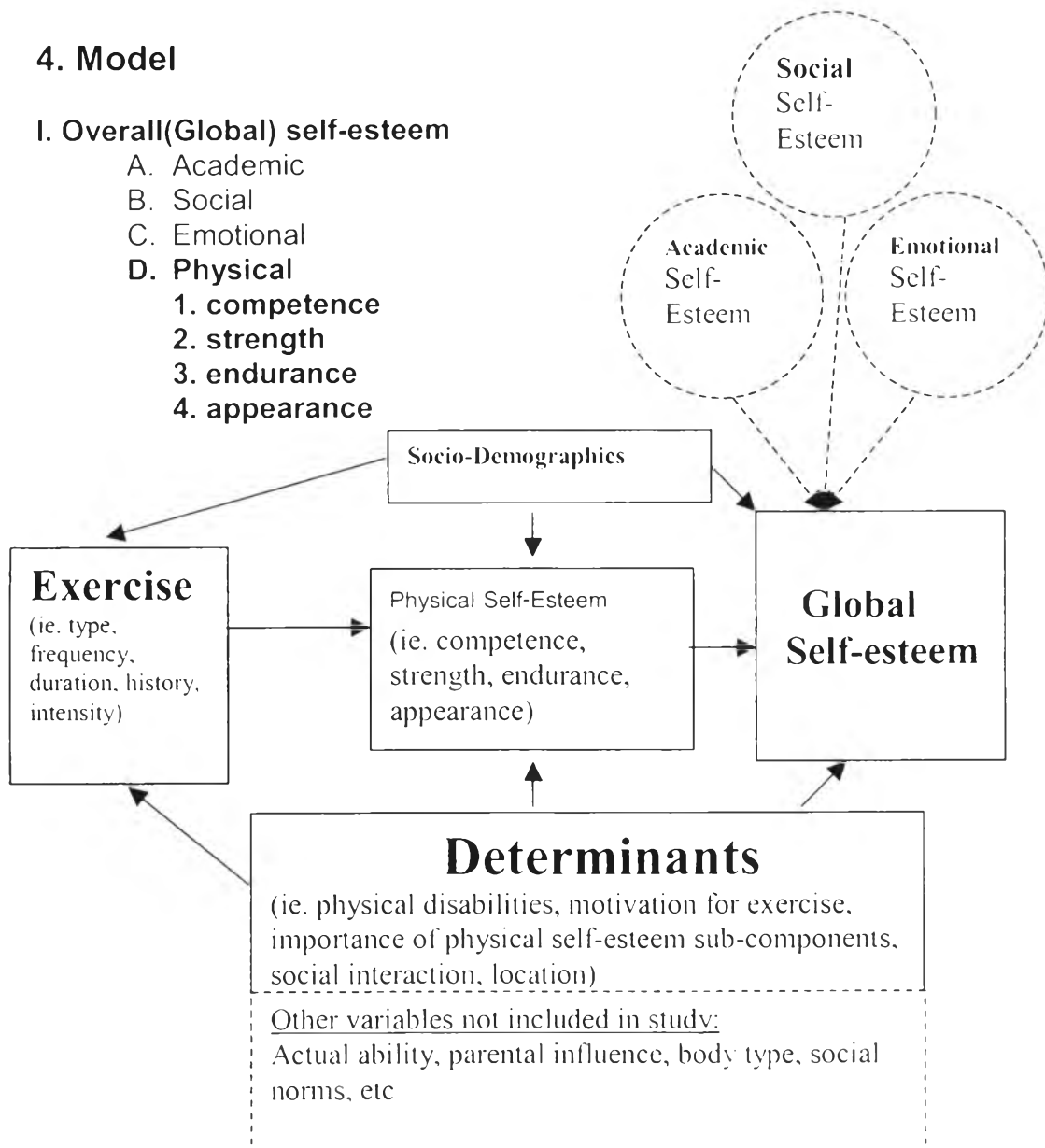
Importance of Physical Self Components

In addition to each participant's self-esteem measures, both globally and physically, it is important to look at how they perceive each component of physical self in relation to its importance in their lives. Some people may put greater importance on physical looks, while others may be more concerned with strength. For example, previous research shows that physical appearance consistently acts as one of the most dominant factors of self-esteem (Harter, 1988, as cited in Fox & Corbin, 1989). Importance of a physical characteristic may affect an individual's self-esteem in that particular characteristic. Also, importance may affect one's exercise characteristics, for example exercise frequency. Preferences will ultimately affect the degree to which each of an individual's physical self-esteem ratings affect their overall, global self-esteem.

4. Model

I. Overall(Global) self-esteem
A. Academic
B. Social
C. Emotional
D. **Physical**
   1. **competence**
   2. **strength**
   3. **endurance**
   4. **appearance**

Social Self-Esteem

Academic Self-Esteem

Emotional Self-Esteem

Socio-Demographics

Exercise
(ie. type, frequency, duration, history, intensity)

Physical Self-Esteem
(ie. competence, strength, endurance, appearance)

Global Self-esteem

Determinants
(ie. physical disabilities, motivation for exercise, importance of physical self-esteem sub-components, social interaction, location)

Other variables not included in study:
Actual ability, parental influence, body type, social norms, etc

(Based on conceptual model of Fox &Corbin, 1989)

Figure 2.2: Conceptual Model of Self-esteem and Exercise

5. Questions

1) What is the prevalence of exercise in Administrative staff under 60 years old from the Faculty of Engineering, Chulalongkorn University?

2) What is the relationship between regular exercise and global and physical self-esteem in Administrative staff under 60 years old from the faculty of Engineering, Chulalongkorn University?

3) What effect do socio-demographics, exercise characteristics, physical disability, motivation, social interaction, and individual values of physical self-esteem have on the relationship between regular exercise and global and physical self-esteem?

6. Objectives

1) Determine the prevalence of exercise in Administrative staff under 60 years old from the Faculty of Engineering, Chulalongkorn University.

2) Determine the relationship between regular exercise and physical self-esteem in Administrative staff under 60 years old from the Faculty of Engineering, Chulalongkorn University, using the analysis of a co-relation coefficient, one-way ANOVA, and Independent T-Test.

3) Determine the relationship between regular exercise and global self-esteem in Administrative staff under 60 years old from the Faculty of Engineering, Chulalongkorn University, using the analysis of a co-relation coefficient, one-way ANOVA, and Independent T-Test.

4) Determine the relationship between physical self-esteem, the importance an individual places on its sub-components, and global self-esteem.

5) Identify the determinants, which affect the relationship between regular exercise and self-esteem, both physical and global.

7. Hypothesis

1) Females exercise more than males.

2) Those who exercise have higher physical self-esteem than those who do not.

3) Exercise characteristics impact physical self-esteem.

8. Variables

Age

Conceptual: time from birth until present

Operational: age at last birthday

Gender

Conceptual: biological sex

Operational: male or female

Educational level

Conceptual: level of education

Operational: highest level of schooling completed; none, primary school, M-3, M-6, technical college, undergraduate, graduate+

Income

Conceptual: amount of money earned

Operational: Thai Baht obtained per month by entire household; less than or = 5,000, 5001-10,000, 10,001-15,000, 15,001-20,000, >20,000

Physical disability

Conceptual: physical disability that prevents exercise

Operational: real or perceived physical disability that the individual believes prevents exercise

Exercise frequency

Conceptual: number of times a person exercises

Operational: number of days a person is involved in self-defined exercise per week

Exercise duration

Conceptual: length of an average exercise session

Operational: number of minutes that an average exercise session is sustained

Motivation

Conceptual: reason for doing something

Operational: main reason for exercising; improve physical health, improve mental health, improve body's appearance, recreation/leisure, other

Type of exercise

Conceptual: the kind of exercise performed

Operational: usual exercise of individual; aerobics class, running, bicycling, martial arts, weightlifting, brisk walking, other

Exercise intensity

Conceptual: exercise intensity level

Operational: perceived, usual level of exercise intensity judged using Reebok's 4-point scale (Miller, 2004)

Social interaction

Conceptual: conducting activities and/or dialogue with others

Operational: the individual regularly exercises alone or with others

Exercise location

Conceptual: place of exercise

Operational: regular place of exercise; home, gym, other

Exercise history

Conceptual: length of time individual has been involved in regular exercise

Operational: individual has been exercising consistently for less than one month, one month to one year, or more than one year

Global Self-esteem

Conceptual: an individual's overall evaluation of their self

Operational: Rosenberg's 10-question Self-esteem scale (Rosenberg, 1965)

Physical Self-esteem

Conceptual: an individual's evaluation of their physical self-worth

Operational: 12 scaled questions assessing physical competence, physical strength, physical endurance, and physical appearance, based on Fox and Corbin's PSPP (Fox & Corbin, 1989)

Importance

Conceptual: the importance of each component of physical self to the individual

Operational: four scaled questions assessing the level of importance of each component of physical self to the individual

9. Key Terms

Exercise

Exercise can be defined as physical exertion for development, training, or fitness. Webster's Medical Dictionary defines exercise as "bodily exertion for the sake of developing and maintaining physical fitness." (Pease, 1986) One of the prominent authorities in exercise worldwide, ACSM, American College of Sports Medicine recommends that regular exercise should be conducted 3 to 5 times a week with a minimum duration of 30 minutes (ACSM, 2004). In the case of this study, exercise was both self-defined and defined by ACSM's international guidelines of a minimum of 3 days per week at a minimum duration of 30 minutes.

Self-Esteem

Since it is virtually impossible for an individual to examine him or her-self without evaluation or feeling, research in this area tends to focus on self-esteem. Self-esteem, therefore, is usually defined as how one evaluates or feels about their self-image or self-concept (Buckworth & Dishman, 2002; Hales, 1989). Donnellan defines self-esteem as the "feeling we have about our worth and value as a person." (Donnellan, 2003, p.22) Ultimately, self-image, self-concept, and self-esteem are used interchangeably in this field, however, this study has used the term self-esteem.

In relation to this study, self-esteem was examined both globally and physically.

Self-Image and Self-Concept

To most self-image is how you view yourself in relation to others. Webster's Medical Dictionary states that it is "one's conception of oneself or one's role" (Pease, 1986). Then there is self-concept. Basically, it is defined as one's perception or mental image of oneself. Self-image and self-concept are objective recognitions of who we are (Buckworth & Dishman, 2002). The difference between these two terms is minimal and for all practical purposes negligible.

Self-Confidence and Self-Efficacy

There is occasional confusion between self-esteem and self-confidence. Self-confidence, however, is more specific, focusing on one's abilities and one's belief in those abilities (Donnellan, 2003). Self-efficacy is defined as the strength of an individual's belief in their ability to perform a certain activity (Frank, n.d.)