PSYCHOLOGICAL FACTORS RELATED TO REASONS FOR EXERCISE: A
COMPARATIVE STUDY BETWEEN CHINESE AND AMERICAN COLLEGE
STUDENTS

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ABSTRACT

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Exercise has been shown to be associated with health and it is related to decreased morbidity and mortality in the general population (U.S. Department of Health and Human Services, USDHHS, 1996). Despite the multiple health benefits of exercise, relatively few people exercise. The present study examined factors that may influence exercise participation. Chinese undergraduate students from Beijing Normal University ($n = 213$) and American undergraduate students from Bowling Green State University ($n = 213$) were recruited to participate in the present study. This study examined how reasons for exercise were related to exercise stages of change among Chinese and American college students. Also examined were how reasons for exercise were related to exercise enjoyment and self-efficacy. In addition, cultural and gender differences were examined. The main results were as follows: (1) Women in different stages of change exercised for different reasons, with women in higher stages primarily exercise more for non-body related reasons than women in lower stages of change. (2) American college students exercised more for Weight Control, Fitness, and Physical Attractiveness, while Chinese college students exercised more for Health and Enjoyment. (3) Students who primarily exercised for Mood enjoyed exercise more than people who exercised for other reasons, and people who exercised for body-related reasons, such as Weight Control and Body Tone, enjoyed exercise the least. (4) Women exercising primarily for Mood had higher self-efficacy than women exercising for other reasons. In conclusion, certain reasons for exercise are related to stages of change, exercise enjoyment, and exercise self-efficacy.
For people who died in Wenchuan earth quake in China.
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CHAPTER 1
INTRODUCTION

Exercise & Physical Health

Exercise is associated with health. Exercise is related to decreased morbidity and mortality in the general population (U.S. Department of Health and Human Services [USDHHS], 2000) and it offers individuals protection against coronary heart disease (CHD). This is of particular importance because CHD is the leading cause of death and disability in the United States (USDHHS, 2000).

Similarly, cerebrovascular diseases accounted for about 32% of the deaths in China in 2001 (Gu, Reynolds, & Wu, 2002), and 28.2% of Chinese adults population between 35 and 74 years of age have hypertension (Gu, Reynolds, & Wu, 2002). Additionally, the percentage of adults with diabetes or total cholesterol levels of 200 mg/dL or greater is 5.2% and 53.2%, respectively (Reynolds, Gu, & Chen, 2003; Reynolds, Gu, & Muntner, 2003). Reasons for the increasing burden of these heart disease risk-factors have not been elucidated, but it has been suggested that low physical activity level is one of most important factors (Wu, Yao, & Zhao, 2001).

Exercise is also associated with a decreased risk of several types of cancer, such as endometrial, and ovarian, breast, and colon cancers (Center of Diseases Control and Prevention [CDC], 1996). In addition, regular physical activity lowers the risk of developing non-insulin-dependent diabetes mellitus, reduced osteoarthritis, and osteoporosis. Exercise involvement also reduces the risk of falling among older adults (CDC, 1996).
Another important benefit of habitual exercise is that it can reduce one’s risk of becoming obese (CDC, 1996; USDHHS, 2000). In the U.S., obesity is defined as BMI over 30 (Cole, Bellizzi, Flegal, & Dietz, 2000). According to the USDHHS (2000), only four states had obesity prevalence rates less than 20 percent, while 17 states had prevalence rates equal to or greater than 25 percent, with three of those having prevalence equal to or greater than 30 percent.

China has a similar obesity problem. Although obesity is defined as BMI > 28 in China, China is also suffering from the problem of increasing obesity (Liu et al., 2004). The popularity of fast food is an important factor. According to the Financial Times (McGregor, 2003), the success of Kentucky Fried Chicken (KFC) and McDonald’s in China is the result of a transformation of China’s lifestyles, which are becoming more geared toward speed and convenience. There also is some sense of curiosity and faddishness on the part of Chinese youth toward Western fast-food restaurants and diet changes. In Beijing, 27.8% of children surpass the standard weight guidelines (Luo, 2002). By the end of 2000, the obesity rate of male students in Beijing reached 15%, doubling that of 1990 and approaching that of developed countries (Luo, 2002).

Currently, there are tens of millions of people suffering from obesity in China; the number of diabetics is increasing by 3,000 a day; and that of hypertensive patients, who exceed 100 million, is rising at an annual rate of 2.5% (Tang, 2001).

Exercise & Psychological Health

In addition to the promising improvements in physical health, exercise also has been shown to offer participants psychological benefits. These benefits contribute to quality of life (QoL) and subjective well-being (SWB) of exercisers. Quality of life
reflects the harmonious satisfaction of personal goals and desires (Diener, 1994). Subjective well-being, which is the major part of quality of life, includes two key components: affective evaluations based on moods and emotions, and cognitive judgments of life satisfaction (Eid & Diener, 2004). In general, exercise can influence QoL and SWB of exercisers through multiple ways, including decreasing negative affect, increasing positive affect, optimizing stress level, and providing peak moments and opportunities for enjoyment (Berger, Pargman, & Weinberg, 2007). Exercise also enhances QoL and SWB by providing opportunities for exercisers to enhance self-concepts, produce meaningful experiences, and to slow the aging process (Berger et al., 2007).

Exercise increases SWB by enhancing the desirable mood states and reduces negative moods. A fairly consistent finding is that desirable mood changes occur after specific types of exercise (Berger & Motl, 2000; Gauvin, Rejeski, & Rebourssin, 2000; North, McCullaugh, & Tran, 1990). Mood changes as measured by the Profile of Mood States (POMS) shows that after exercise, scores for Vigor increase and scores for Tension, Depression, Anger, Fatigue, and Confusion decrease (Berger, 1996; Berger & Motl, 2000).

Mood enhancement with exercise has much to contribute to the life quality of individuals throughout their lifespan (Berger & Tobar, 2007). For example, mood enhancement with exercise can affect a person’s social interactions, and improved moods states can make a person’s day more enjoyable. In a study of a 24-week program, exercisers significantly improved their scores on Vitality, Mental Health, Physical Functioning, Bodily Pain, and General Health (Atlantis, Chow, Kirby, & Singh, 2004).
Moreover, the desirable mood states associated with exercise can be directly related to the positive psychology concept of flourishing which refers to positive feelings about emotional, psychological, and social well-being as well as their life in general (Keyes, 2005).

Exercise also contributes to SWB by offering opportunities to experience peak moments. Peak moments is a broad spectrum of sporadic and highly valued states that include peak experiences, peak performance, flow, and the runner’s or exercise high (Berger et al., 2007; Berger & Tobar, 2007). All the components are related to personal positive feelings. Peak moments also provide vivid memories that help individuals define the personal meanings of their lives.

Another way that exercise contributes to SWB is by enhancing self-concept and self-esteem (Asci, 2003; Taylor & Fox, 2005). Research showed that for people who participate in exercise programs, the longer the participants adhere to the exercise programs, the greater the increase in self-concept (Marsh, Richards, & Barnes, 1986). Moreover, people who are high in measures of physical fitness tend to have higher self-concepts than do those with low fitness levels (Berger & McInman, 1993).

In addition, exercise enhances SWB by reducing stress and helping people recover from stress more rapidly (Spalding, Lyon, Steel, & Hatfield, 2004). Regular exercisers experience fewer psychological stress indices as evidenced by lower levels of tension, tiredness, depression, and anger and higher levels of calmness and energy for several hours after exercising (Plante, Coscarelli, & Ford, 2001). Individuals who exercise frequently, or those who are physically fit, may have reduced stress symptoms (Rejeski, Thompson, Brubaker, & Miller, 1992; Spalding et al., 2004). In addition, single
exercise sessions have included increased brain wave activity, which may be related to feelings of enhanced psychological well-being (Crabbe & Dishman, 2004). Also exercise, particularly aerobic exercise seems to have numerous benefits that can affect cardiovascular reactivity to psychological stress and mood state (Spalding et al., 2004).

Exercise: A Need for Increased Participation

Although many benefits are associated with exercise and many people are aware of the benefits of exercise, there are still few regular exercisers. For people aged 18 to 24, only 57.4% were engaged in recommended physical activity, 32.3% had insufficient physical activity, and 10.3% were inactive (CDC, 2005). Similar problems have been reported in China. In rural and urban China, 78.1% and 21.8% of residents, respectively, were physically active; 75.8% and 16.5%, respectively, participated in work-related activity; and only 28.9% and 7.9%, respectively, participated in leisure-time physical activity (Muntner et al., 2005). Needless to say, motivational issues may contribute to the lack of exercise.

Research Objectives

Motivation is an important factor that is related to exercise participation (DHHS, 2000), and it is also the key factor that the present study focuses on. Diverse reasons for exercise represent different motivations of people to participate in exercise. It is valuable to understand the following: (1) The relationship between reasons of exercise and the level of exercise participation that may be reflected by exercise stages of change. (2) The relationship between reasons of exercise and exercise enjoyment. Exercise enjoyment is considered to be an important factor that motivates people to participate in exercise, and it may also be related to different reasons for exercise. (3) The relationship between
reasons of exercise and exercise self-efficacy. Self-efficacy, which reflects the confidence of exercisers to participate in exercise, is considered to be an important factor related to behavior changes, and exercise self-efficacy may be closely related to exercise stages of change (Marcus, Eaton, Rossi, & Harlow, 1994). The present study examined these relationships. In addition, cultural and gender differences between China and the U. S. may exist among these relationships. Therefore, cultural differences were investigated in the present study too.

*Reasons for Exercise*

People exercise for a variety of reasons. Different reasons to exercise reflect diverse motivations to exercise. Exploring the reasons that people exercise may assist researchers understanding of the motivational factors associated with exercise behavior, which in turn may lead to more effective exercise interventions and programs. Based on the seven-subscale version of the Reasons for Exercise Inventory (REI) developed by Silberstein et al. (1988), the reasons of exercise are (1) Weight Control, (2) Fitness, (3) Health, (4) Mood, (5) Physical Attractiveness, (6) Enjoyment, and (7) Body Tone. Cash et al. (1994) later determined that the original seven-subscale instrument may actually only be comprised of four factors: (1) Weight/Appearance Management, (2) Fitness/Health Management, (3) Stress/Emotion Management, and (4) Socializing. However, since factor analysis is an empirical technique that is sample dependent, this finding may be an artifact of Cash et al.’s sampling. Therefore, since the REI has never been used in China before, the original seven-subscale version of the REI were used in the present study.
Weight Control, Body Tone, and Physical Attractiveness. Exercise can help people to lose or maintain weight since it burns calories and helps control appetite (USDHHS, 1996). Recent statistics for 2006 indicate that only four states had a prevalence of obesity less than 20%. Twenty-two states had a prevalence equal or greater than 25%; two of these states (Mississippi and West Virginia) had a prevalence of obesity equal to or greater than 30% (CDC 2006). In comparison, in 1990, among states participating in the Behavioral Risk Factor Surveillance System, 10 states had a prevalence of obesity less than 10% and no states had prevalence equal to or greater than 15% (CDC, 2006). Exercise plus diet is proved to be the best and healthiest way to lose weight. However, not all exercisers who exercise for weight control need weight loss (Miller, Koceja, & Hamilton, 1997). Actually, many females, especially young females, who are at a normal weight still exercise to lose weight (Tiggnmann & Williamson, 2000). In addition, exercise, especially anaerobic exercise, can help tone the body (Austin, 1993). Motivations to control weight or tone the body relate to people wanting to improve the shape of their body and/or improve their physical attractiveness. These reasons are considered as body-related reasons. For most people, especially women, body-related reasons are associated with their desire to achieve the slim appearance that is often emphasized by the popular media in today’s modern world.

Fitness and Health. Although fitness and health are related to conditions of the body and sometimes they are considered to have similar meanings, they are not exactly the same. Fitness is the capacity of the heart, blood vessels, lungs, and muscles to function at optimum efficiencies, while health is the general condition of the body and mind with reference to soundness and vigor (USDHHS, 1996). Health is also defined as
the absence of disease as based on the medical model of health (Berger et al., 2007). More and more people show concern for their fitness and health levels as it shows that fitness and health levels are related to the quality of life (USDHHS, 1996). There is a well-established literature supporting the positive relationship between exercise and physical health. Actually, more and more people are becoming aware of the physical benefits of exercise, and health related exercise motivation becomes one of the most important reasons for people to exercise. In addition, exercising for fitness/health reasons is also related to positive psychological outcomes, such as self-esteem and body satisfaction (Strelan, Mehaffey, & Tiggemann, 2003).

**Mood.** Exercising for mood reason means people exercise to feel better, such as to reduce depression and anxiety. Mood is a host of “transient, fluctuating affective states,” both positive ones and negative ones (Berger et al., 2007, pp.78). According to the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971, 1992), mood can be classified as Tension, Anger, Depression, Vigor, Fatigue, and Confusion. Exercise can reduce stress and help recover from stress more rapidly (Berger et al., 2007; Spalding et al., 2004). Exercise can improve positive mood and reduce negative mood. Studies have consistently reported that after exercise, participants’ tension, depression, anger and confusion are reduced (O’Connor, 1997; Berger & Tobar, 2007).

**Enjoyment/Socializing.** Exercise for socializing is related to making new friends and socializing with friends during exercise. Exercise provides a chance to socialize and be with others. Exercise can provide an outlet to meet new people, which can often lead to camaraderie and friendship. Exercising with others also provides a means to maintain relationships, and it is found that almost 90% of exercise program participants prefer to
exercise with a partner or group rather than alone (Willis & Campbell, 1992). In a review by Carron, Hausenblas, and Mack (1996), social support was consistently related to increased exercise behavior. Moreover, using exercise as a way to socialize with friends is also considered to be an important source of exercise enjoyment (Flood & Hellstedt, 1991). This may be another reason why the factor of Enjoyment reason on the seven-subscale REI was labeled as Socializing on in the four-subscale REI.

Although each of the reasons of exercise can motivate people to exercise, it is not clear whether there are any specific reasons that motivate people to exercise more regularly than other reasons. In other words, do regular exercisers have different reasons of exercise compared to non-regular exercisers? Stages of change clarify behavior of exercise into several phases to help understand the relationship between reasons for exercise and exercise participation.

Stages of Change

Stages of change describe how exercise behavior changes occur over time. Behavior change is a dynamic and multi-determined process (Hausenblas et al., 2001). People usually need to go through multiple stages to reach the Maintenance stage which is defined as exercise at least five times per week and thirty minutes per time (Prochaska & DiClemente, 1986).

Reasons for exercise have not been extensively studied in combination with the stages of change. One study using self-report questionnaire to examine this relationship found that there was a significant difference between stage of change and exercise “enjoyment” (Sundeman, 1990). Studies also suggested that new participants started exercising for a variety of reasons, while regular exercisers had fewer reasons for
exercise (Perrin, 1979). It is valuable to further explore the relationship between reasons for exercise and stages of change to find out which reasons are the most influential to motivate people to progress to the next stage of exercise. It is also interesting to examine if reasons for exercise are related to exercise enjoyment which is considered a key factor related to exercise participation (Berger et al., 2007).

Exercise Enjoyment

Enjoyment is a positive affective response, a process, and part of the larger flow experience (Heck & Kimiecik, 1993). Exercise enjoyment is important because it is associated with exercise adherence, positive mood change, and increasing exercise motivation (Motl, Berger, & Leuschen, 2000). The degree to which participants enjoy sport or exercise always appears as one of their primary reasons for participating or dropping out (Heck & Kimiecik, 1993; Wankel, 1993). If exercise is not enjoyable, it is less likely that exercise will be associated with desirable psychological changes such as mood enhancement, more positive self-concept, and stress reduction (Berger & Owen, 1988; Motl et al., 2000).

The present study focuses on whether exercise enjoyment is related to reasons for exercise. Wankel (1993) suggested that enjoyment is influenced by many factors which include compatibility of exercise type with specific exercise goals. For example, research found that Exercising for Health, Fitness, Mood, and Enjoyment reasons was associated less with eating disturbance and more with self-esteem, while exercising for weight lost/appearance reasons was more related with eating disturbances, low self-esteem, and body physique anxiety (Furnham, Badmin, & Sneade, 2002). It can be expected that exercising for Health and Fitness reasons result in more enjoyment, while exercising for Weight
Control and Appearance reasons would be less enjoyable. However, research that supports this assumption is scant.

The present study also examined the relationship between reasons for exercise and self-efficacy. Self-efficacy is considered an important factor related to exercise participation.

**Exercise Self-Efficacy**

Self-efficacy is defined as beliefs regarding one’s capability to successfully satisfy specific situational demands (Bandura, 1997). It is the central motivational construct in social-cognitive theory. Self-efficacy expectations influence (a) the activities that individuals choose to approach, (b) the effort expended on such activities, and (c) the degree of persistence demonstrated in the face of failure or aversive consequences (Bandura, 1986).

Self-efficacy is hypothesized to be the most important mediator of behavior change (Bandura, 1986). Exercise self-efficacy has been found to be related to the stages of change in the area of physical activity (Marcus, Eaton, Rossi, & Harlow, 1994; Sarkin, Johnson, Prochaska, & Prochaska, 2001). Research investigating stages of change relative to exercise behavior has been shown that persons in early stages have a lower self-efficacy for exercise adherence as compared to those in higher stages (Marcus & Owen, 1992). This is reasonable because people who have high self-efficacy tend to overcome more barriers to participate in exercise and become regular exercisers.

It would be interesting to examine if self-efficacy is related to reasons for exercise. Self-determination theory proposes that behavioral regulation towards an activity can be amotivated, extrinsically motivated, or intrinsically motivated.
Intrinsically motivated behaviors are free from pressures and external controls, and they are accompanied by interest and enjoyment. Externally motivated behaviors are determined largely by pressures and controls. Only when individuals are intrinsically motivated towards an activity is the behavior considered to be fully self-determined. When intrinsically motivated, individuals enjoy the process of engaging in the activity (e.g. exercising because it is fun) rather than the outcomes associated with the latter, and they have high self-efficacy to participate in exercise (Mullan, Albinson, & Markland, 1997). Individuals reporting intrinsic reasons for exercise, such as enjoyment and feeling good, typically exhibit greater levels of adherence to exercise than those who report exercising for extrinsic reasons, such as compliance with external pressures or attainment of rewards (Wankel, 1993). Hence, it is expected that people who exercise for intrinsic motivations would have higher self-efficacy than people who exercise with extrinsic motivations in the present study.

Cultural Differences

Cultural differences may exist in exercise participation, exercise motivations, and motivation-related psychological factors. For example, the Chinese culture is depicted as a family style collectivism society, and the Chinese people are fundamentally socially oriented (Yang, 1995). Chinese students may exercise more for Socializing/Enjoyment reason than American students.

In addition, Chinese culture views academic success as more important than the physical health of students. Thus, participating in physical activities is not encouraged much; in addition, Chinese students suffer more depression and feel more stress than American students (Davis & Kattzman, 1998), which may contribute to avoiding leisure
activities such as exercise. Moreover, exercise facilities in Chinese universities are less prevalent than those in American universities. These barriers may contribute to differences in exercise behaviors and related psychological factors between exercisers in China and the U. S.

Also, Chinese culture has typically placed greater emphasis on sport than exercise, and this is due, in part, toward the Olympic Games. China has put considerable energy and financial support to sport research. At the same time, support for research in the field of exercise has not been as forthcoming. Using “sport” as the key word in the largest Chinese journal resource, CNKI (中国知识基础设计工程网, http://dlib.cnki.net/kns50/), there were 115,223 entries, whereas using “exercise” as the key word there were only 12,832 entries (as of 05/18/08). Although exercise is not widely explored in China, research on exercise is very important because it can benefit all people, not just athletes. The present study attempts to fill the gap in the exercise psychology literature regarding cross-cultural comparisons of reasons for exercise and exercise participation.

Research on exercise behavior of Chinese college students is scarce and only few studies on this topic have been reported. Research has suggested that Chinese college students also suffer from diseases that are related to physical inactivity and the percentage of obesity among them has increased dramatically in recent years (China’s Department of Education, 2000). A study which compared exercise behaviors between Chinese students in Hong Kong and Chinese students in the U. S. showed that students in these two cultures had different exercise behaviors, indicating cultural differences may influence exercise behavior and related psychological factors (Callaghan et al., 2002).
Moreover, it is reported that Chinese students have different attitudes and behaviors toward exercise compared with American students. For example, there are some types of exercise such as Tai Chi and Qi Gong that are popular in Asian countries but not in Western countries (Keating, et al., 2005). In addition, in winter, the indoor exercise equipment available to exercise with in China is not as prevalent as in America, which probably is a barrier for people who want to exercise during the winter months.

In conclusion, there is a dearth of research on the reasons for exercise reported by Chinese participants with a standardized instrument such as the Reasons for Exercise Inventory (REI), and no studies have been located that examined the relationship between the reasons for exercise and stages of change across Eastern and Western cultures. Exploring different reasons for exercising between different cultural people may give us clues about the relationship between reasons for exercise and stage of change across ethnicity. Studies testing stages of change with non-Caucasians could also shed light on the cross-cultural validity of the model thus giving the present study practical and theoretical significance. Finally, comparing self-efficacy and enjoyment between Eastern and Western cultures provides more information about exercise-related psychological differences.

**Thesis Hypotheses**

The main purpose of this study is to examine if there are cultural and gender differences on the relationships between reasons for exercise and stages of change, self-efficacy, and enjoyment. The following hypotheses are forwarded:

Hypothesis #1: Male and female students in China and the U. S. who differ in stages of change differ in reasons for exercise.
Hypothesis #2: Participants who differ in culture, gender, and reasons for exercise differ in exercise enjoyment.

Hypothesis #3: Participants who differ in culture, gender, and reasons for exercise differ in exercise self-efficacy. Participants who exercise for intrinsic motivations would have higher self-efficacy than people who exercise with extrinsic motivations.

Based on the above review, the present study examined hypotheses according to the following framework.

Figure 1.1. Conceptual framework of the relationships among reasons of exercise, stages of change, enjoyment, and self-efficacy
Reasons for Exercise

Reasons for exercise, the primary focus of this study, reflect different motivations of people to participate in exercise. Reasons for exercise may vary across different stages of change. However, the relationship between reasons for exercise and stages of change is unclear. Moreover, people with different reasons for exercise may differ in exercise enjoyment and self-efficacy. It has been reported that enjoyment and self-efficacy increase as exercisers move to later stages, but the results have been equivocal (Rejski & Focht, 2002; Clark & Eves, 1997; Hills, 2002). In addition, the cultural influences on these relationships are unknown. In the present study, the relationships among reasons of exercise, stages of change, enjoyment, self-efficacy and cultures were examined. The following review includes each of these factors.

People exercise for different reasons. Understanding these reasons may assist researchers and practitioners in their attempts to encourage more people to be physically active. The Reasons for Exercise Inventory (REI) seeks to measure the different reasons for exercise involvement. Different reasons reflect different motivations for people to participate in exercise. The original version included seven-subcales (i.e., factors): Weight Control, Fitness, Health, Physical Attractiveness, Mood, Enjoyment, and Body Tone (Silberstein et al., 1988). Later, Cash, Novy, and Grant (1994) determined that the original seven-subscale instrument may actually be reduced to only four factors: Weight/Appearance Management, Fitness/Health Management, Stress/Emotion Management, and Socializing. These two versions of the REI have similar items, but
categorize the items into different factors. The Weight Control, Physical Attractiveness, and Body Tone in the seven-subscale version are similar to the factor of Weight/Appearance Management; Fitness and Health in the seven-subscale version are combined to create the factor of Fitness/Health in the four subscale version; Mood in the seven subscale is similar to the factor of Stress/Emotion Management in the four subscale version; and Enjoyment in the seven subscale version is similar to the factor of Socializing. It is interesting that Enjoyment in the seven subscale version measures more about “socializing” rather than “fun” or “interest”, because two of the three items in the “Enjoyment” subscale relate to making new friends or socializing with friends. The additional item measures if exercise is “fun”. Since there were different exercise motivation measures, it is difficult to report different results together. Hence, for the purpose of this review, the research about the different reasons was combined on similar factors of the REI.

**Weight Control, Body Tone, and Physical Attractiveness.** It has been suggested that men and women exercise for different reasons, and women exercise more for weight-related reasons than men (Garner, Rockert, Olmstead, Johnson, & Coscina, 1985; Furnham et al., 2002). It was found that women, in contrast to men, exercise primarily in order to lose weight (Garner et al., 1985). In general, girls exercise for weight control, mood, and tone reasons significantly more than boys, who exercise more for fitness reasons (Furnham et al., 2002). The gender differences also interact with age. Tiggmann and Williamson (2000) reported that young women (average age 18.4 years) are more likely to exercise for weight loss reasons than are men and mature women (average age 33.6 years). Young women and young men (average age 18.4 years) exercised more for
attractiveness and enjoyment reasons compared to mature men and women (average age 36.5 years).

The differences between women and men in the use of exercise to control weight suggest that women want to lose weight more than men do (Furnham et al., 2002). Silberstein et al. (1988) found that only 4.4% of the women wanted to become bigger compared with 46.8% of the men. This gender difference seems to influence youth. For example, Furnham et al., (2002) reported that 29.4% of the 11-12 year old boys in their study wished to gain weight, whereas only 10.2% of the girls did. Furthermore, 35% of the boys wished to lose weight, compared to 69% of girls. In young children (5- to 8-year-old), the ideal figure for girls was smaller than their current rating, while young boys had an ideal figure that was larger than their current size (Lowes & Tiggemann, 2003). Among 8- to 11-year-old children, boys were significantly more likely to think about increasing their muscles and to engage in strategies to achieve this goal compared to girls (McCabe & Ricciardelli, 2003). Similarly, in a study of male undergraduate students, 85% desired to be more muscular (Vartanian, Giant, & Passino, 2001), and strength-training exercises are the primary technique for men to change their body type (Anderson, Zager, Hetzler, Nahikian-Nelms, & Syler, 1996; Klein, 1995).

The phenomenon that women want to become smaller may indicate that women are more dissatisfied with their body size. Women are more likely to judge themselves as being overweight even though by objective standards they are not. Men are more likely to perceive themselves as underweight with respect to objective standards (Furnham & Calnan, 1998). Body dissatisfaction consistently has been found to be related to exercising for weight loss among women (e.g., McDonald & Thompson, 1992; Furnham
et al., 2002). Brownell (1991) argued that this body dissatisfaction is due to Western societies encouraging and rewarding the pursuit of the perfect, ideal body that symbolizes the attainment of numerous personal virtues and achievements. This trend drives women to lose weight or tone their body to match this social standard. Unfortunately, the body image standard to which women currently aspire is far beyond what can be realistically achieved with sensible levels of dieting and exercising. Thus, the rate of body dissatisfaction is high among women (Brownell, 1991).

Asian countries face similar problems with the media influencing unrealistic body-related goals. As economic liberalization encourages Asian governments to deregulate television, magazine, and newspaper advertising, hyper-slim movie stars, models, and pop music figures project a powerful image that equates success with a young, slender, and glamorously adorned woman. Diet and fashion industries then both reinforce and feed on the cultural idealization of slimness (Malson, 1998). This is evidenced by the appearance of many slimming products that commodify women’s bodies and fluidize their identities, such as diet pills, cellulite creams, and diarrhea-inducing herbal teas (Lee & Lee, 2000). For example, one study showed that typically Western patterns of body dissatisfaction have overshadowed the traditional Chinese notions of female beauty based on the face and other nontruncal features, and may predispose more young females to body dissatisfaction (Lee, Leung, Lee, Yu, & Leung, 1996).

The phenomenon that women are increasingly interested in losing weight or toning their body can be explained by objectification theory (Fredrickson & Roberts, 1997). Objectification theory indicates that girls and women are gradually socialized to
internalize an observer’s perspective of their physical self, that is, to treat themselves as objects to be looked at and be evaluated. Therefore, people who are self-objectifiers are more likely to try to lose weight to match the standard of society. Further, Fredrickson and Roberts (1997) argued that it was young women who were most targeted for objectification. It is probably because older people, especially older women, may experience less specific pressure from the media (Stevens & Tiggemann, 1998). Thus, they may view health reason as more important than do young adults. Recently, more studies have focused on the influences of self-objectification. For example, Strelan et al. (2005) reported that for 153 Australian participants, self-objectification was significantly and negatively related to exercising for Health, Fitness, and Mood reasons for women, but not for men. Reasons for exercise were found to mediate the relationships among self-objectification, body satisfaction, body esteem, and self-esteem (Strelan et al., 2003).

Body-related reasons for exercise may also be associated with physical and mental health problems. For example, studies show that exercising for weight loss, toning, and to a lesser degree, for attractiveness is positively connected to eating disturbances (e.g., McDonald & Thompson, 1992; Furnham et al., 2002). This has been demonstrated by the high prevalence of eating disorders in groups for which there is an increased emphasis on maintaining a thin, ideal body (Garner, Garfinkel, Schwatz, & Thompson, 1980). In addition, dissatisfaction with body size may result in social physique anxiety (SPA) and low self-esteem. Moreover, Crawford and Eklund (1994) used the seven- subscale REI and Social Physical Anxiety (SPA) to test 104 college female students. Results showed that scores on SPA were significantly correlated to exercise for body tone, weight control, and physical attractiveness. This probably is
because these three reasons for exercise relate to observable physical qualities. They also can be construed as related to self-presentation (Leary, 1992).

To summarize, females are more likely to exercise for body-related reasons, which may be related to several negative psychological outcomes such as low self-esteem and high social physique anxiety. Although China is also experiencing a similar situation with the valuing of slimness, cultural differences may still exist.

*Fitness and Health.* As discussed before, exercise promotes multiple health benefits, such as reducing blood pressure, obesity, and so on. Research has shown that men were more likely to exercise for Fitness and Health reasons compared to women (Furnham et al., 2002). For instance, 111 boys and 124 girls (years 12 and 13) reported their motivation to exercise and boys reported Fitness reasons more so than did girls. Boys also reported exercising more to gain weight. In comparison to boys, girls want to lose weight instead of gaining weight (Furnham et al., 2002).

Exercising for Fitness and Health reasons is related to positive psychological outcomes. Specifically, exercising for fitness reason has been positively associated with self-esteem among men (McDonald & Thompson, 1992). Strelan et al. (2003) reported that exercising for Health and Fitness is moderately and positively related to body satisfaction, body-esteem, and self-esteem. In addition, McDonald and Thompson (1992) reported that exercising for fitness was negatively connected with eating disorders (bulimia) for men (not women). This suggested that the more men exercise specifically for fitness reasons, the less likely they will have an eating disorder and the negative psychological outcomes associated with it.
Exercising for Fitness and Health reasons may act as determinants between regular exercisers and non-regular exercisers. Gauvin (1990) found that regular exercisers had mainly two reasons for exercise: fitness and physique, while non-regular exercisers have a large variance of reasons for exercise. This result also suggests that reasons for exercise may be related to exercise adherence and adoption.

Mood. People who exercise for Mood reason usually want to reduce negative moods (e.g., anger, anxiety, depression), and increase their positive moods (e.g., vigor). Exercise which is noncompetitive, highly predictable, and performed at moderate intensity levels and for relatively short duration, tends to lower participants’ stress levels and increase energy level (Berger et al., 2007). Exercise can enhance mood by increasing desirable moods and reducing undesirable moods. Studies that use POMS to test mood change consistently show that exercise can reduce Tension, Depression, and Confusion, and increase Vigor. In addition, studies report that desirable mood changes occur after exercising (e.g., Berger et al., 2007; Gauvin, et al., 2000; Long & van Stavel, 1995).

Exercising for Mood enhancement has been found to be related to increased self-esteem and body satisfaction (e.g., McDonald & Thompson, 1992). Strelan et al. (2003) reported that exercising for Mood reasons is moderately and positively related to body satisfaction, body esteem, and self-esteem. Compared to men, women were more likely than men to exercise to release tension, which could be regarded as comparable to stress reducing and mood enhancing (e.g., Biddle & Bailey, 1985; Furnham et al., 2002).

Enjoyment. As discussed before, in the measure of REI, enjoyment and socializing subscales include similar items. Socializing is a part of enjoyment, but not all of it. Exercising for enjoyment also includes having fun. Research has shown that regular
exercisers exercise more for enjoyment reason than do non-regular exercisers (Sundeman, 1990). In addition, it was reported that enjoyment is the primary reason that Chinese college students participated in exercise (Chen, Yan, & Tan, 2006). It was also reported that there are equivocal gender differences with regard to exercising for social reasons. Studies have found that socializing factors were more important to some groups of women compared to men (e.g., Biddle & Bailey, 1985; Flood & Hellstedt, 1991). For example, in a study that examined 116 male and 45 female college student-athletes, results showed that the social aspect of participation was a strong motive for women, but not for men (Flood & Hellstedt, 1991). However, in another study that examined 202 women and 208 men, the results showed that men had higher scores on socializing. The gender differences regarding exercise for socializing reasons requires further exploration (Koivula, 1999). Research has shown that enjoyment is an important reason for Chinese students to exercise. Chen, Yan, and Tan (2006) used the Motives for Physical Activities Measure – Revised (MPAM-R) Chinese version to test 1179 college students. They found that health- and enjoyment-related motivations were the most important motivations for Chinese college students, and less important reasons were appearance and social-related reasons. In addition, Liu (2006) reported that 48.8% and 28.48% of Chinese college men and women exercised for enjoyment.

**Conclusion: Reasons for Exercise.** It seems that exercising for Health, Fitness, and Mood reasons is associated less with eating disturbances and more related to self-esteem. In contrast, exercising for Weight Control, Physical Attractiveness, and Body Tone reasons is more related to eating disturbances, low self-esteem, and body physique anxiety. Therefore, it was expected that non-body related reasons such Health, Fitness,
Enjoyment, and Mood reasons are related to higher exercise enjoyment and exercise self-efficacy, while body-related reasons such as Weight Control, Physical Attractiveness, and Body Tone are related to lower exercise enjoyment and exercise self-efficacy.

**Stages of Change**

Stages of change are a part of the Transtheoretical Model of behavior change (TTM). The TTM attempts to explain how behavior change occurs. Unlike previous behavioral models, it takes a pragmatic approach and offers suggestions for how people can be helped to change their behaviors (Adams & White, 2003). TTM, which was originally developed by Prochaska and DiClemente (1982), includes four components: stages of change, processes of change, decisional balance, and self-efficacy. In the present study, stages of change and self-efficacy were measured. TTM has been applied to alcohol and substance abuse, anxiety and panic disorders, and eating disorders and obesity. TTM has also been applied in the field of physical activity (Marshall & Biddle, 2001).

Stages of change describe the behavior change process. A specific stage is used to identify the dynamic process through which an individual changes their behaviors (Prochaska & Velicer, 1997). There are five stages of change: Precontemplation, Contemplation, Preparation, Action, and Maintenance (see Table 2.1). People in these stages usually follow a certain distribution. For example, in a study of more than 1,000 participants (Marcus, Rossi, Selby, Niaura, & Abrams, 1992), the percentages of people in each stage of change were as follows: (a) 24% in Precontemplation, (b) 33% in Contemplation, (c) 10% in Preparation, (d) 11% in Action, and (e) 22% in Maintenance. Although this distribution pattern is similar to the distribution of stages of change for
other behaviors such as smoking cessation and weight control, participants of different ages and from different cultures may show different distribution patterns. In the present study, it is expected that students in the U. S. and China have different distributions of these stages.

Table 2.1. Stages of Change (Marcus et al., 1992)

<table>
<thead>
<tr>
<th>Stage 1: Precontemplation</th>
<th>Those who are not anticipating starting exercising in the next six months.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 2: Contemplation</td>
<td>Individuals in this stage may seriously intend to exercise within the next six months or at least they are contemplating exercise within the next six months.</td>
</tr>
<tr>
<td>Stage 3: Preparation</td>
<td>Those planning to change their behavior in the near future and already making some initial progress towards change.</td>
</tr>
<tr>
<td>Stage 4: Action</td>
<td>Individuals in this stage may exercise regularly, but they have been doing so for less than six months.</td>
</tr>
<tr>
<td>Stage 5: Maintenance</td>
<td>Individuals in this stage have been exercising regularly and have done so for more than six months.</td>
</tr>
</tbody>
</table>

When applying the stages of change to the exercise area, the validity of the Stages of Change of Exercise Scale (SECS) has been demonstrated. Marcus and Simkin (1993) compared the stages of change instrument with the Seven Day Physical Activity Recall Questionnaire (Blair et al., 1985) and found that self-reported levels of physical activity corresponded with reported stages of change. The results revealed that individuals in the
Action/Maintenance stages reported more moderate and vigorous physical activity compared to people in the Precontemplation/Contemplation stages, and more vigorous physical activity compared to those in the Preparation stage. In addition, the construct validity of the stages of change for exercise measure has been demonstrated. Cardinal (1995) examined the relationship between the stages of change and energy expenditure, cardiorespiratory fitness, body mass index, exercise behavior relapse, barriers, and self-efficacy. Significant differences between stages were found for each variable, with a pattern of improvement being observed from Precontemplation through Maintenance.

Research about stages of change is designed to help people participate in exercise, adhere to exercise, and maintain their exercise. This is not a linear process, and people usually need to progress through multiple stages of change for exercise behaviors (Prochaska & DiClemente, 1986). Most people drop out of exercise before they reach the Maintenance stage. For instance, approximately 50% of individuals who started an aerobic exercise program stopped within the first six months (Dishman & Lackes, 1981). For participants who already participate in exercise for more than five years, they are in the maintenance stage, the risk for relapse falls to seven percent (USDHHS, 1991).

Needless to say, long-term behavioral compliance or adherence to an exercise program is a fundamental issue in the development of healthy lifestyle to promote wellness.

As noted, people usually need to go through multiple stages to reach the Maintenance stage (Prochaska & DiClemente, 1986). For people who are not regular exercisers, a lot of them drop out exercise program before they reach the Maintenance stage. For instance, in a study that assessed the stages and processes of change among 314 employees of worksites at baseline and at six-month follow-up, participants were
categorized as follows: 1) stable sedentary (participants remaining in Precontemplation and Contemplation at baseline and follow-up), 2) stable active (participants remaining in Preparation, Action, and Maintenance at both assessments), 3) adopters (participants who moved from Precontemplation or Contemplation to Preparation, Action, or Maintenance) and 4) relapsers (participants who moved from Preparation, Action, or Maintenance to Precontemplation or Contemplation). The results indicated that more individuals remained in a stable stage pattern (59%) than those who changed stages (41%). Of those who were originally sedentary at baseline (54%), the majority remained sedentary (32%). Of those who were originally active at baseline (46%), the majority remained active (27%). The majority of the relapsers regressed only to the contemplation stage (76%) suggesting that those who were involved in exercise tend to want to become involved again (Marcus, Simkin, Rossi, & Pinto, 1996).

Exercise Enjoyment

It has been suggested that enjoyment is the most important reason for people to continually participate in exercise. Research has shown that people who dropout of exercise usually do so because they do not enjoy exercise (Kimiecik & Harris, 1996). Enjoyment of exercise is important because it is associated with positive mood change, increasing exercise motivation, and exercise adherence (Berger et al., 2007). However, the concept of enjoyment is hard to define. Wankel (1993) suggested that enjoyment was one of many factors influencing intrinsic motivation, including the pursuit of and activity for the rewards within the activity itself. Scanlan and Simons (1992) presented a broader perspective of enjoyment that included the movement experience itself, the social and environmental setting, self-reinforced feelings of mastery, competence, and control, and
externally reinforced feelings of mastery, competence, and control, such as social
recognition. Kimiecik and Harris (1996) argued that enjoyment was not an affective
product of experience, but a psychological process. This idea is gaining in popularity.

There are many factors that influence whether people enjoy exercise or not. For
example, enjoyment is related to intrinsic, social, and extrinsic factors. Intrinsic factors
related to enjoyment include accomplishment, challenge, excitement, fun, and skill
improvement. Social factors include being with friends or being on a team. Extrinsic
factors include receiving awards, winning, and parental approval (Wankel & Kriskel,
1985). Research has shown that intrinsic motivation is associated with continued activity
participation and greater task enjoyment, while extrinsic motivation is associated with
lower levels of freely chosen participation and lower task enjoyment (Deci & Ryan,

Enjoyment is also positively related to increased post-exercise energetic arousal
and vigor after controlling for pre-test scores. Individuals reporting lower enjoyment may
not experience the same increase in positive affective states or decrease in negative
African American and European American boys and girls during early, middle, and late
adolescence. They reported that more positive feeling states during physical activity
predicted greater enjoyment.

*Exercise Self-Efficacy*

Self-efficacy is an important determinant of behavior change, and it has been
incorporated into most of the major behavior change models, especially TTM. Self-
efficacy is defined as control beliefs regarding one’s capability to successfully satisfy
Specific situational demands (Bandura, 1997). Self-efficacy cognitions have been consistently correlated with physical activity participation (McAuley & Blissmer, 2002; McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003; Rejeski & Focht, 2002).

Judgments of self-efficacy determine how much effort people would like expend to achieve a behavior change in the face of obstacles. Those with high self-efficacy exert greater effort to achieve behavior change in the face of obstacles. In addition to influencing physical activity behaviors, self-efficacy is also proposed to be related to affective reactions to exercise, with higher self-efficacy beliefs being associated with more positive psychological responses to acute exercise (McAuley & Blissmer, 2002). In a study of female students, Bozoian et al., (1994) found that those who already had high self-efficacy for exercise also experienced beneficial effects on mood, while people with low self-efficacy did not experience the same effect. In another study, McAuley, Shaffer, and Rudolph (1995) also reported that men reporting higher self-efficacy exhibited more pleasant affective states and less psychological distress during and after acute exercise.

**Cultural Differences**

Cultural differences may influence exercise reasons. Western cultures emphasize independence, and people are more likely to exercise by themselves. In comparison, Eastern Cultures have distinct conceptions of individuality that insist on the fundamental relatedness of individuals to each other (Markus & Kitayama, 1991). These differences may result in exercisers in Eastern cultures exercising more for Socializling/Enjoyment than those in Western cultures. In addition, results have also shown that Chinese students in the U. S. reported significantly greater exercise participation compared to those in
Hong Kong, which suggests that maybe the Western culture emphasizes exercise more than does the Eastern culture (Davis & Kattzman, 1998).

In another study which tested 1,179 Chinese college students using Motives for Physical Activities Measure-Revised (MPAM-R), the results showed that Health and Fitness motivations were the highest motivations to exercise followed by enjoyment, ability, social, and appearance motivations (Chen, Yan, & Tan, 2006). Compared to Chinese students, American students were more likely to exercise for appearance reasons and less likely to exercise for social reasons. In a similar study in the U. S., 15,000 college students reported their exercise motivations using the Exercise Motivation Inventory-2 (EMI-2). The results showed that the highest motivation for college students to participate in physical activity was appearance reason, followed by health, enjoyment, and affiliation reasons (Kilpatrick, Hebert, & Bartholomew, 2005). Unfortunately, there are too few cross-cultural studies to draw any conclusion. In addition, Hong Kong may have different cultural expectations than mainland China since Hong Kong was colonized by Britain for about 137 years. No study has compared Chinese and U. S. college students on exercise motivation using the same questionnaire. The present study seeks to fill this gap.

Studies have demonstrated that cultural differences, particularly lifestyle, have an influence on exercise attitudes and behaviors (Le Grange et al., 1998). Some races of people were more likely to be sedentary than other race of people. Specifically, 36% of White Americans were sedentary followed by 42% of Asians or Pacific Islanders, 46% of American Indians, 52% of Black or African Americans, and 54% of Hispanic Americans (USDHHS, 2000). Suminski and Petosa (2002) reported that stages of change varied
among White, Asian, African American, and Hispanic students. Minorities were more likely than were White students to be in the inactive stages of Precontemplation and Contemplation. They also found that there were much fewer Asian American students in the Maintenance stage of change compared to White students.

In a study of 171 college students in France and 231 college students in the U. S. exercise stages of change were assessed (Cardinal, Keis, & Ferrand, 2006). The majority of American participants reported being in the Action or Maintenance stages, whereas the majority of French participants reported being in the Precontemplation or Contemplation stages of change (66.2% vs. 56.8%, respectively). American participants were more physically active than French participants. Moreover, the scores on self-efficacy increased as they moved to higher stages.

Stages of change have also been examined in Eastern cultures. For example, undergraduate students \((n=298)\) in Hong Kong reported that there were found to have the following stage distribution: 3.4% in Precontemplation, 10.7% in Contemplation, 54.7% in Preparation, 20.5% in Action, and 8.7% in Maintenance (Callaghan, Eves, Norman, Chang, & Lung, 2002). Compared to the distribution in 12 previous studies in Australia, USA, and the UK, Buxton, Wyse, and Mercer (1996) concluded that most (43%) people were ‘Active’ (i.e., in Action and Maintenance), 29% were in Preparation and 28% were ‘Inactive’ (i.e., in Precontemplation and Contemplation). The percentage of students who reported being ‘Active’ (29.2%) in this study was lower than that reported for British students (43%) (Buxton et al., 1996) and Canadian high school students (Nigg & Courneya, 1998).
In another study, Keating et al., (2005) first developed the Chinese version of The Stages of Change of Exercise Scale (C-SCES). The percentages of college students (n = 1834) found across the stages of Precontemplation, Contemplation, Preparation, Action, and Maintenance were 38.25%, 9.82%, 20.13%, 10.53%, and 17.20%, respectively. Compared with students in Hong Kong, American, and France, mainland Chinese students were in the earlier stages of change.

That people in Hong Kong were less active than people in Western countries may be attributed to the culture and environment of Eastern cultures not being conducive to exercise (Callaghan et al., 2002). Exercise is often seen as play and considered less important than academic success. In addition, few schools have comprehensive physical education programs and physical activity policies in education are given low priority (Callaghan et al., 2002). Mainland China also has a similar situation. Hence, cultural differences may exist between mainland Chinese and American college students. The present study examined these relationships.

_Hypothesis #1: Male and female students in China and the U. S. who differ in stages of change differ in reasons for exercise_

The studies that have examined the relationship between stages of change and reasons to exercise are not well documented. As the author knows, only one study explores this relationship. Sunderman (1990) used self-developed questionnaire to measure reason for attending physical activity. It includes fifteen reasons, and participants were asked to rank them from 1, (strongly disagree) to 5, (strongly agree). There were 294 participants (average 34.62 year old), 110 males and 184 females. Results showed that “Health” had the highest mean for each stage. For each stage, while
the order varied, the same six reasons ("improve appearance," "control weight," "feel better," "stay in shape," "release tension," and "increase energy") were ranked within the second through seventh positions. There was a significant difference between stage groups for the enjoyment reason for exercise. People in the Maintenance stage exercised more for enjoyment than did people in the other stages. However, people in the Action stage exercised less for enjoyment than did people in the Preparation stage (Sundeman, 1990). In addition, it was reported that exercise adherence was associated with motivations focused on enjoyment, competence, and social interaction, but not with motivations focused on fitness or appearance (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997). This suggests that some reasons for exercise are more likely to motivate people to participate in exercise for a longer period.

Moreover, Ingledew, Markland, and Medley (1998) followed up 425 British government employees for three months to test the discriminators of exercise motivations that can predict exercise adherence and whether exercise motivations could discriminate between those who stayed inactive, stayed active, became active or became inactive over the three months. The results suggested that extrinsic (such as weight control) motivations dominate during the early stages of exercise adoption, but that intrinsic (such as mood) motivations are important for progression to and maintenance of actual activity.

The previous studies indicate that people in different stages of change may have different reasons to exercise. However, this relationship needs further investigation. The present study examined the relationship between reasons for exercise and stages of change.
Hypothesis #2: Participants who differ in culture, gender, and RE differ in exercise enjoyment

People who exercise for specific reasons may experience more enjoyment. The present study examined enjoyment separately to further explore the relationships among enjoyment, reasons for exercise, and stages of change. Wankel (1993) suggested that enjoyment was influenced by many factors, including compatibility of exercise type with specific exercise goals.

In addition, it was reported that exercise for Health/Fitness, Mood/Enjoyment reasons were associated less with eating disturbance and more with self-esteem, while exercise for body-related reasons were more related to eating disturbance, low self-esteem, and body physique anxiety (Furnham et al., 2002). It can be speculated that people who exercise for health and fitness reasons would experience more psychological well-being and enjoyment, while people who exercise for body-related reasons have less psychological well-being and less enjoyment. However, studies to identify this assumption are not well documented. In the present study, it was examined if certain reasons for exercise related to higher exercise enjoyment.

Hypothesis #3: Participants who differ in culture, gender, and reasons for exercise differ in exercise self-efficacy. Participants who exercise for intrinsic motivations would have higher self-efficacy than people who exercise with extrinsic motivations

It has been suggested that self-efficacy is related to intrinsic and extrinsic motivation (Mullan, Albinson, & Markland, 1997). Different reasons for exercise can be identified as either intrinsic or extrinsic motivations. Intrinsically motivated behaviors are free from pressures and external controls and they are accompanied by interest and
enjoyment. Externally motivated behaviors are determined largely by pressures and controls and they are undertaken essentially for reasons other than intrinsic interest in the activity itself and they can range from being somewhat self-determined to being completely non-self-determined. Individuals reporting intrinsic reasons for exercise, such as enjoyment and feeling good, typically exhibit greater levels of adherence to exercise than those who report exercising for extrinsic reasons, such as compliance with external pressures or attainment of rewards (Wankel, 1993). Moreover, studies have shown that certain reasons for exercise are related to positive mood changes, and people who have higher exercise self-efficacy also tend to experience more positive mood (Bozoian, Rejeski, & McAuley 1994; Rudolph & McAuley, 1995). This is additional support that reasons for exercise may be related to exercise self-efficacy. Since there are no studies that have examined the relationship between exercise self-efficacy and REI, the present study examined this relationship. It can be speculated that people who exercise with intrinsic motivation have higher self-efficacy than people who exercise with extrinsic motivations.

Conclusion

The relationships between reasons for exercise and stages of change, reasons for exercise and enjoyment, and reasons for exercise and self-efficacy were examined. In addition, the present study examined the cultural and gender differences relative to reasons for exercise, stages of change, exercise enjoyment, and exercise self-efficacy.
CHAPTER 3

METHOD

Participants

Undergraduate students from Bowling Green State University and Beijing Normal University were recruited based on a voluntary basis to examine possible cultural differences between American and Chinese students. Beijing Normal University has 8,500 undergraduate students and Bowling Green State University has 16,085 undergraduate students. Chinese undergraduate students from Beijing Normal University (n = 220) and American undergraduate students from Bowling Green State University (n = 230) were recruited to participate in the present study. Students were excluded from the study if they were graduate students, studying in an exercise related field, or they did not answer one or more questionnaires. There were total seven invalid Chinese questionnaires. Four were excluded because the participants were graduate students. The other three participants were invalid because the participants did not answer one of the questionnaires. There were 17 invalid answers in the U. S. Four were excluded because they were exercise related majors, and 13 participants did not answer one or more of the questionnaires. As indicated in Table 3.1 and Figure 3.1, overall there were 213 valid data (men = 64 women = 149) from two classes at Beijing Normal University, and 213 (men = 42, women = 171) valid data from six classes at Bowling Green State University (see Table 3.1). Chi square test showed that there was a significant difference for the gender distributions between China and the U. S., $\chi^2 (1) = 2.463, p < .05$. There were more women and fewer men in the American and Chinese samples.
Table 3.1.

**Participants in China and the U. S.**

<table>
<thead>
<tr>
<th>Culture</th>
<th>Time</th>
<th>Course Names</th>
<th>Total data</th>
<th>Valid data</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Dec., 2007</td>
<td>Deng Xiaoping Theory</td>
<td>108</td>
<td>108</td>
</tr>
<tr>
<td>China</td>
<td>Dec., 2007</td>
<td>Deng Xiaoping Theory</td>
<td>112</td>
<td>105</td>
</tr>
<tr>
<td>U.S.</td>
<td>Nov., 2007</td>
<td>Education in a Pluralistic Society</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>U.S.</td>
<td>Jan., 2008</td>
<td>Culture &amp; Family Studies</td>
<td>56</td>
<td>49</td>
</tr>
<tr>
<td>U.S.</td>
<td>Jan., 2008</td>
<td>Family</td>
<td>67</td>
<td>65</td>
</tr>
<tr>
<td>U.S.</td>
<td>Jan., 2008</td>
<td>Systems/Community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>Jan., 2008</td>
<td>Paraprofessional Skills</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>U.S.</td>
<td>Jan., 2008</td>
<td>PEG 291 001</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>U.S.</td>
<td>Jan., 2008</td>
<td>Tension Management</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>450</td>
<td>426</td>
</tr>
</tbody>
</table>

Figure 3.1.

**Proportion of men and women in the China and the U. S samples**
Figure 3.2. shows the average age of Chinese and American men and women. American men had the highest average age, which was almost 23 years, while Chinese men and women, and American women had similar average ages between 21 to 22 years. American men had a significant higher average age than American women and Chinese men and women, $F (3, 73) = 8.722, p < .001$. No differences for average ages were found among American women, Chinese men, and Chinese women.

Figure 3.2.

*Average ages of Chinese and American men and women*
The participants in China were from 13 majors and the American participants were from 27 majors. The majority of majors in the sample from China were from International trade, Psychology, Accounting, Law, and Financial (see Figure 3.3). Most of the participants in the U.S. were from Education and Family and Consumer Science (see Figure 3.4).

Figure 3.3.

* Distributions of majors of Chinese participants

![Diagram showing majors of Chinese participants]

- International trade, 17.80%
- Psychology, 16.90%
- Accounting, 16.00%
- Financial, 10.30%
- Law, 10.30%
- Others, 28.70%

Figure 3.4.

* Distributions of majors of American participants

![Diagram showing majors of American participants]

- Education, 45.50%
- FCS, 15.00%
- Sport management, 3.30%
- Communication, 3.30%
- Others, 32.90%

*Note. * FCS = Family and Consumer Science
The distributions of Freshmen, Sophomores, Juniors, and Seniors of Chinese and American participants are shown in Figure 3.5. Most of the Chinese participants were Juniors, while most of the American participants were Sophomores, Juniors, or Seniors. This is because that the two classes which were tested in China were for Junior students. In China, each class usually is open to certain students. As a result, most of participants in China were Juniors.

Figure 3.5.

*Figures of Freshmen, Sophomores, Juniors, and Seniors of Chinese and American participants*

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**Measures**

Participants completed five questionnaires. They were the Demographic Questionnaire, Reasons for Exercise Inventory (REI), Stages of Changes of Exercise
Scale (SCES), Self-Efficacy Questionnaire (SEQ), and Physical Activity Enjoyment Scale (PACES). See Appendix A for all questionnaires in English and Chinese versions.

Demographic Questionnaire. The demographic questionnaire is a self-developed questionnaire that asks about the participants’ gender, age, grade, and major. Other information that relate to exercise were also investigated. For example, if they consider themselves as exercisers, if they are taking Physical Education classes this semester, how many days per week, and how many minutes on average they have exercised in the past one month, and what kind of exercise they do on a regular basis. In addition, their attitudes towards exercise facilities on campus were investigated. This questionnaire provides additional information to understand the factors that are related to exercise behavior in the present study.

Reasons for Exercise Inventory (REI). Silberstein et al. (1988) developed and tested the REI. The original version of REI has 25 items, including seven-subscales: Weight Control, Fitness, Health, Physical Attractiveness, Mood, Enjoyment, and Body Tone. Sample items from each subscale regarding reasons for exercise include: Weight Control, “To lose weight;” Fitness, “To increase my energy level;” Health, “To improve my overall health;” Physical Attractiveness, “To be sexually desirable;” Mood, “To improve my mood;” Enjoyment, “To socialize with friends;” and Body Tone, “To improve my overall body shape.” Responses are rated on a seven-point scale ranging from not at all important (1) to extremely important (7). Cronbach reliability coefficients for the REI ranged from 0.67 for Enjoyment to 0.81 for Weight Control (Silberstein et al., 1988). Using factor analysis techniques, Cash et al. (1994) determined that the original seven-subscale instrument comprised only four factors: Weight/Appearance management,
Fitness/Health management, Stress/Emotion management and Socializing. In this version, two original items were deleted, and Cronbach reliability coefficients were reported range from 0.73 to 0.91. The present study used the seven-subscale REI since the REI has not been used in mainland China and it is important to test whether the factors and reliability of REI are the same in China as they are in the U.S.

*The Stages of Change of Exercise Scale (SCES).* The SECS (Marcus et al., 1992) is based on the Transtheoretical Model of Behavior Change (Prochaska et al., 1994) and originally was used with female participants (test-retest reliability coefficients range from .93 to 1.00). The SCES resembles a ladder with each rung representing a different stage. The stages include Precontemplation, Contemplation, Preparation, Action, and Maintenance. The stages are determined by the respondent's choice of a statement that best describes her/his current degree of interest in physical activity and actual involvement in physical activity.

Although the SCES has been translated into Chinese (C-SCES) and has been reported to have cross-culture concurrent validity (Keating et al., 2005), the original C-SCES is unavailable. The SECS was not attached to the journal publication, and the authors have been unreachable. In the present study, the author translated the English version into Chinese. In addition, Wushu, stair climbing, and Tai Chi were added into the examples of “physical activity” which was defined in the instructions of C-SECS.

*Physical Activity Enjoyment Scale (PACES).* Kendzierski and DeCarlo (1991) developed the Physical Activity Enjoyment Scale (PACES) to examine a person’s enjoyment of physical activity. The PACES may be used to assess an individual’s enjoyment of exercise most of the time (trait) and/or an individual enjoy exercise at the
moment (state). Kendzierski and DeCarlo started out with 39 items based upon the exercise adherence and enjoyment literature, dictionary entries, and discussion between the authors about affective experiences in physical activity. These items were presented to three experts in the field of exercise adherence. In all, 19 items were selected for the final version. Examples of items include “It’s no fun at all;” and “It’s very pleasant.” Participants use a seven-point scale to rate their choice from one to seven. The possible score ranges from 19 to 133. The reliability and validity of this measure has been established. One study found a coefficient alpha of 0.96 and a test–retest reliability of 0.60 for bicycling and 0.93 for jogging (Kendzierski & DeCarlo, 1991). In addition, the validity of PACES applied to college students has been demonstrated (Kendzierski & DeCarlo, 1991). The present study used PACES to examine the general attitudes towards exercise of college students.

*Self-Efficacy Questionnaire (SEQ).* The SEQ (Marcus, Selby, Niaura, & Abrams, 1992) was employed to measure participants’ exercise confidence in various situations—when they were tired, were in a bad mood, were too busy, were on vacation, or when the weather was rainy or snowy. A Likert scale from one to five is used to rate their confidence to exercise in each of the situations. The total score ranges from five to 25. Test-retest reliability of the SEQ over a two-week period was 0.90 (Marcus, Selby, Niaura, & Rossi, 1992), and the internal consistency for this measure was 0.82 (Marcus, Rakowski, & Rossi, 1992).

In the present study, the fifth item of the original SEQ used by Marcus, Selby, Niaura, and Rossi (1992), namely “when it is raining, or snowing” was changed to “when it is raining, cold, or very hot” in both English and Chinese versions to reflect the weather
conditions in China and the U. S., which is following a similar change by Callaghan et al., (2002) and Gorely and Gordon (1995).

Translation and evaluation procedures for the U. S. questionnaires. There are no available Chinese versions of the Demographic Questionnaire, REI, SECS, SEQ, and PACES. Thus, these five questionnaires were translated into Chinese by the author who is a bilingual graduate student who is fluent at reading, writing, and speaking English and Chinese and who also is familiar with the field of exercise psychology. Two additional English and Chinese bilingual individuals who are university faculty and experienced in exercise-related science compared the original English version and the translations. Then they provided suggestions to enhance the accuracy of the Chinese translations of each item in each questionnaire. Adjustments in the Chinese translations were made based on their suggestions. After that, a third English and Chinese bilingual university faculty retranslated the Chinese versions back to English without having seen the original versions. Finally, a fourth individual who is a native English speaker as well as a language major professor compared the accuracy of each item of the original English questionnaires and the back translated questionnaires that were in English. Suggested changes of the Chinese translations based on the feedback from those four individuals were made.

Adjustments of the translations. After comparing the original English questionnaires and the back translated questionnaires, changes were made only to the REI, for items #9 and #14. The original English version on #9 is “To be sexually desirable.” For this item, direct translation would be inappropriate because “sexually” is not a delicate word in Chinese. Participants may feel uncomfortable when they answer
this question, and the results may be skewed. After discussion with the thesis committee, this item (#9) was translated into Chinese as “To be physically attractive.” On the original English version, item #14 is “To maintain my physical well-being.” Since the phrase “physical and psychological well-being” in Chinese is not a common word combination, the author translated “physical well-being” into “physical and psychological well-being,” which was not considered to be an appropriate translation. After discussion, the translation was changed to “To maintain my physical well-being.”

Research Design

The main purpose of study was to examine if there is a relationship between reasons for exercise and stages of change. The relationships between reasons for exercise and self-efficacy, reasons for exercise and enjoyment were also examined. In addition, cultural and gender were also examined.

Hypothesis #1: Male and female students in China and the U.S. who differ in stages of change differ in reasons for exercise. Gender, culture, and stages of changes were the independent variables. A 2 (gender) × 2 (culture) × 5 (stages) MANOVA was employed to investigate the effects of the independent variables on the dependent variables of reasons for exercise. A MANOVA was used since there are seven subscales in REI. To examine if people with different cultures and gender differ in stages of change, Chi-square analysis was used.

Hypothesis #2: Participants who differ in culture, gender, and reasons for exercise differ in exercise enjoyment. For comparison purposes, each score from the seven subscales of the REI were adjusted to t scores. Then each participant was categorized according to the one reason he/she has the highest t score. As a result, this
analysis was a 2 (gender) × 2 (culture) × 7 (reasons) ANOVA. The grouping variables were gender, culture, and reasons of exercise, and the dependent variable was enjoyment.

Hypothesis #3: Participants who differ in culture, gender, and reasons for exercise differ in exercise self-efficacy. Participants who exercise for intrinsic motivations would have higher self-efficacy than people who exercise with extrinsic motivations. Gender, culture, and stages of change were categorical variables. For comparison purposes, each of the raw scores of the seven subscales of REI was adjusted to $T$ scores. Then each participant was categorized according to one reason he/she had the highest $t$ score. As a result, this analysis was a 2 (gender) × 2 (culture) × 7 (reasons) ANOVA. The grouping variables were gender, culture, and reasons for exercise, and the dependent variable was self-efficacy.

For all analyses, alpha was set at .05, 2-tailed.

Procedure

Permissions. Permission to conduct the study and recruit participants was obtained from the Human Subjects Review Board (HSRB) at Bowling Green State University. No university-wide permission for recruiting participants was required at Beijing Normal University. Course-instructors’ permissions were sought from each course in which students were asked to participate in the present investigation.

Data collection. Two classes in China and six classes in the U. S. were investigated. The author went to the classrooms with two other graduate students to distribute and collect questionnaires. After the instructor introduced the investigators, the author introduced the present study, invited the students to participate, and questionnaires were distributed. The author read the informational script (Appendix B) and the consent
form (Appendix C) to the students. Upon satisfactorily answering questions or clarifying the requirements, students interested in participating in the study were asked to finish the questionnaires. During the process, the students could ask the investigators questions regarding concerns. Students that were interested in receiving a copy of the results of the study were asked to provide their contact information on the consent form.

Data Analysis

Scoring. Each questionnaire was scored according to each questionnaire’s guideline. The REI is a seven-subscale questionnaire with seven continuous scores for each of the reason. The SEC includes five subscales. Each participant was categorized into a stage of change that ranged from 1 to 5 as indicated in Table 2.1. The PACES was represented by a single continuous score ranging from 18 to 126. SEQ was presented by a continuous score ranged from 1 to 25.

Data Entry. After scoring all the questionnaires, the data were entered into SPSS 15.0 by the author. Then, the author with another graduate student checked the data entry again.

Computing T Scores. For the hypotheses #2 and #3, each participant was categorized according to the reason where he/she had the highest \( T \) score. As a result, seven \( T \) scores needed to be computed for each participant. \( T \) scores were computed based on the \( Z \) score. SPSS automatically calculated the \( Z \) score of the REI for each of the participant. Then, using the formula \( T = 10*Z + 50 \), a \( T \) score for each reason of each participant was computed. Each participant was assigned to the reason where he/she had the highest \( t \) score for use of reasons to exercise scores as independent, rather than dependent variable.
CHAPTER 4
RESULTS

This chapter reports the results of the present study. Class equivalences in China and the U. S. were examined. Then, results of the first, second, and third hypotheses were reported.

Class Equivalence

To examine whether there were any significant differences among different intact classes in China and the U. S., a t-test analysis was used to compare two classes in China, and ANOVA was used to compare the six classes in the U. S. The results are provided in Table 4.1. The class-difference found in the China was on the Reasons for Exercise Inventory (REI). Result showed that $t = 2.75, p < .01$. There was significant difference between the two classes on the scores for the reason of Enjoyment. However, to further test if the difference of the means for the Enjoyment reason was meaningful, Cohen’s $d$ was calculated. The Cohen’s $d$ value was .152, which was considered to be small. As a result, the difference for the reason of Enjoyment between the two classes was small enough to consider the means to be similar. Hence, the two classes in China were combined for follow up analyses.
Table 4.1.

*Class equivalence in China*

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>209</td>
<td>-.751</td>
</tr>
<tr>
<td>Gender</td>
<td>211</td>
<td>1.330</td>
</tr>
<tr>
<td>Stages of Change</td>
<td>211</td>
<td>0.270</td>
</tr>
<tr>
<td>WC</td>
<td>211</td>
<td>-.104</td>
</tr>
<tr>
<td>Fitness</td>
<td>211</td>
<td>-.599</td>
</tr>
<tr>
<td>Mood</td>
<td>211</td>
<td>-.835</td>
</tr>
<tr>
<td>Health</td>
<td>211</td>
<td>-1.592</td>
</tr>
<tr>
<td>PA</td>
<td>211</td>
<td>-.110</td>
</tr>
<tr>
<td>Enjoyment**</td>
<td>211</td>
<td>-2.745</td>
</tr>
<tr>
<td>BT</td>
<td>211</td>
<td>0.084</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>211</td>
<td>0.010</td>
</tr>
<tr>
<td>PACES</td>
<td>211</td>
<td>-1.624</td>
</tr>
</tbody>
</table>

*Note.** *p < .01.  
WC = Weight Control; PA = Physical Attractiveness; BT = Body Tone*
Classes in U. S. differed in age, gender, and exercise enjoyment (PACES). See Table 4.2. One education class had the highest age ($M = 23.0$, $SD = 2.60$), the other education class had the lowest age ($M = 20.7$, $SD = 1.12$). The Cohen’s $d$ value for the difference in age between these two groups was 1.22, which was considered a large difference. Family and Consumer Science classes included more women than Education and stress management classes. In one stress management class, participants reported the highest PACES score ($M = 101.5$, $SD = 12.9$, $p < .05$), and one of the Family and Consumer Science class had the lowest PACES score ($M = 88.3$, $SD = 18.9$). The Cohen’s $d$ value between the mean scores of these two classes was .73, which also was considered a big difference. Although differences were found, they were few in number. There was no indication of a systematic bias between the classes. Therefore, subsequent analyses were preformed with the classes combined in each sample.

Table 4.2.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>$df$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age***</td>
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<td>5.496</td>
</tr>
<tr>
<td>Gender***</td>
<td>5</td>
<td>5.189</td>
</tr>
<tr>
<td>Stages of change</td>
<td>5</td>
<td>.556</td>
</tr>
<tr>
<td>WC</td>
<td>5</td>
<td>1.633</td>
</tr>
<tr>
<td>Fitness</td>
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<td>1.373</td>
</tr>
<tr>
<td>Mood</td>
<td>5</td>
<td>1.069</td>
</tr>
<tr>
<td>Health</td>
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<td>1.821</td>
</tr>
<tr>
<td>PA</td>
<td>5</td>
<td>1.152</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>5</td>
<td>1.821</td>
</tr>
<tr>
<td>BT</td>
<td>5</td>
<td>1.229</td>
</tr>
<tr>
<td>PACES*</td>
<td>5</td>
<td>3.422</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>5</td>
<td>1.421</td>
</tr>
</tbody>
</table>

*Note. $p < .05$, ***$p < .0001$.*

$WC = $ Weight Control; $PA = $ Physical Attractiveness; $BT = $ Body Tone
Hypothesis #1: Participants in U. S. and China in different stages of change differ in reasons of exercise

Relationship between stages and reasons for exercise. The effects of culture, stages of change, and gender on reasons for exercise were examined in a 2 (cultures) × 5 (stages) × 2 (gender) MANOVA on the vector of the seven subscales in REI. All three independent variables were between-subjects variables. To examine if men and women from different cultures differed in stages of change, Chi-square analysis was used.

The analysis showed that the interactions among culture, stages, and gender was significant, $F(28, 1440) = 1.951, p < .005$. Since the effects of culture and stages on the REI were of primary interest in the study, a 2 (cultures) × 5 (stages) simple-effect test was performed to examine the effects of culture and stages on reasons for exercise on men and women separately.

For men, results showed that there was an interaction between culture and stage, $F(28, 326) = 1.81, p < .01$. To further examine the relationship, simple-simple effect tests were performed, with the factor of culture controlled. The significance level was adjusted to .01 in the simple-simple test. The relationships between stages and reasons for exercise were examined in Chinese men and American men. For Chinese men, there was no evidence that the effect of stage on reasons for exercise was significant [$F(28, 193) = 1.103, p > .05$]. For American men, the effect of stages on reasons for exercise was not significant [$F(28, 114) = 1.82, p > .01$]. Due to the small number of men in stages one, two, four, and five, the relationship between reasons for exercise and stages were not examined stage by stage, but combined for the five stages. Hence, no relationship between stages of change and reasons for exercise in men was found in the present study.
For women, the interaction between cultures and stages was not significant \( F(28, 1094) = 1.024, p > .05 \). The main effect of stages was also significant \( F(28, 1094) = 2.145, p < 0.01 \). The factor of culture had a significant effect on reasons for exercise \( F(7, 303) = 12.061, p < .001 \). Follow up analyses for the main effect of stages of change will be presented first.

Figure 4.1.

*T scores of stages of change on REI for women*

*Differences of reasons on stages of change.* Women in different stages differed on reasons for exercise. Key contributors were Fitness, Mood, Health, Physical Attractiveness, and Enjoyment reasons (see Figure 4.1). See Table 4.3 for the mean \( T \) scores of women on each REI subscale. Tables 4.4 to Tables 4.8 showed the Bonferroni results of the reasons on which the stages were significantly differed. According to Table 4.4, women in stage five had significantly higher scores of the Fitness subscale than
women in stages one, two, and three. Women in stage four had significantly higher scores than women in stage one and two. Women in stage three had significantly higher scores than women in stage one. It can be concluded that women in higher stages had higher scores on Fitness.

Table 4.3.

Mean T Scores of women on each REI

<table>
<thead>
<tr>
<th>REI</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC</td>
<td>50.18</td>
<td>50.96</td>
<td>51.10</td>
<td>55.43</td>
<td>52.27</td>
</tr>
<tr>
<td>Fitness</td>
<td>39.95</td>
<td>47.34</td>
<td>48.37</td>
<td>52.64</td>
<td>54.73</td>
</tr>
<tr>
<td>Health</td>
<td>41.45</td>
<td>49.86</td>
<td>50.78</td>
<td>48.83</td>
<td>52.49</td>
</tr>
<tr>
<td>Mood</td>
<td>42.71</td>
<td>49.06</td>
<td>50.33</td>
<td>53.73</td>
<td>52.51</td>
</tr>
<tr>
<td>PA</td>
<td>47.17</td>
<td>49.43</td>
<td>48.87</td>
<td>55.11</td>
<td>52.33</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>43.77</td>
<td>49.30</td>
<td>48.25</td>
<td>53.10</td>
<td>53.20</td>
</tr>
<tr>
<td>BT</td>
<td>45.27</td>
<td>51.23</td>
<td>50.55</td>
<td>52.53</td>
<td>51.30</td>
</tr>
</tbody>
</table>

Note. WC = Weight Control; PA = Physical Attractiveness; BT = Body Tone.

Table 4.4.

The differences of the T scores among each stage on reason of Fitness for women

<table>
<thead>
<tr>
<th>Stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-7.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-8.42*</td>
<td>-1.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-12.69***</td>
<td>-5.30*</td>
<td>-4.26</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-14.78***</td>
<td>-7.39**</td>
<td>-6.36**</td>
<td>-2.09</td>
</tr>
</tbody>
</table>

Note. * p < .05, **p < .01, ***p < .001.
Results presented in table 4.4 showed that women in stages two, three, and five had significantly higher scores on Health than women in stage one. The results of other comparisons were not significant. Women in stages two, three, four, and five had similar scores on Health.

Table 4.5.

*The differences of the T scores among each stage on reason of Health for women*

<table>
<thead>
<tr>
<th>Stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-8.40*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-9.32**</td>
<td>-.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-7.38</td>
<td>.102</td>
<td>1.94</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-11.03**</td>
<td>-2.62</td>
<td>-1.71</td>
<td>-3.66</td>
</tr>
</tbody>
</table>

*Note.* p < .05. **p < .01.

Table 4.5 showed that women in stages four and five had significantly higher scores on Mood than women in stage one. However, women in stages four and five did not have significantly higher scores on Mood than women in stages two and three.

Table 4.6.

*The differences of the T scores among each stage on reason of Mood for women*

<table>
<thead>
<tr>
<th>Stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-6.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-7.61</td>
<td>-1.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-11.02**</td>
<td>-4.67</td>
<td>-3.40</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-9.80*</td>
<td>-3.44</td>
<td>-2.18</td>
<td>-1.21</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, **p < .01.
As Table 4.6 showed, women in stage four had significantly higher scores on Physical Attractiveness than women in stages two and three. Although results of other comparisons were not significant, there was a trend that in general, women in higher stages had higher scores on Physical Attractiveness.

Table 4.7.

*The differences of the T scores among each stage on reason of Physical Attractiveness for women*

<table>
<thead>
<tr>
<th>Stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td>-2.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-1.70</td>
<td>.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-7.94</td>
<td>-5.67*</td>
<td>-6.25**</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-5.16</td>
<td>-2.90</td>
<td>-3.47</td>
<td>2.77</td>
</tr>
</tbody>
</table>

*Note. p < .05. **p < .01.*

Table 4.7 showed that women in stage four had significantly higher scores on Enjoyment than women in stage one, and women in stage five had significantly higher scores on Enjoyment than women in stages one and three. There was also a trend that women in higher stages had higher scores on Enjoyment than women in lower stages, although not all the differences among different stages were statistically significant.
Table 4.8.

The differences of the $T$ scores among each stage on reason of Enjoyment for women

<table>
<thead>
<tr>
<th>Stages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-4.47</td>
<td>-1.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-9.32*</td>
<td>-3.80</td>
<td>-4.86*</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-9.43*</td>
<td>-3.90</td>
<td>-4.96*</td>
<td>-0.10</td>
</tr>
</tbody>
</table>

*Note. * $p < .05$. 
Cultural differences. The results of cultural differences on the REI are provided in Tables 4.8 and 4.9. Regardless of gender, American participants exercised more for Weight Control, Fitness, and Physical Attractiveness reasons, while Chinese participants exercised more for Enjoyment and Health reasons. See Table 4.8 for the means and standard deviations of the T scores on each of the reasons among Chinese men, American men, Chinese women, and American women. See Table 4.9 for the results of t test analyses performed on Chinese men and American men, and on Chinese women and American women.

Table 4.8.

Descriptive results of cultural differences on the REI for men and women

<table>
<thead>
<tr>
<th>REI</th>
<th>Chinese men</th>
<th>American men</th>
<th>Chinese women</th>
<th>American women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>WC</td>
<td>39.62</td>
<td>9.82</td>
<td>48.47</td>
<td>9.16</td>
</tr>
<tr>
<td>Fitness</td>
<td>50.51</td>
<td>9.87</td>
<td>55.19</td>
<td>6.58</td>
</tr>
<tr>
<td>Mood</td>
<td>49.84</td>
<td>8.37</td>
<td>46.83</td>
<td>9.86</td>
</tr>
<tr>
<td>Health</td>
<td>51.10</td>
<td>10.15</td>
<td>47.47</td>
<td>9.09</td>
</tr>
<tr>
<td>PA</td>
<td>47.37</td>
<td>10.14</td>
<td>52.14</td>
<td>10.84</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>52.58</td>
<td>8.77</td>
<td>48.88</td>
<td>10.26</td>
</tr>
<tr>
<td>BT</td>
<td>45.90</td>
<td>11.74</td>
<td>49.93</td>
<td>9.33</td>
</tr>
</tbody>
</table>

Note. WC = Weight Control; PA = Physical Attractiveness; BT = Body Tone.
Table 4.9. Cultural differences on REI on men and women

<table>
<thead>
<tr>
<th>REI</th>
<th>Chinese and American men</th>
<th>Chinese and American women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$t$</td>
<td>df</td>
</tr>
<tr>
<td>WC</td>
<td>-4.654***</td>
<td>104</td>
</tr>
<tr>
<td>Fitness</td>
<td>-2.700**</td>
<td>104</td>
</tr>
<tr>
<td>Mood</td>
<td>1.685</td>
<td>104</td>
</tr>
<tr>
<td>Health</td>
<td>1.870*</td>
<td>104</td>
</tr>
<tr>
<td>PA</td>
<td>-2.305*</td>
<td>104</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>1.987*</td>
<td>104</td>
</tr>
<tr>
<td>BT</td>
<td>-1.868</td>
<td>104</td>
</tr>
</tbody>
</table>

Note. *$p < .05$, **$p < .01$, ***$p < .001$.  
WC = Weight Control; PA = Physical Attractiveness; BT = Body Tone.
For the differences in stages of change, independent Chi-square analysis showed that there was a significant difference between Chinese and American students across stages of change were found \( \chi^2 (4) = 54.1, p < .001 \). More American students were in stages four and five, while more Chinese students were in stages two and three (see Figure 4.2). The percentages of Chinese students in each of the five stages were 3.3%, 24.4%, 59.2%, 6.1%, and 7.0%, respectively. In contrast, the percentages of American participants in stages one to five were 5.2%, 16.9%, 34.3%, 19.2%, and 24.4%, respectively. This result showed that American students were more physically active than Chinese students.

Figure 4.2.

*Differences in stages of change between Chinese and American participants*
Gender differences. Examining the gender differences in reasons of exercise between Chinese and American students, results showed that (see Figure 4.3.), regardless of culture, women exercised more for Weight Control than men, $t = 8.10, p < .001$. Men exercised more for Fitness than women, $t = 3.02, p < .001$. No other gender differences in reasons for exercise were found.

Figure 4.3.

Differences in RE between men and women

Note. ***$p < .001$. 

[Graph showing differences in RE between men and women]
A Chi-square test was performed to examine the difference for stages of change between men and women. Results indicated that there was a significant difference between men and women on stages of change \( \chi^2 (4) = 7.12, p < .05 \). As noted in Figure 4.4, regardless of culture, there were more women were in stages one, two, and four, while there were more men in stages three and five. The gender differences between men and women are not clear.

Figure 4.4.

*Differences in stages of change between men and women*

To summarize, the factors of culture, stages of change, and gender were associated with reasons for exercise, and there were interactions among these factors. The relationships between stages and five reasons for exercise subscales were significant in women, but not in men.
Examining cultural differences, American students reported that they exercised more for Weight Control, Fitness, and Physical Attractiveness reasons. In contrast, Chinese students reported that they exercised more for Enjoyment and Health reasons.

For gender differences, Women exercised more for Weight Control while men exercised more for Fitness. In general, women who were in higher stages (Action and Maintenance) had higher scores on most reasons for exercise: Fitness, Health, Mood, Enjoyment, and Physical Attractiveness, than women in lower stages.

Hypothesis #2: Participants who differ in gender, culture, and reasons for exercise differ in exercise enjoyment

The effects of reasons, culture, and gender factors on exercise enjoyment were examined in a 7 (reasons) × 2 (cultures) × 2 (gender) ANOVA. No interactions among the three factors were found. The main effect of reasons of exercise was significant, $F(6, 6952) = 3.511, p < .05$. As noted in Figure 4.5 and Table 4.10, students who primarily exercised for Mood, Fitness, Enjoyment reasons had significantly higher scores on exercise enjoyment, as measured by PACES than students who exercising for Physical Attractiveness, Weight control, and Body Tone reasons. The main effects of culture and gender on PACES were not significant, with $F(1, 129) = .391, p > .05$, and $F(1, 0) = 0, p > .05$, respectively.
Figure 4.5.

*Differences among different reasons for exercise for exercise on the PACES*

Table 4.10. The differences among each REI on PACES

<table>
<thead>
<tr>
<th>REI</th>
<th>WC</th>
<th>Fitness</th>
<th>Health</th>
<th>Mood</th>
<th>PA</th>
<th>Enjoyment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitness</td>
<td>-11.01*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>-5.92</td>
<td>5.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood</td>
<td>-10.45*</td>
<td>.567</td>
<td>-4.52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>1.84</td>
<td>12.86**</td>
<td>7.77</td>
<td>12.29**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment</td>
<td>-9.48*</td>
<td>1.53</td>
<td>-3.56</td>
<td>.966</td>
<td>-11.33**</td>
<td></td>
</tr>
<tr>
<td>BT</td>
<td>.311</td>
<td>11.32*</td>
<td>6.23</td>
<td>10.76*</td>
<td>-1.54</td>
<td>9.79*</td>
</tr>
</tbody>
</table>

*Note. p < .05, **p < .01.*

WC = Weight Control; PA = Physical Attractiveness; BT = Body Tone.
Hypothesis #3: Students who differ in reasons for exercise, cultures, and gender differ in exercise self-efficacy. Participants who exercise for intrinsic motivations would have higher self-efficacy than people who exercise with extrinsic motivations.

The effects of reasons, culture, and gender factors on self-efficacy were examined in a 7 (reasons) × 2 (cultures) × 2 (gender) ANOVA analysis. A three-way interaction was not found, $F(5, 86) = 1.616, p > .05$. However, there were two two-way interactions between the factors of cultures and gender, $F(1,133) = 12,452, p < .0001$, and the factors of Reasons for exercise and gender, $F(6,169) = 28.179, p < .05$. Thus, to investigate the effects of reasons for exercise and culture on self-efficacy, a simple-effect test was performed by controlling gender.

Men in different reasons for exercise did not have significant differences on self-efficacy, $F(6, 110) = 1.944, p > .05$. Women in indifferent reasons for exercise were different in the scores of self-efficacy, $F(6, 156) = 2.345, p < .05$. Women exercising primarily for Mood reason had higher self-efficacy than other reasons.
For the cultural and gender differences (see Figure 4.6), American students had significant higher self-efficacy than Chinese students, $t = 3.95, p < .001$. American college men had significantly higher self-efficacy than American women, $t = 4.64, p < .001$. However, as indicated in Figure 4.6, no differences in self-efficacy were found between Chinese men and women $t = 1.21, p > .05$.

Figure 4.6.

*Differences in self-efficacy of Chinese and American men and women*
CHAPTER 5
DISCUSSION

Exercise is related to enhanced health and psychological well-being (ACSM, 2006; Berger, Pargman, & Weinberg, 2007). Exercise contributes to quality of life through multiple ways, including decreasing negative affect, increasing positive affect, optimizing stress levels, and providing peak moments and opportunities for enjoyment (Berger et al., 2007; Berger & Tobar, 2007). However, relatively low participation rates in exercise remain a global problem (DHHS, 1996; Muntner, et al., 2005). It is important to explore the possible factors that relate to exercise participation. Previous studies have consistently found that lack of motivation is a major reason for sedentary lifestyles (Sonstroem, 1988), yet it is not clear how diverse motivations are related to exercise participation, especially as they relate to exercise adherence. The Reasons for Exercise Inventory (REI) describes the different reasons for which people exercise, and may represent different motivations that people exercise. Stages of change describe how exercise behavior changes across time, which is a dynamic and multi-determined process (Hausenblas et al., 2001). Thus, exploring the relationship between Reasons for Exercise and the stages of changes may provide important information related to regular exercise participation. In addition, research has shown that there are cultural differences for exercise motivations and exercise participation (Keating, et al., 2005; Kobayashi, 2007). However, there are few cross-cultural studies that have examined these factors. The present study focuses on three hypotheses that seek to examine potential cultural differences between China and the U. S. in terms of the relationships among reasons for exercise, exercise participation, exercise confidence, and exercise enjoyment. The
primary focus in the present study is to examine the relationship between stages of change and reasons for exercise among men and women in both China and the U.S. Additional foci include the relationships among reasons for exercise, exercise enjoyment, and exercise self-efficacy.

College women in different stages of change were different in reasons for exercise

Results indicated that the relationship between stages and reasons was significant for women in both countries. Chinese and American college women in higher stages of change reported more consistent exercise participation and reported higher scores on five of the seven reasons for exercise compared to those in lower stages. Women in higher stages of change exercise more for Fitness, Mood, Health, Physical Attractiveness, and Enjoyment reasons. No causal relationship can be found in the present study. Specific exercise reasons may be related to higher stages of change, or higher stages of change may influence specific reasons to exercise. However, it seems that exercising for Fitness, Mood, Health, Physical Attractiveness, and Enjoyment reasons appear to be important factors related to habitual exercise participation. These results provide additional information to the previous studies. Gauvin (1990) asked 78 participants to describe their thoughts, feelings, and behaviors, before, during, and after a workout. Gauvin found that regular exercisers had two primary reasons for exercise: fitness and health. Sundeman (1990) used a self-developed motivation questionnaire to measure the relationship between exercise motivations and stages of change. Results showed that there was a significant difference between stage groups and the reason of “enjoyment.” The present study also found that women in higher stages scored higher on the reason of Enjoyment. Using different measurements, the present study not only supports that regular exercisers
have stronger Fitness, Health, and Enjoyment reasons, but also found that Mood and Physical Attractiveness were additional reasons that differentiated among the habitual and non-habitual exercisers.

In contrast to the five reasons related to stages of change, the other two reasons of Weight Control and Body Tone were not found to be related to stages of change. This suggests that women in different stages of change had similar levels of motivation for Weight Control and Body Tone. Since the average score of Weight Control and Body Tone for women were relatively high (14.45 and 15.85, out of a possible score of 21 on each subscale), it seems that all women, regardless of their physical activity levels, had fairly strong motivations to exercise to control their weight and tone their bodies. In general, higher motivation is related to mobilizing and directing one’s energy toward something (Wright & Brehm, 1988). For people who have high motivations on one or more reasons for exercise, they are expected to have high exercise participation. However, based on the present study, women who had high motivations on Weight Control and Body Tone reasons did not necessarily have high exercise participation. In other words, it seems these reasons may not consistently motivate people to participate in exercise.

Since women around the world seem to value a slim figure, weight control would appear to be important for most women, regardless of their physical activity level (Malson, 1998). Previous studies have shown that weight control was the primary reason for women to exercise (Garner et al., 1985, Furnham et al., 2002). For example, girls (average age 11.5 years) primarily exercise for weight control, mood, and tone reasons (Furnham et al., 2002). Tiggenmann and Williamson (2000) reported that young women
(average age 18.4 years) also were more likely to exercise for weight loss and attractive reasons. It seems that women are under pressure to be slim, which results in them having high motivations to exercise to control weight, even if a lot of them are not habitual exercisers.

The findings of the present study have great relevance for understanding the factors leading to exercise participation. Self-determination theory proposes that behavioral regulation towards an activity can be amotivated, extrinsically motivated, or intrinsically motivated. Only when individuals are intrinsically motivated towards an activity is the behavior considered to be fully self-determined. When intrinsically motivated, individuals enjoy the process of engaging in the activity (e.g. exercising because it is fun) rather than the outcomes associated with the latter.

The present study found that habitual exercisers had significant stronger motivations on intrinsic motivational factors, such as Enjoyment and Mood, in comparison to non-habitual exercisers. In contrast, the present study also found high motivations on Weight Control and Body Tone, which may not relate as well with high exercise participation. According to Wankel (1993), body-related reasons, such as Weight Control, can be described as extrinsic motivations since they are related with external pressures or attainment of rewards. This indicates that intrinsic motivations, such as Enjoyment and Mood are related to adherence on exercise and extrinsic motivations, whereas Weight Control and Body Tone reasons may be related to dropping out of exercise.

Although reasons for exercise were found related to the stages of change, it is not clear whether there is a causal relationship between stages of change and reasons for
exercise based on this cross-sectional study. On the one hand, different exercise reasons may motivate people to be more physically active, which results in moving towards higher stages of change. On the other hand, different stages of change may bring different exercise experiences, which may facilitate changes in reasons for exercise as individuals become habitual exercisers. Hence, no causal relationship can be concluded in the present study. However, it is reasonable to state that these five reasons are positive factors that are changed by, or change the exercise participation pattern.

**Cultural differences between Chinese and American participants**

*Stages of change.* In the present study, the percentages of Americans in stages one to five were 5.2%, 16.9%, 34.3%, 19.2%, and 24.4%, respectively. A total of 43.6% were regular exercisers (in stages four and five). A similar survey that investigated over 1,000 American adults found that the percentages in each stage were 24%, 33%, 10%, 11%, and 22%, respectively. A total of 33% were regular exercisers (in stages four and five) (Marcus, Rossi, Selby, Niaura, & Abrams, 1992). Compared to the study of Marcus et al. (1992), the present study found that American college students were more physically active since the present study found there were higher percentages of students in stages three, four, and five, while lower percentages of students in stages one and two. Since age is negatively correlated with physical activity, college students would be more physically active than the general adult population.

The percentages of Chinese students in each of the five stages were 3.3%, 24.4%, 59.2%, 6.1%, and 7.0%, respectively. A total of 13.1% were regular exercisers (in stages four and five). In a previous study that investigated 298 undergraduate students in Hong Kong, the percentages of students in each stage were 3.4%, 10.7%, 54.7%, 20.5%, and
8.7%, respectively. These results were similar, except that there were fewer students in stage two (Contemplation) and more students in stage four (Action) in Hong Kong.

The present study found that there were more American college students in Action and Maintenance stages than Chinese college students. This suggests that American college students were more physically active than Chinese students, at least within this sample and using this measure. These results are consistent with previous research. For example, it has been noted that 42% of 21-year-old men and 30% of 21-year-old women in America engage in vigorous physical activity (DHHS, 1996), while only 28.9% of people in rural and 7.9% of people in urban areas of China participate in leisure-time physical activity (Muntner, et al., 2005). Zhan and Yu (2007) also reported that only 26.4% freshmen and Sophomores and only 19.4% Juniors and Seniors in college exercised three or more times per week. The results of the present study indicated that compared to American college students, Chinese college students may benefit more from participating in exercise. However, both Chinese and American students are not physically active enough. They may need to be more physically active to maximize the benefits of exercise.

Reasons for Exercise. American men and women exercised more for reasons of Weight Control, Fitness, and Physical Attractiveness, while Chinese men and women exercised significantly more for Enjoyment. This indicates that Americans exercised more for body-related reasons than Chinese, while Chinese were more likely to exercise more for an intrinsic reason like enjoyment.

The results that American students exercised for body-related reasons is consistent with previous studies that have shown the primary motivations for exercise
participants were body-related or extrinsic motivations (Frederick & Ryan, 1993; Ryan & Frederick, 1997). Recently, Kilpatrick, Hebert, and Bartholomew (2005) used the Exercise Motivation Inventory-2 (EMI-2) to examine 233 American college students’ sport- and exercise-related motivation, and the results showed that the primary motivations to exercise for American college women were health- and appearance-related motivations. These results suggest that American college women continue to be influenced by the Western culture, with an emphasis on slim figure for women.

Although American women exercised more for body-related reasons than did Chinese women, Chinese women may also want to lose weight or to be physically attractive. Research has shown that Chinese women are slimmer than American women, and there are more Chinese women who try to lose weight than American women. For example, Yan et al. (2007) measured 469 college women in China and found that 100% of the participants had a BMI lower than 25, which means none of them were overweight. However, 83.8% of them were or had been trying to lose weight. Compared to the Chinese college students, one study which investigated 302 American college students showed that eight percent of the participants had a BMI over 25 (i.e., overweight) (Haberman & Luffey, 1998). Another study of 38,204 American students showed that 28% of the students were overweight or obese (Kobayashi, 2007). However, compared with Chinese students, only half of American students (50%) were trying to lose weight (Kobayashi, 2007). These data indicate that Chinese college students were slimmer, but had a greater desire to lose weight compared to American college students.

The fact that Chinese women want to lose weight more but are less physically active than American women may be because Chinese women tend to use diet and other
ways to control weight and enhance their Physical Attractiveness. Among the different ways to lose weight, 57.5% of Chinese women were using or had used diet as a way to lose weight (Yan, et al., 2007), whereas among American women, 47% used diet to lose weight, and 41% used exercise plus diet to lose weight (Wharton, Adams, & Hampl, 2008). Chinese college women seem to be more likely to use diet as a way to lose weight than American college women.

The present study also found that Chinese college students exercised more for Health and Enjoyment reasons than did American college students, which is consistent with previous studies. Examining the differences of motivation to participate in sport and physical activity between Chinese and American children, Yan and McCullagh (2004) found that American children were more favorable to competitive sports while their Chinese counterparts were more likely to get involved in fitness-related physical activities. It seems that Chinese students are not motivated toward competitive physical activities as much as American students are, and Chinese students seems to be more motivated for the benefits of health and enjoyment from exercise. For example, research in China showed that health and enjoyment were the most important exercise motivations for Chinese people. For example, Chen, Yan, and Tan (2006) used the Motives for Physical Activities Measure – Revised (MPAM-R) Chinese version to test 1179 college students. They found that health- and enjoyment- related motivations were the most important motivations for Chinese college students, and less important reasons were appearance and social-related reasons. Jiang and Wu (2004) tested 206 women in China, average age was 23.3 years, and found that health was the most important reason for Chinese women to participate in exercise, followed by mood, weight control, and
enjoyment. Liu (2006) reported that 48.8% and 28.48% of Chinese college men and women exercised for enjoyment. Compared to American participants, it seems that Chinese students consider health and enjoyment from exercise as a primary motivational factor.

The differences in stages of change and reasons for exercise between Chinese and American college students may reflect the cultural differences between Asian and Western cultures. American and Chinese cultures differ considerably on many aspects of socio-cultural or natural environmental factors (e.g., history, lifestyle, value system, living surroundings, and/or climate), and these factors may influence youth’s moral, social, cognitive, and motor development (Yan & Thomas, 1995; Yan & McCullagh, 2004). Although the economy in China is developing quickly, the standard of living and the overall level of sport performance or exercise involvement in China are relatively low compared to the United States. Hence, people in China may not be provided with as good of exercise equipment as in the United States. In addition, since most of the Chinese students are from single-child families, they have more pressure for academic success from their family and society than do American students (Lin & Chen, 1995). As a result, they are less encouraged to participate in sport and exercise (Yan & Thomas, 1995). Less health-related information may also contribute to less participation among Chinese people. Studies have shown that Chinese people were not aware of the benefits of exercise as much as American people were (Lewis et al., 1997). Taken together, the factors of economy, social environment, source of information may result in less exercise participation in China and the differences observed for reasons for exercise between China and the U. S.
Gender differences for reasons for exercise

Regardless of cultural differences, women exercised more for Weight Control than did men, while men exercised more for Fitness than did women. These results were consistent with previous research. The differences between women and men in the use of exercise to control weight probably reflect that women want to lose weight more than men do, whereas men want to gain weight more than women (Furnham et al., 2002). Silberstein et al. (1988) found that only 4.4% of the women wanted to become bigger compared with 46.8% of the men. This gender difference seems to influence youth. Furnham et al., (2002) reported that 29.4% of 11-12 year old boys wished to gain weight, compared to 10.2% of the girls, and 35% of the boys wished to lose weight, compared with 69% of the girls. Among young children, ages 5- to 8-years, the ideal figure for girls was smaller than their current rating, while among young boys, the ideal figure that was larger than their current size (Lowes & Tiggemann, 2003). For 8- to 11-year-old children, boys were significantly more likely to think about increasing their muscles and to engage in strategies to achieve this goal than were girls (McCabe & Ricciardelli, 2003). Similarly, among male undergraduates, studies have found that 85% of males desired to be more muscular (Vartanian, Giant, & Passino, 2001), and strength-training exercises were the primary technique for doing so (Anderson, Zager, Hetzler, Nahikian-Nelms, & Syler, 1996; Klein, 1995). The results of present study support previous research, as well as providing additional information from a cultural perspective (i.e., there is some cross-cultural consistency).
**Enjoyment and Mood reason**

For exercise enjoyment, regardless of culture and gender, students who primarily exercised for Mood reason enjoyed exercise the most. This finding is consistent with the exercise taxonomy described to enhance mood benefits as developed by Berger and colleagues (Berger, 1996, 2004; Molt, Berger, & Leuschen, 2000). The taxonomy includes a bi-directional relationship between exercise enjoyment and mood alteration. In addition, in this study, students who primarily exercised for Enjoyment, Fitness, and Health reasons also enjoyed exercise. In contrast, students who primarily exercised for Physical Attractiveness, Weight Control, and Body Tone had the lowest PACES scores, which indicated that the people who primarily exercised for these reasons enjoyed exercise the least.

Although no studies have shown that enjoyment is related to Mood reason, it has been noted that perceived exercise enjoyment is significantly related to mood (Lochbaum & Bartholomew, 2002). Studies consistently report that exercise is related to positive mood changes. Studies which used the POMS to measure mood changes before and after exercise found that after exercise, Tension, Anxiety, Depression, Fatigue, and Confusion all decreased, and Energy increased (Berger, Pragman, & Weinberg, 2007).

It has been noted that enjoyment is related to both positive and negative mood changes. Motl, Berger, and Leuschen (2000) used the POMS to examine the mood changes associated with rock climbing and participating in health education classes. They found that rock-climbers reported greater improvements in mood than did the health education students. PACES scores had a direct effect on changes in mood disturbance and mediated the mood disturbance changes associated with rock-climbing and the health
education class. However, recently, it has been found that enjoyment is only related to positive mood change, not negative mood change. Raedeke (2007) reported that although positive affect increased and negative affect decreased after exercise, exercise enjoyment was positively related to increases in positive affect, but unrelated to changes in negative affect. Specifically, enjoyment was positively related to increased post-exercise energetic arousal and vigor after controlling for pre-test scores. In addition, Robbins, Pis, Pender, and Kazanis (2004) tested 168 African American and European American boys and girls during early, middle, and late adolescence. They reported that more positive feeling states during physical activity predicted greater enjoyment. Based on these studies, it can be concluded that exercise enhances mood, and positive mood changes enhance exercise enjoyment, which is an important reason for people to exercise.

Although exercise is related to positive mood changes and positive affect is related to exercise enjoyment, it is not clear why people exercising for mood enjoy exercise more than people exercising for other reasons. To explain this result, the relationship between enjoyment and other reasons needs to be clarified. Enjoyment is not simply an affective consequence of exercise. Rather, enjoyment reflects feelings about exercise and it is a psychological state directly connected to an eliciting stimulus, the exercise experience (Wankel, 1993). Thus, exercise enjoyment reflects how one feels about exercise in general and for people who enjoy the exercise, they may enjoy not only the results (benefits) of exercise, but also the process of exercise. For people exercising for different reasons, they may expect different benefits from exercise. If they get the expected benefits from exercise, they would be more likely to participate in exercise. However, benefits do not guarantee the enjoyment. For people who enjoy exercise, they
would enjoy the process of the exercise. People who exercise for Mood feel better during and after exercise, which intrinsically makes them enjoy the process of exercise. It is also suggests that positive affect influences how enjoyable the task is during actual engagement (Isen & Reeve, 2006). For people who exercise for the Mood reason, positive mood enhancement during or after exercise makes them enjoy exercise more. In addition, based on Heck and Kimiecik (1993), mood enhancement is a dimension of enjoyment. Heck and Kimiecik suggested that there were six dimensions of enjoyment and one was emotional outcomes. For people who exercise for the Mood reason, one of their exercise outcomes is emotional enhancement, which is a source of enjoyment (Heck & Kimiecik, 1993). As a result, it is not surprising to find that exercising for mood reason brings more enjoyment than do other reasons.

Not only can mood changes bring enjoyment, enjoyment can also contribute to the positive mood changes. According to Berger’s taxonomy for enhancing mood benefits of exercise (Berger et al., 2007), exercise enjoyment is the first of the three requirements to enhance mood. The other two factors include type of exercise and practice/training requirements. Wankel (1993) stated that enjoyment may be the key to maximizing the psychological benefits of exercise. Motl, Berger, and Leuschen (2000) reported that enjoyment and activity jointly accounted for 28% of the variance in acute mood change. Individuals reporting lower enjoyment may not experience the same increase in positive affective states or decrease in negative affective states (Raedeke, 2007). Based on this evidence, a causal relationship between enjoyment and exercise for mood reason cannot be concluded. However, it is clear that these two factors are closely related to each other.
The present study also found that people who exercise for body-related reasons, such as Weight Control, Physical Attractiveness, and Body Tone enjoy exercise the least. From the perspective of self-determination theory, body-related reasons are extrinsic motivations, while motivations such as mood and enjoyment are considered intrinsic motivations. Research has shown that intrinsic motivation is associated with continued activity participation and greater task enjoyment, while extrinsic motivation is associated with lower levels of freely chosen participation and lower task enjoyment (Deci & Ryan, 1985; Isen & Reeve, 2006). For example, people who feel bad about their body weight may use exercise as a way to lose weight. Since exercise for these individuals ties together with the feeling bad and exercise, eventually this relationship makes exercise less enjoyable. As a result, it is not surprising to find that body-related reasons were related to less enjoyment.

In addition, body-related exercise reasons may be associated with physical and mental health problems, which also may result in less enjoyment. For example, studies show that exercising for weight loss, toning, and to a lesser degree, for attractiveness is positively related to eating disturbances (e.g., McDonald & Thompson, 1992; Furnham et al., 2002). This has been demonstrated by the high prevalence of eating disorders in groups in which there is an increased emphasis on maintaining a thin, ideal body (Garner, Garfinkel, Schwatz, & Thompson, 1980). In addition, dissatisfaction with body size may result in social physique anxiety (SPA) and low self-esteem. All these negative psychological affects may make people focus more on the exercise outcomes and reduce enjoyment of the process of exercise.
REI and Self-efficacy

Self-efficacy cognitions have been consistently correlated with physical activity participation. People with higher exercise self-efficacy have more exercise participation than do people with lower self-efficacy (McAuley & Blissmer, 2002; McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003; Rejeski & Focht, 2002). Judgments of self-efficacy determine how much effort people will expend to achieve a behavior change in the face of obstacles. Those with high self-efficacy exert greater effort to achieve behavior change in the face of obstacles. Research consistently shows that people in higher stages of change have higher self-efficacy to exercise (McAuley, Jerome, Elavsky, Marquez, & Ramsey, 2003; Rejeski & Focht, 2002). However, it is not clear whether self-efficacy is related to diverse exercise reasons.

The present study explored whether certain reasons for exercise were related to higher self-efficacy than other reasons. The results suggested that college women primarily exercising for Mood reason have higher self-efficacy than do women primarily exercising for other reasons. This result provided additional evidence of the relationship between mood and self-efficacy. Bandura (1986) suggested that self-efficacy expectations may influence affect, and some previous research provided evidence to support his view. For example, McAuley and Courneya (1992) reported that more efficacious older adults reported more positive affect during graded exercise testing than did individuals with lower self-efficacy. Bozoian, Rejeski, and McAuley (1994) also found that those who had high self-efficacy for exercise experienced beneficial effects on mood, while people with low self-efficacy did not experience the same effect. Later, Robbins, Pis, Pender, and Kazanis (2004) reported that positive feeling states during
physical activity predicted higher post-activity self-efficacy. Based on these results, it seems that high self-efficacy induces more mood benefits. Reciprocally, the mood benefits people get from exercise may motivate them to participate in exercise more, and this in turn increases their self-efficacy.

The result that exercising for the Mood reason was related to higher self-efficacy may also be explained by the results that women who primarily were exercising for Mood reasons enjoyed exercise more than women who primarily exercised for other reasons. Previous research has consistently shown that self-efficacy is related to enjoyment (DiLorenzo, Stucky-Ropp, Vander Wal, & Gotham, 1998; Sallis & Owen, 1999). For example, Robbins, Pis, Pender, and Kazanis (2004) tested 168 African American and European American boys and girls during early, middle, and late adolescence. They reported that self-efficacy was strongly related to exercise enjoyment. In addition, DiLorenzo et al., (1998) examined 111 boys and girls about social learning variables, such as self-efficacy, enjoyment, exercise knowledge, and parents/friends support, relevant to their exercise behaviors. They found that self-efficacy and enjoyment were correlated with each other and both were related to physical activity. Hence, it seems that exercising for Mood reason, exercise enjoyment, and self-efficacy are associated with each other.

In addition, mood benefits from exercise are more immediate than some of the other reasons which may contribute to participating in exercise. Research has shown that the positive affects happen during and after exercise (Berger et al., 2007). These immediate benefits make the exercise experience desirable and increase the self-efficacy. The increased self-efficacy makes participants overcome the obstacles to exercise, such
as bad weather and no time. Hence, these immediate benefits strengthen the exercise behavior consistently. In contrast, other benefits, such as health, weight control, and body tone, are hard to achieve in a short time and self-efficacy is hard to increase. Hence, exercise behavior is hard to be strengthened by the benefits based on these exercise reasons.

Cultural differences for self-efficacy

The results also showed that regardless of gender, American college students had higher self-efficacy than did Chinese college students. It may be because American students were more physically active as reflected by being proportionally more in stages four and five. Since stages of change were found to positively relate to self-efficacy, American students may have higher self-efficacy than Chinese students. In addition, it also may be because of cultural differences. Research showed that exercise self-efficacy is related to health status, body image, exercise intensity, frequency, and duration (Li, Qi, Jing, & Wang, 2007; Wu et al., 2006). There may be a lot of cultural differences beyond those factors, which contribute to the differences in self-efficacy between Chinese and American students.

Limitations

This study has several limitations. The first limitation is that the present research is both correlational and self-report based. Causal inferences are therefore speculative. Second, the sample of the participants in the present study is not representative of all Chinese and American college students. Only one university in China and one university in the U. S. were investigated. Additional students from different universities and located in different regions of each country may be needed to increase the representativeness of
the sample. Third, the proportions of the men and women were not balanced in this study. There were twice as many women as men in the study. Fourth, most of the Chinese participants were Juniors, while American participants were students who were different years in college. Fifth, no objective measure of physical activity was used in the present study. The present study used self-reported stages of change as a measure of physical activity. Further studies should investigate additional information of physical activity, such as intensity, duration, and frequency. Finally, the quality of questionnaire translation is important and the translational reliability and validity of the questionnaires used in the present study were not independently verified. Further research is needed to examine the reliability and validity of these questionnaires. In all, the present cross-cultural study provides important information related to exercise motivation and participation. Further research is needed to continue exploring the cross-cultural differences in exercise participation and related psychological factors to further understand the factors that influence participation of exercise in diverse populations.

Summary

The present study explored the relationships among reasons for exercise, stages of change, exercise enjoyment, and self-efficacy. Culture and gender effects were also considered. The main results found that as follows: (1) college women in different stages of change exercise for different reasons, with people in higher stages primarily exercise more for non-body related reasons, compared to women in the lower stages of change. (2) American college students exercised more for Weight Control, Fitness, and Physical Attractiveness, while Chinese college students exercised more for Enjoyment. (3) People who primarily exercised for Mood, Fitness, and Enjoyment enjoy exercise more than
people who exercise for body-related reasons, such as Weight Control and Body Tone.

(4) Women who primarily exercised for Mood have higher self-efficacy in comparison to
those who primarily exercised for other reasons.

The results support that exercise participation is not only related to how strong the
motivation, but also related to what kind of motivation. Specific exercise reasons are
related to more adherent exercise participants. This finding is important since people may
involve more in exercise by strengthening certain motivations, such as mood, enjoyment,
and fitness. In addition, specific exercise reasons, such as Mood, may be related to higher
exercise enjoyment and self-efficacy. Another important finding of the present study is
the cultural differences. Chinese and American college students have many differences
on stages of change, reason for exercise, and self-efficacy. These differences need further
research.
References


[Analysis on reliability and validity of MPAM – R in Chinese version].

*中国体育科技* [Chinese Sport Technology, 42], 52-54.


Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotions.


Appendix A: Questionnaires

1). In English
2). In Chinese
Exercise Inventory

Thank you for participating in this survey. It will probably take you 10 minutes. You responses will be kept in confidence. Thank you!

* * * * * * * * * * * *

Instructions: Read each of the following questions carefully and indicate the BEST response. Be sure to respond to EACH item.

1. Gender
   ____ Male
   ____ Female

2. _____/_____(mm/yy) Birthday

3. ___________ Academic Major

4. I am a
   ____ a. Freshmen
   ____ b. Sophomore
   ____ c. Junior
   ____ d. Senior
   ____ e. Graduate student
   ____ f. Other

5. I am an exerciser
   ____ Yes
   ____ No

6. If no to question #5, choose the best description of yourself (check that all apply):
   ____ a. I am sedentary
   ____ b. I am too busy
   ____ c. I am physically lazy
   ____ d. I dislike exercise
   ____ e. The university does not provide the exercise facilities which I want to use to exercise

7. Are you taking Physical Education class NOW?
   ____ Yes
   ____ No

8. If yes to question #7, list classes you are taking NOW
   __________________
   __________________
9. How many days per week, and how many minutes on average have you exercised in the past one month?
   ______ days/week
   ______ minutes/each time

10. What kind of exercise do you do on a regular basis? (check that all apply)

   _____ a. Badminton   _____ t. Rock climbing
   _____ b. Baseball     _____ k. Soccer
   _____ c. Basketball   _____ l. Softball
   _____ d. Bicycling    _____ m. Swimming
   _____ e. Bowling      _____ n. Tai Chi
   _____ f. Dance        _____ o. Tennis
   _____ g. Football     _____ p. Walking
   _____ h. Golf         _____ q. Volleyball
   _____ i. Jogging      _____ r. Weight lifting
   _____ j. Ping-Pong    _____ s. Yoga
   _____ k. Pilates      _____ u. Others (please indicate)
   _____ l. Racquetball  

11. Do you think the exercise facilities on campus can satisfy you need to exercise?
   _____ Yes
   _____ No

12. If no to question #11, what are the problems?
    a) __________________________________________________________
    b) __________________________________________________________
    c) __________________________________________________________
    d) __________________________________________________________
锻炼量表

非常感谢你参加这个调查。这个调查大概需要花费你10分钟的时间。你的回答会被保密。非常感谢！

* * * * * * * * * * * *

注意：请仔细阅读下面各题目并且标出你认为最合适的答案。

1. ______ 性别

2. ___/___ (月/年) 出生日

3. ___________ 专业

4. 我现在是
   _____ a. 大一
   _____ b. 大二
   _____ c. 大三
   _____ d. 大四
   _____ e. 研究生
   _____ f. 其他

5. 我是一个锻炼者
   _____ 是
   _____ 不是

6. 如果你对第5题的回答是“是”，请在下面选择对你最适合的描述：
   _____ a. 我是一个运动员
   _____ b. 我是一个有强迫性锻炼习惯的人
   _____ c. 我是一个有锻炼习惯的人
   _____ d. 我是一个偶尔参加锻炼的人
   _____ e. 我只是在周末才锻炼的人
7. 如果你对第5题的回答是“是”，请在下面选择你认为对你最恰当的描述(可多选):
   _____ a. 我是久坐不动的人
   _____ b. 我太忙了
   _____ c. 我在运动方面很懒
   _____ d. 我不喜欢运动
   _____ e. 学校没有提供我想要的运动设备

8. 我这学期修了体育课。
   _____ 是
   _____ 不是

9. 如果你正在修体育课，你具体修的什么项目？请写下来

   __________
   __________

10. 在过去的一个月中，你平均每周锻炼几次？平均每次多少分钟？
   _____ 次周 _____ 分钟/次

11. 你一般都参加什么项目的锻炼
   _____ a. 羽毛球      _____ t. 攀岩
   _____ b. 棒球       _____ k. 足球
   _____ c. 篮球       _____ l. 垒球
   _____ d. 自行车     _____ m. 游泳
   _____ e. 保龄球     _____ n. 太极拳
   _____ f. 舞蹈       _____ o. 网球
   _____ g. 橄榄球     _____ p. 速走
   _____ h. 高尔夫     _____ q. 排球
   _____ i. 慢跑       _____ r. 力量练习
108

____ j. 乒乓球    ______ s. 瑜珈
____ k. 普拉提    ______ u. 其他（请注明）
____ l. 壁球

12. 你认为目前学校的运动设备能满足你的锻炼需要么？
    ______ 是
    ______ 不是

13. 如果你12题的回答是“不是”，请写出你认为学校在哪些方面不能满足你的锻炼需求？
    a) __________________________________________
    b) __________________________________________
    c) __________________________________________
    d) __________________________________________

下一页，请继续
Reasons for Exercise

People exercise for a variety of reasons. When people are asked why they exercise or want to exercise, their answers are sometimes based on the reasons they believe they should have for exercising. What we want to know are the reasons people actually have for exercising or wanting to exercise.

Please respond to the items below as honestly as possible. **To what extent is each of the following an important reason that you have for wanting to exercise? Circle the best choice for each item below.**

<table>
<thead>
<tr>
<th></th>
<th>Not At All Important</th>
<th>Moderately Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To cope with sadness, depression</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>To improve my cardiovascular fitness</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>To alter a specific area of my body</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>To improve my mood</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>To lose weight</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>To have fun</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>To redistribute my weight</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>To increase my energy level</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>To be sexually desirable</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>To improve my overall body shape</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>To socialize with friends</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>To improve my appearance</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>To improve my overall health</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To maintain my physical well-being</td>
<td>Not At All Important</td>
<td>Moderately Important</td>
</tr>
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<td>----------------------</td>
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<tr>
<td>14.</td>
<td>To maintain my physical well-being</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>To improve my muscle tone</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>To improve my flexibility, coordination</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<tr>
<td>17.</td>
<td>To cope with stress, anxiety</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>18.</td>
<td>To be attractive to members of the opposite sex</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>To increase my resistance to illness and disease</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>20.</td>
<td>To meet new people</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>21.</td>
<td>To be slim</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>22.</td>
<td>To improve my strength</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>23.</td>
<td>To maintain my current weight</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>24.</td>
<td>To improve my endurance, stamina</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
锻炼动机调查问卷

人们参加锻炼有很多原因。当人被问到为什么要锻炼时，他们的回答往往反映了他们认为应该锻炼的原因。我们想要知道的是人们锻炼的真实原因。请你尽量真实的回答下面题目。

就你参加锻炼的原因而言，下面这些原因有多重要？圈出你认为最合适的答案。

<table>
<thead>
<tr>
<th>序号</th>
<th>原因</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
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<td>1.</td>
<td>为了缓解悲伤和抑郁</td>
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<td>2.</td>
<td>为了提高心肺功能</td>
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<td>3.</td>
<td>为了塑造身体某一部位</td>
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<td>为了提高情绪</td>
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<td>5.</td>
<td>为了减轻体重</td>
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<td>6.</td>
<td>为了乐趣</td>
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<td>7.</td>
<td>为了塑造体形</td>
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<td>8.</td>
<td>为了提高身体能量</td>
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<td>9.</td>
<td>为了增强身体吸引力</td>
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<td>10.</td>
<td>为了提高身体整体形态</td>
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<td>11.</td>
<td>为了和朋友交往</td>
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<td>12.</td>
<td>为了增强外表</td>
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<tr>
<td>13.</td>
<td>为了身体更健康</td>
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<td>一点也不重要</td>
<td>比较重要</td>
<td>非常重要</td>
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<td>14.</td>
<td>为了保持身体健康</td>
<td>1 2 3 4 5 6 7</td>
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<td>15.</td>
<td>为了增加肌肉</td>
<td>1 2 3 4 5 6 7</td>
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<td>16.</td>
<td>为了提高柔韧性</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>17.</td>
<td>为了应对压力和焦虑</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>18.</td>
<td>为了增加对异性吸引力</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>19.</td>
<td>为了增强对疾病抵抗力</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>20.</td>
<td>为了认识新朋友</td>
<td>1 2 3 4 5 6 7</td>
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<tr>
<td>21.</td>
<td>为了更瘦</td>
<td>1 2 3 4 5 6 7</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>为了增强力量</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>为了保持现有体重</td>
<td>1 2 3 4 5 6 7</td>
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<td></td>
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<tr>
<td>24.</td>
<td>为了增强耐力和体力</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
# Physical Activity Stages of Change

For each of the following questions, please circle Yes or No. Please be sure to read the questions carefully.

**Physical activity or exercise** includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense (breathing hard) as these activities.

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am currently physically active.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2. I intend to become more physically active in the next 6 months.</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

For activity to be *regular*, it must:

- add up to a total of 30 minutes or more per day and
- be done at least 5 days per week.

For example, you could take a 30-minute walk or take three 10-minute walks for a daily total of 30 minutes.

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I currently engage in <em>regular</em> physical activity.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2. I have been <em>regularly</em> physically active for the past 6 months.</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
运动阶段变化量表

请仔细阅读下面问题，请在是或者不是上画圈。

锻炼包括诸如快速走路，慢跑，自行车，游泳，爬楼梯，武术，或者其他至少和这些运动量（呼吸强度）相当的活动。

不是 是

1. 我目前正在参加锻炼 0 1
2. 我希望在未来6个月中我更积极的锻炼 0 1

对于习惯性锻炼的定义是：
- 活动的时间每天至少30分钟，
- 并且至少每周5天。
比如，你可以一次速走30分钟，或者一次速走10分钟，每天走3次。

不是 是

1. 我现在处于习惯性锻炼阶段 0 1
2. 我处于习惯性锻炼阶段已经有6个月以上了. 0 1
# Exercise Confidence

Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these activities.

**Directions:** Circle the number that indicates how confident you are that you could be physically active in each of the following situations:

<table>
<thead>
<tr>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = not at all confident</td>
</tr>
<tr>
<td>2 = slightly confident</td>
</tr>
<tr>
<td>3 = moderately confident</td>
</tr>
<tr>
<td>4 = very confident</td>
</tr>
<tr>
<td>5 = extremely confident</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I am tired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. When I am in a bad mood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. When I feel I don’t have time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. When I am on vacation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. When it is raining, snowing, or hot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**锻炼信心量表**

锻炼包括诸如快速走路，慢跑，自行车，游泳，爬楼梯，武术，太极，或者其他至少和这些运动量相当的活动。

下面各题目测试了在各种情况下你参加锻炼的信心有多少，请你在你认为合适的数字上面画圈。

<table>
<thead>
<tr>
<th>刻度量</th>
<th>1 = 一点信心都没有</th>
<th>2 = 有一点信心</th>
<th>3 = 有中等程度信心</th>
<th>4 = 有信心</th>
<th>5 = 非常有信心</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 当我觉得很累的时候</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 当我情绪状态不好的时候</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 当我觉得没有时间的时候</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 当我在度假，或假期中的时候</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 当下雨，很冷，或者很热的时候</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercise Enjoyment

Please rate how you feel about **exercise in general, most of the time**? Circle your response to each of the following terms.

<table>
<thead>
<tr>
<th>Term</th>
<th>Rating Options</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoy it</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I feel bored</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I dislike it</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I find it pleasurable</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I am very absorbed in this activity</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It’s no fun at all</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I find it energizing</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It makes me depressed</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It’s very pleasant</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I feel good physically while doing it</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It’s very invigorating</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I am very frustrated</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It’s very gratifying</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It’s very exhilarating</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It’s not at all stimulating</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It gives me a strong sense of accomplishment</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>It’s very refreshing</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I felt as though I would rather be doing something else</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
## 锻炼乐趣量表

大多数时候，你对一般的锻炼有如何评价？请在你的选择上画圈。

<table>
<thead>
<tr>
<th>选项</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>我很享受它</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>我觉得它很枯燥</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>我不喜欢它</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它令我愉快</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>锻炼时我非常投入</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它一点也没趣</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我精力更充沛</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我情绪低落</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我愉悦</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>锻炼时我感觉身体很棒</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我感觉精神振奋</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我有挫折感</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我感觉很满足</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我兴奋</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它一点也不刺激</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我有强烈的成就感</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>它使我精神焕发</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>我宁愿做点别的，而不是锻炼</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B: Script
1). In English
2). In Chinese
The purpose of this study is to look at how reasons to exercise are related to your exercise programs in exercise participants in college students in U.S and China. My goal is to obtain information about motivational factors for exercise and to learn how to encourage more people to participate in exercise.

If you choose to participate in this study, you will be asked to complete five questionnaires on one occasion. Completion of the questionnaires will take approximately 5 minutes of your time. You can withdraw from this study anytime you want by not returning the questionnaires.

Now if you would like to participate in this study, please read the consent form carefully.

We appreciate your participation!

Thank you very much!
指导语

这个调查的目的是我们想知道在中国和美国高校的学生中，人们锻炼的原因是什么，人们参加锻炼的信心有多大，人们锻炼的乐趣有多大。我们想检验这其中是否存在跨文化差异。此外，这个调查还将为怎么鼓励人们更多参加锻炼提供参考信息。

如果你决定参加此调查，你将会完成几个问卷。这大概需要你5分钟时间。在此期间任何时间你可以选择退出此调查，并不用交回问卷。

如果你同意参加这个调查，请仔细阅读参加调查同意书并签字。

我们对你的合作非常感激！

非常感谢！
Appendix C:
  1). U.S. Informed Consent Form
  2). Chinese Informed Consent Form
U.S. Participants Informed Consent Form

Project Title: Psychological Factors Related to Exercise Participation: A Comparative Study

Research Group: Zi Yan, Graduate Student, Developmental Kinesiology
Bonnie Berger, Ed.D., Professor and Director, School of HMSLS

The purpose of this study is to look at how reasons to exercise are related to exercise programs, exercise confidence, and enjoyment of exercise in exercise participants in U.S and China. We will examine whether there are cultural differences on reasons to exercise, exercise confidence, and enjoyment between Americans and Chinese. A goal for this study is to obtain information about motivational factors for exercise and how to encourage more people to participate in exercise.

If you choose to participate in this study, you will be asked to complete some questionnaires on one occasion. Completion of the questionnaires will take approximately 10 minutes of your time. You can withdraw from this study anytime you want during the test by not returning the questionnaires.

If you have any questions or concerns about this study, please ask right now, or contact Zi Yan, ziyan@bgsu.edu or Dr. Berger, 419-372-7595, bberger@bgsu.edu. If you have any questions or concerns, you may also contact the Chair of Bowling Green State University’s Human Subjects Review Board, 419-372-7716, hsrb@bgsu.edu.

My completion and return of the questionnaires indicates my consent to participate and that I have been informed of the following:

- I must be over the age of 18 in order to participate in this study,
- all information that I provide will be confidential,
- my decision to participate in this study is entirely voluntary and will have no impact on my standing with the team, grades, class standing or relationship to BGSU (Beijing Normal University) in any way,
- the procedures that will be requested of me,
- a copy of this informed consent document will be provided to me, and
- Upon request, I will receive a summary of the findings of the study.
中国参与者同意书

项目名称: 与锻炼动机相关的心理因素：跨文化研究

调查小组: Zi Yan, Graduate Student, Developmental Kinesiology
Bonnie Berger, Professor and Director, School of HMSLS

这个调查的目的是我们想知道在中国和美国高校的学生中，人们锻炼的原因是什么，人们参加锻炼的信心有多大，人们锻炼的乐趣有多大。我们想检验这其中是否存在跨文化差异。此外，这个调查还将为怎么鼓励人们更多参加锻炼提供参考信息。

如果你决定参加此调查，你将会完成几个问卷。这大概需要你10分钟时间。在此期间，如果你决定不参加此调查，你可以不交回此问卷。

如果你有任何疑问，请马上提出，或发电子邮件到Zi Yan, ziyang@bgsu.edu。你还可以和Dr. Berger, 419-372-7595, bberger@bgsu.edu或者Bowling Green State University的人类被试审核委员会主任联系：419-372-7716, hsrb@bgsu.edu。

如果我交回问卷，证明我已被告知:

- 我已经年满18岁，
- 我提供的信息都是真实的，
- 我是自愿参加这次调查，并且调查结果不会影响我的考试成绩，以及任何与学业相关的审核等，
- 我已被告知参加这个调查的程序，
- 我将得到这个同意书的一份复印稿，
- 如果我要求，我将被告知到这个调查的结果。