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A cross-cultural study on exercise motivation and behavior: The case of American and Taiwanese exercisers

Kang, Lingjiin, Ph.D.

The University of North Carolina at Greensboro, 1991

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

A CROSS-CULTURAL STUDY ON EXERCISE MOTIVATION AND BEHAVIOR: THE CASE OF AMERICAN AND TAIWANESE EXERCISERS

by

Lingjiin Kang

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Diane L. Gill

Dissertation Advisor

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

Dissertation Advisor _____
Diane Gill

Committee Members _____
Daniel Gould

_____
William B. Karper

_____
Jacquelyn W. White

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The study examined exercise motivation and behavior of two cultural groups, American and Taiwanese. Gender and group differences on associated variables were studied. Also, relationships between psychological and personal variables were tested. Self-Motivation Inventory, Personal Incentives for Exercise Questionnaire, and Sport Orientation Questionnaire served as exercise motivation measures. Personal and program variables, and open-ended questions, were also included to assess relevant factors. English questionnaires were translated into Chinese for Taiwanese. A total of 391 American and Taiwanese exercisers participated in this study.

The results indicated cultural, gender, and group differences on psychological, personal, and program variables. Relationships between psychological and personal variables were significant. Specifically, American exercisers were found more self-motivated and competitive, with higher incentives for exercise than Taiwanese. Older exercisers appeared to have different incentives than younger adults. Further, Four program factors--social support, exercise leadership, organized classes, and group activity--were important in both cultures. Finally, practical implications and recommendations for future research are discussed.

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INTRODUCTION

Despite the widespread belief that a physically active lifestyle is desirable and the well documented benefits of exercise (Blair, 1988), a large proportion (42%) of the population has difficulty initiating and maintaining such a lifestyle (Fitness Ontario, 1982). In the United States, it is estimated that only a third of adults participate in exercise on a regular basis, and 40 to 50% of adults are sedentary (Dishman, Sallis, & Orenstein, 1985). Although North American researchers are asking how and why people stick to their exercise regimen and what the barriers to regular exercise are, very little research is being done in other countries to investigate the influence of cultural and social context on exercise participation.

The Need for Cross-cultural Research in Sport Psychology

Research in psychology, in general, has been criticized for its ethnocentric nature, which is demonstrated in the theoretical perspective and methodological procedures adopted. Specifically, it has been suggested that the results obtained from most psychological studies represent mainly a Western, middle-class, and male point of view (Maehr & Nicholls, 1980). In the same vein, Duda and Allison (1990) have suggested that

this ethnocentric bias in theoretical perspective and method also holds in sport psychology research. In the recent review of studies published in the major journals, they reported no cross-cultural research among sport psychology studies conducted since 1979. They argued that sport psychologists should be concerned with the study of cross-cultural variation because physical activity is not exclusive to the white middle-class Americans only. Duda and Allison further suggested that the failure to consider cultural factors could leave the theoretical understanding of exercise behavior in these contexts biased and distorted at best. With these issues in mind, a cross-cultural approach should offer a solution to the long-existing ethnocentric problem and lead to a better understanding of variations in human behavior (Malpass, 1977).

Theoretical and Methodological Issues In Cross-Cultural Research

Cross-cultural research has been conducted for a long time in both anthropology and psychology. The earlier work in particular has much to offer concerning theories and methods related to these fields. According to Jahoda (1980), the main objection to much of the previous cross-cultural studies is that it has remained innocent of theory.

The prevailing tendency was pursuing a topic that seemed interesting, without much concern as to how it would fit into a broader picture. The result has been largely a patchwork--often fascinating and sometimes insightful, but not particu-

larly adequate as a cumulative science. As researchers became increasingly aware of this problem they shifted their focus to a more research-oriented and conceptual framework.

The study employed what Jahoda (1980) called "systematic comparative description" to collect data, based on a coherent plan defining relevance and boundaries. This approach is usually connected with certain theoretical positions, but because it is not a theory, it is not directly concerned with any causal relationships. Instead, the present study focuses essentially on description, i.e., recording the presence or absence of particular psychological and situational variables. Therefore, the goal of this study is to describe characteristics of exercise behaviors of the Taiwanese and Americans and identify cultural variations in exercise settings.

Kornadt, Eckensberger, and Emminghaus (1980) pointed out that, to conduct a useful cross-cultural study, one must consider intercultural differences and make accurate observations about the cultural conditions that are effective. Without such observations and a theoretical framework within which relationships and differences may be interpreted, such studies can produce only trivial and perhaps even misleading results (Eckensberger, 1973). Therefore, this researcher attempts to interpret the results based on American theoretical propositions and Taiwan's peculiar socioeconomic and political climate in order to make meaningful comparisons.

It is important to note that, in cross-cultural studies, even if similarities were found, this would not say that culture does not matter. According to Jahoda (1980), the aim of finding a behavior as "universal" is hard to achieve for a variety of reasons, including the unavoidable error variance inherent in any specific method, and the fact that different methods are apt to achieve different kinds of results. Furthermore, there is the problem of the range of cultures that must be studied before one can feel confident of having really tracked down a "universal."

The Study of Individual and Cultural Differences in Exercise Involvement

It is apparent that individual differences are prevalent in exercise involvement. Some participants like to exercise with a group in a social context while others like to do it alone. One exerciser goes to fitness classes every day, another does it 3 times per week, and still another does it only when he is free. Such variations in behavior reflect individual differences in exercise motivation and indicate a host of personal and situational factors that affect participation.

Furthermore, it is reasonable to expect cultural factors as important determinants in exercise involvement. As Jackson (1988) suggested culture is not merely an independent variable that defines group membership, but instead more fundamentally may be related to basic social and psychological processes

such as perception, value aquisition, personality development and social interaction. Specifically, Allison (1988) found that culture is a critical factor in explaining physical activity pattern. Also, Castro, Baezconde-Garbanati, and Beltran (1985) have reported that blacks, and particularly Hispanics, are less likely to engage in regular exercise than whites. These researchers considered this lack of regular physical activity among Hispanics, especially among females, to be a major contributor to the high incidence of obesity found among members of this minority group. Thus, it is reasonable to suggest that cultural variation is pertinent to the study of exercise behavior. The comparative approach should enhance the understanding of exercise involvement.

Summary

As benefits of exercise became more evident, enhancing people's motivation toward exercise became an important area of study in North America. However, little is known about exercise motivation and behavior in a different cultural context, i.e., a non-Western and less democratic society, as cultural differences have not been factors of particular interest to sport psychologists. Further, it is clear that cross-cultural research can reduce the ethnocentric bias by offering theoretical and empirical insights beyond the white middle-class American viewpoints. Besides, evidence suggests that the study of individual and cultural differences

can enhance the understanding of exercise involvement. More importantly, the present study can facilitate the understanding of exercise motivation in Taiwan, where theory and research is still primitive. Finally, it is suggested that the lack of a theoretical framework and difficulty in interpreting results are two major problems in cross-cultural work which the researcher hopes to shed some light upon.

With these issues in mind, the main purpose of this study was to apply three North American exercise motivation models, Self-Motivation, Personal Incentives for Exercise, and Sport Orientation, to cross-cultural analyses of exercise behavior and motivation. Specifically, this study examined cultural, gender, and group (student/adult) differences in psychological, personal, and program variables in exercise settings. American and Taiwanese exercisers served as two cultural groups. Male and female as well as college student and adult exercisers were included in both cultures. A secondary focus of the study was to investigate the relationship between personal and psychological variables and describe reasons for initiating and continuing exercise programs as well as thoughts and feelings after exercise participation.

Cultural, gender, and group differences in psychological variables were expected based on research in sport and other areas. Differences in personal and program variables and open-ended responses were also expected.

LITERATURE REVIEW

This chapter begins with a definition of culture followed by reports on the geographical, political, socioeconomic, and educational conditions in Taiwan. Further, a brief Chinese cultural background is described. Also discussed are cultural differences in values between the United States and Taiwan. Finally, exercise-related factors in Taiwan and exercise determinants in the United States are reviewed.

Definition of Culture

Triandis (1972) divided culture into two parts: material and nonmaterial cultures. The material includes environment (climate, latitude) and maintenance systems (economy, social and political structures, and historical development). The maintenance system is regarded as the major influence in determining the form of its education and child training which shapes certain aspects of personality. The nonmaterial includes "a cultural group's characteristic way of perceiving the man-made part of its environment" (p.4), and it covers the perception of rules, norms, roles, and values. It is assumed that both the material and nonmaterial cultures can affect exercise involvement, because exercise is only possible after one has basic political, social, and economic needs met, and can afford the time, energy, and cost of the participation.

Taiwan

Geography

Taiwan is an island 121 miles off the southeast coast of the China mainland across the Formosa Strait. The population is currently about 20 million. The total area, is 13,892 square miles, roughly comparable to the total area of the states of Connecticut and Vermont. Because 52% of the island is forest, the population density is 1,439 persons per square mile, two times of the density of New York City, and 11 times that of the state of North Carolina. Taiwan now has the highest population density in the world. Taiwan straddles the tropical and subtropical zones and has hot and long summers and mild winters. The lowland areas of Taiwan remain consistently frost free (Taiwanese Government, 1989).

Contemporary History (1945-1990) and the Political and Economic Development

More than most places in a world of rapid change, Taiwan has undergone repeated political redefinitions in the past century. Located at the intersection of a succession of diverse influences - Portugese, Spanish, Dutch, British, Japanese, American, and Chinese - the island has repeatedly been ruled by political powers originating far from its shores (Winckler, 1981).

Two Chinas: A Political Dilemma. In 1949, after Mao took over China, the mainland Chinese retreated to the island that

was to become Taiwan. A Nationalist state was established by these political refugees mobilized by decades of turbulent events (World War II and Civil Wars) on the mainland. Since 1949, the Nationalist Chinese have had the monopoly of political power in Taiwan. The head of the Nationalist Party, Chiang Kai-Shek, and subsequently his son, controlled the island for the next 40 years. China was thus divided into the Communist China (the China Mainland) and the Nationalist China (Taiwan). The authorities on both sides of the politically divided China claim an essential unity for the nation. Taipei (Taiwan) and Beijing (Communist China) have been technically at war since then.

Taiwan's Internal Political Changes. Taiwan is the only province of China that has not undergone the sweeping changes of the Cultural Revolution. Chinese life has greater continuity with the past there than anywhere else. The Nationalist government in Taiwan actively promotes adherence to Confucian ideals of social order. Under the monopoly of the Nationalist Chinese, martial law was imposed in 1949 to insure control and defend the island from Communist China. For much of the 1950's and 1960's, many Mainlanders regarded Taiwan as a temporary headquarters from which to recapture the homeland China. Therefore, since the beginning of the 1960's, Taiwan has resembled early twentieth-century Shanghai by opening itself to international investment and trading for development as a solid political base.

However, in Taiwan, as in other rapidly developing authoritarian countries, economic growth and political control can be mutually reinforcing rather than functionally incompatible (Winckler, 1981). Therefore, the liberalization of economic policy often coexisted with periodic crackdowns on independent reporters and opposition political parties to insure the internal stability. To summarize Taiwan's situation in the 1970's and early 1980's, Winckler (1981) stated that it "has little precedent in history and few analogies in the contempory world - it is embattled and dependent like Israel; divided like Korea and Germany; increasingly isolated but, like South Africa, still in economic demand" (p. 15).

Consequences of Political Isolation. Owing to Taiwan's adamant "One China Policy", a wishful thinking which rejects the (mainland) Chinese government and, consequently, countries that form diplomatic relations with China, Taiwan has become a political orphan. This political isolation has resulted in the rejection of not only political allies but other international communities such as the Olympics, the World Bank, and the United Nations. It is my belief that this ambiguous political identity, the absence of commitment for Taiwan's future, and constant rejections by the world have hampered people's trust and respect for the Nationalist government and damaged the sense of community within Taiwan.

Taiwan's Economic Growth and Current Political Reforms. Due to its increasingly political alienation in the world in the 60's and 70's, Taiwan has recently abandoned its long-time "One China Policy" by using economic power to promote semi-official, diplomatic ties and accepting dual recognition of two Chinas: the People's Republic of China (PRC) and the Republic of China (ROC, Taiwan).

In 1989, Taiwan exported "made in Taiwan" products to 189 countries and regions in the world while importing goods from 167 countries and regions. However, Taiwan's experience with the capitalist development model - full state autonomy, competent economic bureaucracy, successful industrial policy, and equitable income distribution - brought about the most serious political challenge to the regime (Wu, 1989).

According to Wu (1989), capital development relies on private business to accumulate capital, and market mechanisms to allocate resources and facilitate growth. By letting individual citizens accumulate capital for themselves, the state is giving away an essential tool of social control - economic deprivation. Therefore, self-assertive economic groups emerge, and power centers other than the government's can easily proliferate. Further, the opposition can use material resources to advance its goals. Consequently, the longtime ruling party, the Nationalist Party, is forced to first recognize, then compete with other political parties in attracting voters.

After 38 years of political repression, rapid reforms started in 1987. Martial law was lifted, a decision pressured by the internal economic and political growth and acclerated by the demonstration effect of the Philippines and the South Korea turbulence. The removal of martial law opened the door for drastic political and social change in Taiwan. Opposition parties were permitted; the press was deregulated; and newspapers were allowed to join the market. Other liberalization measures included permission for Taiwan's citizens (mainlanders) to visit their relatives in China and for specific groups of people from Communist China to visit Taiwan, legalization of Taiwan - China indirect trade, loosening of foreign exchange controls, release of some political prisoners, permitting demonstrations and strikes, and allowing some radical opposition leaders to come home from abroad. In other words, changes in political openness since 1987 exceed all gradual movement in that direction over the past 40 years.

Current International Political and Economic Evaluation. In a 1989 Survey of Freedom (Staff, 1989, December 31), Freedom House, a private American organization devoted to the support of political freedom around the world, gave Taiwan a combined rating of 3.5 on a scale between 1 (the most free) and 7 (the least free) for its political rights and civil liberties. Communist China was given ratings of 7. Further, Taiwan was ranked the fourth lowest risk of 10 Asian nations

for foreign investment, led by Japan, Singapore, and Hong Kong.

Summary. This section briefly describes Taiwan's geographical, historical, political and economic background. It is suggested that Taiwan has been standing in a peculiar situation in its political status for 40 years. Also stressed are consequences of this political undefinition. Further, Taiwan has been experiencing drastic political and economic changes due to the inevitable backfire of its longtime repression and a global trend toward democracy and openness. Above all, the removal of martial law promotes continuous political and economic development as well as contact between Taiwan and China. Although the two-China dilemma is not yet resolved, the tension has been reduced. It is now more likely than ever before that a peaceful resolution can emerge.

The following section depicts the cultural conflicts and changes observed in the present time. In the past 40 years, Taiwan has, on one hand, strived to preserve its Chinese Traditions and Confucian ideology without the interference of Communists. On the other hand, it has opened to the western influences. The combination of these two greatly different ideologies and lifestyles has inevitably resulted in changes which are presented in the following section.

The Chinese Philosophy and Its Impact on Social and Education System

Confucian Ideology. The chaos in Taiwan is, in addition to the social and political changes, reflective of the inability of rigid Confucian rules to adapt to the changes that frequently occur in a modern society. Confucian societies are unable to accept or manage changes in their tightly controlled system. They neglect the individuality and social change, and set up norms for human behavior with conformity. Confucius' doctrines have become one of the defenses for conformism, rigid regulations, and totalitarianism in power and knowledge for several thousand years. These tendencies have permeated Chinese social and educational systems, with a group-oriented expectation and stiff curriculum.

Group-Oriented Achievement Motivation. Yang (1984) has proposed two kinds of achievement motivation in a society: the collective-oriented and the individual-oriented motivation. Although McClelland (1963) found that Chinese had lower achievement motivation, Yang argues that it is the individual-oriented achievement motivation of the Chinese that is lower than that of Westerners. He cited several studies from Japan, the Philippines, and Taiwan and suggested that Asians are not in fact low in achievement motivation; instead, Asians simply want their achievement to have more group or social relevence. Yang suggested that group-oriented achievement motivation seems more suitable for authoritarian societies and indi-

vidual-oriented achievement motivation is more suitable for western democratic cultures. He found that Taiwanese still have a stronger tendency toward group-orientation, although the society has become more open and democratic.

Educational System. Generally, the educational system of Taiwan is comparable to that of the United States, with two exceptions. First, education, just like other economic and political matters, is controlled by the government which determines all regulations in schools and universities, public or private. Education is connected closely with the political control and emphasizes the examination process.

The unique examination process is the second difference between Taiwan and the United States. Entrance examination is the approach to selecting students for the next level of education. There are High School as well as College Entrance Examinations. In these examinations, only a third of junior high students go to high schools and, among them, only a fourth can go to college. The rest of students go to vocational training schools (Tsai, 1985).

This competitive process forces teachers to conform to instruction of related materials and disregard other subjects. Students are expected to memorize to pass examinations and are encouraged to remain silent in the classroom. Most schools add intensive training classes every day after school and on weekends to reinforce the learning.

Consequently, students are deprived of their genuine intellectual and emotional development. Further, schools de-emphasize subjects such as social study, liberal arts, and physical education which are not included in the examinations. Physical education lessons are thus, among other classes, not appropriately taught. This probably leads to students' low motivation in participating physical activities.

Summary. This section delineates the Confucian ideology and its impact on Chinese lifestyle. It is suggested that the Chinese stress conformity and family/group expectations. Also discussed are two types of achievement motivation. The Taiwanese have a stronger tendency toward group-oriented achievement motivation, whereas the Americans have a stronger individual-oriented tendency. Further reported is the rigid educational structure in Taiwan in which unrelated subjects are not supported. It is very likely that this lack of exposure to physical activities at younger ages might affect students' exercise motivation.

Cultural Differences In Values Between the United States and Taiwan

Research has suggested that cultural background is an important consideration when studying motivation in different situations (Maehr, 1974; Maehr & Nicholls, 1980). Further, Maehr and Braskamp (1986) suggest that beliefs, values, and goals that are supported by social groups may be the most

important facet of the "sociocultural matrix," which determines the meaning of a situation to a person.

General Attitude Toward Life. Kluckhohn and Strodtbeck (1961) proposed that beliefs, values, and goals held by different cultural groups can vary along the following four dimensions. The first dimension that can influence motivation is "the individual's relationship to others" (i.e., individual- versus group-oriented). The second dimension relates to a culture's concept of time (i.e., past-, present-, or future-oriented), which determines the society's general orientation toward life goals. The third dimension involves the personality traits valued by a culture (i.e., life viewed as "being," "becoming," or"doing"), which leads to a preferred lifestyle. A fourth and final dimension deals with "people's relationship to nature" (i.e., humans as existing in harmony with versus over nature). This dimension seems to influence people's locus of control tendency.

Based on this researcher's observations, the Chinese culture tends to live a group- and past-oriented lifestyle; life is viewed as being instead of doing; and humans are viewed as existing in harmony with nature. In contrast, the American tends to emphasize individuality, has a future-oriented view, experiences a "doing" lifestyle, and perceives humans as existing over nature.

Personality Differences. In this section, studies examining the value system and personality characteristics

prevalent in the American and Chinese cultures will be summarized. It is assumed that the reported cultural differences in values and personality are associated with exercise motivation among people in these two societies.

One investigation conducted by Singh, Huang, and Thompson (1962) compared some value characteristics among Indian, American, and Chinese students at Ohio State University. Results are summarized as follows: (a) American students appeared to be more self-centered, whereas the Chinese were more group-oriented; (b) Chinese were more authoritarian than Americans; and (c) Americans seemed to prefer a flexible and diverse lifestyle while the Chinese emphasized family, group participation, and social concerns.

Tin-Yee Hsieh, Shybut, and Lotsof (1969) found that the individual-centered American scored toward the internal control pole in Rotter's Internal-External scale, while the situation-centered Hong-Kong Chinese personality received significantly higher external control scores. Further, Lao (1977) examined the locus of control among American and Chinese cultures and found that, in both cultures, males seemed more internally-controlled over their lives when compared to females, but these trends were more pronounced in the Chinese culture.

A study by Domino and Hannah (1987) compared the social values held by American and Chinese children. Children were introduced to five of Metraux's stories and all subjects'

responses to these stories were factor-analyzed to demonstrate the commonality and differences between the social values of American and Chinese children. The study indicated that one value distinguishing the Chinese from the American child was that the former placed a greater emphasis on "natural forces" such as fate. Also, two factors emphasized primarily by the American children were economic orientation (e.g., payment, price) and physical aggression (e.g., physical punishment and play). This study suggested that different child rearing practices probably contributed to these cultural differences.

In summary, cultural differences in personality and values are evident. Taiwanese tend to be more group-oriented, have a more rigid and inflexible view about life, and perceive life as more controlled by external events such fate as compared to Americans. Overall, these tendencies are consistent with Taiwanese cultural and historical background.

Exercise-Related Cross-Cultural Studies

From a socialization perspective, Allison (1982) described the role sport plays within a certain culture as "the patterns of and patterns for behavior" In this regard, whether or not one will engage in exercise, as well as the type of exercise chosen, is affected by aspects of one's culture. Once the person is involved in the activity, values and behaviors are likely to be shaped by the content and structure of the games.

Allison's work with Navajo and Anglo adolescents suggested that dissonance perceived by an individual between the demands of the sport task and the essence of the cultural values s/he holds will likely lead to his/her withdrawal from the activity. Furthermore, different values from different cultures (e.g., individual-oriented or group-oriented) might result in different views (e.g., competition or cooperation) which, in turn, could affect people's exercise participation.

Achievement Motivation in Exercise Settings

Duda and Allison (1989) argued that different cultural groups can be classified in their definitions of both achievement and the preferred means toward achievement in different contexts such as sport and the academic settings. Duda's work (1980, 1986a) comparing conceptions of success/failure among Anglo and Navajo adolescents in academic and athletic settings revealed significant cultural differences.

Specifically, Anglo males focused more on ability-based goals and were more individual-oriented and ego-involved when striving for achievement goals; that is, they were the most individually competitive group when seeking success in both sport and classroom settings. Anglo females, on the other hand, showed the least preference for individual competition in athletics, which was assumed to be a less sex-appropriate context. In contrast, Navajo males and females defined athletic success mostly based upon a process- or behavior-orientation (e.g., trying hard), yet males placed an emphasis

on the outcome as well. Similarly, Duda (1985) reported that Anglo males emphasized an ability-based, competitive aspect of success more than their Mexican-counterparts.

In still another study, Kang, Gill, Acevedo and Deeter (1990) investigated the competitive orientation of male and female athletes and students in Taiwan. Gender and athlete/ nonathlete differences were reported. Males scored higher than females on competitiveness; and athletes scored much higher than nonathletes on competitiveness and win orientation. Overall, gender differences were less evident in this study than in reports with Americans, but the pattern of scores for athletes and nonathletes were similar, suggesting comparable sport achievement orientation across these two cultures.

In summary, American males were more competitive, and individual-oriented toward their goals in exercise as compared to other cultural groups. Also, females were less competitive and more goal-oriented than males in cross-cultural studies.

Determinants of Exercise Participation In Taiwan

The following section reports on the Taiwanese economic status and "time-spent" pattern as these two factors provide people's resources to engage in recreation and exercise. The third factor presented is the climatic factor, for it apparently affects every aspect of life including exercise participation. Then, exercise-related surveys with adults and

college students are reviewed to suggest personal, program, and psychological factors that affect exercise involvement.

Economic Factor. Taiwan's per capita income is about $7500, ranking it 27th in the world (Executive Yuan, 1989, November). Although not as high as the Greensboro - Winston Salem area's $12,135 figure (the World Yearbook, 1989), this per capita income has nontheless tripled since 1982.

This rapid change in economic status has certainly affected the leisure lifestyle and "time-spent" patterns in Taiwan. People do not need to devote as much time to working as they once did, and therefore have more time for leisure activities. But, how effectively can individuals learn to re-arrange their leisure time within a period of several years ?

Tsai (1990) has pointed out in his survey in Taiwan that although 86% of his subjects indicated that leisure activities are important, the majority (68%) engaged in sedentary activities (e.g., watching T.V.) as their major leisure lifestyle. Tsai thus concluded that Taiwanese had poor knowledge and education about the arrangement of leisure lifestyle. He urged that the government provide citizens more opportunities and multiple-function community parks for physical activities.

Time Factor. Every three years, the government conducts a national survey of citizens' "time usage" patterns in Taiwan (Executive Yuan, 1988). This survey is designed to aid in the understanding of, among other things, leisure activity of the

Taiwanese people. The results are then used to design and revise public policies.

In 1988, 18,000 households were selected. The survey used the "yesterday recall survey method" to study subjects' activity patterns in the past 24 hours. Results indicated that people had 6 hours and 11 minutes of free time every day. During their free time, people spent 2 hours watching T.V. and visiting family and friends, respectively. However, citizens only spent 12 minutes on weekdays and 16 minutes on weekends doing exercises. Males spent more time on exercise than did females.

In regard to companions for their leisure activities, the top three on the list were family members (45%), friends (23%) and neighbors (13%). In terms of the most desired leisure facilities, the top three on the list were community parks (50%), exercise clubs (10%), and public swimming pools (5%). Due to the scarcity of privately-owned exercise clubs, community park is the place for people to engage in physical activities. Males outnumbered females in desiring a greater number of exercise facilities. Older citizens liked more community parks to walk in, whereas younger people had a preferrence for exercise clubs.

Climatic Factor. Anthropological research suggests that climate relates to the lowered incentive for engaging in sport in Taiwan. Roberts, Arth, and Bush (1959) reviewed the distribution of game types in 50 societies that were either well

covered or apparently well covered, in terms of information on games. In the ethnographic studies reviewed, the researchers noted a relationship between geographic location, specifically latitude, and the number of games of physical skill present in a culture. Societies located within 20 degree north or south of the equator, such as Taiwan, tended to have fewer games of physical skill than those at higher latitudes, probably because those areas have higher annual temperatures and lower technological and economical development, compared to Western countries.

It is conceivable that, in these societies, people need to not only devote more time to surviving but also to tolerate daily work and routines in the long summer climate. Further, exercise facilities and equipment are probably less popular, and thus, more costly. Also, it is probably more difficult for people in tropical areas to value exercise which is associated with excessive sweat, hard work, and fatigue. In other words, the environment is not as favorable for exercise as it is in the West. In the United States, citizens have higher income; facilities and equipment are more readily available at a reasonable price; and climate is cooler, less humid and more comfortable.

Exercise-Related Surveys with Adults in Taiwan

Although primarily atheoretical and descriptive, the following leisure- and exercise-related research reveals factors that influence people's motivation to engage in

physical activities. In a national survey on the promotion of community exercise programs in Taiwan, Chiu (1985) included 2898 exercisers in the study. Results are summarized as follows: (a) 94% of exercisers thought their health status was at least average or above average; (b) 69% exercised at least two times a week; (c) Urban areas had a higher percentage of habitual exercisers; (d) 80% exercised in the community, public parks, schools, or at work, while only 1.7% used privately owned facilities (e.g., YMCA or spa); (e) The top three reasons for doing exercise were for health promotion (70%), fun (13%) and social reasons (4%); (f) In regards to the distance of exercise locations from home, 69% indicated that the locations were within 10 minutes walking distance; (g) Only 14% of the exercisers participated in organized classes with instructors, and 86% had unorganized classes; (h) Only 10% of the exercisers paid fees to do exercise, 90% did not; and (i) Approximately 59% liked to do exercise with others and 41% liked to do it alone.

In a survey by Huang (1979), 1064 homemakers participated in an exercise study. Results indicated that 38% did exercise with family and 24% with neighbors and friends; and 37% exercised alone. Approximately 75% did exercise in nearby parks or schools, and only 5% used privately-owned facilities. The top three reasons for exercise were promoting health (43%), recreational reasons (23%), and enriching life (13%). The major barriers to exercise participation were no time

(27%), no guidance (20%), no partner (15%), and no facility (12%). The time of a day that subjects did exercise was early morning (55%), afternoon (23%), and evening (14%).

Exercise Research with College Students

Hsu (1982) examined factors that determine the enjoyment of physical activity classes among college students in Taiwan. Subjects included 767 students in physical education classes from 23 colleges/universities. A principal factor solution was used and nine sources of motivation emerged: (a) reaching exercise goals (i.e., health, fitness, stress management); (b) creativity; (c) fun; (d) quality of teaching; (e) perseverance; (f) winning experience; (g) watching others play; (h) affiliation; and (i) challenge.

Hsu reported that students who engaged in exercise more than three times a week were more likely to stress reaching exercise goals, creativity, fun, winning, affiliation, and challenge as sources of motivation. However, those who had never participated in exercise placed a greater emphasis on quality of teaching. Gender differences emerged as males endorsed fun and reaching exercise goals more than females.

Summary. It is suggested that the economic status and "time usage" pattern as well as annual temperature affect exercise participation. Also, several surveys reported program and psychological determinants in Taiwan. As a whole, health promotion is the most important incentive to enter a

program. Without time, guidance, social support, or facilities there is little opportunity for exercise participation.

In addition, three program factors are evident. First, the majority of exercisers use community parks and schools, instead of privately-owned exercise clubs. Second, these exercise sites are mostly within a 10-minute walk from home. Third, most exercisers pay little or no money for their programs, because these programs are mostly unorganized and informal. Interestingly, the first two factors are consistent with American research. Shephard, Morgan, Finucane, and Schimmelfing (1980) reported that program inaccessibility and geographic inconvenience were two factors associated with the decision not to join a program.

Exercise Determinants In the United States

The study of individual differences in exercise settings is important, because a host of personal and situational variables can potentially affect involvement; and everyone responds to these factors differently. For example, Dishman, Sallis, and Orenstein (1985) suggested many factors that may affect adherence to exercise programs in their review of approximately 50 studies in North America. Included are attitudes toward physical activity, types of exercise program (frequency, intensity, duration and mode of activity), body weight and composition, medical problems (injuries and level of fitness), social support, personality, age, sex, socio-

economic status, cost, and time-related factors. Although these potential determinants reflect participants' personal and program concerns, they must be conceptualized and assessed in a standardized fashion if systematic prediction and understanding can emerge (Dishman & Dunn, 1988).

The following section presents three exercise motivation models in North America, e.g., Self-Motivation, Personal Incentives for Exercise, and Sport Orientation. These three models also provide a conceptual framework for the present survey. As no specific model was available for the purpose of cross-cultural research, these models suggest associated variables that appear to be relevant to the study of exercise motivation.

Self-Motivation

Self-Motivation was first proposed in Dishman and Gettman's (1980) psycho-biologic screening model, which contained percent body fat, body weight, and Self-Motivation as predictor variables. However, Self-Motivation has been used more frequently as a single predictor than as a model component.

"Self-Motivation is conceptualized as a generalized, nonspecific tendency to persist in the absence of extrinsic reinforcement and is thus largely independent of situational influence" (Dishman & Gettman, 1980, p. 297). Self-Motivation has thus been interpreted as a tendency to persevere in a task after the task has been started. Self-Motivation correlated significantly with self-reports of exercise frequency in

college students (Dishman & Ickes, 1981). Further, Olson and Zanna (1982) found that Self-Motivation differentiated regular and occasional exercisers from dropouts. In addition, Stone (1983) found that Self-Motivation and smoking behavior separated corporate aerobic and recreational exercisers from dropouts with an accuracy of 82%.

Self-Motivation has an extremely high test-retest reliability (r=.86) over a 20-week period (Dishman & Ickes, 1981); this implies that it is relatively resistant to change. Sonstroem (1988) recommends its use as a predictor and screening measure for exercise adherence. Conceivably, its use as a measure of perseverance and the indication of will power in meeting many life challenges should predict adherence to an initiated exercise program. Subjects classified as low self-motivators would be provided with additional extrinsic reinforcement such as partner support.

More importantly, Self-Motivation corresponds to "Sense of Self" in Maehr and Braskamp's (1986) Theory of Personal Investment, reviewed in the following section. In Duda and Tappe's (1988) study, "self-reliance" and "goal-directedness" are positive predictors of exercise adherence. Both factors depict one's tendency to rely on oneself to set goals and behave accordingly.

In summary, Self-Motivation is a personality trait representing one's tendency to persist in the absence of extrinsic reinforcement. It has been widely used in exercise

adherence research and has proven effective in discriminating between adherers and dropouts in the initial stage of an exercise program. Furthermore, Self-Motivation is related to the "Sense of Self" in Maehr and Braskamp's (1986) Theory of Personal Investment.

Theory of Personal Investment

According to Maehr and Braskamp (1986), motivation is a psychological state which cannot be directly observed, yet can be inferred from behavior. Therefore, they proposed a theory of Personal Investment in which the meaning of a situation is the major factor in determining one's motivational orientation. There are three components of meaning: Personal Incentives; Sense of Self; and Perceived Options.

Personal Incentive represents the major motivational factor of a behavior and is classified into four categories: Task, Ego, Social, and Extrinsic Rewards Incentives. Task Personal Incentives involve something about the activity in, of, and by itself, such as the enjoyment or fun a person derives from exercise. Ego Personal Incentives are in effect when the goal of the behavior is focused on winning the game (i.e., Competition Incentive). Social Personal Incentives are at work when a person does something to enjoy the company of others (i.e., Affiliation Incentives). Extrinsic Personal Incentives are apparent when one does something to receive social recognition (i.e., Recognition Incentives) and/or to earn money (i.e., Financial Rewards Incentives).

The second facet of meaning, Sense of Self, is one's tendency to judge one's competence at doing something, set goals, and organize one's behavior accordingly. Both Sense of Self and Self-Motivation reveal one's tendency to rely on oneself to achieve goals.

A final component of meaning is designated as Perceived Options. Perceived Options are defined as "the behavior alternatives or action possibilities that a person perceives to be available to him/her in any given situation" (p.61).

Personal Investment Theory and Exercise

Personal Incentives. Maehr and Braskamp (1986) stated that personal Incentive is the most important motivational factor. It can be divided into four categories: Task, Ego, Social, and Extrinsic Incentives.

First, Task Incentives involve focusing one's exercise participation either on mastering the skill or enjoying the activity. Wankel and Kreisel (1985) found that improving skills and the excitement of the game in and of itself are the most important factors for sport participation among different age groups of children. Duda (1988), in her work with male and female recreational sport participants, revealed that subjects who emphasized mastery-oriented goals had adhered to sports for a longer period of time and had spent more of their free time practicing their sports. Furthermore, Duda and Tappe (1988) found a positive relationship between older

adults' mastery-based incentives and their expectation for continuous involvement in exercise programs.

Second, Ego Incentives are present when one participates in exercise because he/she wants to compare his/her physical competence to that of others. Wankel and Kreisel (1985) stated that one dimension, termed "testing skills against other", was rated by youth sport participants as one of the most important factors predicting their enjoyment in sports.

Third, Social Incentives within an exercise context imply that a person engages in exercise to satisfy affiliation needs. Research has indicated the importance of this incentive among youth participants (Wankel & Kreisel, 1985), adults (Spreitzer & Snyder, 1983), and elderly exercisers (Duda & Tappe, 1988).

Fourth, Extrinsic Incentives refer to whether or not one participates in exercise to gain social recognition from significant others. The relevance of these incentives has been supported in exercise motivation research (Wankel & Kreisel, 1985; Duda & Tappe, 1988, 1989b).

Specific to the exercise domain, research suggested other important incentives. For example, Stress Management (i.e., to control mental pressure through exercise), Appearance (i.e., to look better), and Fitness (i.e., to improve level of physical conditioning) are relevent to exercise motivation (Duda & Tappe, 1988, 1989a, 1989b; Gottlieb & Baker, 1986;

Greist, Klein, Eischens, Faris, Gurman, Morgan, 1979; Spreitzer & Snyder, 1983).

Sense of Self. Roberts and Duda (1984) demonstrated the importance of sense of self-competence in determining an athlete's perception of success and failure. Further, Duda and Tappe (1988) showed that adult exercisers rated high in the area of perceived physical self-efficacy. Similarly, a positive relationship among perceived physical competence, self-reliance, goal-directedness and physical activity level among male and female adolescents was reported (Spreitzer & Snyder, 1976; 1983; Tappe, Duda, & Menges-Ehrnwald, 1989).

Perceived Options. Perceived Option is one's perceived alternatives or barriers to exercise involvement. Factors such as time, degree of health, and the availability of facilities or programs would affect an individual's perception concerning whether it is realistic to participate. Dishman et al. (1985) provided an excellent review of approximately 50 studies related to the barriers of exercise. They reported that factors such as spouse support, perceived available time, access to facilities, disruption in routines, social reinforcement from staff and exercise partner, peer and family influence, cost, climate, and medical screening all affected exercise motivation.

To test the Theory of Personal Investment, Chen (1989) conducted a cross-cultural study which included 181 American and Chinese male and female graduate students at Purdue

University. Results suggested gender and cultural differences in the meaning of exercise as well as in personal incentives. Results suggested that: (a) Americans have higher perceived physical competence, and were more self-reliant than Chinese; (b) Males had higher perceived physical competence than females in exercise contexts; (c) The American society seemed to place a higher value on health and sport involvement in general; (d) Americans seemed to have received more support than Chinese for their exercise involvement from family and friends; (e) American's family, friends, and teachers/coaches were perceived to be more physically active than those of the Chinese subjects; and (f) American adults perceived a greater opportunity to meet their personal goals for participating in exercise than the Chinese.

Summary. The Theory of Personal Investment appears to be effective in explaining exercise behavior and motivation. The meaning of a situation is the major factor in deciding one's motivational orientation. There are three components of meaning: Personal Incentives; Sense of Self; and Perceived Options. Personal Incentive represents the major motivational factor of a behavior and is classified into four categories: Task, Ego, Social, and Extrinsic Rewards Incentives. Sense of Self determines one's perception of physical competence and self-reliance in achieving exercise goals. Perceived Options is one's perceived alternatives or barriers to exercise involvement. The Theory of Personal Investment compensates

for the weakness of previous perspectives that emphasize only the person or the situation. It suggests an interactionistic view which focuses on both the person and meaning of a situation.

Sport Orientation

Gill and Deeter (1988) developed a sport-specific, multidimensional measure of achievement orientation which taps different aspects of sport acheivement orientation. This measure will be appropriate for athletes and nonathletes, males and females, and individual exercisers engaged in competitive or noncompetitive activities. It is stressed that although competition is the major achievement setting for sport, this multidimensional approach to sport achievement orientation includes a disposition to strive for excellence and personal fulfillment in noncompetitive sport achievement situations as well.

Gill and Deeter (1988) employed factor analysis and other techniques to develop a three-dimensional measure of Sport Orientation. The first dimension, named Competitiveness, assesses the desire to enter competitive sports and meet competitive challenges in sport and exercise. The second, termed Win Orientation, measures the importance placed on competitive outcomes. Duda (1989) suggested that these two factors reflect Maehr and Braskamp's concept of Ego Involvement, as this seems to capture the value placed on "being the best" and defeating others in athletic settings

characterized by social comparison. Finally, the third dimension, labelled Goal Orientation, reflects one's desire to meet personal goals and perform to the best of one's ability. Duda suggests that this subscale is aligned with Task Involvement in the Personal Investment Theory.

In a series of validity studies, Gill (1986) found that students who participated in ccmpetitive physical activities tended to be high in Competitiveness and Win Orientation in comparison to peers engaging in noncompetitive physical activities. She also reported that males placed a greater emphasis on Competitiveness than females.

Further, Gill and Deeter (1988) reported that the Competitiveness scores consistently differentiated students in competitive classes from students in noncompetitive classes and competitive sport participants from nonparticipants. In contrast to Competitiveness, Win and Goal Orientation had less influence on the decision to enter competition. Competitive sport participants tended to score higher than nonparticipants on Win and Goal Orientation, but the differences were neither strong nor consistent, and Competitiveness was the only important variable in the discriminant analyses.

Kang, Gill, Acevedo and Deeter (1990) investigated the Sport Orientation of male and female athletes and nonathletes in Taiwan. Gender and athlete/nonathlete differences were reported. Males scored higher than females on Competitiveness and athletes scored much higher than nonathletes on Competi-

tiveness and Win Orientation. Overall, gender differences were less evident in this study than in reports with American subjects, but the pattern of scores for athletes and nonathletes were similar, suggesting comparable sport achievement orientation across these two cultures.

In summary, Sport Orientation suggests three dimensions in sport and exercise involvement: Competitiveness, Win, and Goal Orientation. The first two factors depict one's desire to become the best and defeat others in sport settings. The third factor reflects one's desire to meet personal goals. These three dimensions correspond to Ego and Task Involvement in the Theory of Personal Investment. In the present study, Sport Orientation Questionnaire is complementary to the newly developed "Personal Incentives for Exercise Questionnaire" and serves as a tool to assess the validity of the latter measure.

Statement of the Problem

The present study attempts to determine if personal, psychological, and program factors are different between American and Taiwanese participants. Included in the study is an investigation of the relationships among psychological and personal factors, and an attempt to identify reasons for initiating and continuing their participation in sports. The major comparison is between Taiwanese and American exercisers. Within each culture, comparisons are made between males and females, and between university and health club exercisers.

The Subproblems and Hypotheses

The first subproblem is to determine whether Taiwanese university and health club, male and female exercisers differ from their American counterparts on the psychological characteristics of Self-Motivation, Sport Orientation and Personal Incentives for Exercise. This subproblem involves comparisons on the following variables:

1. Self-Motivation.
2. Sport Orientation, which includes the following subscales,
   (a) Competitiveness,
   (b) Win Orientation, and
   (c) Goal Orientation.
3. Personal Incentives for Exercise, which includes 10 subscales,
   (a) Mastery,
   (b) Competition,
   (c) Affiliation,
   (d) Social Recognition,
   (e) Health Benefits,
   (f) Fitness,
   (g) Mental Benefits,
   (h) Appearance,
   (i) Weight Management, and
   (j) Flexibility/Agility.

Literature suggests that males are more likely than females to place importance on competition in sport and

exercise settings (Duda, 1986; 1988; Gill, 1986). Therefore, gender differences in Competitive Orientation (in SOQ) and Competitive Incentives (in PIEQ) would be expected. Specifically, males are expected to score higher on these scales than females.

In terms of cultural differences, Anglo American children were found more competitive than Mexican children (Kagan & Madsen, 1972; Nelson & Kagan, 1972). According to Nelson and Kagan (1972), the highly competitive American child gave up the chance to obtain rewards for him/herself in order to keep another child from getting similar rewards. In contrast, the Chinese emphasize group conformity more than independence (Huang & Harris, 1973). Because competitiveness is closely related to individual achievement and the need for independence, it would seem logical to expect that American exercisers place more emphasis on Competition Incentive. Specifically, Americans are expected to score higher on Competitive Orientation and Competition Incentive.

The second subproblem is to determine whether Taiwanese university and health club, male and female exercisers differ from their American counterparts on exercise program factors. This subproblem compares groups on the following program characteristics:

1. preference for structured versus unstructured exercise settings

2. preference for competitive versus noncompetitive activities
3. preference for individual versus group activities
4. preference for exercise classes with versus without an instructor
5. availability of social support
6. participation in activities outside the exercise classes.

The literature has shown that social support and structured programs (Heinzelmann & Bagley, 1970), as well as group activities (Massie & Shephard, 1971) are correlates of better adherence. However, no gender, cultural, or group differences in these factors have been studied. Thus, no specific predictions are made.

The third subproblem is to determine whether Taiwanese university and health club, male and female exercisers differ from their American counterparts on their personal variables. This subproblem compares groups on the following measures:

1. number of sessions of participation per week
2. number of minutes of participation per session
3. age
4. years of education
5. self-rating of health status
6. self-rating of fitness status.

Age, socioeconomic status, and gender have consistently been associated with level of activity in various surveys over the past 13 years in the U.S. (Powell, 1988). Younger

age and higher socioeconomic status, whether measured by income, occupation, or educational level, are associated with more leisure-time physical activity. Males are more likely to be more active than females (Stephen, Jacobs, & White, 1985). Therefore, males are expected to exercise more frequently and have participated in exercise longer than females. Exercisers in both cultures are expected to be young and highly educated.

The fourth subproblem is to report responses to 5 open-ended questions. The first and second questions determined reasons for initiating and continuing the participation. The third described thoughts and feelings after exercise involvement in these two cultures. The fourth reported the participants' social support. The fifth reported what kind of exercise subjects participated in. Social support and enjoyment of activities are expected to be important reasons for exercisers to continue their programs.

The fifth subproblem is to examine the relationships among two psychological variables: Sport Orientation, and Personal Incentives for Exercise in these two cultures. This subproblem involves examining correlations among the following variables:

1. Sport Orientation, which includes the following subscales,
    (a) Competitiveness,
    (b) Win Orientation, and
    (c) Goal Orientation.

2. Personal Incentives for Exercise, which includes 10 subscales,
   (a) Mastery,
   (b) Competition,
   (c) Affiliation,
   (d) Social Recognition,
   (e) Health Benefits,
   (f) Fitness,
   (g) Mental Benefits,
   (h) Appearance,
   (i) Weight Management, and
   (j) Flexibility/Agility.

Little is known about the relationships among these variables. However, Personal Incentives for exercise should correlate with Sport Orientation. Competitive Orientation is related to goal perspective and Competition Incentive in Maehr and Braskamp's (1986) theory. Therefore, correlation between Competitive and Competition Incentive is expected.

The sixth subproblem is to examine if combinations of personal and psychological variables correlate. Based on the literature, age, educational level, self-ratings of health and fitness status, and frequency of exercise per week are likely to correlate with Self-Motivation, Goal Orientation, Fitness and Health Benefits, and Weight Control Incentives.

METHOD

Subjects

Initially, the researcher planned to recruit 100 student and 100 adult exercisers in each culture. However, due to the lower response rate of American adults, this subgroup had only 40 subjects. This study included a total of 391 university students and adult exercisers in both Taiwan and the United States. Demographic information is shown in Table 1.

Table 1 Demographic Information

category			Total N
U.S.	male adults = 20	male students = 59	79
	female adults = 20	female students = 43	63
			142
Taiwan	male adults = 93	male students= 45	138
	female adults = 49	female students = 62	111
			249
marital status	single = 276		
	married = 103		
	divorced = 12		391
profession	employed = 86		
	homemaker = 13		
	student = 265		
	retired = 14		
	other = 13		391
Is this physical education course required? (students only)			
	required	Taiwan = 163	
		U.S. = 22	185
	not required	Taiwan = 0	
		U.S. = 80	80

There were an approximately equal number of males and females in both cultures. The low number of American adult subjects was because exercisers were less able to take time to answer the surveys on the spot and had a lower response rate once they took home the surveys. The Taiwanese morning exercisers usually are more relaxed and less pressured by time. Thus, most of them were able to complete the surveys on the spot, and the response rate was much higher.

Most subjects were single, because a large number of them were students. Most adult subjects were employed. The mean age of subjects was 27.6 years. However, the standard deviation (12.8) and range (17-79) were quite large, indicating that most subjects were young but some older adults were also included. The average year of education was 14.4, meaning that most subjects at least finished high school.

University Subjects. The subjects were students enrolled in physical activity classes in the University of North Carolina at Greensboro and National Taiwan Normal University. These students participated in classes that were offered in both universities in the fall, 1989. The activities included tennis, swimming, conditioning, aerobics, softball/baseball and volleyball.

National Taiwan Normal University is the major teacher training institution in Taiwan. Students are assigned to the university based solely on the results of the College Entrance Examination; the student's major is determined at that point.

Transfers between universities are very difficult, if not impossible. Transfers between different majors within the university are also restricted. Students are supported by the government and obligated to teach secondary schools for four years after graduation. Eight physical education credits are required. Basically, the structure of the higher education system is rigid; students have little freedom to choose in their college education. Students' age is comparable to that of the U.S. universities.

Adult Subjects. The American adult exercisers were from a YMCA in Greensboro. The Taiwanese adults were from various morning exercise sites around Taiwan because health clubs are uncommon in Taiwan due to the sociocultural environment. The majority of participants exercise in community and monumental parks, or schools' open space in the early morning when these spaces are open to exercisers and less crowded.

Procedures

Data Collection. In both universities, instructors were contacted beforehand. The researcher was present in the beginning of classes to explain purposes and procedures, administer and collect surveys. Every student completed surveys in the class.

In the U.S. exercise club, after having informed several aerobics instructors, the researcher was allowed to recruit subjects in the beginning of classes. Also, the researcher

spoke to other exercisers to recruit subjects in individual activities. Volunteers picked up surveys after exercises. About 26 subjects filled them out on the spot. Subjects who chose to take questionnaires home were asked to leave their phone numbers and were given stamped, self-addressed envelopes. Those who did not return surveys within a week were phoned. Approximately 20 out of 65 questionnaires were returned. Among 46 completed questionnaires, including 26 completed on the spot and 20 at home, 40 were usable.

In Taiwan, several physical education majors who had experience in collecting data were taught the purposes and procedures of the research. Then, each assistant was assigned to work with exercisers in an area of Taiwan where their hometowns are. These exercise sites were about evenly distributed in northern, central, southern, and eastern Taiwan. About 95 subjects completed surveys on the spot. Similar to Americans, those who chose to take surveys home left their phone numbers and were given stamped, self-addressed envelopes. Also, subjects who did not returned surveys within a week were called. Approximately 53 out of 85 surveys were returned. Among 148 completed questionnaires, including 95 completed on the spot and 53 completed at home, 142 were usable.

Back Translation. Sechrest, Fay, and Zaidi (1972) have described a method of back translation to achieve equivalent forms of instruments and surveys for cross-cultural research. In the method of back translation, a translation is first made

from one language to another, i.e., from English to Chinese, by the researcher. The translated material is then back translated from Chinese to English by another bilingual graduate student. The two versions of the original were then compared and incongruent items were modified. Presumably, by the method of back translation, a better approximation to the original could be obtained. The final corrected translation (see Appendix F) was then administered to the Taiwanese.

Instruments

The instruments consist of (a) human subject consent form (Appendix A), (b) participant information (Appendix B), including demographic information, exercise behaviors, reasons for participation, and program preferences, (c) the Self-Motivation Inventory (Appendix C), (d) the Sport Orientation Questionnaire (Appendix D), and (e) the Personal Incentives for Exercise Questionnaire (Appendix E).

Self-Motivation Inventory (SMI). The 40-item SMI measures one's behavioral tendency to persevere independent of situational reinforcement (Dishman & Ickes, 1981). The scale consists of 19 positively keyed and 21 negatively keyed items with a possible response range of 40-200. Positively keyed items are reflected by items such as "I like to take on jobs that challenge me." Negatively keyed items are reflected by items such as "Things just don't matter much to me."

Dishman and Ickes (1981) reported that the internal consistency of the scale is .91. Test-retest reliability ranges from .86 to .92. Dishman, Ickes, and Morgan (1980) reported that the scale proved to be the best discriminator between adherers and dropouts among the psychological variables employed (e.g., Physical Estimation and Attraction Scales, Health Locus of Control Scale, and Attitude Toward Physical Activity Scales), and was strongly related to program adherence in both male and female exercisers.

Sport Orientation Questionnaire (SOQ). The SOQ is a 25-item, sport-specific, multidimensional measure of achievement orientation developed by Gill and Deeter (1988). The SOQ assesses three dimensions of sport achievement orientation: (a) Competitiveness - the basic achievement orientation toward competitive sport reflected by such items as "I enjoy competing against others" and "I am a determined competitor," (b) Win Orientation - a specific focus on winning reflected by such items as "Winning is important" and "I hate to lose," and (c) goal orientation - a focus on personal standards reflected by items such as "I set goals for myself when I compete."

Gill and Deeter (1988) provided psychometric evidence for the validity, internal consistency, and reliability of these three factors and reported that the scale separates competitive sport participants and nonparticipants. Kang, Gill, Acevedo, and Deeter (1990) used the Chinese version of the SOQ to study competitive orientations among athletes and nonathletes in

Taiwan. The cross-cultural study provided evidence suggesting that this scale is internally consistent and reliable for the Taiwanese sample. The study also provided evidence for the cross-cultural validity of the SOQ and confirmed that the SOQ showed consistent discriminatory power in these two cultures.

Personal Incentives for Exercise Questionnaire (PIEQ). The incentives toward exercise are assessed through the PIEQ. The PIEQ (Duda & Tappe, in press) uses a 48-item, 5-point Likert scale to measure ten categories of personal incentives related to the exercise context. Included among the personal incentives considered to be relevent in exercise context are: (a) the desire to try one's best and demonstrate skill improvement (Mastery); (b) the desire to compete and socially compare one's abilities with others (Competition); (c) the desire to do exercise and interact socially with others (Affiliation); (d) the desire to receive recognition for one's involvement and accomplishments in exercise (Social Recognition); (e) the desire to avoid disease and maintain one's health through exercise (Health Benefits); (f) the desire to increase one's level of physical capacity (Fitness); (g) the desire to cope with and relieve stress (Mental Benefits); (h) the desire to have an attractive physique (Appearance); (i) the desire to lose weight (Weight Management); and (j) the desire to increase agility (Agility/ Flexibility).

The scales were reliable and valid as indicated by a stable factor structure across samples and factor analyses. The Cronbach's alpha reliability coefficients for original scales ranged from .74 to .94 (Duda & Tappe, 1987). Duda and Tappe's later work (1988) has led to scale refinement and evidence of its convergent, construct, and predictive validity.

Data Analyses

Four statistical techniques and one descriptive analysis were used to answer six questions. First, culture by gender by group (2 x 2 x 2) MANOVAs were performed to examine the cultural, gender, and group differences on psychological variables. Second, Chi-square tests of association were used to determine if six program factors differed by culture, gender, and group. Third, MANOVAs were performed to examine cultural, gender, and group differences on personal variables. Fourth, descriptive data were reported to describe responses to four open-ended questions. Fifth, canonical correlation analyses were performed to examine the relationships among psychological variables. Sixth, canonical analyses were performed to examine the relationships between personal and psychological variables.

RESULTS

Reliability Analyses

Internal consistency analysis, Cronbach's alpha reliability, was performed to examine the reliability of both English and Chinese versions of the scales. As shown in Table 2, the Self-Motivation Inventory, Sport Orientation Questionnaire, and Personal Incentives for Exercise all demonstrated good internal consistency.

Table 2 Reliability (Cronbach's alpha) of Self-Motivation, Sport Orientation, and Personal Incentives for Exercise Measures for the two Cultural Groups.

Scale	N of items	U.S.	Taiwan
Self-Motivation	40	.90	.90
Sport Orientation			
Competitiveness	13	.96	.90
Win	6	.86	.79
Goal	6	.90	.87
Personal Incentives			
Competition	4	.90	.79
Appearance	5	.90	.80
Mental Benefits	7	.79	.81
Affect/Enjoyment	4	.86	.77
Social Recognition	4	.72	.85

Scale	N of items	U.S.	Taiwan
Health	3	.81	.92
Flexibility/Agility	6	.89	.91
Weight Control	4	.91	.91
Mastery	4	.83	.83
Fitness	7	.86	.90

Cultural, Gender, and Group (University/Club) Differences on Psychological Variables

Culture by gender by group (2 by 2 by 2) MANOVAs were performed on Self-Motivation, 3 Sport Orientations, and 10 Personal Incentives for Exercise. The results yielded culture, $F(14,370) = 21.12$, $p<.001$, gender, $F(14,370) = 6.16$, $p<.001$, and group (university/club) main effects, $F(14,370) = 3.41$, $p<.001$, and a culture by group, $F(14,370) = 5.64$, $p<.001$, interaction effect.

Cultural Differences

The means and univariate results in Table 3 indicated that cultural differences were significant for Self-Motivation, Competitiveness of the SOQ, and Competition, Appearance, Mental Effects, Social Recognition, Health, Weight Control, Mastery, and Fitness Incentives of the PIEQ. American subjects scored significantly higher on all of these 11 variables, indicating that this group was more self-motivated, more competitive, and more likely to engage

in exercise for competition and improved appearance. Americans also were more likely to engage in exercise for mental, social, and health benefits, as well as weight control, mastery, and fitness incentives.

Table 3 Cultural Differences on Self-Motivation, Sport Orientation, and Personal Incentives for Exercise

Scale	M for Americans	M for Taiwanese	Univ. F
Self-Motivation	150.1	132.2	100.7***
Sport Orientation			
Competitiveness	45.4	40.8	11.7***
Win	18.0	18.5	1.0
Goal	24.1	23.2	3.0
Personal Incentives			
Competition	15.1	12.1	55.3***
Appearance	20.5	16.4	115.1***
Mental Benefits	24.2	23.1	8.1**
Affect/Enjoyment	15.4	13.8	23.6***
Social Recognition	13.4	10.5	63.3***
Health	11.7	11.5	4.7*
Flexibility/Agility	24.1	23.5	2.5
Weight Control	15.4	14.0	18.6***
Mastery	17.3	14.9	61.8***
Fitness	29.1	27.1	25.4***

*** $p<.001$
** $p< .01$
* $p< .05$

Gender Differences

As Table 4 shows, gender differences were significant for Competitiveness and Win Orientation of SOQ, Competition, Social, Weight Control and Fitness Incentives of PIEQ. Males scored higher on all these variables except Weight Control Incentive. These differences demonstrated that males were more likely than females to participate in exercise for Competition, Win, Social, and Fitness motives, whereas females engaged in exercise more than males for Weight Control.

Table 4 Gender Differences on Self-Motivation, Sport Orientation, and Personal Incentives for Exercise

Scale	M for Males	M for Females	Univ. F
Self-Motivation	138.4	139.0	.01
Sport Orientation			
Competitiveness	45.1	39.7	31.9***
Win	19.3	17.0	17.8***
Goal	23.9	23.2	1.9
Personal Incentives			
Competition	14.0	12.4	38.4***
Appearance	17.5	18.3	3.3
Mental Benefits	23.5	23.6	.85
Affect/Enjoyment	14.5	14.3	1.0
Social Recognition	11.9	11.2	8.1**

Scale	M for Males	M for Females	Univ. F
Health	11.8	11.4	.83
Flexibility/Agility	24.1	23.3	1.4
Weight Control	14.2	14.9	5.8*
Mastery	15.8	15.7	1.4
Fitness	28.4	27.2	5.7*

*** p<.001
** p< .01
* p< .05

Group (University/Club) Differences

As can be seen in Table 5, group differences were significant for Competition, Appearance, Mental Benefits, Health, and Weight Control Incentives. Club exercisers scored higher than student exercisers on all but the Competition Incentive variable. These results indicate that club exercisers were more likely than student exercisers to engage in exercise for Appearance, Mental Benefits, Health, and Weight Control whereas students engaged in exercise more than club exercisers for Competition.

Table 5 Group Differences on Self-Motivation, Sport Orientation, and Personal Incentives for Exercise

Scale	M for Adults	M for Students	Univ. F
Self-Motivation	138.2	139.1	2.6

Scale	M for Adults	M for Students	Univ. F
Sport Orientation			
Competitiveness	42.2	42.7	2.1
Win	18.5	18.1	.58
Goal	23.7	23.4	.14
Personal Incentives			
Competition	12.8	13.6	5.6*
Appearance	18.1	17.7	10.7***
Mental Benefits	24.2	23.0	8.8**
Affect/Enjoyment	14.3	14.5	.25
Social Recognition	11.1	12.0	2.8
Health	12.1	11.1	16.4***
Flexibility/Agility	24.3	23.2	3.3
Weight Control	15.0	14.1	12.8***
Mastery	15.4	16.1	1.6
Fitness	28.2	27.5	3.6

*** $p<.001$
** $p< .01$
* $p< .05$

Cultural by Group Interaction Effect

A significant cultural by group (university/club) interaction effect emerged on Competitiveness and Win Orientation, Competition, Affect, Flexibility, Appearance, Social Recognition, and Mastery Incentives.

Competitiveness. As shown in Figure 1, Taiwanese adults scored slightly higher than their American counterparts on Competitiveness; however, American students scored much higher than Taiwanese students. These results suggest that American students were the most competitive among these four subgroups, Taiwanese and American adults were quite comparable in their competitiveness, and Taiwanese students were the least competitive of all.

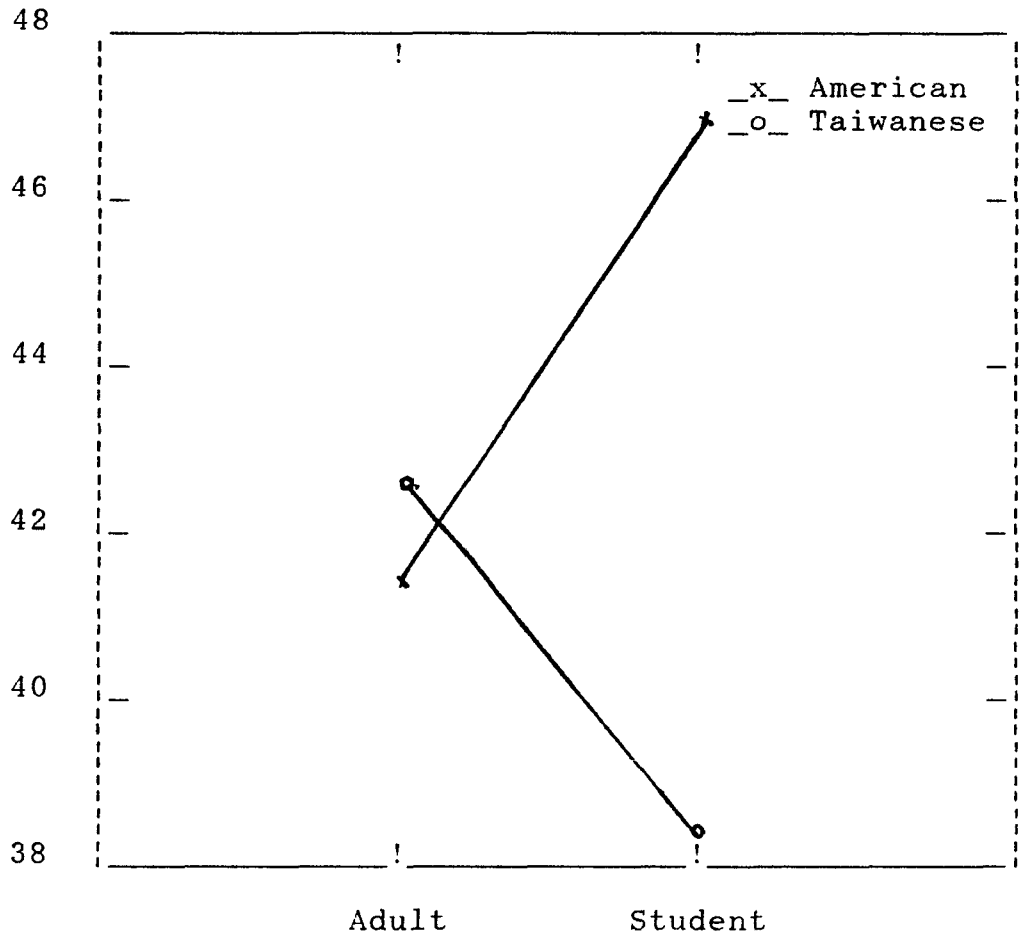

Figure 1 Interaction Effect of Culture and Adult/Student On Competitiveness

Win Orientation. As shown in Figure 2, Taiwanese adults scored much higher than their American counterparts on Win Orientation, whereas American students scored slightly higher than Taiwanese students.

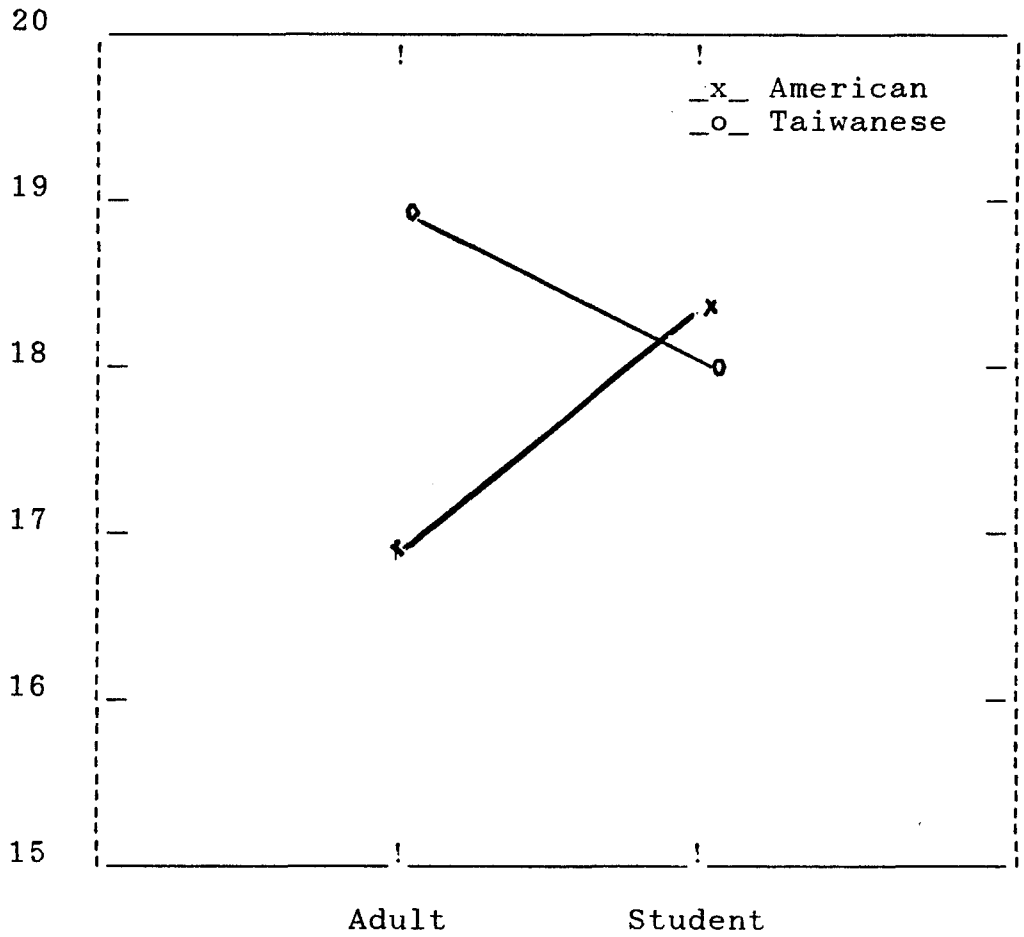

Figure 2 Interaction Effect of Culture and Adult/Student On Win Orientation

Competition Incentive. As can be seen in Figure 3, both American adults and students scored higher on this dimension than their Taiwanese counterparts. The difference between the American and Taiwanese students was particularly great. Although the difference between American and Taiwanese adults was just the reverse of the previously reported

Competitiveness of SOQ, the adults' scores in both culture were quite close. However, both the Competitiveness of SOQ and the Competition Incentive of PIEQ indicated that American students were far more competitive than other subgroups, especially as compared to Taiwanese students.

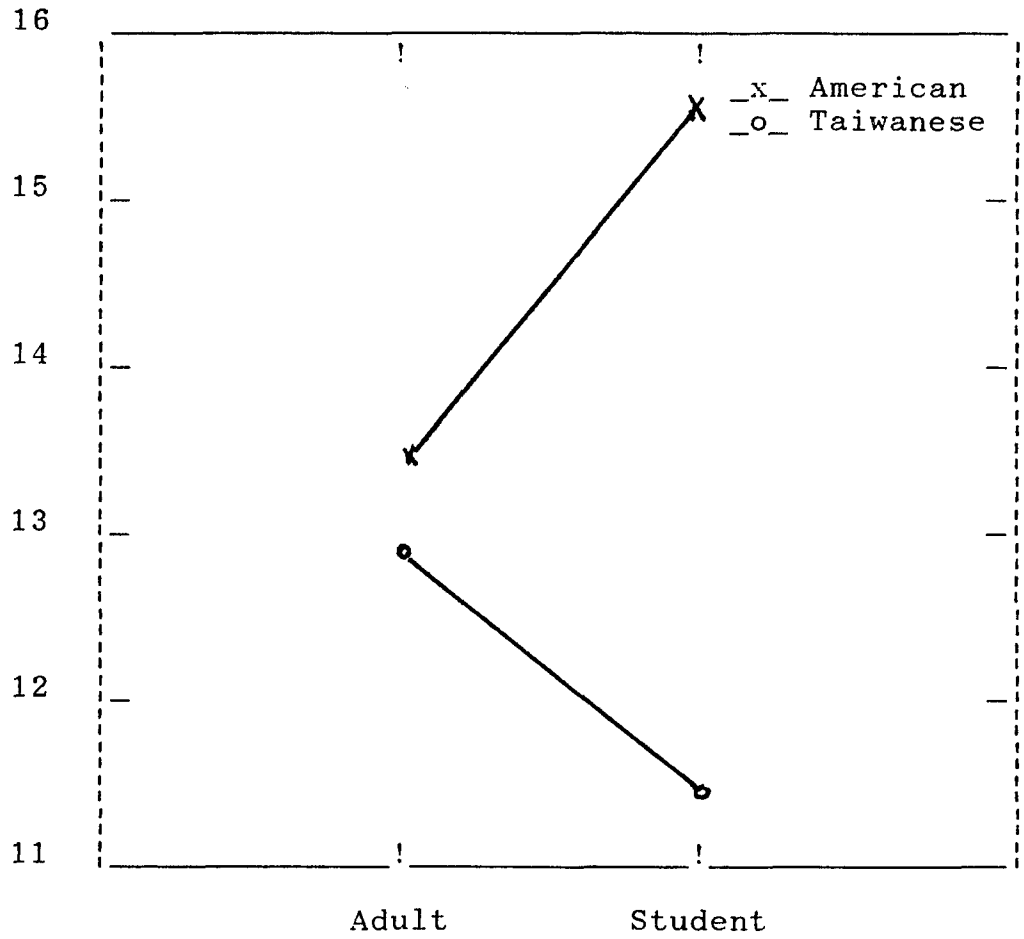

Figure 3 Interaction Effect of Culture and Adult/Student On Competition Personal Incentive

Affect/Enjoyment Incentive. As shown in Figure 4, both American adult and student exercisers scored higher than their Taiwanese counterparts in the Affect/Enjoyment Incentive. The difference was larger between American and Taiwanese students. These results indicate that American exercisers, both adults

and students, had higher incentive to participate in exercise for enjoyment.

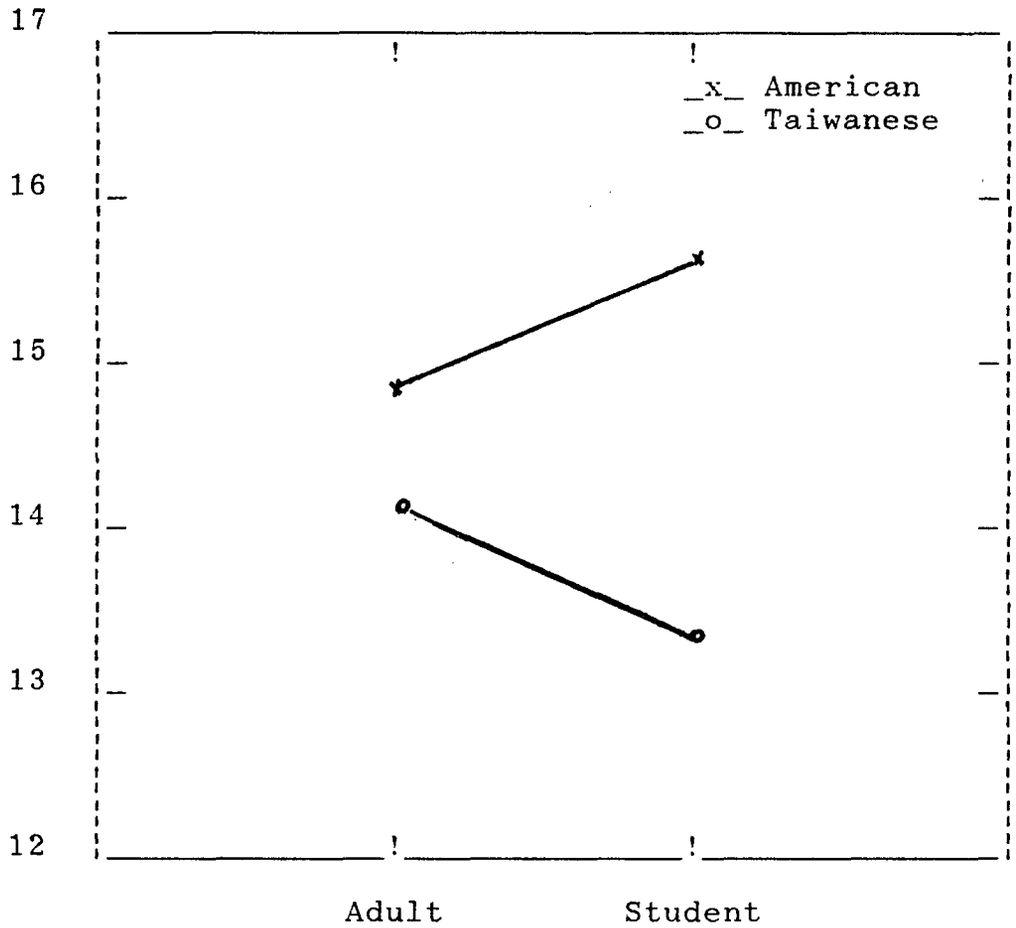

Figure 4 Interaction Effect of Culture and Adult/Student On Affect/Enjoyment Personal Incentive

Flexibility/Agility Incentive. As shown in Figure 5, both Taiwanese adults and American students scored similarly higher than their cultural counterparts. However, the difference was especially large between the two student subgroups, indicating that while Taiwanese students had the lowest incentive to do exercise to improve their flexibility/agility, the rest of the other three subgroups had a quite high incentive to do so.

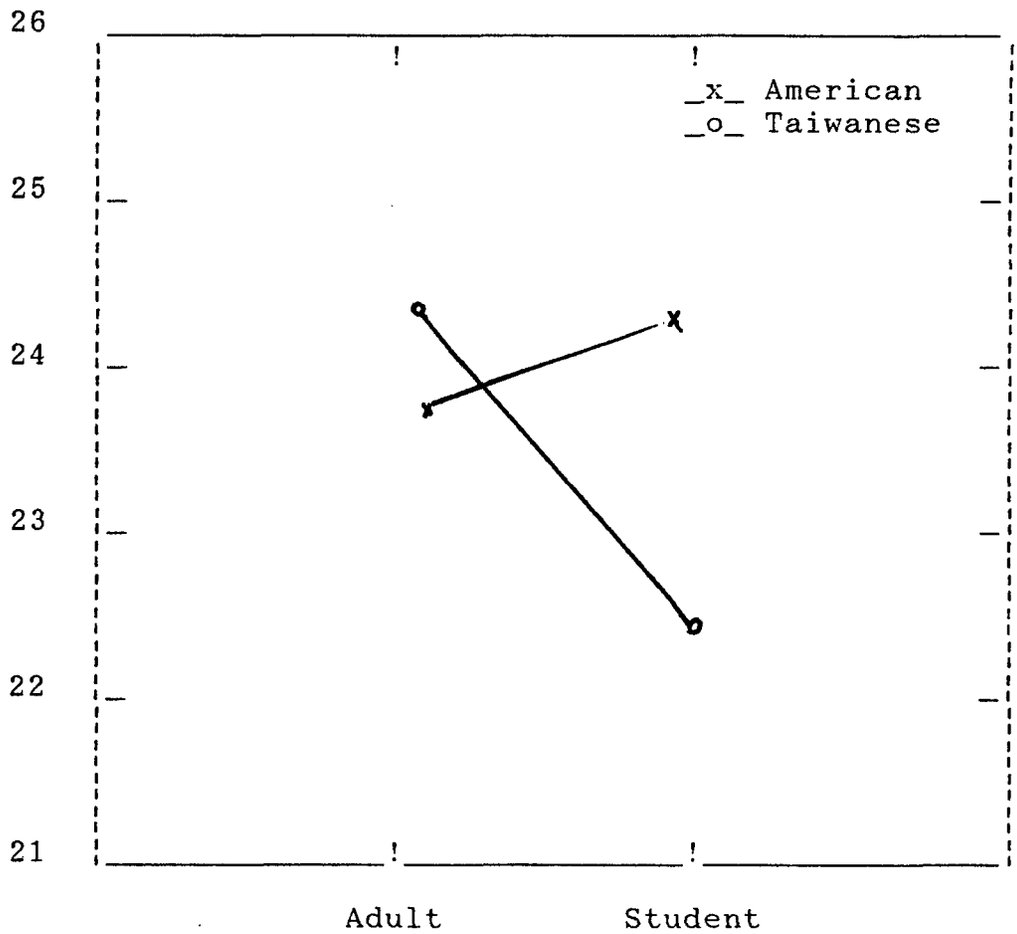

Figure 5 Interaction Effect of Culture and Adult/Student On Flexibility/Agility Personal Incentive

Appearance Incentive. As shown in Figure 6, the cultural differences were quite distinct. The American adults and students had a much higher incentive than their Taiwanese counterparts to use exercise to improve their appearance. Taiwanese adults had a higher score than Taiwanese students, indicating that Taiwanese students did not do exercise to improve their appearance as much as the other three subgroups.

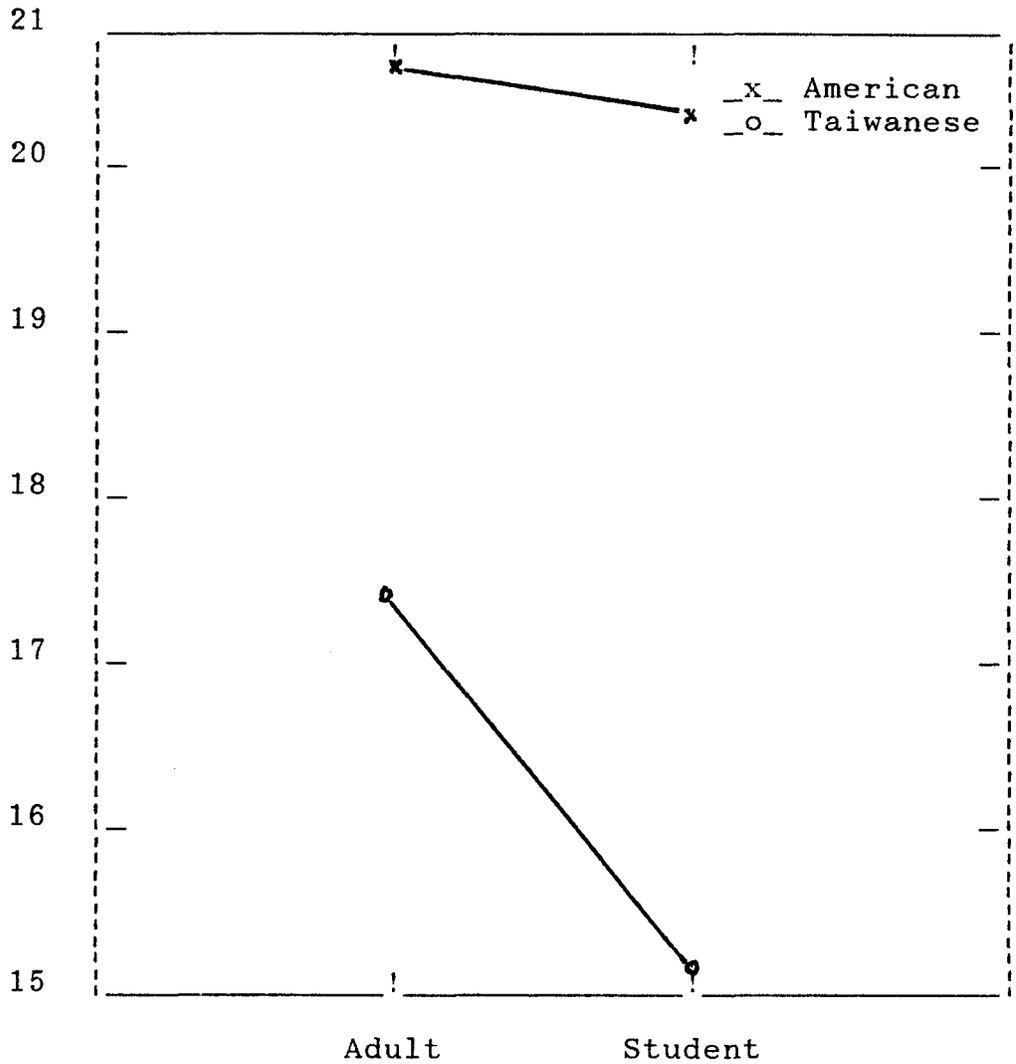

Figure 6 Interaction Effect of Culture and Adult/Student On Appearance Personal Incentive

Social Incentive. As shown in Figure 7, both American adults and students scored much higher than their Taiwanese counterparts on this dimension, with American students scoring the highest of all. These results indicated that Americans, especially American students, had a much stronger incentive than the Taiwanese to do exercise to gain social recognition.

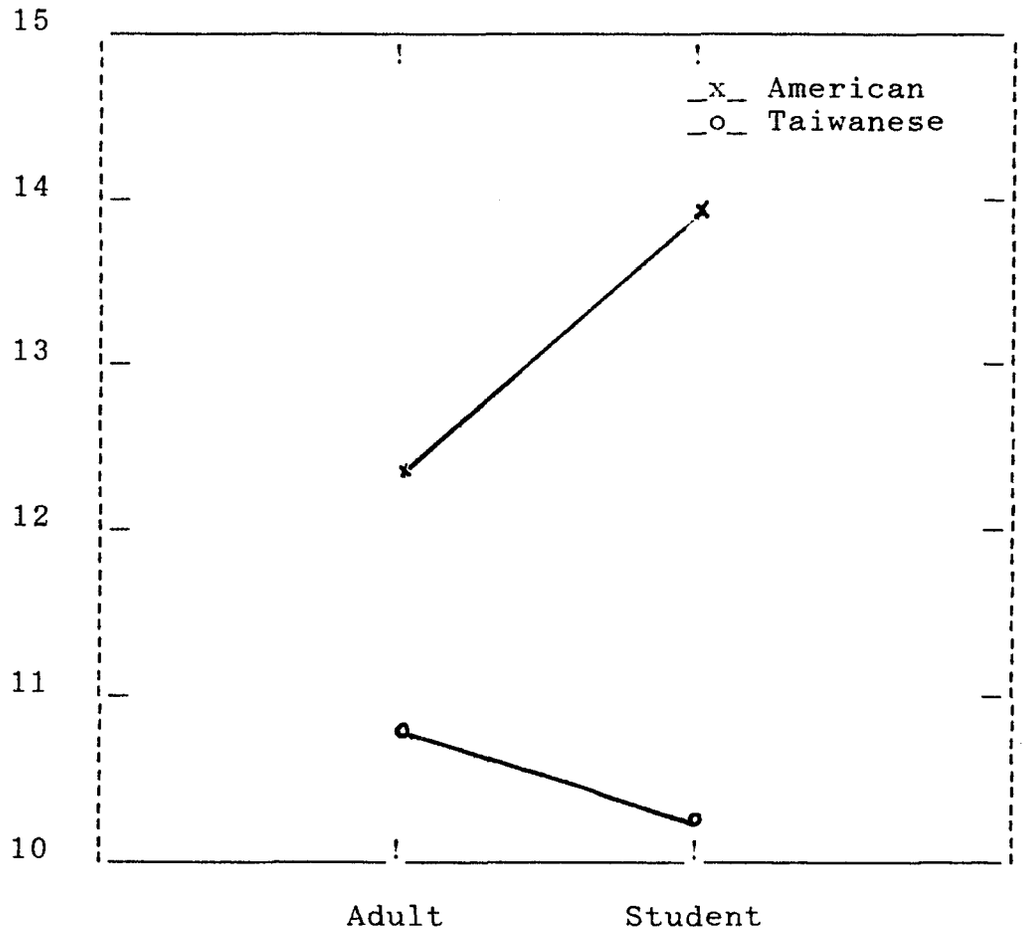

Figure 7 Interaction Effect of Culture and Adult/Student On Social Personal Incentive

Mastery Incentive. As shown in Figure 8, both American subgroups scored higher than their Taiwanese counterparts in this area. This difference indicated that American students and adults had a stronger incentive than their Taiwanese counterparts to master skills through exercise.

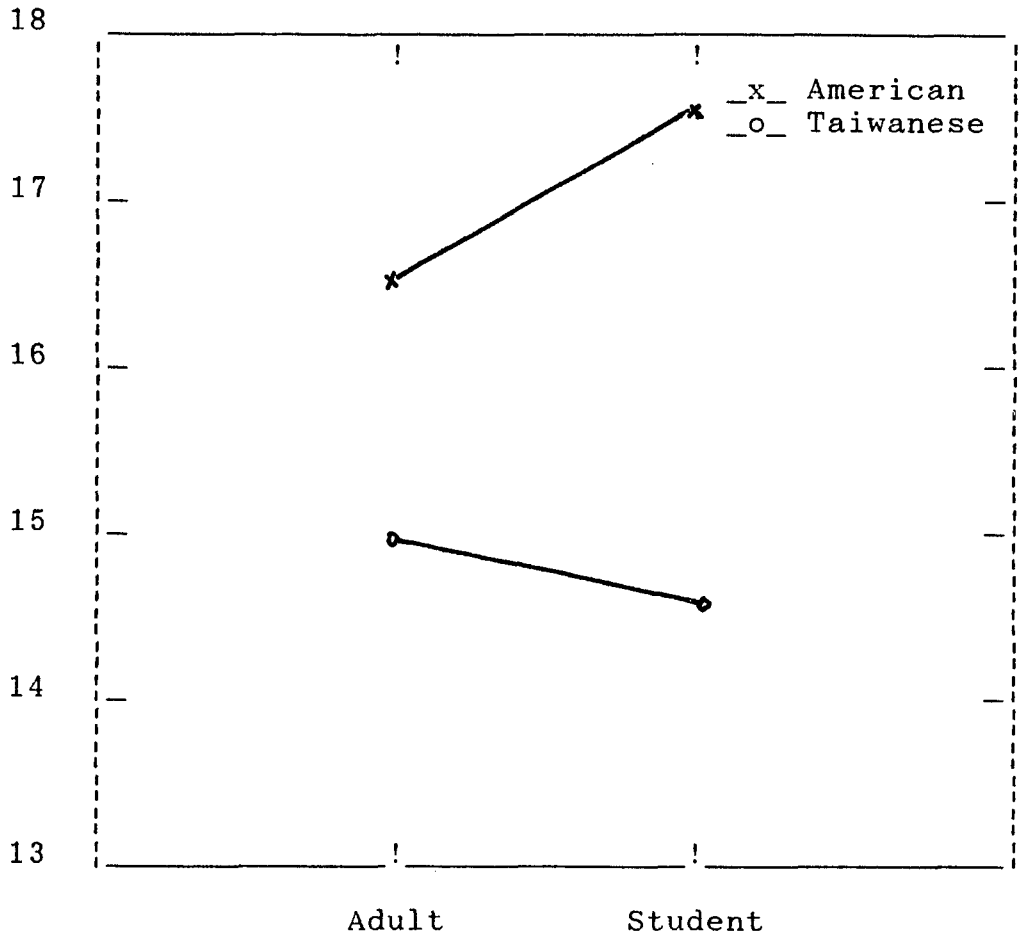

Figure 8 Interaction Effect of Culture and Adult/Student On Mastery Personal Incentive

In summary, the Taiwanese student subgroup was, among these four subgroups, the least motivated to do exercise for competition and for the improvement of affect, flexibility, appearance, social, and mastery aspects. Overall, Americans, especially American students, had higher incentives than the Taiwanese adults and students to do exercise for the improvement of these factors.

Cultural, Gender, and Group (University/Club) Differences on Program Variables

Chi-square tests of association were performed to examine cultural, gender, and group differences on six program variables: preferences for individual versus group exercise, for competitive versus noncompetitive activities, for organized versus unorganized activities, and for activities with versus without instructors, availability of social support, and participation in other sports outside the current program.

Cultural Differences

Chi-square results revealed cultural differences in subjects' preferences for various types of exercise programs. As shown in Table 6, more Americans preferred competitive activities than preferred noncompetitive ones. However, the reverse was true for Taiwanese. More Taiwanese preferred noncompetitive activities than preferred competitive ones.

Table 6 Cultural Differences on Program Variables

Variables	Americans		Taiwanese		
	Actual Count	Exp. Value	Actual Count	Exp. Value	Chi-Square
Preference for					
Individual	35	28	46	53	2.49
Group	100	107	203	196	
Competitive	82	63	101	120	15.5***
Noncompetitive	49	68	147	128	
Organized	96	83	145	158	8.3**
Unorganized	34	47	104	91	

Variables	Americans		Taiwanese		
	Actual Count	Exp. Value	Actual Count	Exp. Value	Chi-Square
With a Teacher	72	81	163	154	3.4
Without a Teacher	58	49	85	94	
Social Support					
Yes	84	86	150	148	.04
No	58	56	97	99	
Other Sports Outside the Current Exercise Classes					
Yes	103	90	141	154	7.3**
No	39	52	101	88	

*** $p<.001$
** $p< .01$

Cultural differences were also found in the preference for organized versus unorganized sports, and participation of other sports outside the current exercise program. Generally, more exercisers in both cultures preferred organized classes than preferred unorganized classes. However, the difference was larger for Americans, indicating that a higher proportion of Americans than Taiwanese preferred organized classes and a lower proportion of Americans than Taiwanese preferred unorganized classes.

A similar pattern of differences existed for participation in other sports. In both cultures, more subjects participated in other activities outside the current programs than did not. However, the difference was larger for the Americans, showing that a higher proportion of Americans than Taiwanese participated in other activities.

Cultural differences were not found in preferences for individual versus group activities, for a class with versus without a leader, or in the availability of social support. These results indicated that, regardless of the cultural background, more exercisers preferred to exercise with a group than to exercise alone. Further, more exercisers preferred exercise classes with instructors than preferred classes without instructors. Finally, most exercisers had social support for their exercise regimen.

Gender Differences

The analyses indicated that gender differences existed in subjects' preferences for competitive versus noncompetitive activities, for exercise classes with versus without instructors, and in the availability of social support. As shown in Table 7, more males preferred competitive activities. In contrast, more females preferred noncompetitive activities.

Table 7 Gender Differences on Program Variables

Variables	Females		Males		
	Actual Count	Exp. Value	Actual Count	Exp. Value	Chi-Square
Preference for					
Individual	42	41	39	40	.00
Group	155	156	148	147	
Competitive	70	90	113	93	15.8***
Noncompetitive	116	96	80	100	
Organized	123	118	118	123	.6
Unorganized	64	69	74	69	

Variables	Females		Males		
	Actual Count	Exp. Value	Actual Count	Exp. Value	Chi-Square
With a Teacher	128	115	107	120	7.0**
Without a Teacher	57	70	86	73	
Availability of Social Support					
Yes	124	115	110	119	4.7*
No	64	73	91	82	
Other Sports Outside the Current Exercise Classes					
Yes	112	119	132	125	1.8
No	75	68	65	72	

*** $p<.001$
** $p< .01$
* $p< .05$

In terms of the presence of an instructor in an exercise program, more exercisers of both sexes preferred a class with an instructor, and fewer preferred no instructor. However, the difference between these two preferences was larger for females, indicating that more females than males preferred the presence of instructors.

In regards to the availability of social support in subjects' exercise regimen, a similar pattern of differences existed. Most exercisers of both sexes had social support. Nevertheless, the difference was larger for females, indicating that more females than males had social support.

No gender difference was found in the preference for individual versus group activities, for organized versus unorganized programs, and for participation in other exercises

outside the current programs. Most men and women preferred group activities over individual ones. Also, more people preferred organized classes than preferred unorganized ones. Finally, more exercisers participated in other sports outside the current programs than did not.

Group (University/Club) Differences

Table 8 Group Differences on Program Variables

Variables	Adults		Students		
	Actual Count	Exp. Value	Actual Count	Exp. Value	Chi-Square
Preference for					
Individual	37	38	44	43	.00
Group	142	141	161	162	
Competitive	75	82	108	101	2.4
Noncompetitive	97	90	99	106	
Organized	97	113	144	128	11.3***
Unorganized	81	65	57	73	
With a Teacher	97	108	138	127	5.2*
Without a Teacher	77	66	66	77	
Social Support					
Yes	109	108	125	126	.00
No	72	73	83	82	
Other Sports Outside the Current Exercise Classes					
Yes	99	112	145	132	6.2*
No	76	63	64	77	

*** $p<.001$ * $p< .05$

The Chi-square results indicated group differences in participants' preferences for organized versus unorganized classes, for exercise classes with versus without teachers,

and for participation in other sports outside the current program. As shown in Table 8, more participants in both groups preferred an organized class than preferred an unorganized program. However, the difference between these two preferences was larger for student exercisers, meaning that more students than adults preferred an organized class and fewer students than adults preferred an unorganized program.

A similar pattern of differences held true for subjects' preference for a class with versus without an instructor and for the participation in other sports outside the current program. In both groups, more exercisers preferred a class with a teacher and participated in other sports outside the current programs. However, the difference was larger for university exercisers, indicating that more student than club exercisers preferred a class with a teacher and participated in other sports.

No group difference was found in the preferences for individual versus group activities, for competitive versus noncompetitive sports, or in the availability of social support. In both groups, more exercisers preferred group activities over individual ones. In terms of the preference for competitive versus noncompetitive activities, both groups were about equal on each preference. Finally, in both groups, most exercisers had social support.

Cultural, Gender, and Group (University/Club) Differences on Personal Variables

Cultural by gender by group (university/club) (2 x 2 x 2) MANOVAs were performed to examine seven personal variables: age, years of education, minutes of exercise per session, frequency of exercise per week, length of participation in exercise programs, self-ratings of health and fitness status. These analyses yielded cultural, $F(7,377) = 11.8$, $p<.001$, gender, $F(7,377) = 4.4$, $p<.001$, and group, $F(7,377) = 27.9$, $p<.001$, main effects, and cultural by group, $F(7,377) = 10.6$, $p<.001$, interaction effect.

Cultural Differences

Cultural differences were found on subjects' years of education, length of time participated in exercise and minutes of exercise per session. As shown in Table 9, Americans had

Table 9 Cultural Differences on Personal Variables

Variable	M for Americans	M for Taiwanese	Univ. F
Age	25	29.1	.03
Years of Education	14.9	14.1	33.3***
Frequency Per Week	4.3	4.0	.79
Minutes Per Session	59.1	70.5	7.6**
Length of Exercise	62.1	44.1	20.2***
Health Self-Rating	3.7	3.7	1.2
Fitness Self-Rating	3.6	3.8	0.8

*** $p<.001$ ** $p< .01$

significantly more years of education, and participated in exercise longer than Taiwanese. However, Taiwanese exercised 10 minutes longer per session than Americans.

These results suggest that exercisers in both cultures were highly educated (at least two years in college). Americans apparently started their exercise participation at an earlier age in life, because the mean age was lower whereas the months of participation were longer than the Taiwanese. No cultural differences were found on age, exercise frequency per week, and self-ratings of health and fitness. Both groups were young, participated in exercise four times per week, and rated themselves very healthy and fit.

Gender Differences

As shown in Table 10, gender differences were found in subjects' age, frequency of exercise per week, length of

Table 10 Gender Differences on Personal Variables

Variable	M for Females	M for Males	Univ. F
Age	24.5	30.6	8.2**
Years of Education	14.5	14.3	1.9
Frequency Per Week	3.6	4.7	19.1***
Minutes Per Session	62	70.3	2.3
Length of Exercise	34.9	65.7	11.5***
Health Self-Rating	3.6	3.8	5.7*
Fitness Self-Rating	3.6	3.8	4.2*

*** $p<.001$ ** $p< .01$ * $p< .05$

exercise participation, and self-ratings of health and fitness status. Males exercised more frequently than females, and had participated in exercise longer (about two times longer) than females. The mean age was lower for females probably due to a larger sample of Taiwanese male adults who tend to be older.

All exercisers rated themselves healthy and fit, however, males rated themselves as slightly healthier and more fit than females. No difference was found in years of education or minutes of exercise per session. Both sexes were equally educated and exercised about 65 minutes per session.

Group Differences (University/Club)

As shown in Table 11, group differences were found in subjects' age, years of education, frequency of exercise per week, length of exercise participation, and self-ratings of health and fitness status. Adult exercisers were older and

Table 11 Group Differences on Personal Variables

Variable	M for Adults	M for Students	Univ. F
Age	35.6	20.7	158.3***
Years of Education	14.6	14.2	24.9***
Frequency Per Week	4.8	3.7	9.7**
Minutes Per Session	67.7	65.1	2.0
Length of Exercise	73.7	30.5	34***
Health Self-Rating	3.9	3.5	19.3***
Fitness Self-Rating	4.0	3.5	27.4***

*** $p<.001$ ** $p< .01$

more educated, did exercise more frequently, had participated in exercise longer, and rated themselves as healthier and more fit than students. No difference was found in minutes of exercise per session, with both groups exercising about 67 minutes in each session.

Cultural by Group Interaction Effect

Years of Education. As indicated in Figure 9, American adults had the highest education of all (17 years of education). This suggests that these individuals were at least university graduates. Taiwanese adults were the least

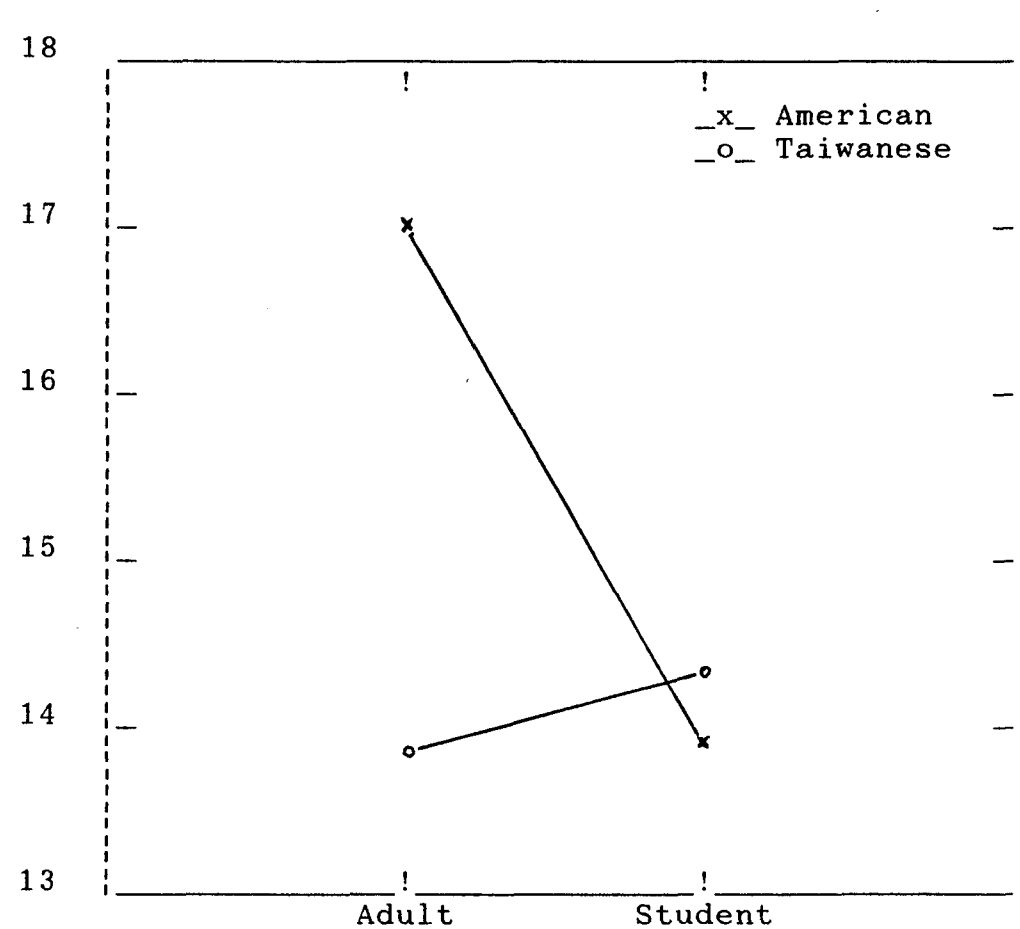

Figure 9 Interaction Effect On Years of Education

educated of all, but their education level was still comparable to American and Taiwanese students.

Exercise Frequency Per Week. As shown in Figure 10, Taiwanese adults exercised more frequently than their American counterparts whereas the opposite was true for two student subgroups. Further, both American subgroups had equal frequency. However, Taiwanese adults exercised about two times more frequently than Taiwanese students; probably because that Taiwanese students do not do exercise outside their required physical education classes.

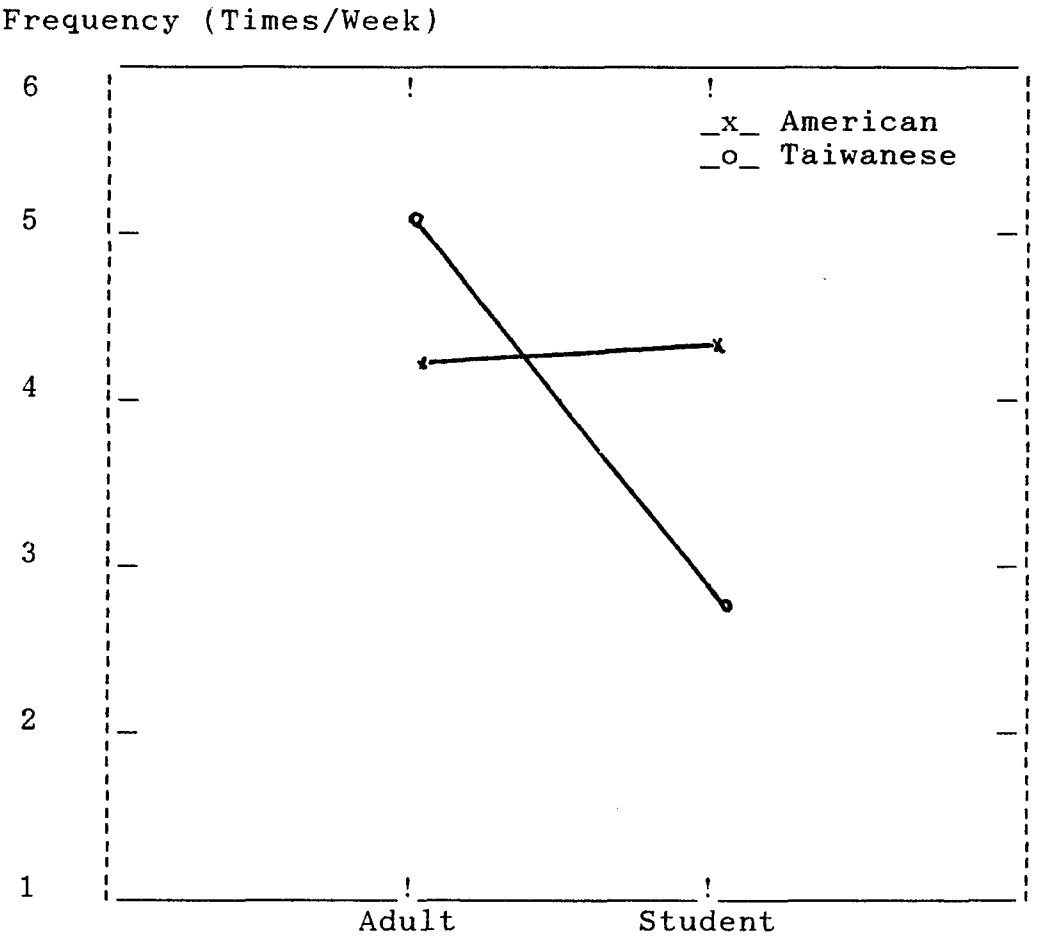

Figure 10 Interaction Effect On Exercise Frequency Per Week

Open-Ended Questions

Open-ended responses were first tallied based on subjects' original reactions. Related or similar responses were then grouped into a category which reflects the central concept. For example, original responses such as "improve my health," "tone my muscle," "maintain good shape," " take care of my body," "gain cardiovascular benefits," and "gain strength and coordination" were categorized as "health enhancement/maintain good shape."

Reasons for Initiating Exercise

As shown in Table 12, for Americans, the top five reasons for initiating exercise programs were: (a) health enhancement/ maintaining good shape (42.5%); (b) fun/enjoyment (28.3%); (c) weight control (20.2%); (d) continuation of youth sport

Table 12 Reasons for Initiating Exercise Programs

	U.S.	Taiwan
Health-Enhancement	42.5%	56%
Enjoyment	28.3%	35%
Weight Control	20.2%	2.4%
Youth Sports	13%	.4%
To Feel Better	12.6%	5.6%
Competition	4.3%	5.4%

	U.S.	Taiwan
Social Reasons	3.8%	5.8%
Stress Reduction	3.2%	4%
School Requirement	3.2%	12%
Nothing Else to Do	2.2%	4%
Learning Skills	.7%	3.6%

participation (13%); and (e) to feel better (12.6%). For Taiwanese participants, the top five list is as follows: (a) health enhancement/maintaining good shape (56%); (b) fun/enjoyment (35%); (c) school requirement (12%); (d) social reasons (5.8%); and (e) to feel better (5.6%).

Health enhancement/maintaining good shape, fun/enjoyment, and to feel better were the most important reasons for initiating exercise in both cultures. Additionally, weight control and the continuation of youth sport appeared to be important for more Americans than Taiwanese. However, school requirement was an important reason for more Taiwanese.

Reasons for Continuing Exercise

As shown in Table 13, for Americans, the major five reasons for continuing exercise programs were: (a) health enhancement/maintaining good shape (64%); (b) fun/enjoyment (26.5%); (c) to feel better (17.5%); (d) weight control (14%);

Table 13 Reasons for Continuing Exercise Programs

	U.S.	Taiwan
Health-Enhancement	64%	46%
Enjoyment	26.5%	36.6%
To Feel Better	17.5%	21.3%
Weight Control	14%	4.2%
Stress Reduction	12%	3%
Competition	6%	4.2%
Social Reasons	2.8%	6%
Learning Skills	1.4%	3%
School Requirement	1.4%	12%

and (e) stress reduction (12.%). For Taiwanese participants, the top five list is as follows: (a) health enhancement/ maintaining good shape (46%); (b) fun/enjoyment (36.6%); (c) to feel better (21.3%); (d) school requirement (12%); and (e) social reasons (6%).

Health enhancement/maintaining good shape, fun/enjoyment, and to feel better were the most important reasons for continuing exercise in both cultures. Weight control and stress reduction were important for more Americans than Taiwanese. In contrast, school requirement remained an important reason for Taiwanese. Social reasons, although listed as the fifth reason for Taiwanese, was chosen by equal proportions of exercisers from both cultures.

There were differences between reasons for initiating and continuing exercise. For Americans, the continuation of youth sport was replaced by health enhancement, to feel better, and stress reduction as reasons for continual exercise. For Taiwanese, a higher percentage than in the initial stage exercise to "feel better", whereas a lower percentage of exercisers responded to "health enhancement." The seemingly lower percentage of Taiwanese responding to "health enhancement" as a reason for continuing exercise was due to the low response rate to this question.

Thoughts and Feelings after Exercise Involvement

First, as shown in Table 14, 45% of Americans and 55% of Taiwanese participants responded that a "better quality of

life" was relevent in feelings and thoughts after exercise involvement. "Better quality of life" included statements such as "my lifestyle changed for the healthier and better," "I am happier," and "I am more self-disciplined," which indicated an overall improvement of well-being. Secondly, for 36% of Americans and 30.5% of Taiwanese, "feeling better physically and psychologically" was the major benefit of exercise. Third, 23% of American and 60% of Taiwanese indicated that they became healthier, stronger, and more fit after exercise involvement. Finally, a small proportion of Americans as well as Taiwanese responded that they gained other benefits such as stress reduction, weight control, and social affiliation from exercise participation. A small percentage of exercisers reported no change after exercise.

Table 14 Feelings and Thoughts After Exercise Involvement

	U.S.	Taiwan
Better Quality of Life	45%	55%
To Feel Better	36%	30.5%
Health-Enhancement	23%	60%
Weight Control	5.6%	1%

	U.S.	Taiwan
Stress Reduction	5.6%	4.4%
Social Reasons	.7%	3.6%
A Way of Escape	.7%	.4%
No Change	2.8%	4.4%

Sources of Social Support

As can be seen in Table 15, for 84 out of 142 American subjects who had social support in their exercise programs, the top three sources were: (a) friends (78.6%); (b) family members (38%); and (c) spouse (13.2%). For 150 out of 249 Taiwanese exercisers, the top three list is as follows: (a) friends (66%); (b) family (31%); and (c) teachers (14%). Other sources of support indicated by a small percentage of exercisers were physicians and co-workers. These results indicated that friends and family members were major sources of social support in both cultures.

Table 15 Sources of Social Support

	U.S.	Taiwan
Friends	78.6%	66%
Family Members	38%	31%
Spouse	13.2%	8.7%
Teachers	8.7%	14%
Doctors	8%	9%
Co-Workers	4.4%	.7%

Participation in Current Exercise Programs

As indicated in Table 16, the top five activities for American exercisers on the list of currently chosen physical fitness programs were: (a) weight lifting (29.6%); (b) jogging

(27.5%); (c) tennis (19%); (d) aerobic/dancing (18.5%); and (e) basketball (17.6%). For Taiwanese, the top five list included: (a) jogging (34%); (b) tennis (24%); (c) volleyball (21.5%); (d) basketball (21%): and (e) aerobic/dancing (17%).

Table 16 Participation in Current Exercise

	U.S.	Taiwan
Weight Lifting	29.6%	.4%
Jogging	27.5%	34%
Tennis	19%	24%
Aerobic/ Dancing	18.5%	17%
Basket-ball	17.6%	21%
Calis-thenics	17.3%	13%
Walking	17%	3%
Volley-ball	16.8%	21%
Swimming	13.4%	6.6%
Biking	12%	1.2%

	U.S.	Taiwan
Golf	1.5%	1.2%
Martial Arts	.7%	10.5%
Table-tennis	.7%	12.6%
Racket-ball	3.5%	0%
Soccer/ Football	2.2%	1.2%
Baseball/ Softball	3.8%	6%
Badminton	0%	12.1%
Bowling	0%	.4%
Skating/ Skiing	.4%	0%

Jogging, aerobic/dancing, tennis, and basketball were the most popular activities in both cultures. However, one would observe different ways to engaging in these sports in Taiwan. These activities are all outdoor exercises which require relatively simple equipment and facilities. In Taiwan, quite often one sees people playing tennis at an

outdoor track or on a basketball court without a net. Also, one will often see a tennis class with 30 students with only two official courts available. The key is that, to play the sport in Taiwan, the activity itself must be very adaptable to suit the limited equipment and over-crowded space. This also would explain why weight lifting was the most popular exercise for Americans whereas it had the lowest participation rate in Taiwan.

Other cultural differences concerning the participation in currently chosen activities were: (a) a much higher percentage of Americans than Taiwanese engaged in walking (17% versus 3%) and biking (12% versus 1.2%); and (b) a greater number of Taiwanese than Americans participated in martial arts (10.5% versus .7%), table tennis (12.6% versus .7%), and badminton (12.1% versus 0%). To make the walk or bike ride pleasant, one would think that a spacious rather than an overpopulated area is more conducive. Activities such as martial arts, table tennis, and badminton require little space and equipment. Thus, it is clear how opportunity to engage in certain types of exercise can be affected by the environment.

Correlations among 3 Sport Orientation and 10 Personal Incentives for Exercise

Scores on the two multidimensional scales, Personal Incentives and Sport Orientation, were used as predictor and criterion variables in canonical analyses to examine the relationship between linear combinations of these two sets of

variables. As shown in Table 17, two canonical variates were significant, accounting for 50% and 23% of the variance (Rc1 = .71, Rc2 = .53, p<.001) respectively. However, Pedhazur (1982) reported that the redundancy index can provide a more accurate assessment of the strength of the association between data sets. A redundancy index was calculated for each canonical variate. These indices showed that the first canonical variate accounted for 7.6% of the variance, and the second accounted for 6.3%. It appears that the ability of Sport Orientation to explain variances in Personal Incentives for

Table 17 Canonical Analyses on Psychological Variables of Sport Orientation, and Personal Incentives

Criterion	Loadings 1	Loadings 2	Predictor	Loadings 1	Loadings 2
Personal Incentives			**Sport Orientation**		
Competition	.96	-.25	Competitiveness	.88	-.42
Appearance	.23	-.35	Win	.17	-.91
Mental Benefits	-.03	-.59	Goal	.58	.00
Affect/Enjoyment	.41	-.39			
Social Recognition	.51	-.02			
Health	.01	-.58			
Flexibility/ Agility	.04	-.55			
Weight Control	-.02	-.64			
Mastery	.30	-.77			
Fitness	.12	-.67			

Exercise was low. Therefore, we can conclude that Sport Orientation and Personal Incentives for Exercise are two related but different exercise motivation measures.

To further understand the contributions of the specific predictor and criterion variables to the canonical correlations, the canonical loadings were examined. Pedhazur (1982) has suggested that loadings greater than .3 be treated as meaningful. These loadings revealed that, for the first canonical variate, the predictor variables of Competition, Affect, Social, and Mastery Incentives, as well as the criterion variables of Competitive and Goal Orientation contributed the most to the canonical correlation. An inspection of the loadings for the second variate revealed that predictor variables of Appearance, Mental Benefits, Affect, Health, Flexibility, Weight Control, Mastery, and Fitness Incentives and the criterion variables of Competitive and Win Orientation contributed the most to the canonical relationship.

The magnitude and signs of these loadings indicated that Competitive and Goal Orientation were positively related to Competition, Affect, Social, and Mastery Incentives. Further, Win and Competitive Orientation were positively related to Appearance, Mental Benefits, Affect, Health, Flexibility, Weight Control, Mastery, and Fitness Incentives.

Correlations Among Personal and Psychological Variables

Canonical correlation analyses were performed to examine the relationship between linear combinations of 7 personal variables and 14 psychological variables. One canonical variate was significant ($Rc = .50$, $p<.001$), with a reduncancy index revealing that this relationship accounted for 6% of the variance. The low redundancy index suggested that these personal variables were related but not greatly related to psychological variables.

The canonical loadings in Table 18 show that the personal variables of age, frequency of exercise per week, length of exercise participation, and self-ratings of health and fitness status contributed the most to the significant correlation. For the psychological variables, Self-Motivation, Competitiveness and Goal Orientations, Appearance, Mental Benefits, Health, Flexibility, Weight Control and Fitness Incentives were the greatest contributors to the relationship. Further, the signs of the loadings indicated that age, frequency of exercise per week, length of exercise participation, and self-ratings of health and fitness status were positively related to all psychological variables.

Table 18 Canonical Analysis on Psychological Variables and Personal Variables

Criterion	Loadings	Predictor	Loadings
Self-Motivation	-.69	Age	-.57
Sport Orientation		Years of Education	-.17
Competitiveness	-.41	Frequency Per Week	-.63
Win	-.21	Minutes Per Session	.09
Goal	-.41	Length of Exercise	-.55
Personal Incentives		Health Self-Rating	-.78
Competition	-.26	Fitness Self-Rating	-.81
Appearance	-.45		
Mental Benefits	-.49		
Affect/Enjoyment	-.24		
Social Recognition	-.24		
Health	-.74		
Flexibility/Agility	-.71		
Weight Control	-.48		
Mastery	-.30		
Fitness	-.67		

DISCUSSION

There can be little question of the growing need to understand cross-cultural variations in sport psychology. Because some variables that might be influencing sport and exercise participation co-vary with other factors in a particular cultural group, we need cross-cultural data to separate those factors and thereby determine which of them are important. For example, Edwards (1981) found that preference for outdoor wilderness activities and skill classes was higher among whites than blacks. One would speculate that this tendency is probably due to lower incomes rather than lack of incentive among blacks. In other words, the cultural group affiliation is closely related to economic status. Cross-cultural studies indicate that important factors such as economic status, climate, availability and cost of programs, and attitude toward exercise can affect various cultural groups differently. Therefore, those studies can provide relevant information to design practical programs and enhance motivation for different groups.

One purpose of the present study was to use three American exercise motivation measures, Self-Motivation, Personal Incentives for Exercise, and Sport Orientation for cross-cultural comparisons. Dishman and Ickes (1981) proposed self-

motivation as an important correlate of exercise adherence. Personal Incentives for Exercise was based on the Theory of Personal Investmant (Maehr & Braskamp, 1986) which provides a comprehensive approach to assessing variations in exercise involvement. Sport Orientation outlined three motivational dimensions (e.g., Competitiveness, Win, and Goal) for exercise and sport participants. More importantly, present results revealed cultural, gender, and group differences in exercise motivation, program preferences, and personal variables.

In this chapter, four major sections are addressed: (1) cultural differences in exercise motivation and behavior; (2) gender differences in exercise motivation and behavior; (3) group differences in exercise motivation and behavior; and (4) relationships between psychological and personal variables. Subsequently, practical implications and recommendations for future research are discussed.

Cultural Differences in Exercise Behavior and Motivation

Psychological Variables

In the present study, Americans were found more self-motivated, more competitive, and more likely than Taiwanese to engage in exercise for mental, social, and health benefits, as well as for improved appearance, weight control, mastery, and fitness incentives. These results are consistent with Chen's (1989) cross-cultural study in that Americans had higher exercise incentives and sense of self, and were more self-reliant

than Chinese. These cultural differences are also consistent with past research in other areas (Domino & Hannah, 1987; Singh, Huang, & Thompson, 1962). In other words, Americans seem to participate in exercise because they want to, rather than as a result of conforming to others' expectation. They felt that exercise is an effective tool to achieve many personal goals, such as improving mental, social and health conditions, enhancing appearance, controlling weight, and increasing skill and fitness levels. Additionally, previous research consistently finds Americans more competitive than other cultural groups due to the emphasis on individual achievement (Duda, 1985; Huang & Harris, 1973; Kagan & Madsen, 1972; Nelson & Kagan, 1972). Thus, it is not surprising that Americans were more competitive in exercise settings.

In short, Americans demonstrated higher incentives than Taiwanese to reach individual-oriented and ego-involved goals in exercise settings. American exercisers were also more self-motivated and competitive than Taiwanese.

In contrast, Taiwanese tended to perceive their lives as controlled by external forces such as fate and chance as compared to Americans (Domino & Hannah, 1987; Lao, 1977; Tin-Yee Hsieh, Shybut, & Lotsof, 1969). Thus, it is likely that Taiwanese do not perceive fitness and health as being under their control as much as Americans do. Consequently, their exercise motivation is affected. They are less self-moti-

vated and competitive, and have lower incentives to achieve personal goals in exercise settings.

Program Variables

Cultural differences emerged in three program factors: preferences for competitive versus noncompetitive activities and for organized versus unorganized classes, as well as the participation in more than one sport. First, more Americans than Taiwanese preferred competitive to noncompetitive activities. This tendency was consistent with the Americans' high competitiveness, indicating that psychological factors affect a person's program preference. Second, although more people in both cultures preferred organized to unorganized classes, more Americans and less Taiwanese than expected preferred organized classes. This difference may be due to the scarcity of exercise clubs in Taiwan. In other words, there is less opportunity for Taiwanese to participate in organized classes. Third, more Americans than Taiwanese participated in other sports outside the current exercise programs. This also may be due to lack of facilities and space, and lower exercise incentives among Taiwanese.

Cultural differences were not found in the preferences for social support, group activities, and classes with teachers. Interestingly, both group activities and classes with leaders also enhance social support, because peer exercisers and instructors can also serve as sources of support.

These program factors are consistent with North American findings. Franklin (1988) reported that poor exercise leadership and exercise alone were two variables predicting exercise dropouts. Oldridge (1977) reported that exercise leader appeared to be the single most important variable affecting exercise adherence. It is conceivable that poor leardership may contribute to the uninteresting atmosphere and lack of positive reinforcement in exercise classes.

Another important factor, exercising alone, also affects continual involvement. Massie and Shephard (1971) suggested that poorer exercise adherence was found in individual programs than in those including group dynamics. Heinzelmann and Bagley (1970) also reported that approximately 90% of adult exercisers preferred group programs to those in which one exercised alone. The social reinforcement and companionship associated with a group program apparently promotes exercise motivation.

In summary, three program factors that affect exercise adherence seem to be similar in both cultures. Classes with instructors, social support from exercise leader, family and friends, and group activities are essential. However, the degree of competition and organization involved in programs appears to vary as a function of culture. More Americans preferred competitive activities and organized classes as compared to Taiwanese. It is suggested that this may be due to personality differences such as competitiveness and goal

perspectives, and situational factors such as availability of facilities and space.

Personal Variables

Exercisers in both cultures were overall young, at least high school graduates, exercised four times per week for 60 to 70 minutes each session, had participated in exercise at least three and half years, and rated themselves very healthy and fit. These variables are consistent with North American studies reviewed by Stephens et al. (1985) and Dishman et al. (1985) in that personal characteristics of higher education, younger age, perceived physical competence and health status are related to exercise continuation.

One important difference in personal variables confirms the American society's emphasis in exercise and fitness. American subjects started their exercise participation at an earlier age in life than Taiwanese. This corresponds to the 1983 Miller-lite report (Research and Forecast, Inc., 1983) which estimated that more than one-half of Americans over 14 years of age have played organized sports as a child. Although no data in this regard are available for Taiwanese, it is very possible that American youths have more opportunities to engage in sports than Taiwanese. In Taiwan, the age of 13 to 19 is a time for academic competition; there is little room for sport participation in schools.

Although it is still equivocal as to whether childhood participation in physical activities is related to adult involvement (Dishman & Dunn, 1988), one would speculate that American children's early exposure to organized sports may enhance the competition aspect of sports whereas Taiwanese youths' limited exposure may lead to less competitive-oriented goals in sports. If this is so, then, it adds to the explanation of the higher competitiveness of Americans, especially college students, than their Taiwanese counterparts.

In short, most exercisers were young, educated, perceived themselves as healthy and fit, and had participated in exercise for over three years. However, Americans started their exercise participation much earlier in life than Taiwanese. It is suggested that this early experience in organized sports may affect goal orientation in exercise involvement.

Possible Reasons for Cultural Differences

Cultural Factors. Four cultural factors may have affected the differences in exercise involvement. First, labor saving devices and automobiles are more abundantly available at lower cost in the United States. The American lifestyle appears to involve more automation. In contrast, Taiwan is a developing country. People do not have as high income as Americans, and labor saving devices are more expensive. As a result, more manual work is needed in the daily life. It is likely that Taiwanese people feel more physically

exerted overall. Therefore, their incentive to do habitual exercise is affected.

Second, the over-populated condition in Taiwan affects the availability of space and programs. Further, the hot and humid climate could certainly make exercise less appealing.

Third, the group-oriented and external locus of control characteristics may hinder people from perceiving exercise a useful tool to achieve personal goals. Further, it is likely that the lack of youth sport and physical education lessons in elementary schools, and its rigid educational structure in Taiwan contribute to students' low motivation to exercise voluntarily outside their physical education classes. Also, the difference in physical education requirement between two universities might have affected results. The lack of free choice among Taiwanese students may result in their tendency to fulfill external requirement, instead of perceiving exercise as a tool for personal goals. Students' low incentives contribute greatly to the cultural differences, as Taiwanese students had the lowest incentives among all subgroups.

Fourth, American society has a positive attitude toward exercise and sport participation, and the social support is stronger. Also, the media disseminate exercise and sport related information more efficiently. Further, facilities and equipment are more readily available at reasonable costs. In other words, the environment is more favorable in the United States than Taiwan to engage in habitual exercises.

Measurement Errors. Five sources of errors possibly contribute to the cultural differences. First, translated materials may not have been perceived as relevent and original to the Taiwanese as it was to the Americans. Many English concepts or words do not have exact equivalent counterparts in the Chinese language. For example, "fitness" is considered a foreign and technical word understood only by researchers who are in contact with western publications. Therefore, it was translated into words which carry similar meanings, such as stamina and/or physical endurance. Also, "enjoy" implies hedonistic indulgence, therefore, it was replaced by "like the pleasure of." In addition, "competitive" is an uncommon word in Chinese, and was translated into "like to win" or "contest a game." "Aggressive" implies warlike offense in Chinese, and was replaced by "like to win or be strong." Further, "stress" and "anxiety" are uncommon concepts, and was replaced by "pressured" and "worried," respectively. These translations may be similar to the English words but may not reflect the precise concept of their originals. Also, terms such as "self-motivation" and "incentive" are less familiar to Taiwanese who deemphasize individuality/self and stress group expectations. It is possible that the translation process may have reduced the meanings of orginal English questionnaires.

Second, even if the translation is exact and equivalent, there are still linguistic differences in grammatical struc-

tures and interpretations. For example, "physically active" implies one's high physical ability to be active in the Chinese language whereas it simply describes one's behavioral pattern in English.

Third, the tendency to respond to the Likert scale may be culturally dependent. It is commonly observed that Chinese people are less expressive than Americans. Public expressions of strong reactions, disagreement, or negative opinions are considered offensive and inappropriate. This reserved fashion may affect the way Taiwanese respond to the Likert scale where the extent of agreement and disagreement are distinct and expansive. Therefore, it is possible that Taiwanese subjects may appear to give less positive responses even though their attitudes may in fact differ to a lesser extent from their American counterparts than they seem. However, an inspection of standard deviations indicates that Taiwanese and Americans had similar variability in all but four variables: Win Orientation, Competition, Mastery, and Fitness Incentives. In Win and Competition measures, Americans had higher standard deviations (5.7 versus 4.7 and 3.9 versus 3, respectively). In contrast, in Mastery and Fitness subscales, Taiwanese had higher variability (2.9 versus 1.9 and 4.4 versus 3.3). Overall, these standard deviations do not suggest that Taiwanese were more likely to express only neutral opinions in Likert scales as the researcher suspected. Therefore, this source of measurement error is minimum.

Fourth, it is possible that the recruited Taiwanese adults represented lower socioeconomic class, for the park exercise programs are more accessible to these people than private culbs are. Also, these lower socioeconomic class exercisers are probably less westernized. In the United States, however, most recruited club exercisers probably belong to upper or middle class. Further, the self-organized and unstructured park exercise programs in Taiwan might be perceived by participants as less formal than structured classes taught in enclosed private clubs. Therefore, the motivation to achieve goals may be less important. In a word, the possible socioeconomic differences between two cultural groups and the differences between the structured private club and the self-organized park exercise programs might have contributed to the apparent cultural differences.

Fifth, the fact that some adults took surveys home and some filled them out on the spot may also have affected their responses. It is possible that adults who took home the surveys had more time to respond to each item carefully. However, approximately equal proportion of Taiwanese and American adults completed the surveys at home. Thus, this procedural difference should cause negligible errors.

In summary, four cultural factors and five sources of measurement errors might have influenced cultural differences. Although measurement errors might have occurred, standard measures of exercise motivation are nonetheless valuable.

They provide not only multidimensional and comprehensive frameworks but a viewpoint of western industrialized societies for cross-cultural comparisons.

In the present study, only psychological variables were assessed through the scales, which were more susceptible to measurement errors related to cultural and language differences. Therefore, it is wise to incorporate psychological, program, and personal variables to draw a full picture of cultural differences. Program and personal variables were evaluated by open-ended and dichotomous responses, and were therefore less influenced by the language differences.

Open-ended Responses

Reasons for Initiating and Continuing Exercise

Three major reasons for both initiation and continuation of exercise in both cultures were health enhancement, fun/enjoyment, and to feel better, indicating that exercisers perceive physical activities as health-promoting and enjoyable. These findings are consistent with previous studies in Taiwan (Chiu, 1985; Hsu, 1982; Huang, 1979). Furthermore, the differences between reasons for initiating and continuing exercise seem to suggest motivational changes after the initial stage of participation. This motivational change is consistent with past research. Oldridge (1982) and Wankel (1985) found that initial participation is often associated with a desire to enhance one's health (e.g., to lose

weight, to enhance stamina), continued involvement is more dependent on the enjoyment of the program, its convenience and social support received.

Another cultural difference deserves to be noted. For American exercisers, weight control, continuation of youth sports, and stress reduction were important reasons for initiating and continuing exercise. In contrast, school requirement was an important reason for Taiwanese. This suggests that individual-oriented goals are important for Americans, whereas more Taiwanese do exercise to fulfill an external requirement. Thus, these open-ended responses are consistent with psychological variables in that Americans were more self-motivated and had higher exercise incentives.

Thoughts and Feelings after Exercise Involvement

Most exercisers reported that exercise involvement enhanced their quality of life, health and/or physical and psychological well-being. Blair (1988) reported that ample evidence has associated regular exercise with health and several quality of life factors such as longevity, work performance, and the aging process. Further, Morgan and O'Connor (1988) concluded that, based on examination of earlier reviews concerning exercise and mental health, physical fitness and mental health were positively related. The present study confirms that most exercisers experience healthy lifestyles,

suggesting that regular exercise is an important health-promoting behavior.

Sources of Social Support

Most Taiwanese and Americans reported that Friends and family members are the most important sources of social support. This finding is consistent with past research in North America (Dishman, et al., 1985; Heinzelmann & Bagley, 1970) and Taiwan (Executive Yuan, 1988; Huang, 1979).

Participation in Current Exercise Program

Jogging, aerobic dancing, tennis, and basketball were reported to be the most popular exercise activities for both Americans and Taiwanese. Many western sports have yet to be adapted in Taiwan. Because Taiwan is a highly populated country and has few privately-owned exercise clubs, most exercises are done in outdoor community parks or school facilities (Tsai, 1990). For example, badminton can be played easily on the side of streets without a net or court. Tennis is played as a form of "mini-tennis" in physical education classes, where rules are changed; so more students can be included in a court. Regular tennis can only be available in private tennis clubs and usually takes a long time to wait for an open court. Only exercises such as jogging and basketball, which require very simple equipment and allow for easy adaptation in different environments, can be popular in Taiwan. Therefore, table

tennis, martial arts, and badminton are popular; but weight lifting and golf are not.

In summary, this section discusses cultural differences in exercise behavior and motivation. Americans and Taiwanese differ on exercise motivation, preferences for competitive and organized exercise programs, opportunity for involvement in more than one sport, and choices of activities. However, cultural differences were not found in other personal and program factors. Most exercisers were young and at least high school graduates, exercised four times per week for 60 to 70 minutes per session, had participated in exercise for at least three and half years, and rated themselves very healthy and fit. Most exercisers preferred social support, group activities, and classes with instructors, and perceived exercise as a fun and health promoting activity.

Further, four cultural factors and three sources of measurement errors are suggested to explain cultural differences. Cultural factors affect a society's attitude toward exercise involvement, opportunities to participate in exercise, and accessibility of programs and facilities. Measurement errors result from Taiwanese' responses to translated instruments and the Likert scales. In addition, subjects' responses to open-ended surveys were incorporated with the standard measures to obtain a full understanding of cultural differences. The open-ended surveys reveal results which are overall consistent with standard measures.

In conclusion, American and Taiwanese exercisers have different levels of incentives and goals. Americans have higher incentives and focus on more individual- and ego-oriented goals in exercise involvement than Taiwanese. Further, situational factors such as cost, space, climate, lifestyle, cultural attitude toward exercise, and youth sport opportunities are different between these two cultures. All cultural and situational variables affect exercise motivation.

Gender Differences in Exercise Behavior and Motivation

Psychological Variables

Based on the results, males had stronger orientation toward Competitiveness and Winning as well as higher incentives toward Social Recognition and Fitness in their exercise involvement. Females, however, were more likely than males to participate in exercise to control weight. In addition, fitness was an important incentive for both genders as expected, and health enhancement was the most important reason for initiating and continuing exercise.

These findings are consistent with previous research in Taiwan and North America. Kang, Gill, Acevedo, and Deeter (1990) found that Taiwanese male college students had higher Competitiveness and Win Orientation than females, while females had higher Goal Orientation than males. Hsu (1982) reported that Taiwanese male college students endorsed fun and

reaching exercise goals more than females. Gill (1986; Gill & Dzewaltowski, 1988) reported that males more than females seem to focus on engaging in challenging, competitive activities and comparing with others in sports. Duda and Tappe (1989b) reported that male adults engaged in exercise more for competition whereas females exercised more for fitness reasons.

Further, Duda and Tappe (1989b) suggested that women tend to perceive themselves as less physically competent than men and believe that one's fitness status is mainly a result of fate or chance occurrences. Similarly, Chinese females tended to perceive their lives more externally than males (Lao, 1977). Therefore, Duda and Tappe suggested that low perceived competence and the belief that one's level of performance is externally controlled is related to lower incentives in women to continue exercise.

In conclusion, it could be suggested that males and females have different goal perspectives in exercise settings. Males tend to focus on extrinsic goals such as competition, winning, and social recognition, whereas females focus on more intrinsic goals such as weight control and fitness.

Program Variables

The chi-square analyses indicated gender differences in the preference for competitive activities. More males preferred competitive activities than preferred noncompetitive ones. However, the reverse was true for females. More

females preferred noncompetitive activities than preferred competitive ones. This finding is consistent with males' high Competitiveness and Competition Incentive.

Other important program factors for most exercisers were: classes with instructors, social support, group activities, and organized programs. Also, most people reported involvement in other sports outside the current programs. These findings are generally consistent with the literature. Social support and structured programs (Heinzelmann & Bagley, 1970), as well as group activities (Massie & Shephard, 1971), have correlated with better adherence.

However, a difference emerges between the present study and previous research. Duda and Tappe (1989) reported that women tended to perceive greater social support for their exercise involvement. Danielson and Wanzel (1977) reported that women were more likely than men to attend an exercise class if they were accompanied by a partner. The lack of gender difference in this study may be due to measurement. In the present study, subjects were asked to answer "yes" or "no" to the availability of social support. In Duda and Tappe's study, however, subjects were requested to rate on a Likert scale the perceived degree of support for their fitness programs provided by significant others. Therefore, the measurement in the present study is less sensitive in discriminating various groups.

In summary, the present findings indicate that social support, instructors, and organized programs along with group activities can make exercise more appealing for participants. These program factors are important for exercisers when considering initiating or continuing a program. The only gender difference was the preference for competitive activities. More males preferred competitive activities whereas more females preferred noncompetitive activities, suggesting that one needs to downplay the competition element of physical activities when dealing with female participants.

Personal Variables

The results indicated that males exercised more frequently and had participated in exercise two times longer than females. Female exercisers were younger than males. Both sexes rated themselves very healthy and fit; however, males rated themselves slightly healthier and more fit.

Research has suggested that males and females exhibit different exercise behaviors. For example, Gottlieb and Baker (1986) demonstrated that males participated in fitness activities more frequently than females. Chen (1989) reported that males had a higher physical activity level than females; also, more males than females continued to be active, and more females than males dropped out. Further, Corbin (1981) and Duda (1989) reported that females tended to view themselves physically as less able than males. In other words, these

findings are consistent with the previous research. In both cultures, males tend to be more physically active, more likely to continue exercise programs, and perceive themselves as healthier and more fit.

No gender by culture interaction effect was significant for psychological, program, and personal variables, indicating that gender differences were quite similar in both cultures. This tendency is not surprising when one observes the longtime male authoritarian society in Taiwan. Feminist activitism did not begin until the mid 80's in Taiwan when the number of working women increased drastically and the traditional female roles were seriously challenged. By the same token, the American masculine roles emphasize dominance, strength, and superiority. Women's similarly submissive and inferior roles in both socieites probably adversely affects their perception of the ability to initiate and continue the exercise programs.

Group (University/Club) Differences in Exercise Behavior and Motivation

Psychological Variables

Results indicated that adult exercisers were more likely than student exercisers to participate in sports for improved Appearance, Mental and Health Benefits, and Weight Control Incentives. Students engaged in physical activities more than adults for Competition Incentive. Specifically, American adults and students had higher incentives than their Taiwanese

counterparts to exercise for improvement of these factors. In contrast, the Taiwanese student subgroup was, among these four subgroups (i.e., American adult and student, and Taiwanese adult and student), the least motivated to do exercise for Competition, improvement of Flexibility and Appearance, Enjoyment, Social Recognition, and Task Mastery.

These results are consistent with past research. Duda (1989b) found that middle-aged and elderly adults tended to engage in exercise more than young adults for the health and fitness improvement. Also, Duda (1989) reported that college students who placed more importance on task involvement, such as the American students in the present study, tended to have participated in sports for a longer time.

It could be argued that the Taiwanese students' low incentive is due to their relatively low exposure to sport and that the Taiwanese society does not reinforce exercise in schools. Consequently, this lack of experience may lead to lack of self-confidence in sports which further results in low incentive to participate. In contrast, Duda (1989) suggested that American students tend to process their competence with respect to self-referenced standards and task-oriented goals, such as task mastery and enjoyment. Thus, they are likely to perceive their ability to be high. In other words, if such people find themselves in a situation in which they are not the best, they can focus on task improvement and enjoyment, and still feel competent. As a result, they have at least two

subjective sources of success experiences and, consequently, more reasons to continue their exercise involvement.

In summary, Taiwanese students had low exercise motivation, probably due to lack of exposure at the younger age and deemphasis of physical education in schools. In contrast, American students had the highest incentives to do exercise for personal goals. Adult exercisers in both cultures participated in physical activities more than college students for health and fitness and less for competition reasons. Therefore, it seems warranted to suggest that exercise goals change as one grows older.

Program Variables

The chi-square analyses indicated four important program factors for the higher proportion of both adult and student exercisers: an organized class, a class with an instructor, group activities, and social support. These four program factors are also important for both gender and cultural groups in this study, indicating that regardless of their gender, social, or cultural affiliation, these four factors are essential elements of exercise programs. Also, both competitive and noncompetitive activities were equally liked by exercisers, suggesting that both types of activities need to be offered in university exercise classes and adult programs.

Personal Variables

According to chi-square analyses, adult exercisers were older and more educated, exercised more frequently, had participated in exercise longer, and rated themselves as healthier and more fit as compared to students. Specifically, Taiwanese adults exercised more frequently than their American counterparts whereas the opposite was true for two student subgroups. Furthermore, Taiwanese adults exercised about two times more frequently per week than Taiwanese students whereas American students had a slightly higher frequency than adults.

It is logical to connect exercise frequency with the level of motivation, as Maehr and Braskamp (1986) suggested. Taiwanese students' low exercise frequency corresponds to their low incentives. These students probably take exercise classes only to fulfill a graduation requirement, and do not exercise outside their physical education classes. In contrast, American students exercised more than four times per week and showed very high exercise motivation.

Interestingly, Taiwanese adults exercised five times per week and demonstrated high incentives. Three situational factors are probably related to this high attendance. First, the adult programs in Taiwan usually take place within a 10 minute walking distance from subjects' homes in early mornings (Chiu, 1985; Huang, 1979). It has been well established that the distance traveled to an exercise site is related to exercise continuation (Andrew, Oldridge, Parker, Cunningham,

Rechnitzer, Jones, Buck, Kavanagh, Shephard, & Sutton, 1981; Hanson, 1976; Price, Pollock, Gettman, & Dent, 1977). Higher adherence is associated with an exercise site that is closer to home. Second, early morning programs may result in low interference with one's daily schedules and high attendance. In other words, it is less likely that these adults cannot go because of unfinished work from the day, unexpected incidents that occurred in a day, or a conflicting timetable that may easily deter one from going if it was the afternoon or evening programs. Third, Taiwanese lifestyle is less hurried and time-conscious. It is possible this slower pace and relaxed lifestyle is a positive factor for people to enjoy and adhere to morning programs.

In short, older exercisers seem to be more educated, attend exercise more frequently, have participated in programs longer, and perceive themselves as healthier and more fit than college students. Further, various cultural factors are suggested to account for Taiwanese students' low motivation and adults' high attendance in exercise participation.

Correlations among Personal and Psychological Variables

The canonical analysis indicated that the personal variables of age, exercise frequency, length of participation, and self-ratings of health and fitness status, as well as psychological variables of Self-Motivation, Competitiveness

and Goal Orientation, Mental and Health Benefits, Appearance, Flexibility, Weight Control, and Fitness Incentives were the greatest contributors to the canonical relationship. These personal variables were positively related to psychological variables.

The high loadings of the personal variables indicate that these variables were closely related. In fact, significant Pearson correlations support this claim. Correlations among these variables ranged from .2 to .67 ($p<.001$). In other words, the older the exercisers are, the more frequently they exercise, the longer they have participated in sports, and the higher they rated themselves as healthy and fit. It is not surprising that those personal factors related to high incentives toward exercise as exercise frequency and length of participation are two behavior patterns, suggested by Maehr and Braskamp (1986), that reflect the level of motivation.

Furthermore, task involvement (i.e., Goal Orientation, Mental and Health Benefits, Appearance, Flexibility, Weight Control, and Fitness Incentives) are important goals for exercisers who continued their participation. These findings are consistent with Duda's (1989) proposition that exercisers who continue their involvement past their young adults years would tend to be task-oriented. Finally, Competitiveness is an important variable, indicating that competitive activities and the chance to achieve personal excellence are important features of exercise programs.

These findings are generally consistent with research. Duda and Tappe (1988) have found that older adults (above 50 years of age) tend to participate in physical activities for both health and fitness benefits. Also, these older adults had higher Self-Motivation and perceived themselves as healthy. Heitmann (1986) reported that middle aged and elderly adults tended to engage in exercise more for the health benefits than young adults.

However, one difference emerges between Duda and Tappe (1988) and the present study. Social Recognition was an important factor for older exercisers in the former study whereas the present findings support the importance of Competitiveness instead of Social Recognition among adult exercisers. This is probably due to the high percentage of college students and a younger sample in the present study.

In summary, exercise frequency, length of participation and self-ratings of health and fitness status appear to be good indications of exercise motivation as they were positively related to most psychological variables. Also, age is related to all the above personal and psychological variables, indicating that older participants tend to have a positive attitude toward exercise and fitness, which is reflected in their exercise frequency and length of participation.

Practical Implications

The results may be applied to maximize motivation in specific contexts. For example, health enhancement, enjoyment, and to feel better were found to be the most important reasons people initiate and continue their exercise programs. Special attention should be directed to these needs. Therefore, appropriate frequency, intensity, duration, and mode of exercise should be designed for different exercisers to maximize health-related benefits and reduce injuries.

In terms of program factors, present findings suggest that social support, exercise leader, organized program, and group activity are four elements that interest exercisers. It is, therefore, important to incorporate these four factors as well as the emphasis of variety and enjoyment to enrich the pleasure aspects of exercise. In addition, distance traveled to exercise programs is a significant factor. It is wise, particularly in the case of Taiwan where space is extremely limited, to construct smaller community parks or recreational centers that are spread around cities or suburban areas so that more people can exercise in their neighborhoods.

The study also reveals that social group membership (e.g., culture, gender, and student/adult) should not be neglected in exercise contexts, because people from different social groups tend to have different values, beliefs, and situational factors. For example, a program primarily designed for American males and college students might emphasize

the competition aspect so that exercisers can have the best chance to demonstrate their abilities. For American and Taiwanese females and older adults, emphasis should be placed on the opportunities to enhance one's health and mental benefits, provide adequate social support, and downplay competition. Although females scored higher on weight control incentive and males scored higher on fitness incentive, these two components should be emphasized equally for both genders for they both relate to health benefits which was the primary reason people do exercise. It is probably wise to reduce gender differences in exercise settings by providing equal opportunities to participate in various exercises so that the stereotypical masculinity and femininity can be downplayed and each individual can be allowed to choose freely what they want in their exercise programs. Further, for Taiwanese college students, enjoyment needs to be a priority to maximize the pleasure of participation. Tasks and activities should lead to repeated and gradual success to enhance the students' sense of competence.

Recommendations for Future Cross-cultural Research

First of all, emphasis should be placed on observational and interpretive studies in cross-settings. There a host of social and cultural factors that affect exercise programs in each culture. It will broaden our understanding to conduct a study in which observation of

exercise behavior such as types of exercise, distance and locations of programs in relation to residential areas, home exercise programs, organizational patterns (self-organized, volunteer teachers, or formal lessons), styles and length of time of social interaction among exerciser before and after exercises, types of exercise setting (enclosed room, open space in a park, or neighborhood exercise groups), and types of clothing exercisers wear. These variables are as important as those can be measured by standard questionnaires and probably provide a comprehensive view of cultural settings and how these cultural differences affect participation.

Second, it seems logical that the more westernized a society is, the more relevant western theories and instruments are to the society. Therefore, for those less westernized and democratic societies, it is less useful to merely duplicate the western research to their cultures. It is advisable to adapt and modify western models, according to specific cultural characteristics such as language, societal values, and cultural expectations, to make the findings more meaningful. For example, it is possible for societies where collective expectations and needs are the most important to neglect personality and individual differences. Therefore, western models which emphasized the equal importance of personality and situational factors may be less relevant than a model in which broader environmental factors such as political system and educational structure are considered.

Third, it is wise to consider the following philosophical issues: the importance of cross-cultural findings, their use and meaning for the particular societies, the biases and wisdom of western models, and how one can avoid repeating the biases of western models when using western findings. It is my belief that only when one can thoroughly understand the culture and design a contextually relevant study for this society can one avoid the contamination of western viewpoints and biases. For example, American exercise clubs can exist in a highly commercialized and product-oriented society where a concept such as "fitness" can become a profitable product. This phenomenon is inconceivable in Taiwan. Therefore, some relevant program variables in the U.S., such as choices of exercise time, availability of various exercise facilities in the clubs, and structured programs, are not necessarily important in Taiwan. To conduct useful cross-cultural research, these cultural characteristics need to be considered, so that the inappropriate variables can be eliminated or modified in order to answer meaningful questions and avoid the contamination of western findings.

Fourth, to reduce the loss of meanings in the process of translation, it is advisable to modify the English surveys to match the Chinese version before data collection. In other words, it is appropriate to have a cross-cultural version of

scales which may be different from the originals but is more readily translated into other languages.

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Appendix A

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO
DEPARTMENT OF PHYSICAL EDUCATION

PARTICIPANT INFORMED CONSENT FORM

I understand that the purpose of this research is to compare the exercise motivation and exercise behaviors of American and Taiwanese exercisers.

I confirm that my participation is entirely voluntary.

I understand that I may withdraw my consent and terminate my participation at any time during the project.

I have been informed of the procedures that will be used in the study.

I understand that all my responses will remain completely anonymous.

Signature_____

Appendix B

Participation Information

Please answer the questions below, by checking or writing the correct response.

Sex: Male____ Female____
Age:_____
Marital Status: Single____ Married_____
Widowed_____ Divorced_____
Highest Education:
Grade school_____ High school_____
College_____ Graduate or professional school_____
Employment: Employed(list occupation)_____
Unemployed_____ Homemaker_____ Student_____
Retired_____ Other(please list)_____

How do you rate your health in comparison to others of your age and sex?

Poor	below average	average	above average	excellent
1	2	3	4	5

How do you rate your physical fitness in comparison to others of your age and sex?

Poor	below average	average	above average	excellent
1	2	3	4	5

1. Presently, how many times per week do you participate in the program? ____times

2. How long do you exercise during a session? _____minutes

3. Why did you first join this exercise program?

_____

4. Why do you now continue to participate in this program?

_____

5. For each of the following, check the type of exercise that you prefer:

Do you prefer to exercise: Alone___
In a group___

Do you prefer activities that are: Competitive___
Noncompetitive___

Do you prefer activitivies that are:
Organized, structured___
Unstructured, free choice___

Do you prefer to participate in exercise activities:
With an instructor___
Without an instructor___

6. Do any other people encourage you to participate in exercise? Yes___ No___

   if yes, indicate the relationship (such as spouse, friend, physician etc)_____

7. Do you now participate in any other sport or exercise activitites (with others or on your own) other than this exercise program? Yes___ No___
   If yes, please list the activities:_____

8. How have your thoughts, feelings or lifestyle changed since you started to participate in a regular exercise program?

_____

_____

_____

Appendix D

Sport Orientation Questionnaire

The following statements describe reactions to sport situations. We want to know how you usually feel about sports and competition. Read each statement and circle the letter that indicates how much you agree or disagree with each statement on the scale: A, B, C, D, or E.

	Strongly agree				Strongly disagree
1. I am a determined competitor.	A	B	C	D	E
2. Winning is important.	A	B	C	D	E
3. I am a competitive person.	A	B	C	D	E
4. I set goals for myself when I compete.	A	B	C	D	E
5. I try my hardest to win.	A	B	C	D	E
6. Scoring more points than my opponent is very important to me.	A	B	C	D	E
7. I look forward to competing.	A	B	C	D	E
8. I am most competitive when I try to achieve personal goals.	A	B	C	D	E
9. I enjoy competing against others.	A	B	C	D	E
10. I hate to lose.	A	B	C	D	E
11. I thrive on competition.	A	B	C	D	E
12. I try hardest when I have a specific goal.	A	B	C	D	E
13. My goal is to be the best athlete possible.	A	B	C	D	E
14. The only time I am satisfied is when I win.	A	B	C	D	E
15. I want to be successful in sports.	A	B	C	D	E
16. Performing to the best of my ability is very important to me.	A	B	C	D	E
17. I work hartd to be successful in sports.	A	B	C	D	E
18. Losing upsets me.	A	B	C	D	E
19. The best test of my ability is competing against others.	A	B	C	D	E
20. Reaching personal performance goals is very important to me.	A	B	C	D	E
21. I look forward to the opportunity to test my skills in competitions.	A	B	C	D	E
22. I have the most fun when I win.	A	B	C	D	E
23. I perform my best when I am competing against an opponent.	A	B	C	D	E
24. The best way to determine my ability is to set a goal and try to reach it.	A	B	C	D	E
25. I want to be the best every time I compete.	A	B	C	D	E

Appendix E, 133-134

各位參加運動的先生,女士們:

這份問卷是為了作我的博士論文,

想瞭解你參與運動的情形及對運動的態度,

調查結果僅供學術研究之用,並且絕對保密,

不對任何人公開,請放心作答.

為了順利完成此一研究,您所提的資料及回答非常寶貴.

請您依照項答說明,仔細閱讀逐題項答.謝謝!!

國立臺灣師範大學體育研究所

康伶瑾

☆ 體育課學生基本資料 ☆

請圈選適當的項目

性別 1.男____ 2.女____

年齡 _____

婚姻狀況 1.單身(未婚)____ 2.已婚____

3.鰥寡____ 4.離婚____

你現在就讀幾年級？____年級

請回答下列問題

1.目前,你每週運動幾次?(包括上體育課在內)____次

2.每次運動幾分鐘?____分鐘

3.做那些運動？

_____

4.你已持續這種每週至少三次的運動習慣多久了？

____年____月

5.與同年齡同性別的人比較時,你覺得你的健康狀況

很差	差	普通	好	很好
1	2	3	4	5

6.與同年齡同性別的人比較時,你覺得你的活動能力

很差	差	普通	好	很好
1	2	3	4	5

7.當初你為什麼想開始運動呢？

_____

_____

_____

8.為什麼你目前還持續地運動呢？

_____

_____

_____

9.請從下列問題中，選擇一項你較喜歡的運動方式

1) 你較喜歡 1.獨自運動____ 或是

2.與團體或別人一起運動_____

2) 你較喜歡 1.有競賽性的運動____ 或是

2.沒有競賽性的運動____

3) 你較喜歡 1.有組織的運動____ 或是

2.沒有組織，自由活動的運動方式____

4) 你較喜歡運動時 1.有老師指導____ 或是

2.沒有老師指導____

10.有沒有別人(如親友同事等)鼓勵你保持運動的習慣？ 1.有____ 2.沒有____

若有的話請列出關係(如先生，朋友，或醫生等)

_____

11.除了本班上的運動課外，你有否(自己或別人)參加其他的運動

1.有____ 2.沒有____

有的話，請列舉運動項目_____

12.自從你開始運動後，你有何感想或在身體或生活上有何改變？

_____

_____

_____

下表測量你對運動競賽的態度及反應，若你完全贊成以下敘述則選甲，有些贊成則選乙，無意見則選丙，不太贊成則選丁，完全反對則選戊。

	完全贊成	有些贊成	無意見	不太贊成	完全反對
1.我是個果斷的競賽者。	甲	乙	丙	丁	戊
2.勝利十分重要。	甲	乙	丙	丁	戊
3.我是一個競爭力強的人。	甲	乙	丙	丁	戊
4.當我參加競賽時，我給自己設立目標。	甲	乙	丙	丁	戊
5.我盡我所能爭取勝利。	甲	乙	丙	丁	戊
6.超越對手十分重要。	甲	乙	丙	丁	戊
7.我盼望比賽的時刻快來。	甲	乙	丙	丁	戊
8.每當要達成我自己的目標時，最勇於拼鬥。	甲	乙	丙	丁	戊
9.我喜歡與別人競賽。	甲	乙	丙	丁	戊
10.我憎恨失敗。	甲	乙	丙	丁	戊
11.我在比賽時放手搏鬥。	甲	乙	丙	丁	戊
12.每當有特定的目標，我最努力。	甲	乙	丙	丁	戊
13.我的目標是成爲一個最卓越的選手。	甲	乙	丙	丁	戊
14.勝利是我惟一感到滿足之時。	甲	乙	丙	丁	戊
15.我要在運動方面有所成就。	甲	乙	丙	丁	戊
16.全力以赴十分重要。	甲	乙	丙	丁	戊
17.我努力練習以便在運動上有所成。	甲	乙	丙	丁	戊
18.失敗時我很傷心。	甲	乙	丙	丁	戊
19.我在與別人競爭時表現最好。	甲	乙	丙	丁	戊
20.達成自己設定的目標對我十分重要。	甲	乙	丙	丁	戊
21.我盼望比賽快來以便一試身手。	甲	乙	丙	丁	戊
22.贏得比賽時我最歡欣。	甲	乙	丙	丁	戊
23.每當有對手時我表現最好。	甲	乙	丙	丁	戊
24.測驗我能力的最佳方法是設立目標並且達成它。	甲	乙	丙	丁	戊
25.每當競賽時我都想要名列前茅。	甲	乙	丙	丁	戊

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