

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

1. Discussion

The response rate of useable questionnaires was 41.1%. The technique of using self-administered questionnaires was conducive to a low hassle operation for the Faculty of Engineering, but didn't produce the high percentage of useable questionnaires as originally hoped for by the researcher. However, this is considerably higher than another university-wide survey done at Chulalongkorn that only yielded a 17% response rate (Chulalongkorn University, 2001).

1.1 Descriptive

Results show that a typical respondent was a 39 year-old female with an undergraduate degree and a household income of over 20,000 Thai Baht a month. Most respondents said that they exercised 1-2 days per week (37.8%) for a duration of less than 30 minutes (57.4%). In using the ACSM guidelines for healthy regular exercise only eight of the total 74 respondents can be classified as regular exercisers. This is disappointing, in a public health sense, as it constitutes only 10.8% of the total number of respondents. Although several respondents claimed they exercised, their responses revealed

extremely low exercise duration, as well as exercise at the minimum intensity level.

The vast majority of respondents who said they exercise do so to improve their physical health (75%). The most common types of exercise among respondents were brisk walking, aerobics class, and running. All three of these activities can be performed in a variety of locations and require little to no equipment/cost. Therefore promotion and execution of these activities throughout the city should be able to be conducted at a low cost and in a wide variety of locations. About half of the respondents exercise alone, while half exercise with others. A majority of respondents (57.4%) said they exercise at home, while only 7.4% exercise at a club or gym. This also calls attention to promoting simple at home exercises. Finally, the data reveals that most exercisers have been exercising for more than one month (79.6%). This would indicate that there are currently not a large amount of new comers from this study group starting exercise routines.

In relation to descriptive self-esteem data, respondents showed the highest levels of self-esteem in the endurance component of physical self-esteem (mean= 8.29) and the lowest in physical competency (mean= 7.50). This would suggest that the respondents in engaged in regular exercise for long durations in order to condition their endurance. However, their tendency for exercise sessions under 30 minutes seems in contradiction to this assumption. Being that preferred exercise types included running, walking, and aerobics, it is plausible to assume that the technical complexity of executing these movements is low and therefore in line with lower self-esteem in physical

competency in comparison to the other three components. Or perhaps respondents with low competency self-esteem chose exercises, which require few complicated movements. Unfortunately because the question allowed for multiple selections of exercises, this theory cannot be tested. It would be interesting to see if other exercisers who participate in more complex movements ie. martial arts or yoga would show higher levels of physical competency self-esteem. A study in the U.S. showed university students to have their highest levels of physical self-esteem in the component of competency (Fox & Corbin, 1989)

The physical characteristic of strength proved to be of greatest importance to the respondents (mean=3.29), while physical competency was of least importance (mean= 2.97). In an environment that places heavy importance on youthful looks and beauty it is surprising that physical appearance was not of greatest importance. In a study conducted by Fox and Corbin on university students in the U.S. in 1989, they found physical appearance to be the most heavily weighted physical component in terms of importance.

1.2 Inferential (Bivariate)

Determinants

In an attempt to identify some of the determinants that affect the relationship between exercise and self-esteem; age, gender, education, income, physical limitation and importance were analyzed for significance in one-to-one relationships with other variables.

When analyzing age in relation to other variables, no relationships were observed. This may be in large part to the small number of respondents, as some of the descriptive data did show trends. A lack of significant relationships is inconsistent with research on global self-esteem across the lifespan (Robins et al, 2002). Robins and et al have found that global self-esteem increases significantly from 20 to 60 years. Oppositely, one would expect a decline in physical self-esteem score as research has shown a decline in physical ability after late 20's (Peterson, 2004). However, this also was not supported by this study.

Gender was found to have a significant relationship with aerobics ($p=.003$) and with running ($p=.002$). More females were involved in aerobics, while more males were involved in running. This might be related to a female's tendency towards socializing with others and a male's preference for exercising alone, however analysis between gender and exercise alone status showed no significant relationship. The tendency of males and females to participate in particular exercise activities needs to be examined further. The relationship between gender and physical strength self-esteem was statistically significant at $p=.040$. Males had higher strength self-esteem scores than females. This may be explained with biology, in that males are naturally stronger than females. Also due to cultural constructs where an ideal male is strong, males may have a tendency to over-rate their perception of their physical self. Although a significant relationship was only observed in one of the four components of physical self-esteem, it is consistent with other research that shows males to have higher levels of physical self-esteem (Robins et al, 2002;

Fox & Corbin, 1989). However, it must be noted that these higher levels of physical self-esteem have been observed in Western countries.

Education level showed a significant relationship with only one variable, strength self-esteem ($p = .050$). That is to say that those respondents who had less than a university education had a higher level of strength self-esteem than those who had graduated university and/or beyond. This may be explained with the fact that those who haven't achieved a high level of education may have a lower intellectual self-esteem and therefore look to weight their self-esteem in the physical component. However, this explanation is simplistic and further educated research needs to be done to understand the difference in physical self-esteem between people of differing educational backgrounds.

After grouping income into less than or equal to 20,000 Thai Baht per month and more than 20,000 Thai Baht per month, analysis was done to examine relationships. Income was found to be statistically significant in relationship to only one variable, physical competency self-esteem, at $p = .031$. However, logically it seems that there is no reasonable explanation for a significance to exist between lower income and higher competency self-esteem, unless there was a division between manual labor jobs and desk jobs among staff, which in this case is non-existent. Total physical self-esteem and global self-esteem scores between the two income categories were quite similar.

In relation to physical limitation some very unusual results were obtained. Not only were there no significant relationships between physical limitation and exercise characteristics or physical limitation and global and

physical self-esteem, but also the descriptive statistics showed movement in the opposite direction than one would naturally assume. That is to say that those who claimed to have a physical limitation had higher mean total physical self-esteem score and a higher global self-esteem score in comparison to those without a physical limitation. Additionally, they exercised more frequently than those without limitations. This is most surprising because the question of physical limitation states that it is something, which "prevents you from exercising." Therefore, those who answered that they did have a physical limitation should not have filled out the exercise questions. Aside from the confusion of the question's meaning, the possible higher levels of self-esteem in those with disabilities could possibly come from a desire to overcompensate for those disabilities. Also, the lack of respondents could have led to unreliable results.

In relation to importance of physical characteristics no statistically significant relationships were revealed in relation to frequency or duration at a $p=.050$. Although logically one would assume that those who placed a higher importance on physical characteristics would participate more frequently and longer in exercise activities than those who placed less importance on physical characteristics, this was not found to be the case in this study.

Physical self-esteem

Total physical self-esteem score showed a continuous increase in relation to exercise intensity. As intensity increases, the total physical self-esteem score increases. This relationship was statistically significant at a 95%

confidence interval, $p=.020$. Exercise motivation and location lacked sufficient cases to test for relationships and all other exercise characteristics failed to show relationships in regards to total physical self-esteem score. This is inconsistent with other research, in which exercise was related to physical self-esteem score (Cockerill, 1995; Fontaine, 2000; Fox & Corbin, 1989). However, it must be pointed out that these other studies were interventions with set, identical exercise routines. Therefore individual exercise characteristics could not be separated out for analysis.

In regards to exercise characteristics and the various components of physical self-esteem three relationships stand out. Statistically significant relationships were found between exercise frequency and physical appearance ($p=.042$), exercise intensity and competency ($p=.006$), and between exercise alone status and competency ($p=.002$). One possible explanation for the relationship between exercise frequency and physical appearance may be the fact that more frequent exercise will help to build muscle and shed fat directly impacting the body's appearance. The relationship between exercise intensity and physical competency self-esteem, however, seems to lack a clear explanation. Lastly, the significant relationship between those who exercise with others and high competency self-esteem could show that by observing, participating, and learning from others, exercisers may improve their actual and/or imagined competency or ability, which then manifests into higher self-esteem levels for physical competency.

Although these specific correlations cannot be compared to similar studies, due to its cross-sectional nature (all relevant research using similar

instrumentation have been conducted as cohort interventions), this study's findings are in partial agreement with other research which shows a significant, positive correlation between exercise and physical self-esteem levels (Fox & Corbin, 1989; Fontaine, 2000; Alfermann & Stoll, 2000; McAuley et al, 1997). Here some of the correlations are viewed with exercise as the independent variable, however, it should be noted that in this research and in previous research it is still unclear whether it is actually exercise or self-esteem that is the independent variable.

Global self-esteem

When exercise characteristics were analyzed in comparison to global self-esteem score, no significant relationships were observed. This is logical based on the findings for physical self-esteem score. Since only a few variables (exercise frequency, exercise intensity, and exercise alone) had significant relationships with physical self-esteem and physical component self-esteem scores, it is safe to assume, based on the hierarchy model of self-esteem, that those characteristics would have even less of an impact on the more distal global self-esteem score. This study differs from Fox and Corbin's study in 1989, which showed exercise to have a significant, although minimal relationship with global self-esteem score. This, however, may be explained by Fox and Corbin's large number of samples, and consequently more power in the analysis of relationships.

Physical self-esteem/Importance/Global self-esteem

Analysis shows a statistically significant correlation between each physical component self-esteem score and its matching physical characteristic importance. Respondents who had high levels of self-esteem in a particular physical component also tended to place more importance on that physical characteristic. Or perhaps those who place high importance on various physical characteristics subconsciously respond with responses to the matching self-esteem questions with their desired rather than actual selection. However, the correlation coefficients show that the correlations although significant are not especially strong.

Pearson Bivariate correlation was used to examine the relationship between total physical self-esteem score and total global self-esteem score. Results revealed non-significant correlation. In fact the correlation was so weak as to suggest physical self-esteem's lack of impact on a person's overall global self-esteem. This is in contrast to Fox and Corbin's 1989 study, which found a significant correlation between physical self-esteem and global self-esteem.

1.3 Inferential (Multivariate)

Lastly a linear regression was used to examine the relationship between physical self-esteem score, importance of physical self (total of the four component importance score), and global self-esteem score. With a $p = .636$ the results revealed no significant relationship between the three, showing that regardless of importance, physical self-esteem has little impact on global self-esteem in this study group. This is in agreement with Fox & Corbin's 1989

study, which found that importance values had no impact on physical self-esteem score and its relationship with global self-esteem score. Conceptually it may be difficult for an individual to distinguish between importance of a characteristic and their own perception of themselves in that characteristic. Therefore, responses may overlap so to speak, causing no relationship to be observed between the three variables.

It seems more likely that the relationship between physical and global self-esteem was not evident here due to a possible lack of cases. It would seem more likely and in line with other research that as a major component of global self-esteem, physical self-esteem levels would inherently and significantly affect global self-esteem levels (Fox & Corbin, 1989).

Conclusion

The first hypothesis was not supported, as no significant relationship was observed between gender and frequency or duration. The second hypothesis was not supported as no significant relationship was observed between self-defined or ACSM-defined exerciser status and physical self-esteem score. The third hypothesis was partially supported as significant relationships were observed between exercise intensity and total physical self-esteem score, intensity and competency self-esteem score, frequency and appearance self-esteem score, and exercise alone status and competency self-esteem score. Several exercise characteristics had an effect on total physical self-esteem score and component self-esteem score, but had no effect on global self-esteem score.

2. Limitations

As a sort of pioneering study in exercise and self-esteem in Thailand this research inevitably had some limitations. One such limitation was the use of the westernized concept of self-esteem. Many academics believe that self-esteem does not exist in Asia in the same capacity or carry the same significance in mental health as it does in the west where it was developed (Sheldon et al, 2001). This gap was to be lessened in careful translation, however, there was difficulty in that as well. Several different translators were ultimately involved in translating the questionnaire from English to Thai and some of the concepts and terminologies in English were unable to be directly translated in Thai. A focus group was needed to help with defining some terms and concepts.

Use of a self-administered questionnaire produced a low response rate, which limited some variable analysis and gave little power to others. Additionally, questions so heavily linked to social constructs may have had the tendency to cause the respondents to give more socially desirable responses (Strein, 1995). Since what is seen as optimal for physical ability or appearance is socially constructed, respondents may give a higher rating than is actually the case in order to avoid any actual or imagined stigma. The question on physical limitations was also not very clear as respondents who answered positively still proceeded to fill out questions on exercise characteristics.

Due to this study's standing as a first of its kind in Southeast Asia, analysis was kept simple, focusing on descriptive data and bi-variate analysis with little focus on multivariate analysis.

Lastly, this research was unable to determine any directional causation. A review of studies done by Fontane in 1996, shows that individuals with high self-esteem are more likely to engage in regular exercise than those who have low self-esteem. Also, Bandura's theory of reciprocal determinism states that a personality trait of positive self-regard can lead to the adaptation of exercise behavior. This exercise behavior then acts to increase positive self-regard (Bandura, 1977). Therefore the old chicken and egg question remains untouched in this research.

3. Recommendations from Results

Although physical exercise may not be in its self wholly responsible for changes in self-image and self-esteem, it can act as a vehicle for other nonspecific therapeutic processes and has been linked to higher levels of physical self-esteem. This being the case Thailand needs to work on increasing its number of regular exercisers in an effort to promote not only better physical health, but also better mental health. In relation to administrative staff at Chulalongkorn's Faculty of Engineering, promotion efforts should be focused on reaching international exercise guidelines, making people aware that a minimum of three times per week, 30 minutes per session is required to obtain the benefits of exercise. Unfortunately, according to this study's descriptive data, there may be a misunderstanding about the prescription of exercise in a healthy lifestyle. Although 70.3% of respondents indicated that they were

involved in regular exercise, many for increasing physical health, only 15% of these actually exercised at ACSM international exercise guidelines.

The CDC states that support from family and friends has been positively correlated with a maintained program of regular exercise (CDC, 1999). Also this study shows that individuals who exercise with others tend to have a higher physical self-esteem level than those who exercise independently. Therefore, communities need to get involved by promoting physical activity. Activities such as running/walking and aerobics are popular among this respondent group so making safe and accessible running/walking areas available throughout the city would be conducive to exercise. Also hosting of public aerobics classes would be popular with this group of respondents. Lastly, because a majority of respondents said that they exercise at home, the ministry of public health could work on developing and marketing easy exercisers people can do in their houses without the use of expensive equipment.

4. Recommendations for Future Research

Focus groups and in-depth interviews should be conducted to get a better handle on the concepts and significance associated with both exercise and self-esteem in Thailand. This would allow for a more thorough development of terminologies and self-esteem constructs, ultimately leading to more reliable and valid instrumentation. An abstract concept such as self-esteem may be difficult to quantify and questionnaires may fail to capture the true complexity of changes in self-parameters. In the instance where

quantitative questionnaires are used, they should be conducted using an interviewer, in order to help clarify these complex concepts.

Many life experiences, in addition to those related to exercise, are likely to influence mental health (Cockerill, 1995). Therefore studies looking at several different goal-orientated activities, including exercise, should be conducted in relation to self-esteem. If research can prove that exercise leads to higher self-esteem and not vice versa, specifics of frequency, duration, intensity, and type need to be determined for useful prescription in the case of mental health (Cockerill, 1995). An individual's ability to maintain an exercise program largely depends on their reasons for initiating participation (Cockerill, 1995). This being the case more interest should be placed on uncovering exerciser motivation.

Based on this research it would also be interesting to look at why males and females are partial to different exercise activities and why males and females have different levels of physical self-esteem (strength self-esteem). Is there a purely biological answer for this or is this difference socially constructed? Also, it would be interesting to gather more information on how educational level might impact physical and global self-esteem.

Finally, research should be conducted on a broader target population so that the subsequent results can be more applicable to the government's wider public health policies.