

1995

Self-esteem, exercise, and cognitive group counseling.

Richard D. Ginsburg
University of Massachusetts Amherst

Follow this and additional works at: <https://scholarworks.umass.edu/theses>

Ginsburg, Richard D., "Self-esteem, exercise, and cognitive group counseling." (1995). *Masters Theses 1911 - February 2014*. 2294.
Retrieved from <https://scholarworks.umass.edu/theses/2294>

This thesis is brought to you for free and open access by ScholarWorks@UMass Amherst. It has been accepted for inclusion in Masters Theses 1911 - February 2014 by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

312066011018356

SELF-ESTEEM, EXERCISE,
AND
COGNITIVE GROUP COUNSELING

A Thesis Presented

by

RICHARD D. GINSBURG

Submitted to the Graduate school of the
University of Massachusetts Amherst
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

September 1995

Department of Psychology

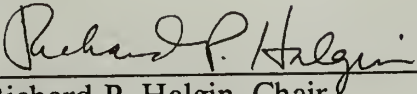
SELF-ESTEEM, EXERCISE,
AND
COGNITIVE GROUP COUNSELING

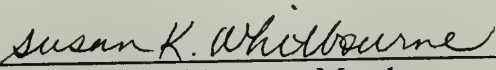
A Thesis Presented

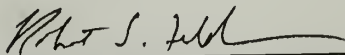
by

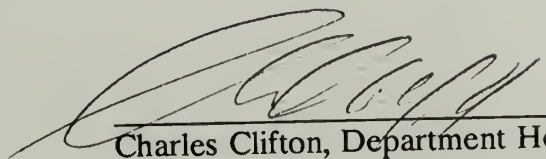
RICHARD GINSBURG

Approved as to style and content by:


Richard P. Halgin, Chair


Susan K. Whitbourne, Member


Robert S. Feldman, Member


Charles Clifton, Department Head

ACKNOWLEDGEMENTS

I would like to thank my advisor and chair of my committee Richard P. Halgin for his patience, insight, and dedication to this study. His consistent support and encouragement was essential to the completion of this study. I am also greatly indebted to the remaining members of my committee, Susan K. Whitbourne and Robert S. Felman. Their support and constructive advise was instrumental to the study's success. Finally, I would like to thank Derek McEntee, who provided the opportunity to use several of my own measures on a study that he designed. His encouragement and tremendous effort was inspirational to my work.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
LIST OF TABLES	v
Chapter	
I INTRODUCTION	1
II METHOD	14
III RESULTS	21
IV DISCUSSION	27
V CONCLUSION	34
APPENDICES	
A. AMERICAN COLLEGE OF SPORTS MEDICINE GUIDELINES FOR EXERCISE TESTING AND PRESCRIPTION	36
B. ROSENBERG SELF-ESTEEM SCALE	37
C. STRESS MANAGEMENT PROJECT EVALUATION	38
REFERENCES	39

LIST OF TABLES

Table		Page
1	Subject Dropout Rates	15
2	Mean Self-Esteem Scores on the RSE	23
3	Planned Contrast t tests for Pre-Intervention to Post-Intervention	23
4	Mean Improvement Ratings Associated with Participation	25

CHAPTER I

INTRODUCTION

Over the past two decades there has been a substantial increase in emphasis in our culture on exercise (Sonstroem & Morgan, 1989; Plante & Rich, 1990) as people have come to recognize the extent to which exercise can improve physical health. Positive physical changes associated with exercise include stabilized blood pressure, clearer skin, improved muscle tone, improved cardiovascular functioning, loss of weight, and increased physical endurance and resistance to illness (Carlson, 1990).

Stemming from the emphasis on the positive effects of exercise has been a growing interest in the relationship between exercise and psychological health. As of 1990 there were more than 1,400 journal articles relating physical exercise and mental health (North, McCullagh & Tran, 1990). Researchers have found that exercise improves psychological functioning, self-esteem and mood, and that it reduces anxiety, stress and depression (Biddle & Fox, 1989; Carlson, 1990; Glessen & Mendleberg, 1990; Hinkle, 1991; and Plante & Rodin, 1985); however, understanding about the mechanisms by which exercise improves psychological well-being is limited.

The possibility of combining exercise with psychotherapy provides exciting opportunities for developing innovative interventions for the treatment of depression, anxiety and low self-esteem. Surprisingly, very little work has been conducted in which these two modalities are combined. Few researchers have examined depression and anxiety and have attempted to incorporate exercise and therapy in a unified treatment model (Fremont & Craighead, 1987; Hilyer et al., 1982; Hilyer & Mitchell, 1979; and Schwartz & Kaloupek, 1987). While the findings of these studies are promising, methodological flaws and inconclusive results indicate the need for further research. The primary purpose of this study was to test the impact of exercise and cognitive group counseling on self-esteem.

Self-Esteem

Self-esteem can be understood as the way people feel about themselves (Sonstroem & Morgan, 1989). A person's self-esteem can range from feeling pleased to feeling down and disgusted. Self-esteem and self-concept are often used interchangeably; however, it is important to note that self-concept refers to perceptions people have about themselves, and self-esteem refers to feelings about those perceptions (Aldridge & Clayton, 1990).

Dimensionality of Self-Esteem

Another issue of debate regarding the definition of self-esteem focuses on whether it is a unidimensional or multidimensional construct. Rosenberg (1965)

viewed self-esteem as a unidimensional construct consistent across a variety of general life experiences; however, Harter (1985) challenged this theory, stating that self-esteem is a multidimensional construct. According to Harter, an individual can have different evaluations of his or her self-esteem depending on the specific situation or domains such as social, academic, or physical (Harter, 1985; Seraganian, 1993). These domains are considered independent components which contribute to general self-esteem.

Sonstroem and Morgan (1989) proposed a slightly different understanding of self-esteem. They constructed a hierarchial model placing general self-esteem at the highest level. Below self-esteem, they listed physical competence and physical acceptance, and at the bottom level they included physical self-efficacy. In this model, feelings of self-efficacy due to exercise lead to feelings of physical competence and physical acceptance, with the result being enhanced self-esteem.

Fox and Corbin (1989) proposed a similar hierarchial model of self-esteem that positions global self-esteem at Level 1, physical self-worth at Level 2, and sports competence, attractive body, physical strength, and physical condition at Level 3. Each of these Level 3 components can contribute to physical self-worth, which in turn boosts self-esteem. Few studies have been conducted on the sub-categories or Level 3 components of self-esteem. Researchers are uncertain about the extent to which these components contribute to self-esteem enhancement; therefore, more studies are needed in this area.

The Relationship Between Exercise and the Enhancement of Self-Esteem

Debate about definitions of self-esteem is centered on understanding and identifying underlying factors (Sonstroem & Morgan, 1989). Bandura (1977, 1989) proposed that an individual's self-esteem is boosted because of an increased sense of self-efficacy. Taking the example of exercise, one might assume that those individuals who successfully complete an exercise task are more willing to continue exercising because of heightened feelings of self-efficacy. A cycle would presumably occur in which exercising makes a person feel good and more willing to continue exercising.

Biddle and Fox (1989) state that feelings of mastery and self-control due to the completion of challenging tasks may be underlying factors that contribute to improved self-esteem. They claim that overcoming an obstacle or completing a challenging task using one's body can enhance a person's ability to tackle psychologically challenging tasks as well. Consequently, one's self-esteem is increased.

Bandura (1977) and Harter (1982) have proposed that the key underlying factor of self-esteem enhancement is the perception that one is making improvements in his or her life. In the case of exercise, these authors would claim that one does not need to be fit to increase self-esteem; rather, a person needs to perceive that he or she is fit.

Summary of Exercise and Self-Esteem Research

The study of self-esteem enhancement due to exercise has not received the attention that researchers have invested in stress reduction and depression alleviation. The limited amount of research that does address the effects of exercise on self-esteem, however, has mainly focused on children.

Blackman, Hunter, Hilyer, and Harrison (1988) selected eight high school, female subjects to participate in an aerobic dance team, which required at least one hour of dance training per day for four to five days a week. The control group consisted of eight female high school subjects who volunteered to participate in a daily physical education class. Following a four-month aerobic dance program, the subjects made significant gains in aerobic and physical fitness and physical strength. Subjects also experienced significant gains in oxygen uptake compared with control subjects; however, there were no significant between-group differences on self-esteem on seven out of nine self-concept scales. The authors suggested that the lack of significant between-group differences in self-concept and self-esteem may have been due to the low status of the dance team on campus. A control group consisting of subjects who were selected to participate in the dance group, yet chose not to participate in any physical activity, would have strengthened the between-group comparisons. In addition, the validity of between-group comparisons might also have been improved by measuring the control group before and after the treatment period.

Nagy and Frazier (1988) tested the effects of an aerobic exercise program on the mood, locus of control, and self-esteem of two groups of women participating in an aerobics class. Subjects' ages ranged from 18 to 36. The subjects were divided into two groups; the trained group consisted of 31 women who were previously exercising at least three times a week and the untrained group, which included 54 women who had not been involved previously in a regular exercise program. The subjects in this study participated in a 30 minute workout three times a week for 15 weeks. The results indicated no significant between or within group differences in mood, locus of control, or self-esteem. Although the trained group scored an average of 10 points higher on self-esteem than the untrained group, the researchers found that the differences were not significant. Consequently, the researchers were unable to determine whether exercise alters personality. However, such findings should be taken with caution because this study lacked an adequate control group.

Parent and Whall (1984) measured whether self-esteem and depression were improved by exercise. The authors selected 30 elder adults, aged 60 and older, who were living in a senior citizen complex. The authors concluded that monthly physical activity was correlated with self-esteem and that regular exercise increased self-esteem and reduced depression. In addition, they found that self-esteem and depression were negatively correlated. Unclear definitions about the amount and nature of exercise experienced by the subjects, the lack of an

experimental manipulation of an exercise training program, and the exclusion of a control group raise doubts about the validity of these findings.

Klein, Greist, Gurman, Neimeyer, Lesser, Bushnell, and Smith (1985) studied the effects of meditation, group therapy, and exercise on depression and self-esteem. Out of the 81 subjects who met the criterion for minor depression, 74 of the subjects were randomly assigned to one of the three treatment programs. Subjects in the exercise program either walked or ran twice a week for 12 weeks. The authors found significant decreases in depression for all three treatment groups and an increase in self-esteem in only the exercise and meditation group. The authors were unable to conclude which treatment modality was most effective for depression or differentiate between the efficacy of exercise and meditation in improving self-esteem. The conclusions from this study are tentative because the researchers failed to include a control group and did not clearly define and measure the parameters of the exercise program; consequently, it is unclear what degree exercise is needed to enhance self-esteem.

Unger, Skinar, Hutchinson, and Yelmokas (1992) measured the effects of exercise on the self-esteem of six subjects with psychiatric disabilities participating in a psychoeducational program. Subjects used stationary bikes, rowing machines, or stair climbers, and eventually participated in a run/walk program after they felt comfortable enough to exert more energy. The program required exercise for 30 minutes and flexibility and strengthening for 30 minutes during each exercise session over a 10 week period. The authors found no significant improvements in

self-esteem as measured by the Rosenberg Self-Esteem Scale (RSE); however, positive attitude changes were noted and improved self-esteem statements were made. In the 16 week follow-up, subjects reported exercising for two months following the program and expressed a greater ability to handle stress. These findings should be viewed with caution due to the influence of psychotropic medication taken by some of the subjects, the influence of group discussions about the benefits of exercise (which might boost the scores), a lack of a control group, and small sample size.

Hellison (1970) administered the Rosenberg-Guttman Scale to a group of college males participating in an exercise program. Subjects were divided into two groups; one group exercised two days a week and the other group exercised four days a week. The author found that only the four-day-a-week group improved significantly in attitudes towards self and body (Ben-Shlomo & Short, 1983).

Exercise, Self-Concept, and Self-Esteem Related Studies

Jasnoski, Holmes, and Banks (1988) measured changes in personality as a result of a 10-week conditioning class involving running and weight training. The subjects consisted of 39 females and 63 males who elected to enroll in the class. Subjects exercised for 50 minutes twice a week. The authors reported that subjects experienced greater feelings of happiness, security, joining, control, and less depression. However, inconclusive measurements in personality and the

absence of a control group create ambiguity when interpreting the contribution this study makes to the relationship between personality and exercise.

Plummer and Koh (1987) administered the Tennessee Self-concept Scale before and after a 10-week exercise program to 116 college women enrolled in an aerobics class; the control group consisted of 177 college women enrolled in nonphysical education classes. Experimental subjects participated in the aerobics class at least twice a week. The authors found significant differences on the following self-concept subscales: physical, personal, family, social, identity, self-satisfaction, and behavior. The self-criticism and moral-ethical subscales were not significant. A clearer measure of the quality and quantity of the exercise program might add further validity to these findings. In addition, the control group consisted of subjects who showed no interest in an exercise program, which confounds the study because experimental subjects may have positive expectations for the efficacy of the aerobics class as opposed to the lack of expectations experienced by the control group.

White (1974) also used the Tennessee Self-concept Scale to measure the effects of a conditioning program on his experimental and control groups. Increases were found in the subscales measuring physical self, personal self, self-satisfaction, social self-identity, and overall self-esteem. While the results of the self-esteem, self-concept, and self-esteem related studies seem promising, the validity of these findings are generally limited by methodological flaws. Many researchers have failed to: include control groups; use random assignment of their

subjects to groups; or specify the type and level of training used in the study (Seraganian, 1993). Well-designed studies are needed to validate these findings.

Aerobic Exercise Treatments

While there are many different forms of exercise, aerobic exercise has been found to be the most effective in creating immediate physical and psychological improvements (Gruber, 1985). Among the different types of aerobic exercise, running has shown the most positive results, which may be due to the fact that it is a consistent form of exercise in which one can clearly measure what has been accomplished physically.

Biological Factors

Although researchers are still unable to identify the biological factors responsible for the positive correlation between exercise and improved psychological health, there are several plausible explanations. Some researchers have found that exercise affects the level of neurotransmitters in the brain that may be responsible for reduced anxiety and improved mood (Ransford, 1982). Although controversial, some researchers believe that endorphins are released, resulting in enhanced mood (Seraganian, 1993). Other researchers have claimed that the body's experience of tolerating physical stress improves an individual's ability to manage psychological stressors (Seraganian, 1993). While these explanations are just a few of the many biological hypotheses that connect

physical well-being to psychological health, little rigorous research has been conducted to date (Seraganian, 1993).

Self-esteem and Anxiety

Rosenberg (1965) was one of the first researchers to delineate the relationship between self-esteem and anxiety. He proposed that the lower an individual's self-esteem, the more likely it is that the individual will experience anxious behaviors such as hand trembling, nervousness, and insomnia. He also stated that either anxiety or low self-esteem can precede the other; therefore, he describes low self-esteem as a psychologically distressing state, which may lead to anxiety as well or be caused by anxiety.

In the last decade, researchers have found that exercise interventions designed to reduce stress have also increased self-esteem (Berger, 1984; Plante & Rodin, 1985; Taylor & del-Pilar, 1992; and Valliant & Antonowicz, 1991).

Self-Esteem, Psychotherapy, and Exercise

Some researchers have suggested that there may be a relationship between exercise and psychotherapy as they pertain to self-esteem enhancement. Neal (1977) administered the Coopersmith Self-Esteem Inventory before and after a 10-week cardiovascular training program for 60 high school boys. Subjects were divided into four groups: conditioning only, counseling only, conditioning and counseling, and control. Improvements in self-esteem were found in both

conditioning groups; however, no significant differences in self-esteem were found between any of the groups. A clearer understanding of the selection and assignment of subjects to groups and the type and level of exercise might help to explain why more notable differences were not found.

Hilyer and Mitchell (1979) tested the effects of an exercise program for college students. Subjects were divided into three groups: an exercise group (stretching and long-distance running), a running and counseling group, and a control group. Significant improvements in self-concept were found in the exercise group compared with the control group. Only those subjects in the combined exercise and therapy group who initially had a low self-concept before the experiment experienced significant improvement in self-concept. Conclusions made about the efficacy of the combined exercise and therapy group should be taken with caution because the counseling focused on discussions about the exercise itself as opposed to the development of self-concept. Future studies that concentrate on developing and building self-concept in the counseling component may find greater improvements in self-concept.

Purpose of the Present Study

This study was a component of McEntee's (1995) study of stress management. In the present study the effects of group psychotherapy, aerobic exercise, and a combination of exercise and therapy were measured to note changes in levels of self-esteem before and after one of four interventions. It was assumed that

cognitive group therapy designed to reduce stress would also enhance self-esteem. Finally, an attempt was made to delineate the underlying physical and psychological mechanisms that are responsible for self-esteem enhancement.

Hypotheses

The hypotheses for the study were:

(1) Only those subjects who participated in an intervention group would experience significant improvement in self-esteem.

(2) Subjects who participated in an intervention group would experience significantly greater improvement in self-esteem than those who participated in the control group.

(3) There would be no difference in self-esteem improvement between subjects who participated in the exercise group and subjects who participated in the cognitive group counseling.

(4) Subjects who participated in the counseling/exercise group would have greater self-esteem than the pooled self-esteem of those who participated in the cognitive group counseling only group and the exercise only group.

Exploratory analyses were planned to examine which underlying mechanisms are associated with self-esteem enhancement.

CHAPTER II

METHOD

Subjects

The subject pool for this study consisted of a 500-student class in abnormal psychology at the University of Massachusetts at Amherst during the Spring semester, 1994. Subjects' ages ranged from 18-36 years; the mean age was 20.17 and the SD was 2.42. The subject pool ratio of women to men was 54 to 16. The gender difference reflected the population of students taking the undergraduate psychology class from which the subjects were selected.

The subjects represented an essentially normal sample in terms of their level of self-esteem. At pre-intervention, RSE scores fell between normative scores for an adolescent and adult population ($x = 30.09$. see Table 1).

Study participation was one of several credit options for the course. Approximately 60 subjects were selected, screened, and matched for age, gender, and self-reported fitness levels; subsequently, subjects were randomly divided into 3 groups with 20 subjects in each group. Subjects were assigned to either: Cognitive Group Counseling only (Group 1) , Aerobic Exercise only (Group 2), or Combined Cognitive Group Counseling and Aerobic Exercise (counseling/exercise group) (Group 3). The Control Group (4) consisted of approximately 20 subjects

who participated in a weekly discussion group on general topics in the field of abnormal psychology. The control group subjects selected the stress management project as their first choice for the class credit option but were randomly excluded from the experimental groups; all control group subjects selected the discussion group as their second choice. A total of 10 subjects failed to complete the study, mainly due to scheduling conflicts (see Table 1).

Table 1

Subject Dropout Rates

Group	Activity	Dropouts	%
1	Cognitive Group Counseling	2/20	10%
2	Aerobic Exercise	4/20	20%
3	Counseling/Exercise	1/20	5%
4	Control	3/20	15%

Subjects were excluded from the study if their anxiety level, as measured by the Symptom Check List-Revised (SCL-90-R) and State Trait Anxiety Inventory (STAI), was 1.5 standard deviations above or below the mean; this procedure excluded subjects who scored above or below the 93rd and 7th percentile on the SCL-90-R and the 93rd and 10th percentile on the State-Trait Anxiety Inventory. In addition, subjects were excluded from the study if they were: (a) taking psychotropic medication, (b) recently involved in psychotherapy, (c) having suicidal thoughts or tendencies, or (d) diagnosed with a condition that might be worsened by participation in the exercise program. Subjects signed an

information form and waiver that explained the possible health risks, the purpose, and the criteria for participation in the study.

Instruments

For this study data from the Rosenberg Self-Esteem Scale (RSE) and an exercise assessment questionnaire devised by the experimenter were used to measure intervention effects.

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1965) is a 10 item measure of global self-esteem. In order to reduce the effects of an acquiescent response set, the scale consists of five positively and five negatively worded statements (see Appendix B) (Rosenberg, 1965; Shapurian, Hojat, & Nayerahmadi, 1987). Each of the 10 items are answered on a four-point scale ranging from "strongly agree" to "strongly disagree". Rosenberg designed the scale to measure how individuals perceive themselves; a high score indicates high self-esteem, self-respect, and personal worth; a low score indicates lack of self-respect, and the perception of being unworthy, inadequate, or "otherwise seriously deficient as a person" (Rosenberg, 1965, p. 54). While debate continues about whether this scale is a unidimensional or multidimensional construct of self-esteem, the RSE is widely used and is considered to be one of the best measures of self-esteem (Crandall, 1973; and O'Brien, 1985).

One advantage of the RSE is that it can be administered in a brief amount of time. Initially, Rosenberg recommended Guttman-scale scoring; however, many researchers find the Likert scale superior to the Guttman (Rosenberg, 1965; and Wylie, 1989). Scoring for the Likert-type scale requires reverse scoring of several items; (i.e., 1, 3, 4, 7, and 10 are reverse scored). Using this method, scores range from 10 - 40. Likert-scale scoring was used for the present study.

The reliability of the RSE shows alpha coefficients ranging from .72 to .87 (Byrne & Shavelson, 1986; Dobson, Goudy, Keith, & Powers, 1979; Orme, Reis, & Herz, 1986; Schmitt & Beduan, 1982; Shapurian, Hojat, & Nayerahmadi, 1987; and Ward, 1977). Test-retest reliability ranges from .63 to .91 (Byrne, 1983; Shapurian, Hojat, & Nayerahmadi, 1987; Shorkey & Whiteman, 1978; Silber & Tippett, 1965).

Researchers have found strong evidence of convergent validity through correlating the RSE with the Coopersmith Self-Esteem Inventory, the Self-Concept subscale of the Affective Perception Inventory (API), and the General Self-Esteem scale of the Self-Description Questionnaire III (SDQ III); convergent validity coefficients range from .55 to .79 (Wylie, 1989). Discriminant validity was demonstrated by correlating the RSE with Coopersmith's School-Academic subscale, and the Brookover's Self-Concept of Ability Scale; coefficients ranged from .35 to .46 (Byrne, 1983; Byrne & Shavelson, 1986; Demo, 1985). Further discriminant validity for the RSE was established correlating the negatively phrased items of the RSE with Spielberger's State and Trait Anxiety scores.

Negative correlation coefficients ranging from $-.44$ to $-.46$ provide evidence both for the discriminant validity of the RSE and support the relationship between self-esteem and anxiety (Orme, Reis, & Herz, 1986).

Exercise Assessment Questionnaire

The Exercise Assessment Questionnaire (EAQ) (see Appendix C) was devised by the experimenter to assess the mechanisms that underlie the enhancement of self-esteem through exercise; the questionnaire is comprised of eight Likert scale items and an open-ended question. Each of the eight items is answered on a 7-point scale ranging from "no improvement" to "extreme improvement". The open-ended question asks subjects to elaborate on their ratings for each of these eight items.

The Exercise Assessment Questionnaire is based on Fox and Corbin's (1989) model of physical self-worth and its underlying mechanisms: sports competence, attractive body, physical strength, and physical condition. Researchers have found correlations between physical self-worth and RSE scores; correlation coefficients range from $.19$ to $.50$ (Flemming & Courtney, 1984; Franzoi & Shields, 1984). Physical strength, physical fitness, and physical attractiveness are items included in the EAQ that are generated from Fox and Corbin's model (1989). The remaining five items of the EAQ were generated from proposed theories of self-esteem enhancement through exercise; these include self-efficacy, mastery, relaxation, distraction and perceived competence

(Bandura, 1977; Harter, 1982; Seraganian, 1993). The items generated from these theories tap the extent to which subjects feel calm and experience improvement in self-control, self-confidence, self-esteem, and an ability to complete other challenging tasks.

Procedure

The description and requirements of the study were presented to students during the first class meeting of the semester. Matched random assignment was used to assign volunteers to one of the three intervention groups or to the control group. Before and after the six-week intervention period, all subjects were administered the RSE, the SCL-90-R, the STAI, and a demographic self-report questionnaire. For the post-study administration, the EAQ was included as well.

Cognitive Group Counseling

Subjects in cognitive group counseling only and the counseling/exercise group met for 75-minute weekly sessions. The therapist was a doctoral student from the University of Massachusetts. Therapy sessions were held in the Psychological Services Center at the University. Subjects were assigned to one of three intervention groups each consisting of approximately 20 subjects. Cognitive group therapy was based upon Beck's cognitive treatment for anxiety reduction (Beck, Emery, & Greenberg, 1985) and Meichenbaum's (1985) stress management approach of Stress Inoculation Training (see Appendices D and E). A faculty

member in the Clinical Psychology department, who had training in the cognitive behavioral approach, supervised the graduate student therapist.

Exercise Training

Subjects who participated in the aerobic exercise or the counseling/exercise group participated in a six-week running or jogging program which met twice a week for approximately 20 to 30 minutes at the indoor track in a campus gymnasium; subjects completed a third weekly training session on their own. An instructor was present during the exercise to ensure attendance and provide guidance to the subjects. Subjects were also encouraged to keep a training journal to record their exercise schedule. In order to ensure the health and safety of the subjects, the recommendations of the American College of Sports Medicine's Guidelines for Exercise Testing and Prescription (4th ed.) were followed.

CHAPTER III

RESULTS

This study examined the effects of two different interventions, cognitive group counseling and aerobic exercise, on self-esteem in college students. The study was designed to address several questions including: (1) Does participation in an intervention group significantly enhance self-esteem? (2) Is cognitive group counseling, aerobic exercise, or the combination of the two interventions more effective for increasing self-esteem than participation in a discussion control group? (3) Is exercise as effective a treatment for enhancing self-esteem as cognitive group counseling? (4) Is the combination of cognitive group counseling and exercise more effective in enhancing self-esteem than cognitive group counseling alone and exercise alone? (5) Which underlying factors of exercise are associated with improvements in self-esteem?

Subjects' self-esteem was measured using the RSE, which was administered prior to intervention and after intervention. Individual t test scores were calculated for each group to assess improvement in self-esteem from pre-intervention to post-intervention. A planned contrast using a t test (calculated by subtracting the post-intervention from the pre-intervention RSE scores) was

calculated to test Hypotheses #2, #3, and #4. Finally, the underlying factors of exercise associated with self-esteem improvements were measured using the EAQ.

Changes in Self-Esteem

There was a significant difference between the four groups at pre-intervention, $f(3, 66) = 4.15, p < .01$. In other words, before subjects began participation in the study, their self-esteem levels differed significantly between groups; that is, the groups were heterogeneous (see Table 2 for group means).

Changes in self-esteem from pre-intervention to post-intervention for each group were calculated using t tests. Significant improvements from pre-intervention to post-intervention were found in subjects participating in the three experimental groups: cognitive group counseling only, $t(17) = -2.46, p < .05$, exercise only, $t(15) = -2.46, p < .05$, and the counseling/exercise group, $t(18) = -3.83, p < .01$. Subjects participating in the control group did not experience significant improvement in self-esteem from pre-intervention to post-intervention, $t(16) = -1.33$ (see Table 2 for group means).

Table 2

Mean Self-Esteem Scores on the RSE*

Group	Intervention	Intervention time of RSE			
		Pre	SD	Post	SD
1	Cognitive Group Counseling	29.61	4.69	32.83	4.42
2	Aerobic Exercise	31.31	3.43	33.94	4.75
3	Counseling/Exercise	27.74	3.56	31.32	4.93
4	Control	32.06	4.15	33.29	4.97

*Range 10-40

Experimental vs. Control Condition. A t test was calculated to ascertain whether subjects participating in cognitive group counseling, exercise, or a combination of the two experienced greater self-esteem improvement from pre-intervention to post-intervention than control subjects. Contrary to expectations, students who engaged in the three experimental groups did not experience significantly greater improvements in self-esteem from pre-intervention to post-intervention than discussion group participants, $t(66) = 1.56$ (see Table 3 for all t test contrasts).

Table 3

Planned Contrast t tests for Pre-Intervention to Post-Intervention

Hypothesis #		SE	t	D.F.	p
(#2)	Experimental vs. Control	3.67	1.56	66.0	0.12
(#3)	Counseling vs. Exercise	1.50	0.70	66.0	0.70
(#4)	Counseling/exercise vs Counseling and Exercise	2.52	-0.53	66.0	0.60

Cognitive Group Counseling vs. Exercise

As predicted, subjects participating in cognitive group counseling did not show significantly greater self-esteem improvement than those participating in exercise, $t(66) = 0.40$. In other words, the effects of counseling and exercise were indistinguishable.

Counseling/Exercise Group vs. Cognitive Group Counseling and Exercise

Subjects who participated in the counseling/exercise group did not experience significantly greater improvement in self-esteem from pre-intervention to post-intervention when compared to the pooled scores of subjects participating in cognitive group counseling and exercise groups, $t(66) = 0.53$.

Underlying Variables of the EAQ Associated with Self-Esteem Improvement

Immediately following participation in the study, subjects completed the EAQ by rating their level of improvement on a scale from 1 to 7 on each of the following factors: physical strength, self-confidence, physical attractiveness, physical fitness, self-esteem, ability to complete challenging tasks, ability to concentrate, and feeling calm. A score of 1 indicated no improvement and a score of 7 indicated extreme improvement as a result of participation in one of the three intervention groups. The mean score on each item for each group was calculated. It was assumed that high group means on particular items would

provide some insight into the reasons that subjects experienced self-esteem improvement (see Table 4 for group means).

Table 4

Mean Improvement Ratings* Associated with Participation

Group	PS	SC	PA	PF	SE	AT	AC	FC
1 Counseling	2.06	3.61	2.61	2.16	3.67	40.6	4.22	5.17
2 Exercise	4.06	3.75	3.75	5.00	3.86	3.82	3.25	4.00
3 Couns/Exer.	4.31	4.21	3.42	4.47	3.89	3.95	3.47	4.58
4 Control	3.76	3.18	2.47	3.82	3.11	3.18	2.65	4.29

* (range: 1 = "not at all" to 7 = "extremely")

Note: PS = physical strength, SC = self-confidence, PA = physical appearance, PF = physical fitness, SE = self-esteem, AT = ability to complete challenging tasks, AC = ability to concentrate, FC = feeling calm

An ANOVA was calculated for each item to determine where there would be significant differences between groups. For those items with a significant f , a qualitative analysis was conducted to determine what variables subjects might have regarded as the major contributors to change. Significant differences were found between the four groups on the "physical fitness" item, $f(3,66) = 10.44$, $p < .001$, the "physical strength" item, $f(3,66) = 7.60$, $p < .001$, the "ability to concentrate" item, $f(3,66) = 2.68$, $p < .05$, and the "feeling calm" item, $f(3,66) = 3.37$, $p < .05$. Subjects participating in the exercise group and the counseling/exercise group indicated that "physical fitness" and "physical strength"

improved as a result of participation. The mean "physical strength" rating for subjects in the exercise group was 4.06 and for subjects in the counseling/exercise group was 4.31. The mean "physical fitness" rating for subjects in the exercise group was 5.00 and for subjects in the counseling/exercise group was 4.47.

Subjects participating in cognitive group counseling gave high ratings on the items "ability to concentrate" and "feeling calm". The mean rating for the "ability to concentrate" item was 4.22 and the mean rating for the "feeling calm" item was 5.17.

CHAPTER IV

DISCUSSION

Subjects participating in the intervention groups experienced significant improvements in self-esteem. In contrast, subjects participating in the control group did not significantly improve in self-esteem. It appears that self-esteem improved regardless of intervention modality. This overall intervention effect may be explained by the positive influence of participation in a recognized group activity. Subjects who volunteered to participate in this study may have experienced a heightened sense of importance because they were selected out of a 500 student class and were recognized by the professor and their classmates as a special group. In contrast, the control group consisted of discussion group participants who were assigned one of many discussion groups. While they met once a week, they were not recognized as a part of some special intervention. For the experimental participants, the mere participation in a specialized group designed to enhance self-esteem may have accounted for self-esteem improvement, regardless of the type of intervention.

Blackman and his colleagues (1988) concluded that the reason why they failed to find significant differences in subjects' self-esteem improvement as a result of participation in an aerobics dance team when compared to a control

group was the low status that the dance team had on campus. These researchers recognized the fact that social recognition has a significant impact on self-esteem. In the present study, those students participating in the discussion group did not perceive themselves as special.

Several researchers who have found significant improvements in self-esteem as a result of participation in an exercise or combined exercise/group counseling program have designed studies in which the subjects have been part of some type of group or specialized program (Klein, Greist, Gurman, Meimeyer, Lesser, Bushnell, and Smith, 1985; Nagy and Frazier, 1988; Neal, 1977; Plummer and Koh, 1987). The findings of the researchers not only support the influence of participation in a specialized group on self-esteem improvement, but they also suggest that being part of a group that shares a common goal or that struggles with similar psychological problems may also contribute to enhanced self-esteem.

Subject comments from the present study suggest that group involvement had a positive impact on their participation in the study. One subject in the counseling group said, "Hearing other members of the group made me aware of other experiences people have gone through." A subject who participated in the counseling/exercise group said, "I feel better physically... and I thought that everyone was warm and receptive." These responses support the notion that being part of a group with which one can identify may influence improvements in self-esteem.

It was interesting to note that subjects participating in the exercise alone group did not emphasize feeling the benefits of group participation. Instead, they commented on the rewarding feeling of pushing themselves to exercise. One subject in the exercise group said, "It made me realize that I could push myself to do things.... The running got easier each time and I was very proud of myself for accomplishing that." Another subject said, "I think I've improved my aerobic fitness level... This project 'forced' me to start exercising again regularly - the proverbial kick in the butt." Another subject said, "I definitely feel better about myself knowing that I have committed myself to do something and accomplish it." While subjects participating in the exercise group may still have experienced some boost in self-esteem as a result of participating in a recognized study, they did not experience the same level of group involvement that other intervention groups experienced. Perhaps the perceived improvement in facing the challenges of physical training enhanced their self-esteem.

While subjects in each experimental group significantly experienced an improvement in self-esteem, their level of self-esteem did not improve significantly more than subjects in the other two interventions or the control group. Several factors may explain the lack of differential effects for each intervention relative to other interventions and the control group. First, the experimental intervention may have been too brief to cause significant improvements in self-esteem. Second, the small sample sizes may not have

provided enough statistical power to generate conclusive differences between experimental and control groups or between the individual experimental groups.

Previous researchers have found that exercise alone improves self-esteem (Biddle & Fox, 1989; Carlson, 1990; Glessen & Mendleberg, 1990; Hinkle, 1991; Plante & Rodin, 1985). In this study, exercise again was found to have a positive impact on self-esteem. It is interesting to note that the effect of exercise on self-esteem was comparable to the effect of cognitive group counseling. Could this mean that an intervention involving only exercise could be quite effective in improving self esteem? Further research can address questions about the efficacy of exercise in enhancing self-esteem relative to other therapeutic interventions.

Although researchers have found evidence for self-esteem enhancement as a result of participating in counseling and exercise programs (Hilyer & Mitchell, 1979; Neil, 1977), it remains unclear as to which underlying factors are responsible for this change. In this study, the EAQ mean ratings reveal that perceived improvements in "physical strength" and "physical fitness" probably play an important role in self-esteem improvement for those who participate in cognitive group counseling or exercise groups. Participation in regular exercise programs causes participants to feel stronger, more fit, and ultimately better about themselves.

Researchers examining the various factors that influence self-esteem change have focused on social, cognitive, and physical sub-components of self-esteem (Fox & Corbin, 1989; Harter, 1982; Sonstroem & Morgan, 1989). Fox and

Corbin's (1989) model of physical self-esteem as a sub-component of overall self-esteem was tested with a college population. They found that physical strength and condition are underlying factors of overall physical self-esteem. The findings of the present study support this notion.

Limitations of the Study

The following limitations must be noted:

1. The subject pool was limited to college-age students at the University of Massachusetts at Amherst who enrolled in an Abnormal Psychology course. This narrowly defined subject pool limits generalizability. In addition, the gender imbalance and narrow age range of subjects in this sample also limit potential representative conclusions about the population. The study's experimental subjects consisted of 54 females and 16 males. While there is little in the literature to support gender differences in self-esteem as a result of participation in cognitive group counseling or exercise groups, it is conceivable that the results pertain only to a predominantly female, college-age population.
2. Subjects participating in the experiment may have wanted to please the experimenter who had responsibility for assigning credit for their participation. In addition, since subjects had the course option to participate in this study, selection bias may have been a factor. In essence, subjects interested in exercise or cognitive group counseling may have been more likely to select to volunteer for this study.

3. The RSE may not be sensitive to myriad components responsible for self-esteem enhancement. Perhaps a more detailed and inclusive measure may yield a more in depth representation of the facets of self-esteem. In addition, there was a significant difference between RSE group means at pre-intervention. This was perhaps due to the fact that subjects were randomly assigned to groups based on their levels of anxiety. It was assumed that since there was a correlation between high anxiety and low self-esteem supported by the literature, anxiety levels would correspond to self-esteem levels. The fact that the control group had a significantly higher level of self-esteem was a random effect.

4. The six-week intervention period may have been too brief to promote significant improvement in self-esteem. In addition, subjects participating in the exercise program were required to complete one of the three jogging requirements on their own. It was impossible to account for their compliance. Missed jogging sessions may have lessened the effect of the exercise.

5. The sample size may have been too small to assess the intervention effects on self-esteem. With 10 drop-out subjects, the group sizes reduced, and the statistical power generated by these small groups, may have been too low to detect between-group differences.

6. The EAQ only assessed subjects' perceived improvements and did not provide a scale that accounted for negative or regressed scores on the eight items in the measure. A more balanced scale representing both positive and negative effects may have provided more accurate data. By rating only improvement,

subjects may have been biased in their responses. In addition, the EAQ was only given at post-intervention and would have provided more meaningful data if it was administered at pre-intervention.

CHAPTER V

CONCLUSION

This study was an empirical investigation of the influence of cognitive group counseling and exercise or a combination of the two interventions on self-esteem enhancement. Each of these interventions was effective in enhancing self-esteem; however, these interventions were not significantly more effective than participation in a control group. Further, there was no difference in self-esteem improvement related to the specific kind of intervention. These findings are consistent with the self-esteem literature and suggest that self-esteem is a trait that is less amenable to a brief intervention designed to alter symptoms of anxiety.

The lack of significant differences between the experimental groups in self-esteem improvement suggests that participation in any specialized group intervention may add to self-esteem improvement. These findings suggest that interventions aimed toward self-esteem improvement should include group participation. Therapists may want to consider including some group involvement as part of therapeutic interventions. One might question whether other kinds of groups designed to create common goals and sharing would also increase self-esteem.

Exercise alone may be a cost effective and practical method to help people improve self-esteem. Future studies that involve larger sample sizes, longer intervention periods, and more carefully selected control groups may help to distinguish the differential effectiveness of exercise, cognitive group counseling, and a combination of the two. In addition, closely monitored exercise programs involving supervision of all three exercise tasks and physiological measures such as VO2 Max and heart rate may ensure self-esteem change. Researchers may want to compare the effectiveness of individual and group interventions in both counseling and exercise to identify the extent to which group involvement enhances self-esteem. Finally, researchers may also want to assess the impact on self-esteem associated with participation in any kind of group (e.g., art or music). Addressing these research challenges may advance knowledge of the contributions exercise makes to mental health as well as provide better understanding as to which interventions are the most effective in improving self-esteem.

APPENDIX A

AMERICAN COLLEGE OF SPORTS MEDICINE GUIDELINES FOR EXERCISE TESTING AND PRESCRIPTION

Based on the existing evidence concerning exercise prescription for enhancement of health and cardiorespiratory fitness, the following recommendations for the quantity and quality of endurance exercise are made:

- 1) **Mode of Activity:** Any activity that uses large muscle groups, that can be maintained for a prolonged period, and is rhythmic and aerobic in nature, eg., running-jogging, walking-hiking, swimming, skating, bicycling, rowing, cross-country skiing, jumping rope, or various endurance game activities.
- 2) **Intensity of Exercise:** Physical activity corresponding to 40 to 85% VO₂max or 55 to 90% of maximal heart rate. It should be noted that exercise of lower intensity may provide important health benefits and may result in increased fitness in some persons (eg., those who were previously sedentary and low fit).
- 3) **Duration of Exercise:** 15 to 60 minutes of continuous or discontinuous aerobic activity.
- 4) **Frequency of Exercise:** 3 to 5 days per week.
- 5) **Rate of Progression:** In most cases, the conditioning effect allows individuals to increase the total work done per session. In continuous exercise, this occurs by an increase in intensity, duration, or by some combination of the two. The most significant conditioning effects may be observed during the first 6 to 8 weeks of the exercise program. The exercise prescription may be adjusted as these conditioning effects occur, with the adjustment depending on participant characteristics, new exercise test results and/or exercise performance during exercise sessions.

APPENDIX B

ROSENBERG SELF-ESTEEM SCALE

The ten items are presented as follows:

Below is a list of statements dealing with your general feelings about yourself. If you AGREE with the statement, CIRCLE A. If you STRONGLY AGREE, CIRCLE SA. If you DISAGREE, CIRCLE D. If you STRONGLY DISAGREE, CIRCLE SD.

		1 Strongly Agree	2 Agree	3 Disagree	4 Strongly Disagree
(1)	On the whole, I am satisfied with myself.	SA	A	D	SD
(2)	At times I think I am no good at all.	SA	A	D	SD
(3)	I feel that I have a number of good qualities.	SA	A	D	SD
(4)	I am able to do things as well as most other people.	SA	A	D	SD
(5)	I feel I do not have much to be proud of.	SA	A	D	SD
(6)	I certainly feel useless at times.	SA	A	D	SD
(7)	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
(8)	I wish I could have more respect for myself.	SA	A	D	SD
(9)	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
(10)	I take a positive attitude toward myself.	SA	A	D	SD

APPENDIX C

STRESS MANAGEMENT PROJECT EVALUATION

For each item, please circle the number that best represents the extent to which you were affected by your experience in the stress management project:

Please rate your level of improvement in the areas of:

	<i>not at all</i>					<i>extremely</i>	
Physical strength	1	2	3	4	5	6	7
Self-confidence	1	2	3	4	5	6	7
Physical appearance	1	2	3	4	5	6	7
Physical fitness	1	2	3	4	5	6	7
Self-esteem	1	2	3	4	5	6	7
Ability to complete challenging tasks	1	2	3	4	5	6	7
Ability to concentrate	1	2	3	4	5	6	7
Feeling calm	1	2	3	4	5	6	7

Please explain in your own words the impact of your participation in this project.

REFERENCES

- Bandura, A. (1977). Self-efficacy: Toward unifying theory of behavioral change. Psychological Review, 84, 191-215.
- Beck, A.T., Emery, G., & Greenberg, R.L. (1985). Anxiety disorder and phobias: A cognitive perspective. New York: Basic Books.
- Berger, B.G., Owen, D. (1983). Mood alteration with swimming - swimmers really do "feel better". Psychosomatic Medicine, 45, 425-433.
- Biddle, S.H.H., & Fox, K.R. (1989). Exercise and health psychology: Emerging relationships. British Journal of Medical Psychology, 62, 205-216.
- Byrne, B.M. (1983). Investigating measures of self-concept. Measurement and Evaluation in Guidance, 16, 115-126.
- Byrne, B. M., & Shavelson, R. J. (1986). On the structure of adolescent self-concept. Journal of Educational Psychology, 78, 471-481.
- Carlson, J. (1990). Counseling through physical fitness and exercise. Elementary School Guidance & Counseling, 24, 298-302.
- Demo, D.H. (1985). The measurement of self-esteem: Refining our methods. Journal of Personality and Social Psychology, 48, 1490-1502.
- DeRosa, A.P., & Frank, P. (1991). Effects of familiar proctor on fifth and sixth grade students' test anxiety. Psychological Reports, 69(1), 103-113.
- Dobson, C., Goundy, W.C., Powers, P.M., & Powers, E. (1979). Further analysis of Rosenberg's self-esteem scale. Psychological Reports, 44, 639-641.
- Doganis, G., Yannis, T., & Bagatis, K. (1991). Self-esteem and locus of control in adult female fitness program participants. International Journal of Sports Psychology, 22, 154-164.
- Flemming, F.S., & Courtney, B.E. (1984). The dimensionality of self-esteem: II. Hierarchical facet model revised measurement scales. Journal of Personality and Social Psychology, 46, 404-421.
- Folkins, C.H., & Sime, W.E. (1981). Physical fitness training and mental health. American Psychologist, 36, 373-389.

- Fox, K.R., & Corbin, C.B. (1989). The Physical self-perception profile: Developmental and preliminary validation. Journal of Sport and Exercise Psychology, 11, 408-430.
- Franzoi, S.L., & Shields, S.A. (1984). The body esteem scale: Multidimensional structure and sex differences in a college population. Journal of Personality Assessment, 48, 173-178.
- Fremont, J., & Craighead, L.W. (1987). Aerobic exercise and cognitive therapy in the treatment of dysphoric moods. Cognitive Therapy and Research, 11, 408-430.
- Glesser, J., & Mendelberg, H. (1990). Exercise and sport in mental health: A review of the literature. International Journal of Psychiatry and Related Sciences, 27, 99-112.
- Goldsmith, R.E. (1986). Dimensionality of the Rosenberg Self-Esteem Scale. Journal of Social Behavior and Personality, 1, 253-264.
- Gruber, J.J. (1986). Physical activity and self-esteem development in children: A review of the literature: A meta-analysis. In G.A. Stull & H. M. Eckert (Eds.), Effects of Physical Activity on Children. Champaign, IL: Human Kinetics.
- Harter, S. (1982). The perceived competence scale for children. Child Development, 53, 87-97.
- Hellison, D.R. (1969). The effect of physical conditioning on affective attitudes toward the self, the body and physical fitness (Doctoral dissertation, Ohio State University). Dissertation Abstracts International, 30, 2381.
- Hensley, W.E., & Roberts, M.K. (1976). Dimension of Rosenberg's self-esteem scale. Psychological Reports, 38, 583-584.
- Hilyer, J.C., & Mitchell, W. (1979). Effect of systematic physical fitness training combined with counseling on the self-concept of college students. Journal of Counseling Psychology, 26, 427-436.
- Hilyer, J.C., Wilson, D.G., Dillon, C., Caro, L., Jenkins, C., Spencer, W., Meadows, M., & Booker, W. (1982). Journal of Counseling Psychology, 29, 293-303.

- Hinkle, S.J. (1991). Aerobic running behavior and psychotherapeutics: Implications for sports counseling and psychology. Journal of Sport and Behavior, 15, 263-277.
- Kaplan, H.B., & Pokorny, A.D. (1969). Self-derogation and psychosocial adjustment. Journal of Nervous and Mental Disease, 149, 421-434.
- King, A.C., Taylor, C.B., Haskell, W.L., & Debusk, R.S. (1989). Influence of regular aerobic exercise on psychological health: A randomized controlled trial of healthy middle aged adults. Health Psychology, 8, 305-324.
- McEntee, D.J. (1995). Cognitive group therapy and exercise in the treatment of anxiety and stress. (Doctoral Dissertation, University of Massachusetts Amherst).
- Nagy, S. & Frazier, S.C. (1988). The impact of exercise of locus of control, self-esteem and mood states. Journal of Social Behavior and Personality, 3, 263-268.
- Neal, R. (1977). Effect of group counseling and physical fitness programs on self-esteem and cardiovascular fitness (Doctoral Dissertation, Boston University). Dissertation Abstracts Journal, 38(4A), 1911-1912.
- Orme, J.G., Reis, J., & Herz, E.J. (1986). Factorial and discriminant validity of the Center for Epidemiological Studies Depression (CE-D) Scale. Journal of Clinical Psychology, 42, 28-33.
- O'Brien, E.J. (1985). Global self-esteem scales: Unidimensional or multidimensional. Psychological Reports, 57, 383-389.
- Parent, C.J., & Whall, A.L. (1984). Are physical activity, self-esteem, & depression related? Journal of Gerontological Nursing, 10, 8-11.
- Pauly, J.T., Palmer, J.A., Wright, C.C., & Pfeiffer, G.J. (1982). The effect of a 14 week employee fitness program on selected physiological and psychological parameters. Journal of Occupational Medicine, 24, 457-463.
- Perri, S., & Templer, D.I. (1985). The effects of an aerobic exercise program on psychological variables in older adults. International Journal of Aging and Human Development, 20, 167-172.
- Plante, T.G., & Rodin, J. (1990). Physical fitness and enhanced psychological health. Current Psychology, 3-24.

- Plummer, O.K., Koh, Y.O. (1987). Effects of "aerobics" on self-concepts of college women. Perceptual Motor Skills, 65, 271-275.
- Ransford, C.P. (1982). A role of amines in the antidepressant effect of exercise: A review. Medicine and Science in Sports and Exercise, 14(1), 1-10.
- Rosenberg, M. (1965). Society and Adolescent Self-Image. Princeton: Princeton University Press.
- Schmitt, N. & Bedian, A.G. (1982). A comparison of Lisrel and two page least squares analysis of a hypothesized life-job satisfaction reciprocal relationship. Journal of Applied Psychology, 67, 806-817.
- Schwartz, S.G., & Kaloupek, D.G. (1987). Acute exercise combined with imaginal exposure as a technique for anxiety reduction. Canadian Journal of Behavioral Science, 19, 151-166.
- Seraganian, P. (1993). Exercise psychology: The influence of physical exercise on psychological processes. New York: Wiley & Sons.
- Shahani, C., Dipboye, R.L., & Phillips, A.P. (1990). Global self-esteem as a correlate of work-related attitudes: A question of dimensionality. Journal of Personality Assessment, 54, 276-288.
- Shapurian, R., Jojat, M., & Nayerahmadi, A.H. (1987). Psychometric characteristics of a Persian version of Rosenberg Self-Esteem Scale. Perceptual and Motor Skills, 65, 27-34.
- Shorkney, C.T., & Whiteman, V.L. (1978). Correlations between standard English and dialectical Spanish versions of five personality scales. Psychological Reports, 43, 910.
- Silber, E., & Tippet, J. (1965). Self-esteem: Clinical assessment and measurement validation. Psychological Reports, 16, 117-171.
- Sonstroem, R.J., & Morgan, W.P. (1989). Exercise and self-esteem: Rationale and model. Medicine and Science in Sports and Exercise, 21, 329-337.
- Sonstroem, R.J., Speliotis, E.D., & Fava, J.L. (1992). Perceived physical competence in adults: An examination of the physical self-perception profile. Journal of Sport and Exercise Psychology, 14, 207-221.
- Taylor, D.N., del-Pilar, J. (1992). Self-esteem, anxiety, and drug use. Psychological Reports, 71, 896-898.

Valliant, P.M., & Antonowicz, D.H. (1991). Cognitive behavior therapy and social skills training improves personality and cognition in incarcerated offenders. Psychological Reports, 68, 27-33.

Wylie, R.C. (1989). Measures of Self-Concept. Lincoln, NB: University of Nebraska Press.

