THE EFFECTS OF WEIGHT TRAINING ON THE SELF-ESTEEM OF COLLEGE STUDENTS

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ABSTRACT

This study investigated the effects of a weight training program on the self-esteem of college students. Subjects enrolled in a Beginning Weight Training course, a Beginning Golf course and an Introduction to Sociology course were administered the Tennessee Self Concept Scale (TSCS) at the beginning and end of an eight-week period. A subscale of the TSCS, the Total Positive (TP) score, served as the focal point of this study. The statistics used to analyze the data included ANOVA for between group comparisons and a matched pair t-test for within group differences. The subjects in the Weight Training class significantly increased their TP scores; such was not the case for the Golf and Sociology subjects. There were no statistically significant differences among the three groups at the end of the eight-week period.

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CHAPTER ONE

INTRODUCTION

An important consideration for any educator to acknowledge is the fact that every student is a unique individual with his or her own ideas, actions and perceptions. Of particular importance to the present study is the student's self-concept and in particular, his or her self-esteem or sense of self-worth.

Self-concept, as defined by Lugo and Hershey (1981) is how one feels about oneself. Trujillo (1983) defines self-concept as the set of cognitions one holds towards oneself. One subset of self-concept, self-esteem, pertains to the evaluative connotations of these cognitions. Simply put, it is the degree of satisfaction with one's physical and psychological selves. If a person compares himself unfavorably to others or some ideal type, it can result in a negative, perhaps damaging attitude toward self.

As human beings, we all have the need to be treated as persons of worth and importance. People who feel inadequate often work extra hard to prove to themselves that they are worthy and important. Feelings about the self largely depend on others' evaluations.

Maslow (1970, p. 45) states that esteem needs are "the desire for reputation or prestige, status, fame and glory, dominance, recognition, attention, importance, dignity and appreciation." Kalish (1977) feels that people who respect themselves and are respected by others rarely need to proclaim their own capabilities. They are more likely to have faith in their judgements and are less likely to be introverted.

Can the self-esteem be changed and, if so, how can one do so? An extensive research literature strongly suggests that self-esteem can indeed be changed. One can seek help from a psychologist or perhaps try hypnosis, but these methods cost far more then the average person can afford. A far cheaper and more easily accessible method is to try and follow some type of self-initiated, self-improvement program. The activities available are endless. Aerobics, jazzercise, aquasize, jogging, biking and weight training are just a few of the activities that can provide an individual with a healthy, self-paced workout which, in turn, can lead to a more positive evaluation of the self. Once into such a program, the participant begins to realize that physical and psychological benefits are achievable. Improved appearance due to weight loss, toning and strengthening of the musculature can, at the very least, make a person feel better about his or her physical self. Mentally, the person becomes less stressed and more alert and able to cope with trying situations. Overall, the person feels better towards himself or herself and this can often translate into a more positive global evaluation of self. This relationship between physical self-esteem and a general feeling of self-worth has been documented in the literature.

Traditionally, weight training has been a typically male oriented activity. However, with increasing technology and the advent of specific, scientifically advanced machinery, as well as a boom in the popularity of health and fitness clubs, the sport is now experiencing considerable popularity among people of all ages and both sexes. More and more people are realizing the physiological and psychological benefits of weight training programs.

Fleck and Kraemer (1987) state that in the last 10 years resistance training programs have experienced a tremendous

boom in popularity. Athletes, students, physiotherapy patients, as well as average people interested in fitness have turned to weight training to improve performance and/or become physically fit. More and more people are shaping up because they care what they look and feel like. Given the availability of appropriate facilities, a person can design a self-paced workout which provides considerable satisfaction. This improvement in self-satisfaction and a resulting positive self-esteem can lead to a happier lifestyle.

It is important when designing a training program to set goals that are realistic and achievable. The author has taught beginning and intermediate weight training classes at the State University of New York at Brockport for two semesters. Three different types of training programs have been utilized. The strength program consists of lifting heavy weight with few repetitions. This program is used mostly by those who want to add muscle bulk and get stronger. The power program consists of lifting heavy weights with a medium number of repetitions as fast as possible. The endurance/tone program is used by those who do not want to add bulk but want to better define their musculature. This program consists of light weights with a high number of repetitions.

All three programs can be used interchangeably depending on a person's needs. In addition, different weight systems are available to help a person achieve his or her goals. The free weights system consists of dumbbells, barbells and curling bars. These weights allow for a variety of exercises including squats, curls, shrugs and a variety of presses. The universal machine is a multi-station apparatus that allows for the following lifts or movements - leg press, bench press, dips, sit-ups, lat pull down, pullups, curls and military press. The Nautilus system consists of muscle-specific machines for the

lower back, hip adductor/abductor, legs, upper back, arms, abdomen and neck. The machines allow for the following exercises - lower back extension, duo hip and back extension, duo squat press, leg extension, leg curl, decline press, arm cross, super pullover, rowing torso, overhead press, lateral raise, multi-tricep extension, multi-exercise, abdominal flexion and rotary torso extension. Students are generally free to work on any of the equipment if it helps achieve their personal goals. The typical teaching sequence is for the instructor to first introduce and explain each piece of equipment or system available in the weight training room. Students then practice these movements under the instructor's supervision.

It is this researcher's belief that a weight training program can make a person feel better about himself or herself as well as contribute to higher self-esteem. If this speculation is true, then weight training programs can have positive effects for people who feel negative about themselves, people who are depressed or, people who feel inadequate. Through a supervised weight training program, any person can learn the principles of weight training and integrate them into a self-training program. If the program proves to be successful, that is, if the individual achieves his or her pre-set goals and improves his or her body image, there is a reasonably good chance that an improved self-esteem will also result.

Statement of the Problem.

The specific purpose of this study was to determine the effects of individualized weight training programs on the self-esteem of college students. It is hypothesized that

participants in a self-designed eight-week weight training program will result in an increase in the participant's self-esteem.

Delimitations.

1. This study was delimited to students enrolled at SUNY Brockport.

2. The study was delimited to a single weight training class at SUNY Brockport.

3. The study concerned itself only with self-esteem, not a person's total self-concept.

Limitations.

Although the number of uncontrollable variables was minimized to the fullest extent possible, the researcher had no control over such factors as:

1. The quantity and/or quality of weight training activity each of the subjects engaged in outside of class time.

2. The sample size in the weight training class was smaller than hoped for.

3. There was no way of knowing whether or not the students answered the questions on the TSCS truthfully and sincerely.

4. No provision was made to see whether the weight training subjects actually got stronger or increased their girth measurements over the course of this investigation.

Definition of Terms.

1. Self-concept. Self-concept refers to how one feels about oneself. Triandis (1977, p. 211) defines self-concept as "the theory an individual has constructed about himself or herself. It includes major postulates on the nature of the world, the nature of self, and their interactions."

2. Self-image. Self-image refers to how one evaluates his or her physical self.

3. Self-esteem. The degree of satisfaction a person has of himself both physically and psychologically. Ziller (1973, p. 6) defines it as "the individual's perception of his worth."

4. Body cathexis. Secord and Jourard (1973, p. 343) define body cathexis as "the degree of feeling of satisfaction or dissatisfaction with the various parts or processes of the body."

5. Squat. A free weight movement in which the legs are bent and straightened under resistance.

6. Curl. A training movement in which the joint is flexed under resistance.

7. Shrugs. A training movement in which the shoulders are circumducted under resistance.

8. TSCS. The Tennessee Self Concept Scale.

9. TP. The Total Positive subscale of the TSCS.

10. ANOVA. One-way-analysis-of-variance is a statistic used to measure between group differences.

11. Matched pair t-test. A statistic that measures mean differences between two sets of scores obtained from the same group of subjects.

Basic Assumptions.

All of the following assumptions guided this investigations.

1. All participants in the weight training program were motivated, enthusiastic and gave full effort.

2. All students experienced the same instruction pertaining to the equipment and facilities.

3. Individual instruction was provided when requested.

4. The subjects in this study had no knowledge of the purpose of this investigation.

5. All participants answered the self-esteem questions

truthfully.

CHAPTER TWO

REVIEW OF LITERATURE

Relationship between Self-Esteem and Self-Concept.

Self-esteem is a difficult concept to measure for it relies on how honest and how much a person is willing to "make public about himself" (Ziller, 1973, p. 3). Much of the research on self-esteem can be questioned because of the lack of valid and reliable measurement instruments. Recently, several new instruments have been devised and tested in a variety of situations. For example, Secord and Jourard (1973) have developed a body cathexis scale based on the following hypotheses.

1. Feelings about the body are related to fellings about the self.

2. Negative feelings about the body are related to negative feelings about the self.

3. Negative feelings about the body are related to feelings of insecurity.

The result of their work support the above hypotheses.

In 1964 Fitts designed the Tennessee Self-Concept Scale in order to provide a simple, widely applicable and standardized test to measure self-concept. The Total Positive Sub-scale is an overall measurement of a person's self-

esteem. Trujillo (1983) states that self-report instruments, including the TSCS, are the most frequently used means today for assessing self-concept and self-esteem.

Based on the research done to-date, there appears to be a relationship between how a person evaluates his physical self and the degree of satisfaction with the self. If a person has negative thoughts about his or her body, he or she will tend to act in negative ways. For example, an overweight woman might stay away from the beach because she doesn't want others to see how she looks in a bathing suit. The same holds true for people who have a positive image of themselves. They will tend to act in positive ways. For example, a bigger stronger person might not feel as shy in social situations as a much slighter, frailer person.

Faunce (1984) focused his attention on the effects of status on self-esteem and concluded that the conception of self and degree of concern for achievement in various areas is anchored primarily in on-going social relationships in recurring social settings.

Psychological Aspects of Physical Activity Participation.

Snyder and Sprietzer (1974) examined the psychological consequences of sport involvement among adults. Their data supported the proposition that there is a positive relationship between sport involvement and psychological well-being. They also suggested that psychological well-being is most likely to result from the intrinsic pleasure derived from sports participation.

Sonstroem (1982) demonstrated that boys who received positive feedback from a significant other increased their self-ratings on physical items related specifically to the

feedback. The reverse held true for boys who received negative feedback. Positive feedback was followed by increased preference for activities incorporating the evaluated skills. Decreased preference for congruent activities occurred with negative feedback. Subjects who received positive feedback increased their own positive evaluations while subjects who received negative feedback decreased their personal evaluations.

Joesting (1981) compared community college students who participated in five or more hours-per-week of physical activity with a group that did not participate in regular physical activity. All students were administered body cathexis and self cathexis questionnaires. the results showed that the regular participants had a better view of their bodies and a higher self-concept than the non-participants.

Westcott (1980) discovered that there was significant improvement in the self-concept scores of college students after they completed college activity courses.

Ibertson (1974) administered a personality test to 220 college freshmen and a follow-up test to a random sample of 46 subjects when they were seniors in order to determine the psychological effects of physical activities over a three-year period. He found that there were significant psychological differences between subjects who were physically active and those who were physically inactive. The active group tended to have higher self-concepts, a lesser intellectual-aesthetic orientation toward life and were more socially oriented toward life then the inactive group.

Gruber and Perkins (1978) compared women physical education majors with women non-majors on several personality and psychological traits. Both groups were categorized into varsity, junior varsity, intramural and non-

participants sub-groups. The researchers found that women physical education majors were more happy go lucky and trusting than non-majors. Also, women who competed intercollegiately were more sober, serious, tough-minded and poised when compared to the intramural and non-participant groups.

Pestonjee et. al. (1981) studied boys and girls involved and not involved with sport and physical activities and found that those who were involved scored higher on such traits as reserved, critical, cool, practical, careful, conventional, self-confident, serene, self-opinionated, controlled, and socially precise. They also possessed higher self-control then the non-participants.

Brennan (1985) hypothesized that higher levels of student participation in physical activities lead to higher levels of self-esteem. Specifically, peer group formation and variety of experience proved significant in explaining the relationship between participation and self-esteem.

The research on the psychological aspect of physical activity participation indicates that there is a strong tendency for participants to exhibit more positive attitudes towards themselves and others then non-participants.

Effects of Specific Physical Activities on Self-esteem.

Several studies have linked participation in specific physical activities with increases in self-esteem. Rafferspergen (1985) found that participation in an eight-week movement and music program yielded gains in the self-concept of trainable mentally impaired children. Plummer (1985) found that rhythmic aerobics positively influenced the self-concept of college women.

Pohl (1984) discovered that participation in a 12-week aerobic fitness program positively affected body and self-images while also leading to increased levels of fitness. In short, he found positive and moderate correlations between fitness and body-image and fitness and self-image.

Tseo (1981) found that overall self-esteem and physical fitness improved significantly after a seven-week aerobic dance program.

Kamanski (1983) found that physical fitness goal setting positively affects self-concept and that the achievement of fitness goals leads to an improved self-concept.

A study by Franzoi and Herzog (1986) using the Body-Esteem scale and questions relating to exercise, food intake and attractiveness found: (1) positive relationships between male upper body strength and the physical condition subscale and; (2) female weight concern, physical condition and the sexual attractiveness subscale.

Trujillo (1983) examined the effects of weight training, running exercise and mixed activity programs on the self-esteem of college women. The subjects were pretested on self-esteem, sex role identity, selected physiological measures, and psychological attitudes. Significant self-esteem increases were found for the weight training and running groups while a non-significant loss was found for the control group. The weight training group had a higher increase in self-esteem than the running group. The weight training subjects also felt better about themselves and had a higher self-image. In addition, physiological and psychological benefits were reported for both exercise groups but not the mixed activity group.

Summary.

Although there is substantial literature on the effects of exercise programs on self-esteem, there is still a need for additional work to validate these findings. There is also limited research on the relationship between participation in an individualized, self-initiated weight training program and self-esteem. Additional studies need to be done before definitive conclusions can be reached about the relationship between participation in physical activities and self-esteem. For example, Sonstroem (1984) examined the causal effect of exercise on self-esteem with the aim towards improving present understanding and research about the subject. He suggests limiting self-esteem studies to the testing of relationships where the variables are clearly established. For example, the author chose to deal only with the TP Sub-scale in the present investigation even though three other sub-scales could have been looked at. If a significant relationship is found between weight training and improved self-esteem, additional studies will have to be done in order to determine whether the relationship can be elevated from a discrete research finding to an empirical generalization. This study represents a modest attempt to see whether the relationship is obtained. It will remain for other researchers to build upon the present investigation.

A proven relationship between weight training and self-esteem can have important implications for the field of mental health. People who have a negative self-image may be able to do something about it if they wish. Active involvement in a physical activity program can possibly influence a person's mental health and total well-being. It then follows that they

may be able to live happier and more productive lives because of that participation.

CHAPTER THREE

PROCEDURES

Subjects.

The subjects for this study consisted of undergraduate students enrolled at SUNY Brockport. The three groups employed in this investigation were as follows. Group 1 was a Beginning Weight Training class; Group 2 was an Introduction to Golf class; and Group 3 was an Introduction to Sociology class. Hereafter, these groups will be referred to as G1, G2 and G3.

G1 consisted of nine females and six males (N=15). G2 consisted of four females and twelve males (N=16). G3 consisted of seven females and eleven males (N=18). Thus, a total of 49 students served as subjects in this study. All three courses are generally taken in the freshmen year. G1 met Mondays, Wednesdays and Fridays from 9:30 a.m. to 10:30 a.m.; G2 met Tuesdays and Thursdays from 11:30 a.m. to 1:00 p.m.; G3 met Tuesdays and Thursdays from 3:30 p.m. to 5:00 p.m.. G1 met a total of 24 times, G2 16 times, and G3 30 times over the course of the semester. All three courses were taught Spring Semester, 1988.

The Golf class was selected as a control group because most participants choose the course to learn basic golf skills and techniques, not because they wished to improve their physical fitness. The Sociology class was included as a second control group because it is totally unrelated to physical fitness, conditioning and the like. If significant self-esteem differences are found in favor of the weight training class at the conclusion of the study, it would seem reasonable to argue

that they were due to the unique experience of working with resistance and the better body images and increased fitness levels which resulted from the individualized training program.

G1 was taught by a Graduate Assistant with four years of teaching experience at the elementary level. G2 was taught by a Graduate Assistant with two years of experience at the secondary level. G3 was taught by a college professor with a Ph. D. and 26 years of teaching experience at the secondary and college levels. All three instructors were fully briefed as to the nature of the study, the TSCS and its administration.

Instruments.

Pre- and post-testing using the TSCS (Tennessee Self Concept Scale) took place on the first and last days of the Weight Training and Golf courses (8 weeks); the Sociology class took its post-test half way through the course (the eighth week of the semester).

The TSCS (see Appendix A) is an instrument developed primarily to measure the self-concept. The TP or Total Positive sub-scale measures a person's overall self-esteem. The test was designed by William Fitts, a Professor of Psychology, employed by the Tennessee Department of Mental Health. He sought to tie together relevant research and clinical findings on how people feel about themselves. For example, if a person has negative thoughts and perceptions about himself, he tends to behave or act in a negative manner towards himself and others. The TP sub-scale can help a person understand how he perceives himself and what he can do to change his negative traits.

Two forms of the test are available, a Clinical and Research Form and a Counseling Form; both forms contain identical items. The Clinical and Research Form is more complex in terms of scoring, analysis and interpretation, and requires experience in pyschometrics and psychopathology. The Counseling Form was used in this study because it provides immediate feedback, is self-administering and is easier to score and analyze.

The Counseling Form consists of 100 self-descriptive statements that allow an individual to characterize himself and his feelings toward himself. Ninety of the questions are equally divided between positive and negative items; the remaining ten items constitute a criticism sub-scale. The latter indicates how truthfully a subject answers mild derogatory but probably true questions about himself.

Scoring.

A five-point Likert scale is used to respond to each of the 100 items. The choices are always agree, mostly agree, no feeling, mostly disagree and always disagree. The test takes approximately 20 minutes. The TP score which measures overall level of self-esteem, is arrived at by adding the total number of points awarded for each of the 100 answers; 500 is the maximum score a person can achieve on this test (5 X 100 = 500). The lowest score that is possible is 100 (1 x 100 = 100). Fitts has established norms for the sub-scale based on a sample of 626 subjects. The mean score for this group was 345.57.

People with high scores tend to like themselves and feel confident. Low scores indicate a low level of self-esteem.

Each of the 100 items is graphed on a profile sheet which was hand scored by the researcher.

Testing Procedures.

The researcher had the same instructors in the three classes administer the TSCS twice to their students. All three teachers were fully briefed as to the nature of the study as well as how to administer the test. The teachers were instructed to tell their students that the test was completely voluntary and that the results would in no way affect their grades. The students were also told to be honest in answering each of the items. The same instructions were repeated at both the pre- and post-tests. The students were given as much time as they needed to complete the questionnaire.

Group 1.

During the eight weeks, the weight training students were introduced to the full line of Nautilus equipment, the Universal apparatus and free weights. All classes were conducted in the weight training gymnasium in Tuttle North on the Brockport Campus. Instruction on how to use each machine and piece of equipment was given to the group as a whole. The instructor explained the differences between training for strength, power and endurance. All of the students were then given free reign to design and work on their own training program based on their individual needs and interests. The instructor provided individual instruction and guidance to those who requested it.

Recording sheets were provided to all students. A list of exercises for the three systems was also made available. In addition, two homework assignments were given. One dealt

with principles of weight training, the other focused on diet analysis. The final project for the course required each student to write out a summary of his or her program and discuss whether he or she felt the program was successful in achieving his or her pre-test goals. See Appendix B.

Group 2.

Introduction to Golf is a one-credit, lower division, elective activity course which introduces students to the basic skill fundamentals of golf, rules, etiquette and playing strategy. The class met on a large field, received instruction on the topic of the day, then practiced with a partner. The subjects played two nine-hole games the last week of class at the Brockport Country Club.

Group 3.

Introduction to Sociology is a three-credit, lower division, elective course which introduces students to sociological perspectives on society and human behavior and applies this information to familiar social surroundings. Additional attention is focused on the meanings and rules that shape human social life, social organization and the ways in which individual human beings are incorporated into, and prepared for, participation in society.

CHAPTER FOUR

RESULTS AND DISCUSSION

The purpose of this study was to investigate the effects on an eight-week weight training program on the self-esteem of college students. Subjects for this investigation self-selected themselves into three groups. G1, a Beginning Weight Training class, consisted of nine females and six males. G2, a Beginning Golf class was included for control purposes and consisted of four females and twelve males. G3, an Introduction to Sociology class was also included for control purposes and consisted of seven females and eleven males. Thus, a total of 49 subjects were included in this study, 20 females and 29 males.

The Tennessee Self Concept Scale was administered at the beginning and at the end of an eight-week period, Spring Semester, 1988 at SUNY Brockport. The same testing technique, instructions and instructors were used at both the pre- and post- testing sessions.

Analysis.

Two methods of analyzing the collected data were used. A one-way-analysis-of-variance (ANOVA) was used to determine if there were initial differences in self-esteem among the three groups prior to as well as at the end of an eight-week interval. Specifically, the Total Positive Sub-scale (TP) scores were calculated and compared. The second method used to analyze the data was a matched pair t-test to compare within-group difference scores. The level of statistical significance was set a priori at the .05 level.

Results.

TABLES 1 and 2 provide pre-experimental, inter-group comparisons. TABLE 1 lists the Ns, means, standard deviations and high and low scores on the first administration of the TP Sub-scale for all three groups.

TABLE 1
MEANS, STANDARD DEVIATIONS AND HIGH AND LOW SCORES ON THE FIRST ADMINISTRATION OF THE TP SUB-SCALE

Group	N	Mean	Standard Deviation	High Ind. Score	Low Ind. Score
1	15	267.67	13.87	293	242
2	16	277.25	15.60	304	241
3	18	278.25	16.69	320	250

G1 had the lowest mean TP Sub-scale score (267.67) on the first administration of the test; G3 had the highest mean score (278.25). Only 10.58 points separated the highest and lowest group mean scores.

TABLE 2 presents an ANOVA for the pre-experimental TP scores to see if there were any initial differences in self-esteem among the three groups.

TABLE 2
ANOVA FOR PRE-EXPERIMENTAL TP SUB-SCALE SCORES
FOR THE THREE GROUPS

Source of Variation	df	Sum of Squares	Mean Sum
Factor	2	1076	538
Error	46	11076	241
Total	48	12152	

F-Ratio = 2.24 p = 0.12

For the .05 level of significance, the F-Ratio must be 3.20+ with 2 and 46 df. Since the F-Ratio was 2.24 (p = 0.12), it was concluded that there were no statistically significant differences among the three groups on the initial administration of the TP Sub-scale.

TABLES 3 and 4 present post-experimental, inter-group comparisons. TABLE 3 includes the Ns, means, standard deviations and high and low scores for the three groups following the eight-week experimental period.

TABLE 3

MEANS, STANDARD DEVIATIONS AND HIGH AND LOW SCORES ON THE SECOND ADMINISTRATION OF THE TP SUB-SCALE

Group	N	Mean	Standard Deviation	High Ind. Score	Low Ind. Score
1	15	279.80	16.89	323	257
2	16	278.63	14.52	307	257
3	18	274.39	16.24	316	255

The mean score for G1 increased from 267.67 to 279.80 (+4.53%). The mean score for G2 increased from 277.25 to 278.63 (+0.50%) while the mean score for G3 decreased from 278.25 to 274.39 (-1.39%).

TABLE 4 presents an ANOVA on the post-experimental TP scores for the three groups.

TABLE 4

ANOVA FOR POST-EXPERIMENTAL TP SUB-SCALE SCORES FOR THE THREE GROUPS

Source of Variation	df	Sum of Squares	Mean Sum
Factor	2	274	137
Error	46	11640	253
Total	48	11914	

F-Ratio = 0.54 p = 0.59

Since the obtained F-Ratio was a non-significant 0.54, it was concluded that there were no statistically significant differences among the three groups following the eight-week experimental period.

TABLES 5, 6 and 7 provide post-experimental intra-group analyses for the Weight Training, Golf and Sociology classes, respectively.

TABLE 5 provides a pre- and post-experimental analysis of the self-esteem scores for the subjects in the Weight Training class.

TABLE 5
PRE- AND POST-TEST SELF-ESTEEM SCORES FOR THE WEIGHT TRAINING CLASS

Pre-experimental mean	Post-experimental mean	Paired t-test value	P
267.67	279.80	4.47	0.00

The result of the paired t-test was statistically significant ($p = 0.00$) indicating that the subjects in the Weight Training class significantly improved their self-esteem scores over the eight-week period. This statistical finding supported the researcher's hypothesis that the weight training program would have positive effects on the participant's self-esteem.

TABLE 6 provides a pre- and post-experimental analysis of the self-esteem scores for the subjects in the Golf class.

TABLE 6
PRE- AND POST-TEST SELF-ESTEEM SCORES FOR THE GOLF CLASS

Pre-experimental mean	Post-experimental mean	Paired t-test value	P
277.25	278.63	0.50	0.62

It is obvious that there was no significant change in the self-esteem scores for the students enrolled in the Beginning Golf class. Their self-esteem did not significantly change over the eight-week experimental period.

TABLE 7 provides a pre- and post-experimental analysis of the self-esteem scores for the subjects in the Sociology class.

TABLE 7
PRE- AND POST-TEST SELF-ESTEEM SCORES FOR THE SOCIOLOGY CLASS

Pre-experimental mean	Post-experimental mean	Paired t-test value	P
278.25	274.39	-1.67	.11

The results of the paired t-test showed that there was no significant change in the self-esteem scores for the students enrolled in the Introduction to Sociology class. Although not statistically significant, it is interesting to note that their self-esteem scores actually decreased over the eight-week interval.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary.

The purpose of this study was to determine the effects of an eight-week weight training program on the self-esteem of college students. The Tennessee Self Concept Scale (TSCS) was administered to a Beginning Weight Training class (G1), a Beginning Golf class (G2), and an Introduction to Sociology class (G3) both before and after an eight-week interval.

G1 met Mondays, Wednesdays and Fridays from 9:30 a.m. to 10:30 a.m.; G2 met Tuesdays and Thursdays from 11:30 a.m. to 1:00 p.m.; G3 met Tuesdays and Thursdays from 3:30 p.m. to 5:00 p.m.. G1 met 24 times, G2 16 times and G3, 15 times over the course of the experimental eight-week period. All three courses were taught Spring Semester, 1988 on the Brockport Campus.

G1 participated in a self-directed, self-paced weight training program under the supervision of a qualified instructor. Free weights, Universal equipment, Nautilus systems and exercise bicycles were available to the students.

G2 serves as a physical activity control group in this investigation. The students participated in a basic golf skills course which included the practice of fundamental skills and shots, golf etiquette, and playing rules and regulations. The students played 18 holes of golf the last week of the course.

G3 serves as a non-physical activity control group for comparison purposes. The students participated in a lecture-oriented course which focused on a variety of sociological

concepts including social institutions, social relationships, social processes and social problems.

Pre- and post-testing using the Counseling Form of the TSCS took place at the beginning and end of an eight-week period.

The Total Positive (TP) Sub-scale of the TSCS measures the subject's overall level of self-esteem. The researcher chose the TP Sub-scale because it was most relevant to the purposes of the present study.

Two methods of analyzing the collected data were used. Between group analysis was accomplished via a one-way-analysis-of -variance of the pre- and post-test scores on the TP Sub-scale. The second statistical method employed to analyze the data was a matched pairs t-test. It was used to determine if there were significant differences within the three groups on the TP Sub-scale scores. All findings were interpreted according to the .05 level of significance.

Based on an analysis of this data, the following conclusions are advanced.

Conclusions.

1. There were no statistically significant differences in self-esteem scores among the three groups prior to the start of the eight-week experimental interval.

2. There were no statistically significant differences in self-esteem scores among the three groups following the eight-week experimental interval.

3. The subjects in the Weight Training class significantly increased their self-esteem scores over

the eight-week interval. It would appear that the eight-week weight training program had a positive effect on the self-esteem of the participants.

4. The subjects enrolled in the Golf and Sociology classes did not significantly improve their self-esteem scores over the eight weeks. These findings suggests that the subject matter presented in these two classes had little or no effect on the self-esteem of the involved students.

Analysis of the pre- and post-TP Sub-scale scores indicated that an eight-week weight training program can have a positive influence on the participant's self-esteem. Several studies (Ibertson, 1974; Joesting, 1981; Plummer,1985; Pohl, 1984; Rafferspergen, 1985; Snyder and Sprietzer, 1974; Trujillo, 1983; Tseo, 1981; and Westcott, 1980) support this finding.

An ANOVA on the post-test scores produced an insignificant F-Ratio. This may be attributed to the relatively short duration of the study. A longer experimental interval could have possibly resulted in significant positive findings in favor of the weight training class. It is possible that some of the students were just beginning to see improvements in girth measurements and muscle mass when the TSCS was administered the second time.

Additional studies such as the present one are needed if the psychological consequences of physical activity are to be firmly established. These findings support the contention that a weight training program can positively influence a person's self-esteem. It remains for future researchers to study the effects of other physical activity programs over differing time

intervals, to see whether the case for physical activity can be further substantiated.

Recommendations.

Based upon the results of the present study, the following recommendations should help point the way for future research in the area of self-esteem.

1. Instead of using a single source of data, i.e., a standardized instrument, it is recommended that a triangulation of data collecting procedures be used. In addition to standardized test performance, future researchers should also consider the possibility of including interview and observation protocols.

2. Assessment of the physiological effects of a weight training program, e.g., girth measurements, body fat composition, etc., should be incorporated in order to better explain any changes that may result in self-esteem scores.

3. The TSCS can be used to measure participation effects in other physical activities such as Ultimate Frisbee, Orienteering, Aerobics and Dance.

4. Use larger samples in order to see whether these findings can be generalized to larger populations.

APPENDIX A

THE TENNESSEE SELF-CONCEPT SCALE

DIRECTIONS Fill in your name and other information on the separate answer sheet

The statements in this inventory are to help you describe yourself as you see yourself. Please answ them as if you were describing yourself to yourself. Read each item carefully, then select one of t five responses below and fill in the answer space on the separate answer sheet

Don't skip any items. Answer each one. Use a soft lead pencil. Pens won't work. If you change answer, you must erase the old answer completely and enter the new one.

RESPONSES	Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
	C	M		M	C
	F	F	PF - PT	T	T
	1	2	3	4	5

TENNESSEE SELF CONCEPT SCALE

1. I have a healthy body 1
2. I am an attractive person 2
3. I consider myself a sloppy person 3
4. I am a decent sort of person 4
5. I am an honest person 5
6. I am a bad person 6
7. I am a cheerful person 7
8. I am a calm and easy going person 8
9. I am a nobody 9
10. I have a family that would always help me in any kind of trouble 10
11. I am a member of a happy family 11
12. My friends have no confidence in me 12
13. I am a friendly person 13
14. I am popular with men 14
15. I am not interested in what other people do 15
16. I do not always tell the truth 16
17. I get angry sometimes 17
18. I like to look nice and neat all the time 18
19. I am full of aches and pains 19
20. I am a sick person 20
21. I am a religious person 21
22. I am a moral failure 22
23. I am a morally weak person 23
24. I have a lot of self-control 24
25. I am a hateful person 25
26. I am losing my mind 26
27. I am an important person to my friends and family 27
28. I am not loved by my family 28
29. I feel that my family doesn't trust me 29
30. I am popular with women 30
31. I am mad at the whole world 31
32. I am hard to be friendly with 32
33. Once in a while I think of things too bad to talk about 33
34. Sometimes when I am not feeling well, I am cross 34
35. I am neither too fat nor too thin 35
36. I like my looks just the way they are 36
37. I would like to change some parts of my body 37
38. I am satisfied with my moral behavior 38
39. I am satisfied with my relationship to God 39
40. I ought to go to church more 40

41. I am satisfied to be just what I am 41
42. I am not as nice as I should be 42
43. I despise myself 43
44. I am satisfied with my family relationships 44
45. I understand my family as well as I should 45
46. I should trust my family more 46
47. I am [illegible] as I want to be 47
48. I try to please others, but I don't overdo it 48
49. I am no good at all from a social standpoint 49
50. I do not like everyone I know 50
51. Once in a while, I laugh at a dirty joke 51
52. I am neither too tall nor too short 52
53. I don't feel as well as I should 53
54. I should have more sex appeal 54
55. I am as religious as I want to be 55
56. I wish I could be more trustworthy 56
57. I shouldn't tell so many lies 57
58. I am as smart as I want to be 58
59. I am not the person I would like to be 59
60. I wish I didn't give up as easily as I do 60
61. I treat my parents as well as I should (Use past tense if parents are not living) 61
62. I am too sensitive to things my family say 62
63. I should love my family more 63
64. I am satisfied with the way I treat other people 64
65. I should be more polite to others 65
66. I ought to get along better with other people 66
67. I gossip a little at times 67
68. At times I feel like swearing 68
69. I take good care of myself physically 69
70. I try to be careful about my appearance 70
71. I often act like I am "all thumbs" 71
72. I am true to my religion in my everyday life 72
73. I try to change when I know I'm doing things that are wrong 73
74. I sometimes do very bad things 74
75. I can always take care of myself in any situation 75
76. I take the blame for things without getting mad 76
77. I do things without thinking about them first 77
78. I try to play fair with my friends and family 78
79. I take a real interest in my family 79
80. I give in to my parents. (Use past tense if parents are not living) 80
81. I try to understand the other fellow's point of view 81
82. I get along well with other people 82
83. I do not forgive others easily 83
84. I would rather win than lose in a game 84
85. I feel good most of the time 85
86. I do poorly in sports and games 86
87. I am a poor sleeper 87
88. I do what is right most of the time 88
89. I sometimes use unfair means to get ahead 89
90. I have trouble doing the things that are right 90
91. I solve my problems quite easily 91
92. I change my mind a lot 92
93. I try to run away from my problems 93
94. I do my share of work at home 94
95. I quarrel with my family 95
96. I do not act like my family thinks I should 96
97. I see good points in all the people I meet 97
98. I do not feel at ease with other people 98
99. I find it hard to talk with strangers 99
100. Once in a while I put off until tomorrow what I ought to do today 100

APPENDIX B

WEIGHT TRAINING HANDOUTS

Nautilus. TRAINING RECORD

Name _____

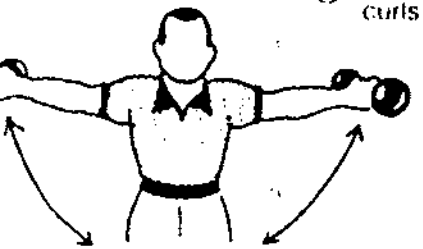
M/F _____ Height _____

	Date																		
	Bodyweight																		
Workout Time	START / FINISH																		
	WEIGHT / REPS																		
Machine	Seat Adj.																		
1.																			
2.																			
3.																			
4.																			
5.																			
6.																			
7.																			
8.																			
9.																			
10.																			
11.																			
12.																			
13.																			
14.																			
15.																			
16.																			

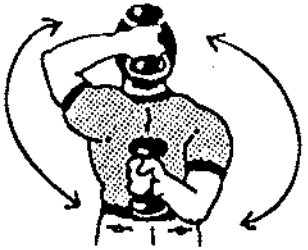
Curls

(2) Reverse curls

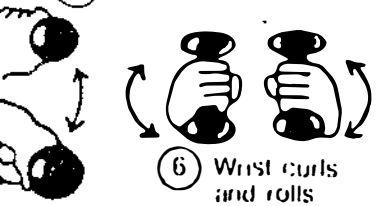
(3) Front elevations



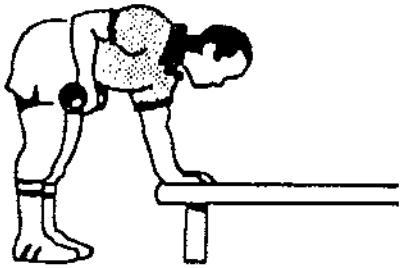
(4) Side elevations



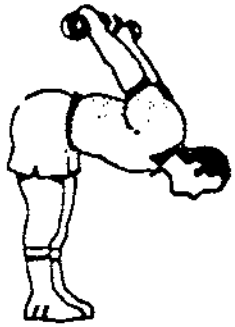
(5) Hands behind neck and back



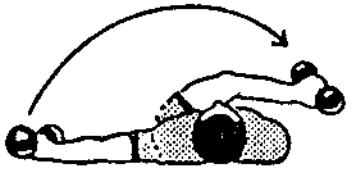
(6) Wrist curls and rolls



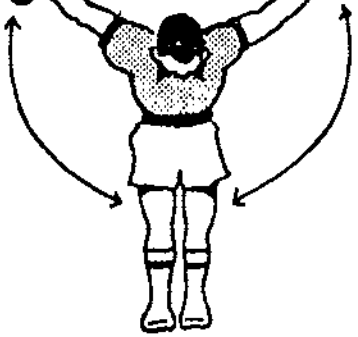
(7) Bent-over one-arm rowing



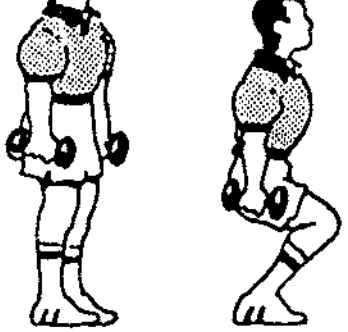
Bent-over extensor lift



(9) Hands across chest and out to side

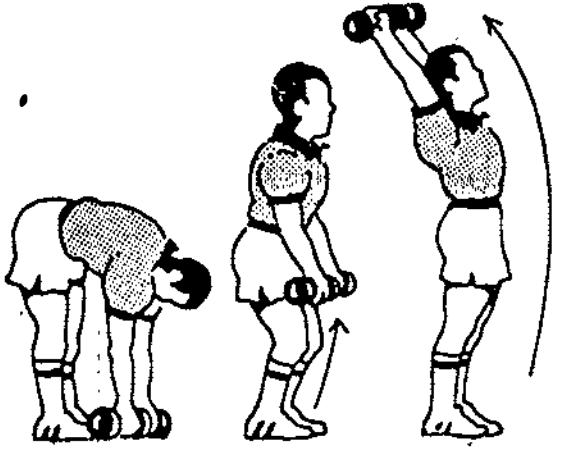


(10) Bent-over side lifts

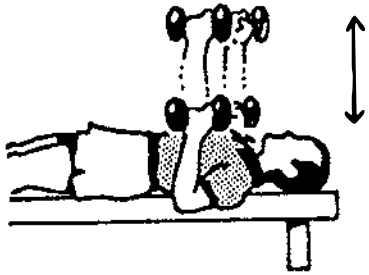


(11) Half knee-bends

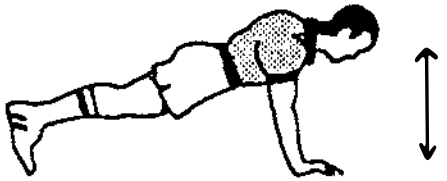
(12) Alternative overhead press



(13) Full press



(14) Bench press



(15) Push-ups

Implications. The following exercises, grouped by muscle group and equipment, are applicable to most strength training programs:

Muscle Group	Barbells/Dumbbells	Universal Gym	Nautilus Machines
Buttocks/lower back	squat stiff-legged deadlift	leg press hyperextension	hip and back squat leg press
Quadriceps	squat	leg extension leg press	leg extension squat leg press
Hamstrings	squat	leg curl leg press	leg curl squat leg press
Calves	calf raise	toe press on leg press	calf raise on multi exercise toe press on leg press
Latissimus dorsi	bent-over rowing bent-armed pullover stiff-armed pullover	chin-up pulldown on lat machine	pullover behind neck torso/arm chin-up on multi exercise
Trapezius	shoulder shrug dumbbell shoulder shrug	shoulder shrug	neck and shoulder rowing torso
Deltoids	press press behind neck upright rowing forward raise side raise with dumbbells	seated press upright rowing	double shoulder • lateral raise • overhead press omni shoulder rowing torso
Pectoralis majors	bench press dumbbell flies	double chest parallel dip	• arm cross • decline press • parallel dip on multi exercise
Biceps	standing curl	curl chin-up	compound curl bicep curl omni curl
Triceps	tricep extension with dumbbells	press down on lat machine	compound tricep tricep extension omni tricep
Forearms	wrist curl	wrist curl	wrist curl on multi exercise
Abdominals/obliques	sit-up side bend with dumbbells	sit-up leg raise	abdominal curl leg raise on multi exercise
Neck	neck bridge (dangerous)	neck harness	4-way neck rotary neck neck and shoulder

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