The Effects of Exercise on Women's Self-Esteem

Wendy Laurie Biddle

Old Dominion University

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THE EFFECTS OF EXERCISE ON
WOMEN'S SELF-ESTEEM

by

Wendy Laurie Biddle
B.S.N. May 1974, University of Delaware

A Thesis Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE
NURSING

OLD DOMINION UNIVERSITY
May, 1982

Approved by:

Helen Yura (Director)

Ronald V. Singer

Ann Bennett
ABSTRACT

THE EFFECTS OF EXERCISE ON WOMEN'S SELF-ESTEEM

Wendy Laurie Biddle
Old Dominion University, 1982
Director: Dr. Helen Yura

The effects of a 12-week session of aerobic dancing were examined on two groups of women, assigned into fit and unfit groups. The subjects had voluntarily enrolled in aerobic dancing prior to the study. Self-Esteem scores were obtained using the Rosenberg Self-Esteem Scale during the first and tenth or eleventh weeks of the session. Pretest and posttest scores were analyzed along with the variables of age, marital status, weight loss, and smoking habits. A significantly higher gain score (posttest score subtracted from pretest score) was found on those women who attended three weekly classes compared to those who attended two weekly classes. A significant difference on gain scores was also found between those who had lost weight and those who had not (women who lost weight gained more in self-esteem). Significant differences were also found on pretest scores between fit married and single women, and between smokers and nonsmokers (fit married women and nonsmokers had higher self-estees).
DEDICATION

To my parents for the faith and love that gave me the confidence to undertake this endeavor.

To my husband for his enthusiasm in exercise that sparked in me the intent of this project.

To my daughter for her loving and joyful presence.
ACKNOWLEDGEMENTS

The researcher wishes to acknowledge Helen Yura, R.N., Ph.D., for her enthusiasm and encouragement.

To the following for their help and support throughout this project.

Ronald V. Singer, Ph.D.

Ann Bennett, R.N., M.N.

To the area and regional coordinators and all the instructors of Aerobics Dancing, Inc., for their cooperation and enthusiasm in allowing their students to participate in this study.
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CHAPTER I

Health is a fundamental human right. Everyone deserves the opportunity to attain this state of complete physical, mental, and social well-being. The World Health Organization supported this view at the First International Conference on Primary Health Care, stating that all individuals have the right and the duty to participate in their own health care (Robinson, 1980). An individual moral obligation to preserve the self's health is an essential aspect of the freedom of choice one has about this health (Rodgers, 1981). Recognition of this obligation, individual responsibility, and preventive measures are all necessary to satisfy the attainment of health (Siegler, 1980). Taking this responsibility and acting on it defines self-care activities proposed by Orem (1980).

Problem Statement

Attainment and preservation of health is a function of one's self-esteem, or feelings about oneself. Exercise has been shown to have many psychological benefits, including improvement of self-esteem (Morgan, Roberts, Brand, & Feinerman, 1970; Leonardson, 1977). Aerobic dancing is an increasingly popular form of exercise of which little has
been written. The researcher found from personal experience that aerobic dancing enriched her self-esteem and chose to study this effect. Benefits of aerobic dancing must be scientifically demonstrated if it is to be considered worthwhile. Would a regular, weekly period of aerobic dancing significantly affect women's self-esteem?

Purpose

Nurse practitioners are concerned with the promotion and maintenance of health. By encouraging beneficial self-care activities they can help the client help herself. A client must be motivated to take care of herself and perform these self-care practices. Having high self-esteem provides this motivation. Determining ways to improve self-esteem is an important aspect of preventive health care because of its potential impact on self-care.

Theoretical Framework

Dorothea Orem's (1980) theory of self-care was the theoretical framework for this study. Self-care is the practice of activities that individuals initiate and perform on their own behalf in order to maintain life, health, and well-being. Orem saw man as a unity that functions biologically, symbolically, and socially; a psycho-physiologic organism with rational powers, acting on self, others, and the environment. These powers make meeting self-care needs possible, if one chooses. Whether or not this choice is
made is determined by one's self-esteem. Throughout Orem's works the premise is clear that a high self-esteem yields advantageous self-care. Nursing is concerned with the provision and management of the client's self-care needs. The goal is the attainment of the client's health, a state of physical, psychological, and social well-being.

Psychological well-being is as important as the other aspects, and self-esteem is essential to this well-being. Self-esteem enables one to take responsibility for herself by providing motivation. When the individual's self-care needs are not being met nursing can intervene and assist the client. The point along the health-illness continuum that intervention occurs determines the type of health care needed. The intervention is facilitated through application of the nursing process (Yura & Walsh, 1978).

Nurse practitioners care about the quality of life experienced by their clients. They care that life shall hold work, love, and play; that it shall hold joy and meaning (Diekelmann, 1980). The quality of life can be enriched by high self-esteem because it provides a sense of purpose, contentment, and independence (Smith, 1978). Preventive health care must be considered if nurse practitioners are to help improve the quality of life. Orem's (1980) definition of primary prevention is health care provided before the onset of disease and the purpose is to promote and maintain health and prevent illness. Primary
prevention is central to nurse practitioners' practice (Lindberg, 1980).

Being health care providers in an outpatient setting, nurse practitioners are in an ideal situation to practice primary prevention. It is here that the first signs of poor self-care can be identified. Lack of motivation is a prime factor in poor self-care. Bettering self-esteem would contribute to the development of motivation, enhanced self-care and the attainment of health. Sandelowski (1981) felt that good health is not an end but merely a crucial means toward obtaining freedom and control over one's life. This augments the quality of life.

Review of the Literature

There was a vast amount of information in the literature concerning the self. The definitions for this study were derived from several sources. Beane and Lipka (1980) defined self-concept as the perception one has of oneself. Chrzanowski (1981) saw self-esteem as a validly favorable image of oneself based on a fair evaluation of one's assets and liabilities. For this study self-concept was considered to be the information one has about oneself and self-esteem was the judgments, thoughts, and feelings one has about that information as cited by different sources (Felker, 1974; Germaine, 1978). Some of the major theorists' views of the self will be discussed in order to provide an overview of the material present in the literature.
Abraham Maslow contributed significantly to the field of psychology. Self-esteem was included as one of the needs in the hierarchy he developed. All people need self-esteem, which is defined as a stable, firmly based, (usually) high evaluation of themselves (Maslow, 1943). Satisfaction of this need, Maslow claimed, leads to feelings of self-confidence, worth, strength, and usefulness in the world.

Another major contributing theorist was Carl Rogers. He felt that the self has the ability to change. When the self realizes that this is possible then perceptions and patterns of reaction change, along with confidence (Rogers, 1947). The gain of insight of this changeable self causes the person's thoughts and behavior to be altered. Maslow's and Rogers' theories implied that an improvement in self-esteem would elicit changes in behavior, such as better self-care habits.

Angyal (1951) proposed a theoretical model which was suitable to this study. He proposed that people are striving to assert and expand their self-determination and they are trying to exercise their freedom and organize relevant information out of the autonomous center of self. In other words, people generally want to be in control of themselves but do not always know how to gain this control. Heightened self-esteem could aid in the gain of this control.
Raimy (1948) was one of the first to scientifically document findings based on the study of self-concept. He reported that self-concept was a significant factor in behavior and personality organization and that changes in self-concept could be detected. To further substantiate the study and measurement of self-concept, Sheerer (1949) also studied the self and found that acceptance of and respect for self could be operationally defined and objectively rated with a satisfactory degree of reliability. Acceptance of and respect for self are part of self-esteem. These early studies paved the way for the multitudes of studies that have been completed on the self since then. The term self-esteem evolved from various works that have been done on self-concept.

Rosenberg (1965) saw self-esteem as a positive or negative attitude toward the self. High self-esteem means thinking well of oneself, while low self-esteem means thinking poorly of oneself. Erdwins, Mellinger, and Tyer (1981) examined self-esteem of different age groups of women and discovered that the age groups did not differ significantly from each other in overall levels of self-esteem. These results implied that grouping of varying ages of women together to measure their self-esteem would not affect results of the study.

As with the self, there was a vast amount of information on exercise in the literature. Many have expounded on
the benefits purported to be gained through participation in physical exercise. Some of the benefits theorized will be presented here.

Exercise helps to improve the quality of life (Halfman, 1981). There are many forms of exercise and participation in any form may be beneficial. With participation comes a growing sense of worth which promotes physical strength and vitality. Individuals can experience increased satisfaction with the self and a positive self-image can be enhanced (Boots & Hogan, 1981). An exercise program for psychiatric patients can produce positive changes in the behavior of those patients with emotional disorders (Stubbert, 1975). Fentem (1979) felt that physical activity is of considerable benefit to everyone and should be seen as a necessary element in the pattern of daily living at all ages. Macnamara (1980) cited many possible psychological benefits of exercise: relief of stress, frustration, and aggression; improvement of self-confidence, attitudes and mood; promotion of relaxation; and encouragement of emotional and social adjustments.

Many of the studies done on exercise have been with male rather than female subjects. In order to facilitate the relevance of the literature to this study dealing with only women it has been documented that there is no significant difference between the sexes in their physiologic responses to physical training (Flint, Drinkwater, &
Horvath, 1974; Massicotte, Aron, and Corriveau, 1979; Pollock, Foster, Salisbury, & Smith, 1982). Hanson and Nedde (1974) felt that identical benefits can and should be gained from regular activity by both sexes.

Aside from the theorized benefits of exercise, numerous psychological benefits have been scientifically documented in the literature with research studies. Brunner (1969) examined the motivating factors for participation in exercise and reported that the primary reasons were a desire to maintain fitness and attain the associated feeling of well-being. A survey of physicians revealed that 98 percent believed that moderate exercise helps to give relief from tension and 93 percent had prescribed exercise as treatment (Byrd, 1963). Depressed males experienced a significant reduction in depression after exercising three times a week for six weeks (Morgan, Roberts, Brand, & Feinerman, 1970). Carter (1977) found a positive relationship existed between exercise score and global happiness. Sedentary men who maintained an exercise routine gained a sense of accomplishment, independence, and a sense of control of their own lives (Ismail & Trachtman, 1973).

Positive improvement in self-concept and/or self-esteem has been demonstrated to occur with regular exercise after varying periods of time in various studies (Collingwood & Willett, 1971; Collingwood, 1972; Hanson & Nedde, 1974; Leonardson, 1977). A structured exercise class has
also improved self-esteem (Clower, 1979; Smith & Brandt, 1979; Goldberg & Fitzpatrick, 1980).

Aerobic dancing is a structured class that utilizes music and consists of choreographed routines containing dance steps, calisthenics, and body movements (Sorenson, 1979). Anshel and Marisi (1978) found that music has a positive effect on one's ability to endure the task of exercise, especially when the exercise is synchronized to the music. Aerobic dancing utilizes the principle of synchronized exercise to music and thus maintains the participants' ability and interest in the exercise. The music and steps are changed every session in order to minimize boredom among the participants. Relatively little has been written about aerobic dancing since it is fairly new. It was developed by Jacki Sorenson in 1971.

Aerobic dancing was documented as a legitimate form of exercise and an acceptable alternative to other measures of physical training (Foster, 1975; Igbanugo and Gutin, 1978). The intensity of an aerobic dancing class was decided to be sufficient to elicit physiological and psychological alterations in college women (Rockefeller & Burke, 1979). However, they did not specifically examine psychological effects.

In order to better understand the relationship between physical activity and psychological benefits, the importance of body image was considered. Zion (1965) found a significant linear relationship between self-concept
and body concept. Feelings about the self and feelings about the body were reported to have a significant proportional relationship (Secourd & Jourard, 1953). An interesting study by Schwab and Harmeling (1968) revealed that females' negative attitudes toward their bodies were much more closely tied to conditions of illness and their psychological well-being than were males'.

It was pondered whether weight loss would occur with exercise and if it would affect the self-estees of the women. Dahlkoetter (1979) studied obese subjects, exercise, diet, and weight loss. He reported that self-concept increases with weight reduction. He also found that exercise alone will cause weight loss, as have others (Shapiro, 1978; Pollock, Salisbury, & Smith, 1982).

Both physically fit and unfit women participate in exercise, the effects of which have been documented through study. There are reports concerning either one group or the other and comparisons of the two groups in the literature.

Albinson (1974) studied active and inactive college males and concluded that the continuation of a high level of physical activity tends to be associated with a better self-concept. Psychological well-being and sports involvement were shown to have a positive relationship (Snyder & Spreitzer, 1974), while Olympic female champions revealed a strong self-concept suggestive of a positive self-image (Balazs, 1975). Women athletes had higher scores than
nonathletes on measures of psychological well-being and body image and showed more positive self-attitudes (Snyder & Kivlin, 1975). It is suggestive that a positive self-concept or high self-esteem would be obtained and maintained with regular, continuous exercise.

Folkins, Lynch, and Gardner (1972) examined two groups of college women, all unfit. The group that participated in the jogging course two times a week for fourteen weeks significantly improved their psychological fitness. It was suggested that those in the poorest physical and/or psychological condition improve the most. The other group who participated in archery and golf had no significant changes. This finding supports the conclusion that it takes more than just a structured class of activity to produce the benefits cited, but rather vigorous physical activity is the key factor. It is also important to note that effects were obtained with an exercise frequency of only two times a week.

Hilyer and Mitchell (1979) studied males and females involved in an exercise program. There were considerable increases of self-concept in the low self-concept group. Those who began with high self-concepts had only minimal improvement. Those who already had fairly high self-concepts or high self-esteems did not have much room for improvement while the individuals with lower self-esteems had more room to improve and were more likely to do so.
Athletes have high self-estees and remain so with little change from the continuation of exercise while unfit individuals improve their self-estees with exercise. It was evident from the cited results that there would be a difference between fit and unfit participants and their self-estees.

There has been much discussion about the frequency, duration, and intensity of exercise. The American College of Sports Medicine (1978) stated that one needs at least 3 days per week of 15-60 minutes of vigorous aerobic activity to obtain physical training effects and that the training effect decreases significantly after 2 weeks of detraining but takes from 10 weeks to 8 months for near pretraining levels to be reached. There was no mention of detraining on the psychological training effect. Aerobic dancing traditionally meets two days a week for 60 minutes of vigorous physical activity each time. The intensity per class was found to be adequate for physical training to occur (Igbanugo & Gutin, 1978).

Heaps (1978) did a study on perceived and actual physical and psychological fitness. He discovered that the psychological benefits acquired following consistent exercise and physical change resulted from the emotional or psychological perception of the physical and personal value
of continued exertion. Since the duration (60 minutes) and the intensity of aerobic dancing meets the standards set by the American College of Sports Medicine and the exercise is continuous (sessions are 8 to 12 weeks long), it was felt that aerobic dancing would be adequate to cause psychological changes.

The Rosenberg Self-Esteem Scale was designed for use with adolescents. Several studies have utilized the scale on adult populations (including the author of the scale) (Schooler & Tecce, 1967; Nocks & Bradley, 1969; Yancey, Rigsby, & McCarthy, 1972; Howe, 1973; Miller, 1973; Lopez & Greenhaus, 1978; Rosenberg, 1978; Shapiro, 1978; Goldberg & Fitzpatrick, 1980; Stones, 1981).

Having considered the findings that aerobic dancing has begun to be recognized as a valuable form of exercise and that psychological benefits of it have not been documented, this study chose to examine the effects of aerobic dancing on self-esteem.

**Hypotheses**

Three hypotheses were tested to determine the effects of participation in aerobic dancing on women's self-esteem:

I. A regular weekly period of aerobic dancing will improve the self-esteem of those unfit women who participate.
II. A regular weekly period of aerobic dancing will not improve the self-esteem of those fit women who participate.

III. There will be a significant positive correlation between self-esteem improvement and weight loss of those women who lose weight during the aerobic dancing session.

**Definition of Terms**

The independent variable was regular, weekly aerobic dancing which consisted of calisthenics and body movements choreographed to music. The session of dancing contained two, one-hour classes per week for 12 weeks. The classes had 18 to 30 students per class and one instructor. No experience or special skill was required to attend.

(The dependent variable was self-esteem, defined as the judgments, thoughts, and feelings an individual had about her self-concept. Self-concept was the information one had about herself.)

Fit women were those who had participated in any form of exercise at least two times per week on a regular basis within the month prior to the start of the aerobic dance session.

Unfit women were those who had not participated in any form of regular exercise within the month prior to the start of the aerobic dance session.
Weight loss was considered to be any decrease in weight of 5 pounds or greater between the pre- and post-exercise testing.
CHAPTER II

METHOD

This study was designed to examine the effects of aerobic dancing on women's self-estees in order to determine a way in which self-esteem may be improved. Improvement of self-esteem is essential in order to better self-care.

Sample

The sample for this study was obtained from the population of women in Norfolk and Virginia Beach, Virginia, who had enrolled in the 1982 winter session of aerobic dancing given by Jackie Sorenson's Aerobic Dancing, Incorporated. Permission was obtained from both the area and regional coordinators of Aerobic Dancing, Incorporated, by written consent on the research site approval form of the Department of Nursing, Old Dominion University. The winter session consisted of 22 different classes given at various locations in Norfolk and Virginia Beach, each having met for two times a week for 12 weeks. Each class was equivalent to all other classes in music, dance steps, and method of instruction. The researcher went to 7 of these classes during the second class of the session. 108 women volunteered from these 7 classes. The classes were held in a church hall, a rehearsal hall, and a gymnasium.
This study was reviewed and approved according to Old Dominion University's guidelines established by the Committee for the Protection of Human Subjects.

Apparatus

A short questionnaire was developed by the researcher to obtain demographic data, smoking and exercise habits, and motivational factors for attending aerobic dancing. This questionnaire was part of the pretest. A similar questionnaire was designed for the posttest by the researcher. This questionnaire was developed to obtain changes in weight, smoking and exercise habits, and whether the subjects would continue to take aerobic dancing in the future (see Appendixes A and B).

The Rosenberg Self-Esteem Scale was used to measure self-esteem (see Appendix C). Permission for use of the scale was obtained from the author, Morris Rosenberg, by written consent. The scale was a 10-item Guttman scale which insured a unidimensional continuum, with 92 percent reproducibility and 72 percent scalability (Rosenberg, 1965). The scale uses a Likert format for answers to the 10 questions. It is scored using a Guttman format that yields a 7 point scale from 0 to 6, 0 being high self-esteem and 6 being low self-esteem (Rosenberg, 1979). The scale had a test-retest reliability of .85, satisfactory face validity, and support of construct validity (Rosenberg,
1965; Wylie, 1974). Silber and Tippett (1965) found that the scale met certain criteria of validity and Robinson (1970) felt the scale was appropriate to use with adults.

Four questions were designed by the researcher to be added to the scale in order to disguise the intent of the scale. The questions dealt with various probable benefits of exercise. Since the nature of the scale was looking at self, the researcher did not want the subjects to question the scale since there appeared no relationship of exercise to the scale. The questions added exercise to the scale to make it clearer to the subjects. Questions 1, 2, 3, and 14 were the added questions (see Appendix C).

Procedure

The researcher was present 15 minutes before the second class was scheduled to begin and stayed until the class was finished. Those women who arrived early were requested to volunteer for the study. At the end of the class an announcement was made requesting volunteers from the rest of the participants. Those subjects who volunteered were given the demographic pretest questionnaire and the Rosenberg Self-Esteem Scale to complete and return to the researcher at that time. The questionnaires were completed within 5 to 10 minutes.

The researcher returned to the class during the tenth and eleventh weeks of the session, or the nineteenth,
twentieth, twenty-first, and twenty-second classes. Those who arrived early were asked if they had completed the questionnaires in January and would like to do so again. At the end of the class an announcement was made for requests of the rest of those who had volunteered in January to complete the posttest questionnaires. Those who volunteered were given the demographic posttest questionnaire and the Rosenberg Self-Esteem Scale to complete and return to the researcher at that time. All questionnaires were completed within 5 to 10 minutes. Aerobic dancing students are allowed to attend classes other than the one enrolled in and therefore made it difficult to find all 108 subjects who had volunteered in January. Sixty subjects were obtained during posttesting.

The subjects were divided into two groups. If they met the fit criteria they were placed in the fit group, otherwise they were placed in the unfit group. There were 23 unfit subjects and 37 fit subjects. One fit subject was removed from the study due to pregnancy. It was felt that the numerous changes in pregnancy could have an effect on self-esteem. Fifty-nine subjects were analyzed in this study.

Each group, fit and unfit, was divided into two age intervals and the mean age of each interval was calculated. The mean ages of the intervals 16 to 37 years of the fit and unfit groups were within two years of each
other. The mean ages of the intervals 38 to 58 years of the fit and unfit groups were within 4 years of each other.

The data were statistically analyzed with chi-square and one-way analysis of variance. The gain scores of the Rosenberg Self-Esteem Scale or posttest scores subtracted from the pretest scores were the primary data utilized to test the hypotheses.
CHAPTER III

RESULTS

Description of Data

Data were collected on 59 subjects in order to study the effects of exercise on women's self-esteem using the Rosenberg Self-Esteem Scale. The subjects were assigned to one of two groups, either fit or unfit, according to whether or not they had exercised routinely within the month prior to the start of the data collection. There were 23 women in the unfit group and 36 women in the fit group.

The age range for the total 59 subjects was 16 to 58 years. This range was divided into two approximately equal intervals, 16 to 37 years and 38 to 58 years. Table 1 demonstrates the distribution of the women in the fit and unfit groups into the two age intervals. The mean age for the interval of 16 to 37 years of the women in the fit group was 31.34 years, while for the women in the unfit group the mean age was 30 years. The mean age for the interval of 38 to 58 years of the women in the fit group was 44.57 years, while the mean age for the women in the unfit group was 48.11 years. Most of the women of both the fit and unfit groups were in the 16 to 37 years interval (80 percent fit and 60 percent unfit).

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Table 1

Means and Standard Deviations for Age Intervals for Fit and Unfit Groups

<table>
<thead>
<tr>
<th>Interval</th>
<th>Group</th>
<th>n</th>
<th>Percent</th>
<th>X</th>
<th>S.D.</th>
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<tbody>
<tr>
<td>16-37 years</td>
<td>Fit</td>
<td>29</td>
<td>(80)</td>
<td>31.34</td>
<td>4.66</td>
</tr>
<tr>
<td></td>
<td>Unfit</td>
<td>14</td>
<td>(60)</td>
<td>30</td>
<td>5.15</td>
</tr>
<tr>
<td>38-58 years</td>
<td>Fit</td>
<td>7</td>
<td>(20)</td>
<td>44.57</td>
<td>6.45</td>
</tr>
<tr>
<td></td>
<td>Unfit</td>
<td>9</td>
<td>(40)</td>
<td>48.11</td>
<td>7.02</td>
</tr>
</tbody>
</table>

\[a \text{ n=36 for fit and n=23 for unfit.}\]

Table 2

Frequencies of Married and Single Subjects in Fit and Unfit Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Age Interval</th>
<th>Married</th>
<th>Single</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
</tr>
<tr>
<td>Fit</td>
<td>16-37</td>
<td>20</td>
<td>(56)</td>
</tr>
<tr>
<td></td>
<td>38-58</td>
<td>7</td>
<td>(19)</td>
</tr>
<tr>
<td>Unfit</td>
<td>16-37</td>
<td>8</td>
<td>(35)</td>
</tr>
<tr>
<td></td>
<td>38-58</td>
<td>6</td>
<td>(26)</td>
</tr>
</tbody>
</table>

\[a \text{ n=36 for fit and n=23 for unfit.}\]
The subjects were also separated according to their marital status (see Table 2). The single category included widowed, divorced, separated, and single women. Of the 59 subjects studied 69 percent were married.

Other variables for which data were obtained were employment outside the home (47 percent of the women in the unfit group and 55 percent of the women in the fit group) and whether they had children (women who had children comprised 69 percent of the unfit group and 58 percent of the fit group). Four women from each of the fit and unfit groups were smokers. Of these one from the unfit group stopped smoking between the pretest and the posttest.

A substantial number of the women had taken aerobic dancing previously. Fifty-six percent of the women in the unfit group and eighty-six percent of the women in the fit group had engaged in aerobic dancing prior to the session tested. At the posttesting session 100 percent of the women in the unfit group and 88 percent of the women in the fit group reported they would continue to participate in aerobic dancing after the current session.

From the posttest demographic questionnaire (see Appendix B) it was determined that 30 percent of the women in the unfit group and 38 percent of the women in the fit group had added some type of exercise to their daily routine during the aerobic dancing session (other than aerobic dancing).
The session of aerobic dancing utilized in this study had added a third class per week for those who chose to attend and pay an additional fee. Of the women in the unfit group 17 percent attended this class, while 11 percent of the women in the fit group attended.

Reasons for attending aerobic dancing were reported by the subjects as follows: for the exercise (45 percent), for emotional well-being (17 percent), for fun (17 percent), to lose weight (9 percent), for cardiovascular fitness (4 percent), and miscellaneous (8 percent).

Analysis of Data

The design of this study was quasi-experimental consisting of two, one-group pretest-posttest groups both having received the same treatment. Chi-square and one-way analysis of variance statistical tests were utilized to analyze the data. An alpha of .05 was used for all tests. The pretest and posttest scores on self-esteem were analyzed in a variety of combinations.

The pretest and posttest scores were obtained from the Rosenberg Self-Esteem Scale, which consisted of 10 items that were answered in a Likert format (see Appendix C). The scoring was done on a Guttman scale and yielded a score range of 0 to 6. Zero indicated a high self-esteem while 6 meant a low self-esteem. All items were accounted for in the scoring. Some items were combined to equal 1 point. The scoring process was accomplished in accordance with Rosenberg's (1965) format.
Means and standard deviations were calculated for both the fit and unfit groups on the scores obtained at pretest and posttest (see Table 3). To measure improvement of self-esteem the differences obtained from subtracting posttest scores from pretest scores was used.

The levels of fitness, perceived and assigned, were compared in analysis. Perceived level of fitness was obtained from the demographic questionnaires at pretest and posttest (see Appendixes A and B). A subject was considered to have perceived herself fit if she marked excellent or good for level of fitness and unfit if she marked fair or poor. Assigned level of fitness was the fit or unfit group the women were placed in by the researcher at the beginning of the analysis.

Chi-square analysis comparing assigned and perceived levels of fitness revealed a significant relationship between the two at $p<.01$ and a strength of association of .448 (see Table 4). Analysis of the women's perceived level of fitness at pretest compared with perceived level at posttest was also performed using the chi-square test. A significant relationship was found between the perceived level at pretest and posttest in both groups, fit and unfit at $p<.05$. This relationship had a strength of association of .47 (see Table 5).

One-way analysis of variance tests were performed on the self-esteem scores in a variety of combinations with the variables age, weight loss, marital status, and smoking
Table 3

Means and Standard Deviations of Scores on Pretest, Posttest, Gain Scores (Posttest Subtracted from Pretest) for the Rosenberg Self-Esteem Scale

<table>
<thead>
<tr>
<th>Group&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Pretest score</th>
<th>Posttest Score</th>
<th>Pretest Minus Posttest Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit</td>
<td>.66</td>
<td>.52</td>
<td>.13</td>
</tr>
<tr>
<td>Unfit</td>
<td>1.08</td>
<td>.78</td>
<td>.30</td>
</tr>
</tbody>
</table>

<sup>a</sup>n=36 for fit and n=23 for unfit.

Table 4

Frequencies of Subjects in Assigned and Perceived Levels of Fitness and Chi-Square Analysis<sup>a</sup>

<table>
<thead>
<tr>
<th>Assigned</th>
<th>n</th>
<th>Percent</th>
<th>Perceived Fit</th>
<th>n</th>
<th>Percent</th>
<th>Perceived Unfit</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit</td>
<td>36</td>
<td>(100)</td>
<td>29 (80)</td>
<td>7</td>
<td>(20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfit</td>
<td>23</td>
<td>(100)</td>
<td>11 (48)</td>
<td>12</td>
<td>(52)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup><sup>x</sup><sup>2</sup>=6.93, d.f.=1, p<.01, strength of association=.448.
Table 5

Frequencies of Subjects' Perceived Levels of Fitness of Pretest and Posttest in Relation to Assigned Levels and Chi-Square Analysis*

<table>
<thead>
<tr>
<th></th>
<th>Assigned Fit&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Assigned Unfit&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perceived Fit n</td>
<td>Perceived Unfit n</td>
</tr>
<tr>
<td>Pretest</td>
<td>29</td>
<td>7</td>
</tr>
<tr>
<td>Posttest</td>
<td>31</td>
<td>5</td>
</tr>
</tbody>
</table>

*χ²=10.29, d.f.=3, p<.05, strength of association=.47
<sup>a</sup>n=36
<sup>b</sup>n=23

habits. Both pretest and posttest scores were analyzed separately along with the gain scores, or posttest subtracted from pretest scores. The scores were analyzed between the assigned fit and unfit group. No further analysis was done on perceived level of fitness. The analysis of variance tests were testing for main effects only; interaction could not be tested due to the small and unequal numbers of scores in the different groups.

No significant differences were found between pretest and posttest scores of either the fit or unfit groups. There were also no significant differences found on the gain scores between the fit and the unfit groups. Comparisons of the pretests between the fit and unfit groups yielded no
significant differences as did comparison of the posttest scores between the fit and the unfit groups.

However, when analyzing the variable of attendance of three weekly exercise classes, a significant result was obtained. Eight women from the fifty-nine total subjects attended the third class per week. These women were in the groups fit married women ages 16 to 37, fit married women ages 38 to 58, fit single women ages 16 to 37, unfit single women ages 16 to 37 and ages 38 to 58. Analysis of variance comparing those eight women to the rest of the women in those groups just mentioned revealed that the posttest self-esteem scores subtracted from pretest scores (gain scores) were significantly different at $p<.05$ with the gain scores being greater of the eight women who attended the three weekly exercise classes than of the women who attended only two weekly classes. The greater gain score means a greater improvement in self-esteem. The strength of association of the relationship of attending three weekly exercise classes and improvement of self-esteem was .29 (see Table 6).

Those women who lost 5 pounds or more differed significantly from those who did not on their gain scores of self-esteem (posttest subtracted from pretest scores). Eight women lost 5 pounds or more between the pretest and posttest. These women were part of the groups unfit married women ages 16 to 37, unfit single women ages 16 to 37 and 38 to 58, and fit married women ages 16 to 37. The
### Table 6

One-Way Analysis of Variance on Pretest Minus Posttest Self-Esteem Scores on Women Who Attended 2 vs. 3 Weekly Exercise Classes

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>T</th>
<th>X</th>
<th>SD</th>
<th>d.f.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit, married, ages 16-37 and 38-58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, ages 16-37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfit single, ages 16-37 and 38-58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 weekly class attendance</td>
<td>8</td>
<td>8</td>
<td>1</td>
<td>1.69</td>
<td>1,43</td>
<td>4.37*</td>
</tr>
<tr>
<td>2 weekly class attendance</td>
<td>37</td>
<td>3</td>
<td>.08</td>
<td>.98</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05, strength of association=.29

In an attempt to reduce the large difference between n's, the groups unfit, married women ages 16-37 and 38-58 were excluded from this analysis since no one in those groups attended 3 weekly classes. They all attended 2 weekly classes.

Eight women were compared to the women who did not lose weight from the just-mentioned groups on their gain scores using analysis of variance. The women who lost weight had a greater mean gain score than those who did not, which meant that those who lost weight had a greater improvement in self-esteem than those who did not. This difference was significant at p<.05 with a strength of association at .36 (see Table 7).
Table 7

One-Way Analysis of Variance of Gain Scores (Posttest Subtracted from Pretest Scores) of Self-Esteem on Weight Loss of Those Fit and Unfit Groups

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>T</th>
<th>X</th>
<th>d.f.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit, married ages 16-37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfit, married ages 16-37,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>single ages 16-37 and 38-58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>weight loss</td>
<td>8</td>
<td>7</td>
<td>.87</td>
<td>1,35</td>
<td>4.57*</td>
</tr>
<tr>
<td>no weight loss</td>
<td>29</td>
<td>0</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, strength of association = .36

In an attempt to reduce the large difference between n's, the groups fit single and married ages 38-58 and unfit married ages 38-58 were excluded from this analysis since no one in those groups lost weight.

Table 8

One-Way Analysis of Variance on Pretest Self-Esteem Scores of Smokers and Nonsmokers

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>T</th>
<th>X</th>
<th>d.f.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit, married ages 16-37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single ages 16-37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfit, single ages 16-37 and 38-58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smokers</td>
<td>7</td>
<td>7</td>
<td>1</td>
<td>1,34</td>
<td>6.68*</td>
</tr>
<tr>
<td>Nonsmokers</td>
<td>29</td>
<td>6</td>
<td>.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, strength of association = .55

In an attempt to reduce the large difference between n's, the groups fit married ages 38-58 and unfit married were excluded from the analysis since no one in those groups smoked.
Seven women from the total sample of 59 smoked. They were in the groups fit married women ages 16 to 37, fit single women ages 16 to 37, unfit single women ages 16 to 37 and 38 to 58. The seven smokers were compared to the rest of the women in those groups (nonsmokers) on their pretest self-esteem scores using analysis of variance. The smokers' mean pretest score was higher than nonsmokers' mean pretest score meaning their self-estees are lower. This difference was significant at \( p < .05 \) with a strength of association at .55 (see Table 8).

A significant difference was found between the fit married women and the fit single women on their pretest self-esteem scores using analysis of variance. The difference was significant at \( p < .05 \) with a strength of association of .61. The difference remained significant when the fit married women ages 16 to 37 and the fit single women ages 16 to 37 were compared on their pretest scores at \( p < .05 \) with a strength of association of .37 (see Table 9). In both cases, the fit married women's mean pretest score was lower than the fit single women's pretest score, which meant that fit married women had a higher self-esteem than fit single women.

Numerous other combinations were analyzed and found to be nonsignificant. These include the following: fit married and single women's gain scores, fit married and single women ages 16 to 37 gain scores, fit married women ages 16 to 37 and 38 to 58 pretest scores, fit married women
Table 9

One-Way Analysis of Variance on Pretest Self-Esteem Scores of Married and Single Women in the Fit Group

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>T</th>
<th>$\bar{X}$</th>
<th>d.f.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married Ages 16-37</td>
<td>20</td>
<td>9</td>
<td>.45</td>
<td>1.27</td>
<td>5.33**</td>
</tr>
<tr>
<td>Single Ages 16-37</td>
<td>9</td>
<td>13</td>
<td>1.44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p<.05$, strength of association=.61
** $p<.05$, strength of association=.37

and unfit married women pretest scores, unfit married and single women gain scores, unfit married and single women ages 38 to 58 pretest scores, and smoking and nonsmoking women posttest scores.
CHAPTER IV
CONCLUSIONS

Findings

This study examined the effects of exercise, in the form of aerobic dancing, on the self-estees of women who participated in aerobic dancing over a 12-week session. The Rosenberg Self-Esteem Scale was used to obtain pretest and posttest scores which were analyzed using analysis of variance. The variables of age, level of fitness, weight loss, marital status, and smoking habits were included in the analysis. The 59 women in the study were assigned to a level of fitness by the researcher either fit or unfit. There were 23 women in the unfit group and 36 women in the fit group. The women were also asked for their judgments on their level of fitness, perceived fit or unfit. The differences between assigned and perceived levels of fitness and between perceived levels of fitness on pretest and posttest were analyzed using a chi-square test. Findings of the analysis will now be presented.

The hypothesis that self-esteem of women in the unfit group would improve after participation in aerobic dancing was not supported. However, it was found that the mean gain score (posttest self-esteem score subtracted from pretest score) of the women who attended three weekly
classes was greater than the mean gain score of those who attended two weekly classes. The women who attended three weekly classes had a mean gain score of 1, while those who attended two weekly classes had a mean gain score of only .08. This means that there was greater improvement in the self-estees of the women who attended the three classes per week. This finding supports the research cited by the American College of Sports Medicine (1978) who recommended a frequency of at least three times per week of exercise in order to obtain physical and psychological benefits.

The hypothesis that fit women would not alter their self-estees was supported by nonsignificant differences between their pretest self-esteem scores and their posttest scores. This finding supports Folkins, Lynch, and Gardner (1972) in their results that those subjects in good physical and/or psychological condition improve only minimally in their physical and/or psychological fitness.

Weight loss demonstrated a main effect on self-esteem supporting the hypothesis that those with weight loss would have a greater improvement in self-esteem. Dahlkoetter (1979) also demonstrated a positive relationship between weight loss and self-esteem.

All means of the pretest self-esteem scores demonstrated high self-estees. The overall posttest means showed a small amount of change in the direction of higher self-esteem. This was not a significant difference. Hilyer and Mitchell (1979) found that those with high self-estees had
only minimal improvement after exercise because there was little room for upward mobility.

The demonstrated relationship between assigned fitness level and perceived fitness level at pretest supported the defined boundary (women were assigned fit if they had exercised routinely within the past month, assigned unfit if they had not) chosen to separate women in the fit group from women in the unfit group. Heaps (1978) found that a subject's perceived level of fitness is a key factor in whether or not that subject receives any physical and/or psychological benefits from exercise. Therefore, the demonstration of this relationship was important in consideration of this study.

The relationship demonstrated between perceived level of fitness at pretest and posttest revealed that it depended upon whether one was in the fit or the unfit group if one's perception of fitness level changed after the exercise. More women in the unfit group changed their perception of level of fitness at posttest than did women in the fit group. This change in perception was significant and lended support to the value of aerobic dancing as exercise (Rockefeller & Burke, 1979).

Discussion

There was a general trend of improvement in mean self-esteem scores between the pretest and posttest, even though it was not significant. All subjects (with the
exception of four from the fit group and three from the unfit group) had high self-esteem at the pretest, which may account for the nonsignificant improvement. The nature of the Rosenberg Self-Esteem Scale was such that one cannot score higher than zero for self-esteem. The woman may have, in reality, improved her self-esteem but if she scored one or zero on the pretest there was little or no improvement demonstrated at the posttest. The small scale and few items were limitations of the Rosenberg Self-Esteem Scale. It was an indication that a more sensitive, wider-ranged tool may have been helpful to demonstrate changes in self-esteem that the Rosenberg Self-Esteem Scale did not. One tool that might have been helpful is the Tennessee Self-Concept Scale. This tool measures many aspects of self-esteem and could demonstrate subtle changes. The Rosenberg Self-Esteem Scale was primarily chosen for its ease of administration and economy of time.

The fact that these women had all voluntarily enrolled in aerobic dancing prior to the study indicated their awareness of self and a desire to improve themselves. Confidence in being able to partake in aerobic dancing provided for a positive self-esteem. The high percentage of subjects from both the fit and the unfit groups that had previously engaged in aerobic dancing suggested a heightened concern and favorable evaluation of themselves. The feeling "I'm worth it" prevailed among the women, evidenced by the completion of the questionnaires on why they had enrolled in aerobic dancing.
Two classes of aerobic dancing per week produced a nonsignificant rise in self-esteem, but three classes a week demonstrated a statistically significant rise in self-esteem. This suggested that if the frequency of exercise (aerobic dancing) is three times a week significant psychological benefits could be obtained. The knowledge of what the frequency of exercise should be enables the nurse practitioner to more accurately counsel clients on exercise.

The variables of marital status, smoking habits, and weight loss all had a main effect on self-esteem. This could be useful information for the nurse practitioner providing primary health care. These findings provide insight into some factors that could affect a person's self-esteem. While this was a self-selected sample and therefore some of the results cannot be generalized, these findings do help to increase the awareness of the intricacies of self-esteem.

Since all subjects involved in this study had high self-esteem, no generalizations can be made about women with low self-esteem. However, these findings do bring up an interesting point. Perhaps merely enrolling in aerobic dancing would make one more aware of her self and produce general feelings of worth. Since there was no control group involved in this study, it is difficult to compare the women in this study to the general population. It would have been helpful to study a group of women who had low self-esteem and then enroll them in aerobic dancing to measure the effects of the exercise on their self-esteem.
These findings did suggest that aerobic dancing could be beneficial to one's self-esteem since all the women participating had high self-estees and improved them slightly. Additional study is needed in order to recommend aerobic dancing to clients. These preliminary findings have surfaced many suggestions for further study.

Recommendations

From the results of this study some recommendations for future research can be made.

Further investigation of the effects of aerobic dancing would be beneficial with a larger sample size. Varying control groups would add great significance to the findings such as, nonexercising women, women with low self-estees, or women waiting to participate in aerobic dancing. It would be helpful to study the effects on a group of women for whom aerobic dancing was prescribed as opposed to voluntarily enrolling. Different time intervals of both shorter and longer periods could bring insight into whether there are any longitudinal or time effects.

Use of a different tool to measure self-estee would also add dimension to the effects on self-estee.

Comparing and contrasting aerobic dancing to other forms of exercise would add to the understanding of exercise in general.

Additional study into the relationships of perceived and actual fitness levels is warranted in order to establish
methods to assess an individual's fitness level and to better understand the complexity of the perceptions of self.

Additional research on the study of self-esteem of various groups such as smokers and single women is also suggested from the findings in this study.
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APPENDIX A

DEMOGRAPHIC PRETEST QUESTIONNAIRE
APPENDIX A

code number _______

Please answer all questions as accurately as possible. Thank you.

______  _______  _______  _______  _______
  age    marital status  number of children  current weight  height

Do you smoke? _______  If so, how much per day? _______

Are you currently employed outside the home?  ___ yes  ___ no

In your judgment, your physical fitness level is:
  _____ excellent  _____ good  _____ fair  _____ poor

Do you currently participate in any type of exercise (other than this session of aerobic dancing)?
  _____ yes  _____ no

Have you participated in any type of exercise in the past month?
  _____ yes  _____ no

If yes to either of these, please describe what type of exercise, how much, and how often.

Have you ever attended aerobic dancing classes before?
  _____ yes  _____ no

If so, when?

Why are you taking aerobic dancing now?
APPENDIX B

DEMOGRAPHIC POSTTEST QUESTIONNAIRE
APPENDIX B

code number

Please answer all questions as accurately as possible. Thank you.

________ current weight

Do you smoke? _____ If so, how much per day? ____________

In your judgment, your physical fitness level is:

_____ excellent _____ good _____ fair _____ poor

Have you added any exercise to your daily routine (other than aerobic dancing) since January? _____ yes _____ no

If yes, what exercise have you added?

Will you continue to take aerobic dancing? _____ yes _____ no

If no, why not?

Did you attend the third class per week given on Saturdays?

_____ yes _____ no

Additional comments about aerobic dancing:
APPENDIX C
ROSENBERG SELF-ESTEEM SCALE

code number ________

The following items are statements about your feelings. Read each statement and decide on the extent to which you agree or disagree with that statement, using the following scale and writing your response in the blank to the left of the item.

1 = strongly disagree
2 = disagree
3 = agree
4 = strongly agree

Please answer all questions honestly and remember there are no right or wrong answers.

1. On the whole, I have enough energy to get me through the day.
2. I feel my health is as important as my family's health.
3. I wish I had better eating habits.
4. On the whole, I am satisfied with myself.
5. At times I think I am no good at all.
6. I feel that I have a number of good qualities.
7. I am able to do things as well as most other people.
8. I feel I do not have much to be proud of.
9. I certainly feel useless at times.
10. I feel that I'm a person of worth, at least on an equal plane with others.
11. I wish I could have more respect for myself.
12. All in all, I am inclined to feel that I am a failure.
13. I take a positive attitude toward myself.
14. I feel I am as physically fit as possible.

Thank you for your participation.

*Added by the researcher--not part of Rosenberg Self-Esteem Scale.
APPENDIX D

PARTICIPATION CONSENT FORM

You are being asked to participate in a study to determine the benefits of exercise. The only requirement will be to complete 2 questionnaires at the beginning and the end of the 12-week aerobic dance session. Participation is completely voluntary and you will be free to resign from the study any time you wish without penalty. All information supplied by you will be strictly confidential. The answers to the questionnaires are merely to collect information and will be used only to analyze the information as a whole. Your name will not be associated with your answers in any way. Your name is required only for purposes of supplying you with the questionnaires at the end of the aerobic dance session.

This study is being sponsored by the Graduate Nursing Department of Old Dominion University.

Thank you for your cooperation.

I, __________________________, agree to participate in the study to determine the benefits of exercise. I understand there is no obligation and no penalty for withdrawal. I understand that anonymity will prevail in the presentation of the study findings.

______________________________
signature

______________________________
witness

______________________________
date

______________________________
code number

53
APPENDIX E

LETTER REQUESTING PERMISSION FROM AEROBIC DANCING, INC.
TO: Aerobic Dancing, Inc.

I am a master's degree student in nursing at Old Dominion University, studying to be a nurse practitioner. I will graduate in May, 1982. I am currently working on my master's thesis on the effects of exercise on self-esteem. Having taken aerobic dancing twice, I have found it to be enjoyable and contributory to improving self-esteem. I would like to study aerobic dancing for my thesis research.

I feel that health is a fundamental right, as defined as a state of complete physical, mental, and social well-being. As a nurse practitioner I am concerned with ways to help one achieve this state. I believe exercise is one of these ways. Because aerobic dancing is so popular and utilized by so many I would like to examine the benefits it may have on self-esteem. From numerous studies published in the literature exercise has been shown to have a significant effect on self-esteem. Very little is written about aerobic dancing though.

Enclosed are the questionnaires and consent form I would like to use in the study. I would like to attend the second class of the 12-week January session. I would ask for volunteers to complete my questionnaire. I would then return the last week of the session and again ask the same women to complete the questionnaire. A score will be obtained and the scores will be analyzed according to before and after. I am planning to compare the scores of new participants of aerobic dance to the "retreads." I am hoping for a total of 100 volunteers.

Should I be granted permission to utilize aerobic dance students I would be happy to share my results with you.

Thank you for your time.

Sincerely,

Wendy Biddle