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Physical Estimation and Attraction Scales: Validity in Adult Women

Elizabeth Hanstine Reiss
University of Rhode Island

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PHYSICAL ESTIMATION AND ATTRACTION SCALES:
VALIDITY IN ADULT WOMEN

BY
ELIZABETH HANSTINE REISS

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
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Abstract

The purpose of this study was to examine the validity of the Psychological Model for Physical Activity Participation (Sonstroem, 1978) as it applies to adult women aged 22-65. The components of this model include self-esteem, self-perceptions of physical ability (labeled Estimation), interest in physical activity (labeled Attraction), and physical activity participation.

Comprehensive research of Sonstroem's model showed that previous studies dealt only with adolescent boys and undergraduate males and females. The present sample consisted of 157 women between the ages of 22 and 65 who signed an informed consent and completed the following inventories: Rosenberg's (1965) Self-Esteem Scale, Sonstroem's (1974) Physical Estimation and Attraction Scales, Jackson's (1984) Social Desirability Scale, Dishman's Self-Motivation Inventory (Dishman and Ickes, 1981), and a physical activity index.

Specific hypotheses tested were: (1) Estimation scores will be significantly related to Self-esteem scores, (2) Estimation scores will be significantly related to Attraction scores, (3) The relationship between Estimation and Self-esteem will be larger than the relationship between Attraction and Self-esteem, (4) Attraction scores

will be significantly related to self-reported physical activity participation, (5) Estimation and Attraction scores together will better predict physical activity participation than Attraction scores alone, and (6) The relationship between Attraction and physical activity participation will be larger than the relationship between Estimation and physical activity participation.

Within experimental limitations, data obtained supported the following hypotheses for the total population: Hypotheses 1, 2, 3, 4, and 6. Additional analyses separated the women into two groups; Group 1, women 22-34 years of age, and Group 2, women 35 years of age and older. Group 1 supported hypotheses 1, 2, 3, and 4, while Group 2 supported hypotheses 2, 3, and 4. Hypothesis 5 was not supported at any point in the study.

Social desirability was not significantly related to either Estimation or Attraction in the total sample but was significantly related to self-esteem. Social desirability was found, however, to influence older women's estimation responses.

The Model was supported with adult women aged 22-65 except for the fact that Estimation did not assist Attraction in better predicting physical activity participation. Additional research of adult male and female populations with separation of age groups is highly

recommended to further examine the validity of the model with adult populations. A revised version of the Physical Estimation and Attraction scale may be required to better predict interest in physical activity for adult women.

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Chapter 1

Introduction

Medical consideration has currently established the significance of physical activity to individuals, particularly to the non-active (Sonstroem and Kampper, 1980). Feelings of confidence, mastery, and self-esteem are conventionally spoken of as expected results of exercise participation (Sonstroem, 1987).

The Psychological Model for Physical Activity Participation (Sonstroem, 1975) represents the first model developed specifically for the prediction of exercise involvement. The model theorizes that for a person to participate in a physical activity, the person must be interested in it (Attraction) and must feel capable of achieving an amount of success at that activity (Estimation). The Physical Estimation and Attraction Scales were developed as logical scales for use with this paradigm.

In addition, the model is also concerned with the method in which exercise and the resulting physical fitness improve self-esteem (Sonstroem, 1978). Sonstroem hypothesized that a firm belief in personal physical ability (Estimation) and an attraction to physical activity (Attraction) would lead to increased levels of exercise

involvement and a resulting development in fitness and self-esteem (Fox, Corbin, and Couldry, 1985).

Three separate studies utilizing the PEAS with adolescent boys found that physical ability is not linearly related to global self-esteem (Neale, Sonstroem, and Metz, 1969; Sonstroem, 1974, 1976). Estimation scores, however, related significantly to both physical fitness and self-esteem in large numbers of adolescent boys. Heaps (1978) found that a person's perception of themselves rather than the actual fitness itself to be significantly related to emotional adjustment.

Studies using adult female subjects with the PEAS have been rather limited. Dishman (1978); Fox, Corbin, and Couldry (1985); and Safrit, Wood, and Dishman (1985), utilized the PEAS with female subjects. Different factor structures emerged for males than for females in the Attraction items implicating different learning histories and attitudes in exercise behavior. Fox, Corbin and Couldry (1985) concluded that Attraction does not independently contribute to the model for females because the relationship between Attraction and physical activity participation became nonsignificant when controlled for Estimation.

Safrit, Wood, and Dishman (1985) recommended reducing the PEAS length and revising attitude statements toward

adult populations to better predict the model's relationships with this population.

Statement of the Problem

The purpose of this research was to examine the validity of the Psychological Model for Physical Activity Participation (Sonstroem, 1978) as it applies to adult women aged 22 to 65. The subjects included 157 women between the ages of 22 and 65 who signed an informed consent and completed the following inventories:

Self-esteem Scale (Rosenberg, 1965), Physical Estimation and Attraction Scales (PEAS) (Sonstroem, 1974), Self-Motivation Inventory (Dishman and Ickes, 1981), Social Desirability Scale (Jackson, 1984), and an inventory of physical activity participation.

Specific Hypotheses

1. Estimation scores will be significantly related to self-esteem scores.
2. Estimation scores will be significantly related to Attraction scores.
3. The relationship between Estimation and Self-esteem will be significantly larger than the relationship between Attraction and Self-esteem.

4. Attraction scores will be significantly related to self-reported physical activity participation.

5. Estimation and Attraction scores together will better predict physical activity participation than Attraction scores alone.

6. The relationship between Attraction and physical activity participation will be larger than the relationship between Estimation and physical activity participation.

Significance of the Study

In reviewing the research, a need is found to study further the application of the Psychological Model to female subjects. As research has shown, people's self-perceptions can be manipulated to bring about positive or negative feelings about their physical ability. This provides us with valuable assistance in conducting exercise programs and sessions. In relating to the model, if a person's self-perceptions of ability can be increased, then interest in the exercise activity would be effectively increased and would lead to higher levels of both participation and physical fitness. Whether these results would be applicable to an adult female population has not been consistently shown.

Research using female subjects in testing the PEAS and the model has been meager. A question arises whether the

model and its scales or specific items are applicable to the adult female population.

Additionally, the Estimation, Self-esteem relationship needs to be further studied with female populations. The importance of exercise or physical activity to the individual female's global self-esteem is unknown and may be changing with the times. Current research reports that a fit and healthy body is becoming increasingly important to the female population. A new, more specific scale may be needed to assess the importance of specific skills and activities to this growing interest.

In the present form, the PEAS utilizes statements developed for adolescent boys. A study of its application in measuring adult females' attitudes should be addressed.

Response bias was not found to affect the relationships of the model's variables in adolescent boys (Sonstroem, 1976). Is this also true of adult women aged 22 to 65 and does this variable change as a result of increasing age? This study was designed to further verify the validity of the Psychological Model and the PEAS by testing adult women with the present form of the model and its scales.

Definition of Terms

1. Self-esteem is a negative or positive attitude toward a particular object, namely the self (Rosenberg, 1965). It can be measured in specific or global contexts. Self-esteem in the Estimation scale refers to the evaluative component of self-description. In the Psychological Model, global self-esteem is studied (Sonstroem, 1978).

2. Estimation is the measure of self-perceptions of physical abilities. It is conceived as a component of global self-esteem. Estimation has been shown to be a mediating variable between self-esteem and physical ability in the Psychological Model for Physical Activity Participation (Sonstroem, 1987).

3. Attraction is a measure of interest in a wide variety of sport and physical activity situations (Sonstroem, 1978). According to the model, Estimation affects an individual's interest toward physical activity. It is then the Attraction which provides the greater influence on exercise participation (Sonstroem, 1987).

4. Self-Motivation is conceptualized as a generalized, non-specific tendency to persist in the absence of extrinsic reinforcement and is thus largely independent of situational influence. It is most likely a socially learned characteristic dependent upon the capacity for self-reinforcement (Dishman and Gettman, 1980).

5. Social Desirability is defined as the inclination for individuals to respond to the social desirability of an item rather than its actual content (Jackson, 1984). The model's relationships were found to prevail independently of response distortion.

Limitations

1. Many of the subjects were acquainted with the investigator or her assistants as coworkers.

2. The Physical Activity Index, being a paper and pencil assessment, was subjected to the individual's interpretation and may have limited the prediction of activity.

Chapter 2

The Review of the Literature

The review of the literature is divided into seven sections. These are: (a) Self-esteem, (b) Self-esteem and Physical Ability, (c) The Psychological Model for Physical Activity, (d) The Physical Estimation and Attraction Scales (PEAS), (e) Model Relationships, (f) Self-Motivation, and (g) Social Desirability.

Self-Esteem

Theorists and clinicians in the field of mental health have long held positive self-esteem as the fundamental element of favorable life adjustment (Coopersmith, 1967; Gergin, 1971; Horney, 1950; Rosenberg, 1963, 1979). Its affinity for producing psychological benefit causes self-esteem to be deemed as the paramount variable in exercise personality research (Sonstroem, 1984). Few propositions appear to portray as much validity to sports practitioners as the testimony that exercise involvement is closely related with elevated levels of self-esteem (Sonstroem, 1981).

Rosenberg (1965) stated, "Self-esteem is a positive or negative attitude toward a particular object, namely the self. Self-esteem has two quite different connotations.

One connotation of high self-esteem is that the person thinks he is 'very good'; a very different connotation is that he is 'good enough'" (p. 30). It is thus possible for individuals to consider themselves superior to most others but to feel inadequate in terms of certain standards set by themselves. Self-esteem is comprehensively believed to be the evaluative component of self-conception (Gergen, 1971). It is thought to be comprised of cognitive comparisons and affect (Rosenberg, 1979; Wells and Marwell, 1976), and enters into all sentiments of self-conception (Allport, 1937). Gergen (1971) defines it as "the extent to which the person feels positive about himself" (p. 11).

Self-esteem has been studied in both specific and global contexts (Sonstroem, 1978). Specific feelings towards oneself tend to differ according to situations and/or traits (Wells and Marwell, 1976). Rosenberg (1965) details self-esteem as a kind of linear incorporation of the individual, specific self-estimates, each weighted by the merit of the characteristic and summed in some psychological structure. It is conceivable to discuss self-esteem at diverse levels of specificity or generality. Multiple concepts of the self, a theory offered by Gergen (1971), are said to be sets of attitudes that yield different self-evaluations contingent on the surrounding situations.

Global self-esteem has been regarded as multidimensional in nature with dimensions such as social, academic, and physical aspects being arranged in ordered ranks (Shavelson, Hubner, and Stanton, 1976). Each of the dimensions is fabricated of situation-specific constructs, and the prominence of these to global self-esteem is considered to rely upon their discernible importance to the individual. Harter's (1984) work with global self-worth and perceived competence has established that an individual's perceived importance of each category of proficiency plays an essential role as a mediating value.

Coopersmith (1967) provided a description of the relationship between global self-esteem and the multiplicity of the selves. Self-esteem may vary across different areas of experience and according to sex, age, and other role-defining conditions. Thus it is conceivable that an individual would regard oneself as very worthy as a student, moderately worthy as a tennis player, and totally unworthy as a musician. The overall appraisal of abilities would presumably weight these areas according to their subjective importance, enabling the individual to arrive at a general level of self-esteem.

The development of self-esteem as a notable adjustment variable has increased in the fields of psychiatry and psychology (Sonstroem, 1978). Pilisuk (1963) obtained a

correlation coefficient of $-.62$ in college males between manifest anxiety levels and self-acceptance, a relatively direct criterion of self-esteem. This relationship has been substantiated by Rosenberg (1963) and Coopersmith (1961) in studying younger age groups. Rosenberg states that some clinicians even characterize low self-esteem as one of the fundamental principals of neurosis. Conversely, self-esteem has shown to relate positively to an assortment of performances measures, such as to participation in extra-curricular activities and to realization of leadership skills (Rosenberg, 1965). Genskow (1968) found self-esteem to be positively related to body evaluation, and body anxiety to be negatively related to self-esteem and body evaluation. Additionally, positive self-evaluations of physical ability, conceived as a component of global self-esteem, were revealed to be associated in high school and junior high school males with lack of maladjustment, personality disorder and neuroticism as measured by the Tennessee Self-Concept Scale (Sonstroem, 1976).

Rosenberg, (1979), sustains the position that components of the self-concept are of unequal centrality to the affairs of the individual and are hierarchially organized. A person contends to excel at that which they prize and to prize at that at which they excel. Past research tended to combine these subsets in ways to produce more global evalu-

ations of the self (Sonstroem, 1976). A recent trend in research has been to engage specific sub-sets of esteem to improve predictions of behavior. Both specific and global levels of self-concept are studied by many theorists.

Self-esteem is generally regarded to be comprised of reflexive attitudes about the self. The self is both an agent (knower) and object of the attitude (Rosenberg, 1979; Marwell, 1976). Self-esteem is most often measured by requesting subjects to reply to attitude statements or adjectives expressive of himself or herself.

Self-Esteem and Physical Ability

O'Reilly (1973) and Aronson and Carlsmith (1962) have demonstrated that a person contends to perform at a level most consistent with their image of individual ability. McCall and Moore (1965) state, "...Striving to express or actualize oneself could depend on the assumed capabilities" (p. 1034). These reports were supported by Heaps (1978) in a study of 56 male volunteers participating in Cooper's (1968) 12 minute running test. Social comparisons with a peer and physical standards were manipulated to give subjects either positive or negative feedback as to their fitness level. Physical fitness inventories (test-retest .91) were then given. Data indicated that the participants' responses differed reliably as a function of the

level of feedback they were given during both the social ($F= 9.13, p<.01$) and physical ($F= 81.83, p<.01$) feedback conditions. Heaps (1978) concluded that the relationship between a person's perceptions of individual physical functioning and other psychological characteristics may be augmented if one utilizes positive social or physical information to influence the body perceptions. It is not only physical improvement which results in improved psychological function, but one's cognitive perception of that interpretation.

Psychological Model for Physical Activity Participation

During current years, there has been an increasing interest in obtaining relationships between an individual's psychological and physical functioning (Heaps, 1978). Numerous researchers have proposed that control of physical fitness through a physical training program can be utilized to alter psychological functioning in predictable directions. Although these studies contain certain limitations, they have generally established that as physical fitness increases, anxiety, depression and self-centeredness decrease, and self-satisfaction and social adjustment increase (Cooper, 1968).

A paramount question concerns how one gets people to exercise initially, then, to adhere to a physical activity

program (Sonstroem, 1980). Morgan (1977), states that the study of exercise involvement depicts the principal issue for contemporary exercise scientists.

The Psychological Model for Physical Activity Participation (Sonstroem, 1975), represents the first model developed specifically for the prediction of exercise involvement. This model is also concerned with the method in which exercise and the resulting physical fitness improve psychological benefit, in this case, self-esteem (Sonstroem, 1987). Analogous with the models development, two scales, Estimation and Attraction were created for adolescent boys and are included in the Physical Estimation and Attraction Scales (PEAS), (Sonstroem, 1974). The model postulates that self-perceptions of physical activity (labeled Estimation), affects an individual's interest or attraction toward physical activity. After which, Attraction affords the greater influence on exercise participation (Sonstroem, 1987). Sonstroem theorized that a firm conviction in personal physical ability (Estimation) and an attraction to physical activity (Attraction) would preface higher levels of exercise participation and a resultant augmentation in fitness and self-esteem (Fox, Corbin, and Couldry, 1985).

Physical Estimation and Attraction Scales

The Physical Estimation and Attraction Scales were developed by Sonstroem (1974) and "were developed in the formulation of an action model for physical activity" (Sonstroem, 1978, p. 97). The PEAS arises from a theoretical model of sport and exercise behavior that is sport-specific and has presented a major contribution to psychology research (Safrit, Wood, and Dishman, 1985). Consistent patterns with behavioral (Sonstroem, 1974; Sonstroem and Kampper, 1980) and with mental health (Dishman and Gettman, 1981; Kowal, Patton and Vogel, 1978; Morgan, 1981; and Sonstroem, 1976) parameters have bolstered the meaningfulness of measurements made with the PEAS. The scales permit exact measurement, allow for the measurement of change, and incite the testing of explanatory behavioral hypotheses (Sonstroem, 1978). The PEAS commands an extensive and solid psychometric foundation supporting its validity and reliability (Safrit, Wood, and Dishman, 1985).

Both the Estimation and the Attraction scales utilize attitude statements involving a true-false response format (Sonstroem, 1978). Briefly defined, "an attitude is a like or dislike that has behavioral consequences. It can be thought of consisting of three basic components: a belief, an emotion, and an action tendency" (Krech, Crutchfield,

and Livson, 1974, p. 757). Use of attitudinal assessment in the action model was induced primarily by consideration of this action tendency (Sonstroem, 1978). A person who subscribes to the statement, "I like to ski," could be predicted to at least be occasionally found on the ski slopes. Rotter (1954) hypothesized choice behavior as "a joint function of reinforcement value (equated here with interest) and the subjective probability or expectancy of receiving the valued reinforcement" (p. 108).

The Estimation scale contains 33 attitude statement items. An example of Estimation items are:

I am stronger than a good many of my friends.

It is difficult for me to catch a thrown ball.

I am in better physical condition than most boys my age.

Even with practice I doubt that I could learn to do a handstand well.

In the case of the Estimation items, the attitude object is the self as master or possessor of muscular strength, general athletic ability, physical fitness, and coordination. Specified items ascribe to attributes of skill or efficiency at specific sport activities. These referents were produced as stimuli which male adolescents could comprehend and respond to (Sonstroem, 1978).

The Attraction scale contains 54 items. Attraction items request subjects to verify or disown personal attraction to exercise or physical activity in general or specific sport activities (Sonstroem, 1978). Attraction items also ask subjects to choose between sport activities and non-sport activities, or between two physical activities of varying exercise intensity. The reply is keyed for the more vigorous activity. An example of Attraction items are:

Sports provide me with a welcome escape from the pressures of present day life.

I love to run.

Playing tennis appeals to me more than does golfing.

I enjoy the discipline of long and strenuous physical training.

Ajzen and Fishbein (1977) have argued that attitude toward an object does not predict successive behavior with any measure of strength. Instead, the individual's attitude toward actually executing a specified referent behavior should be appraised. In developing high attitude-behavior correlations, the authors of the research cited above stress the congruence of attitude-behavior in four components: The target at which the action is directed, the specific action itself, the context, and the time in

which the action is performed. When attitudes and behavior concur in these four components, attitudes have been shown to predict behavior very well. The Attraction scale and attitude statements have been successful at predicting initial recruitment to exercise experiences (Dishman, 1978; Morgan and Pollock, 1978; Sonstroem and Kampper, 1980).

Model Relationships

The majority of research denotes that the PEAS can be generalized to adult and college aged populations. Data for young adult females has produced ambiguous results though. Additionally, no substantial data has proved that the Psychological Model is suited for the prediction of adult male or especially adult female, involvement in physical activity (Fox, Corbin, and Couldry, 1985). Related work using measures other than the PEAS revealed gender differences in perceived competence (Corbin, 1981; Corbin and Nix, 1979). Two studies (Sage, 1980; Telama and Silvennvinem, 1979), suggest that the structure of both self-perceptions and attitudes in physical activity environments rely on age as well as gender. Dishman (1978) reported consistent but smaller relationships between the

adolescent male models and college males and females for the Estimation, Attraction, and fitness components. Sonstroem (1978) states, "While the author's previous research has utilized males, a change in gender in the wording of certain items would make the PEAS immediately available for use with females. There is little reason to doubt application of the present incomplete model to feminine participation" (p. 97).

Self-esteem, estimation, and physical ability. The rationale for the development of the estimation scale implies that self-perceptions of physical ability (Estimation) may represent a situation-specific self-esteem construct highly related to perceived competence in the physical activity or sport setting. In three separate investigations (Neale, Sonstroem, and Metz, 1969; Sonstroem, 1974, 1976), global self-esteem was not shown to be related to physical fitness in adolescent boys. Estimation scores, however, have been positively and significantly related to both physical fitness and self-esteem.

In testing high school males, Neale et al., (1969) reported that high-fit boys as compared with low-fit boys were found to be higher in self-estimates of physical ability ($p < .001$) but not significantly different in self-esteem. Sonstroem (1974) obtained significant correlations

between estimation scores and those of height, athletic experience, self-acceptance and a fitness index ($p < .01$) in 710 high school males. No relationship was reported between fitness and self-esteem, however. Internal reliability (KR-20) of the scales reportedly ranged from .70 to .90.

Estimation scores were found to establish significant ($p < .01$) relationships with self-esteem and physical fitness in 109 high school males and 112 junior high males (Sonstroem, 1976). Coefficients between Estimation and self-esteem of .43 for the high school males and .51 for the junior high males improved considerably upon the value of .30 reported by Sonstroem (1974). Sonstroem (1978) concluded that the coefficients appeared to be of satisfactory size when it is recognized that Estimation measures perceptions of reality rather than reality itself. Subject defensiveness was noted to mute the accuracy of self-perceptions of physical ability to a degree in adolescent boys.

Convincing evidence from the three pieces of research cited confirm that physical ability is not linearly related to self-esteem across adolescents of varied physical abilities (Sonstroem, 1978). Physical ability is not important to the psyche of all people. Sonstroem (1978) indicates that Estimation is significantly related to both

physical fitness and self-esteem in relatively large numbers of adolescent males.

In each of the studies cited above, relationships were acquired with self-esteem inventories possessing different item design and/or response categories (Sonstroem, 1978). Wylie (1974) lists the typical correlation coefficient between measures of global self-esteem to be approximately .40. The correlations in the above cited research between global self-esteem and a hypothesized subcategory of self-esteem (Estimation) then, present binding evidence for the Estimation construct.

In a study of 77 females and 94 male undergraduate students, Fox, Corbin, and Couldry (1985) found Estimation to be the first predictor selected ($p < .05$) for female self-esteem and fitness levels. The mean female Estimation score was significantly lower ($p < .01$) than the mean for males. Estimation relationships were similar to those previously described among adolescent males. These findings support previous evidence established relating the importance of perceived physical fitness (Estimation) as a mediator between fitness and self-esteem. The results of this research strongly support this hypothesis, particularly for females. The correlation between Estimation and self-esteem was .53 ($p < .01$), and between Estimation and fitness, .52 ($P < .01$). In support of Sonstroem's findings,

the direct association that might be expected between fitness and self-esteem was not significant when the effect of Estimation was controlled by partial correlation technique. An explanation of the stronger association found for females between Estimation and self-esteem (female=.53, male=.30) may be the recent increase in female interest in sport and exercise. Having a strong, fit body appears to be increasingly valued among females (The Miller Lite report, 1983; The Perrier Study, 1979).

To achieve an improved comprehension of the Estimation, self-esteem relationship, Fox, et al., (1985) suggest that it may be profitable to weigh an individual's subjective importance of physical estimation to their total being.

Estimation and attraction. Within the model, Estimation and Attraction are hypothesized to work in a complementary fashion (Sonstroem, 1978). This theory was supported by Neale, et al., (1969) who reported significant correlations .59 ($p < .01$) between self-estimates of physical ability and attraction to physical activity. In the total study sample of the above cited research, Estimation scores were significantly related to Attraction scores ($r = .49$, $p < .001$).

In addition, Fox, et al., (1985) found significant relationships ($p < .01$) between Estimation and Attraction. Coefficients of .67 for females and .72 for males were reported.

Safrit, Wood and Dishman (1985), testing college male and female students, found that the strongest factorial validity rests with the Estimation items. A portion of the PEAS evidently tapped an Estimation factor in both adult males and females. The Attraction factor was found to be stronger for adult women than for men, suggesting the need for separate instruments for men and women.

Overall, the PEAS appears to incorporate the bases of an operative instrument for measuring the amplitude of physical self-estimation. It was not found to be as efficacious in assessing attitude toward involvement in physical activity. The Psychological Model for participation in vigorous activity might be effective for adults, whereas the PEAS may not make the model's dimensions available in a similar way as it does for adolescent boys (Safrit, Wood, and Dishman, 1985).

Attraction, voluntary physical activity, and physical ability. Physical activity has been shown to improve physical ability. However, improved physical abilities do not necessarily bring about increased physical activity levels (Sonstroem, 1978).

Neale, et al., (1969) reported that high-fit boys were not significantly different than low-fit boys in reported range of physical activity. However, attraction scores of high-fit boys were found to be significantly higher than low-fit boys ($p < .001$). A correlation coefficient of .37 ($p < .01$) was obtained within the total sample between attraction scores and self-reports of voluntary physical activity.

In reviewing past research, Sonstroem (1978) found that the Attraction, fitness relationships were nonsignificant when the effect of Estimation was controlled by partial correlation. The only Attraction relationship to remain significant when Estimation was controlled for was that with extent of voluntary physical activity. Sonstroem concluded that estimation and attraction exert mediating influences in physical fitness and physical activity relationships.

Sonstroem and Kampper (1980) administered the PEAS to 393 seventh and eighth grade males. Discriminant function analysis produced a function containing Attraction first and Estimation second, which accurately predicted initial exercise participation (canonical $r = .35$, $p < .001$), and supported the Psychological Model for Physical Activity. Specific attitudes were reported to be more efficacious in predicting behavior than general attitudes or attitude

scales incorporating a variety of specific attitude objects (Sonstroem and Kampper, 1980).

Sonstroem and Kampper (1980) suggest replication of previous studies with female and middle aged males due to the diverse psychodynamics of exercise involvement with different populations. Newer scale constructions should devote serious effort to form attitudes more congruent to desired and specified behaviors.

In support of Sonstroem's (1978) findings, Fox, et al., (1985) reported similar Attraction relationships. The only Attraction relationship to remain significant in the above cited research was with activity levels. Male subjects reacted similarly to those in Sonstroem's studies, but all female Attraction relationships failed when the effect of Estimation was removed. Attraction was not selected as a significant predictor ($p < .05$) for female activity, fitness or, self-esteem but explained 17% of the variance for men. To increase the prediction of involvement of physical activity, scales designed to measure attraction to specific categories were suggested by Fox, et al., (1985) to be more successful, especially for the female population. Additionally, self-reported measures of physical activity levels were reported to possibly be limiting the prediction of activity.

Self-Motivation

Although there are presently 55 million adult exercise participants in the United States (Clarke, 1973; National Center for Health Statistics, 1978), a considerable percentage of people apparently have a difficult time staying with a regular exercise program, regardless of initial interest and involvement. Dropout rates in exercise programs typically exceed 50% during the first six months of involvement (Dishman and Gettman, 1980). There appears to be considerable similarity between dropout patterns for exercise programs and that for a variety of other preventive medicine settings (Baekeland and Lundwall, 1975; Morgan, 1977).

Dishman and Ickes (1981) report that there is reason to believe that a trait-like construct of self-motivation may afford an operative basis for predicting perseverance in certain therapeutic programs. Dishman's Self-motivation Inventory (SMI) is a 40-item paper and pencil test developed to assess self-motivation, conceptualized as a behavioral tendency to persevere independent of situational reinforcements. It has predicted exercise adherence (Dishman and Gettman, 1980; Dishman and Ickes, 1981).

A majority of current studies investigating exercise participation have concentrated on adherence. These studies have been restricted by insufficient standardiza-

tion and by procedural inadequacies forestalling detection of notable results replicated across settings (Sonstroem, 1987).

In a 20 week study, Dishman and Ickes (1981) indicated that only percentage of body fat, self-motivation and body weight made a significant ($p < 0.05$) contribution to group separation of adherers and dropouts, in 66 adult males in a medically prescribed and supervised exercise program. These Psychobiological Model variables predicted actual adherence or dropout groups for approximately 80% of all cases. Adherers were reported to possess lower values for both percentage body weight and fat but had higher self-motivation scores than dropouts. These findings support Dishman's (1981) results of the influence of body composition on exercise adherence.

Correlations between exercise adherence and self-motivation ($r = 0.44$, $p < 0.05$) were reported. Self-motivation was found to be a better predictor as compared to variables such as locus of control, social desirability, or achievement motivation. Self-motivation was substantially related to certain behaviorally specific attitudes ($p < 0.01$) including attraction to physical activity ($r = 0.53$) and perceptions of exercise as having health and fitness ($r = 0.58$) and ascetic values ($r = 0.47$). Additionally, Self-Motivation Inventory scores have correlated

significantly with self-reports of exercise frequency in college students ($r = .33$, $p < .05$). They have succeeded in predicting the extent of adherence in undergraduate women involved in an eight month crew training season ($r = .33$, $p < .05$) (Dishman and Ickes, 1981). A trait-like measure of self-motivation was again supported by a test-retest correlation of 0.86 over a 20 week time period.

The psychobiological model was recently evaluated by Ward and Morgan (1984) in its prediction of exercise adherence at 10, 20, and 32 weeks of an aerobic exercise program. Results from the 34 male and 42 female subjects exhibited significant differences ($p < .05$) between adherers and dropouts. Adherers and dropouts, though, did not differ in percent body fat, body weight or self-motivation at any of the three points. This was in contrast to Dishman and Gettman's (1980) previously reported differences in body fat and body weight between adherers and dropouts. Prediction of adherence patterns (87%) was significantly more ($p < .001$) accurate than prediction of dropout patterns (25%) for both males and females.

Correlates of adherence were found to differ in the 10, 20, and 32 week analyses where step-wise discriminant function was employed. This indicates that early dropouts may be different than late dropouts and supports Dishman's statement that there may be different intervals across time

for instituting and retaining the exercise practice. Highest canonical correlations were produced by dividing the total group into male and female subjects which, also, increased accuracy of classification. Different adherence correlates emerged in the male and female subjects and were different from those which emerged for the total sample.

Additional studies have given support to the SMI in adherence research. Oldridge (1979) found both that smoking and having a blue collar job negatively affected adherence in a study of 678 cardiac rehabilitation patients. Knapp, Guttman, Foster, and Pollock (1984) reported that self-motivation scores predicted adherence to training of speedskaters while Snyder, Rubenfire, Foss, and Franklin (1982) reported that low self-motivation scores predicted poor exercise adherence in a cardiac exercise therapy program. Self-Motivation Inventory scores significantly differentiated adult regular attenders (n=19) and occasional attenders (n=9) from dropouts (n=32) (Olson and Zanna, 1982). Stone (1983) found that Self-Motivation Inventory scores and smoking behavior significantly separated corporate aerobic and recreational participants from dropouts with an 82% accuracy.

Contrasting information was presented by Gale, Eckhoff, Mogel, and Rodnick (1984). Self-motivation significantly differentiated early dropouts from occasional

attenders and adherers in males but not in females in a study of 106 healthy adults (M=33, F=73). It also failed to separate occasional attenders from nonadherers and adherers in both sexes. It did not predict male adherence beyond an early period and was found unsuccessful in predicting female participation. The Self-Motivation Inventory was not successful in discriminating among starters, team members, and dropouts in high school football squads (Robinson and Carron, 1982). Similar conclusions with adherers and dropouts were reported by Ward and Morgan (1984).

Though certain study results may conflict, limitations in studies have been noted. Many studies characterize behavior groups as either dropouts or adherers. "Although this approach may have clinical and statistical advantages, it may sacrifice a great deal of behavioral information" (Dishman, 1982, p.176). A discrete rather than continuous definition may also prevent comparison of independently obtained results. An adherer in a 20 week program may be a dropout in a 32 week program. A dropout from a formal setting may continue exercising in an informal setting. The fact that its items reflect high face validity for exercise perseverance and have an extremely high test-retest reliability ($r=.86$) over a 20 week period must be noted (Dishman and Ickes, 1981). Though changes in the

inventory may be required, especially for females, its use as a prediction and screening measure for exercise adherence has been strongly recommended.

Social Desirability

Social Desirability is characterized as the proclivity for subjects to respond to the social desirability of an item rather than its actual content (Jackson, 1984). Edwards (1957) postulated that certain personality characteristics are more meritorious than others in our society. Accordingly, personality statements incorporating these characteristics are likely to be subscribed to for their socially desirable influence rather than for the individual pertinence of their construct.

It is recognized that evaluations of the self are never completely unbiased. A degree of the misinterpretation between reality and self-conception is attributable to components such as the desire for affection and the struggle for consistency in self-perception (Wylie, 1968).

"A higher than average score on the Social Desirability Scale (Jackson, 1984) implies that the subject either consciously or unconsciously has focused on this aspect of items, and has responded largely in terms of desirability. High scores may thus indicate either conscious distortion or impression management" (p. 26). Conversely, very low scores may indicate possible

tendencies toward evasion, or, more likely, atypically low self-regard. Jackson and Messick (1958) hypothesized that the tendency to respond desirably might not only be interpretable as a form of response bias but in addition, might bear upon important personality characteristics.

Preliminary work on response bias has suggested that it is not a principal factor in subjects' response to scale items (Sonstroem, 1974) in the Physical Estimation and Attraction Scales. Dishman (1980) investigated the sensitivity of the PEAS to response distortion among college males and females. Estimation scores were not altered by instructions to "fake good". Under "fake bad" conditions, examinee responses were distorted although the impact was stronger for the Attraction scale.

In a study specifically designed to examine response bias (Sonstroem, 1976) showed that response bias did not contribute appreciably to the validating Estimation relationships indicated in high school and junior high males. Controlling for response bias influence by means of partial correlation did not succeed in extinguishing the significance of Estimation validity relationships. Relationships were concluded to prevail independently of response style or response set.

Chapter 3

The Procedure

The procedure is subdivided into four sections. These sections are: (a) Selection of Subjects, (b) Research Design, (c) Inventories, and (d) Statistical Analysis.

Selection of Subjects

This research involved 157 females, aged 22 to 65. Questionnaires were distributed in four separate agencies by the investigator, relatives and acquaintances. These agencies were: Meeting Street School, East Providence, which accounted for 58% of the returns. The Institute of Mental Health, (IMH), Cranston, accounted for 15% of the returns. The Joseph Ladd Center, Exeter accounted for 6% of the returns, and the Trudeau Center, Warwick, accounted for 13% of the returns. Subjects were employed in a wide variety of occupations related to the field of special education. Subjects included 37 teachers, (mean age= 30.45); 44 paraprofessionals, (mean age= 31.22); 23 therapists (mean age= 27.21), which included physical, occupational and speech therapists; and 2 psychologists, (mean age=32). Additionally, 8 nurses, (mean age= 36.25), 2 audiologists, (mean age=32); 10 social workers, (mean age= 42); 7 administrative staff, (mean age= 33.28); and 8

secretarial staff, (mean age= 31.62), completed the inventory. In addition, questionnaires were dispersed to women residing in neighboring areas of the investigator. This accounted for 8%, or 16 of the returns. Occupations of these subjects are unknown. Ages ranged from 25 to 65 with a mean age of 39.75.

Research Design

A packet containing a background information questionnaire, Rosenberg's Self-Esteem scale (Rosenberg, 1965), Sonstroem's Physical Estimation and Attraction Scales (Sonstroem, 1974), Jackson's Social Desirability Scale (Jackson, 1984), Dishman's Self-Motivation Inventory (Dishman and Ickes, 1981), and a previously developed Physical Activity Index was distributed to 256 female subjects. Questionnaires were distributed during the months of May, June, July and August, 1986. Relatives and acquaintances of the investigator personally handed questionnaires to female members in their respective work departments in the Ladd, Institute of Mental Health, and Trudeau Center samples. This was due to the manageable size of these latter groups of 25, 38 and 35 females, respectively. Female employees of the Meeting Street School sample were handed a questionnaire along with their bimonthly paycheck. In addition, subjects such as substi-

tute teachers or therapists who were employed at the Meeting Street School during the months of June or July were personally handed questionnaires by the investigator. Females who resided in neighboring areas of the investigator likewise were personally handed questionnaires during these months.

Fifty percent of the inventory returns were obtained by the investigator during the months of May and June. Twenty-five percent were obtained in the month of July, and 25% were obtained during the months of August and early September.

A cover letter, (Appendix A, B, C, D), explained the process as a partial fulfillment of the Master of Science degree in Physical Education. It revealed that the subject of the thesis was the study of attitudes of adult women toward exercise. To best characterize these attitudes, it encouraged as many women as possible to participate and to be completely open since there were no correct or incorrect answers.

Fifty minutes of time was requested to respond to a background information sheet, the 170 attitude statements and a physical activity index. Careful attention to each set of directions and use of an enclosed answer sheet was requested.

Page one of the inventory consisted of an informed

consent. (See Appendix E). This reiterated the purpose of the study and appealed to the subjects to take their time and respond honestly as to how the questions pertained to them. Participants were asked to sign this as a release to the investigator to utilize the information obtained.

Subjects were asked to return their completed inventories to specific locations listed on each respective cover letter. A follow-up letter was personally given by the investigator and her assistants to all subjects who had not returned their completed inventories after a ten day period had passed. A second copy of the questionnaire was attached to this letter, to provide for misplaced or destroyed copies of the original. The letter reminded subjects of the time period which had past since they received their initial questionnaire and requested their attention to and involvement in completing the questionnaire. Additionally, most subjects at the Meeting Street School, IMH, and Trudeau Center saw the investigator or her assistants during the work week as a visual reminder to complete their inventories.

Inventories

The packet of paper and pencil tests were divided into four sections and consisted of 170 attitude statements. Section I consisted of Rosenberg's 10-item Self-esteem

Scale (Rosenberg, 1969). Sonstroem's 87 item Physical Estimation and Attraction Scales combined with items from Jackson's Social Desirability Scale (Jackson, 1984), comprised Section II and consisted of 120 statements. Dishman's Self-motivation Inventory (Dishman and Ickes, 1981), was contained in Section III, followed by the measure of physical activity participation. A mark-sense score sheet was provided at the back of the questionnaire.

Self-Esteem Inventory

Rosenberg's Self-Esteem Scale (1965) is a paper and pencil test which consists of ten attitude statements concerning an individual's feelings of self-description and self-worth. (See Appendix H). The scale asks subjects to express their agreement or disagreement with each statement as to how it applies to them. A two week test-retest correlation of .85, (N=28), using the Self-Esteem Scale has been reported (Sibert and Tippet, 1965).

The Rosenberg Self-Esteem Scale, and the Physical Estimation and Attraction Scales, utilized the written instructions as follows:

"The statements below reflect certain attitudes and interests of persons. There are no right or wrong answers. Read each statement and decide the degree to which it applies to you. Indicate your answer by blackening the appropriate space on the separate answer sheet. In some cases you may have difficulty deciding which response is best, but please make some decision and answer every item.

Please do not attempt to be consistent in your answers during the test, but respond to each item individually. Even if an item asks about things you have not experienced, answer it as best you can on the basis of what you have heard, seen or read. Express your agreement or disagreement by filling in the appropriate circle on your answer sheet according to the following:

Strongly					Strongly
Agree	Agree	Undecided	Disagree	Disagree	
A	B	C	D	E	

You should rarely need to use C (Undecided).

The significance of this research depends upon the degree to which you express your own opinion.

The Physical Estimation and Attraction Scales

A five point Likert Scale was utilized to provide greater response accuracy. This expanded the degree to which each item was characteristic or uncharacteristic of the individual. Sonstroem's Physical Estimation and Attraction Scales were previously scored by a True/False response. Strongly agree or extremely characteristic of me would represent a very positive view toward a statement, while strongly disagree or extremely uncharacteristic would represent a strong disagreement toward a statement.

The Physical Estimation and Attraction Scales (PEAS), are an 87-item paper and pencil test developed by Sonstroem (Sonstroem, 1974). (See Appendix G). The Estimation scale contains thirty-three items assessing attitudes towards the self as possessing capabilities at physical activity and sport. A second variable, Attraction, measures attitudes

toward vigorous activity and sports (Sonstroem, 1974). Fifty-four items comprise the Attraction scale. The psychometric properties of the PEAS and their construct validity have been tested with adolescent male subjects (Sonstroem, 1974, 1975, 1976). Kuder-Richardson internal consistency coefficients, (KR-20), of .87 for Estimation and .89 for Attraction have been obtained (Sonstroem, 1974). Two week test-retest reliability of .92 for Estimation and .94 for Attraction have also been reported (Sonstroem, 1978).

Sonstroem (1978) suggested that the PEAS could be utilized with females by changing the wording of specific items. Changes in the PEAS items in the present study utilized changes in gender terms. An example would be question 16 of the questionnaire. "My body is strong and muscular compared to other women (men) my age." (See Appendix G).

Self-Motivation Inventory

Dishman's Self-Motivation Inventory is a forty-item paper and pencil test developed to assess self-motivation (Dishman and Gettman, 1980). (See Appendix I).

Self-motivation is conceptualized as a behavioral tendency to persevere independent of situational reinforcement. It has predicted exercise adherence (Dishman and Gettman,

1980; Dishman and Ickes, 1981). The Self-Motivation Inventory produced from a larger item pool by factor analysis and item-total correlation commands a high internal reliability (Cronbach alpha = .91) (Dishman and Ickes, 1981).

Written instructions were given pertaining to this inventory as follows:

Read each of the statements and answer it with the letter of the alternative which best describes how characteristic the statement is when applied to you. The alternatives are:

- (a) extremely uncharacteristic of me
- (b) somewhat characteristic of me
- (c) neither characteristic nor uncharacteristic of me
- (d) somewhat characteristic of me
- (e) extremely characteristic of me

Subjects were then asked to answer every item and to try and be as honest and accurate as possible in their responses.

Social Desirability Scale

The Social Desirability Scale is a 20-item paper and pencil test designed to assess the tendency for subjects to respond to the social desirability of an item rather than its actual content. "This scale was prepared to permit evaluation of profiles for responses primarily in terms of a prominent connotative property of items other than speci-

fic content, namely their desirability" (Jackson, 1984, p. 26). Kuder-Richardson internal consistency (KR-20) of .59 and .62 have been obtained with high school males and with male and female undergraduates respectively. Two week test-retest reliabilities ranging from .80 to .96 have been reported (Jackson, 1984). The Social Desirability Scale is contained within the PEAS section and consists of items 11, 13, 17, 19, 25, 31, 111, 113, 115, 117, 119, 121, and 123-130. (See Appendix G).

Physical Activity Index

A physical activity index was included to assess the individual's specific exercise habits and to categorize them into groups accordingly. (See Appendix J). Subjects were asked to view a list of thirty recreational activities requiring moderate to vigorous physical activity and circle the activities they normally participated in during the year. These activities were summed and recorded by the investigator as number of activities (NACTS). Subjects were then requested to indicate the frequency, or amount of days per week they participated by circling the appropriate number 1-7, provided at the left of the activity. How many minutes they participated in each exercise session and the number of weeks per year of participation in each particular activity was also requested to be written in the spaces

provided. The product of these categories was computed and recorded. This provided a measure of annual physical activity for each subject. An example would be:

Activity	Frequency	Duration	Weeks per year	
Hiking	1 2 3 4 5 6 7	<u>30 min.</u>	<u>5</u>	= 300 ACTSC

Statistical Analysis

The Self-Esteem Scale, Physical Estimation and Attraction Scales, Social Desirability Scale and the Self-Motivation Inventory were scored at the University of Rhode Island Academic Computer Center by an NCS 7001 Optical Mark Reader. The Physical Activity Index was scored by hand. Pearson product moment correlation and partial and multiple correlation procedures were used to test the relationships between the variables of the models. Tests for significant differences between age groups were conducted using the Oneway program of SPSSX.

Chapter 4

Results

Chapter four is divided into eight sections. These are: (a) Descriptive Statistics, (b) Tests of the Hypotheses, (c) Additional Analyses, (d) Self-Motivation Analyses, (e) Discussion, (f) Practical Implications, (g) Recommendations for Future Research, and (h) Conclusions.

Descriptive Statistics

Table IV-1 contains the means and standard deviations for the study variables. These are: age, self-esteem (SE), estimation (EST), attraction (ATTR), self-motivation (SEM), social desirability (SD), number of activities (NACTS), and activity score (ACTSC).

A mean self-esteem value of 41.71 out of a maximum possible score of 50 was obtained. This shows high levels of self-esteem as measured by Rosenberg's Self-Esteem Inventory, within the sample. Using the same inventory with 77 undergraduate females, Fox, et al., (1985) reported a mean self-esteem value of 31.34 out of a possible maximum score of 40 which represents a 78.35% endorsement of this variable. A small standard deviation of 5.09 obtained in the present sample indicates a small degree of variance of the self-esteem scores reported.

Table IV-1
Means and Standard Deviations of Study Variables

Variable	M	SD
Age	33.76	9.77
Self-esteem (SE)	41.71	5.09
Estimation (EST)	99.87	16.59
Attraction (ATTR)	164.16	24.75
Self-motivation (SEM)	93.26	20.82
Social Desirability (SD)	79.31	6.13
Number of Activities (NACTS)	5.20	3.34
Activity Score (ACTSC)	14,153.21	12,648.43

The present study employed a Likert Scale for the estimation, attraction, and social desirability items in lieu of the true-false method utilized in previous studies. Mean scores of these variables were therefore divided by five in order to produce comparable study values. The estimation mean of 99.87 in Table IV-1 was consequently reduced to a value of 19.97. The attraction mean of 164.16 was reduced to a value of 32.83 (Table IV-2). These values were found to be slightly smaller than those reported in previous studies (Table IV-2). Of particular note are the relatively larger mean values for

estimation and attraction obtained by Thunberg (1986) with a female sample of approximately the same age. However, her sample consisted of women with either a past or present background in exercise.

A social desirability mean value of 79.31 (Table IV-1) was recorded with a small standard deviation of 6.13. Dividing this value by five produced a mean value of 15.86. This was found to represent medium values of social desirability, reaching the 58th percentile in comparison with Jackson's (1984) norms. A mean value of 93.26 (Table IV-1) for the self-motivation variable was obtained. Based on an attainable 200 points, this value appeared small. Only a 46.63% endorsement of the self-motivation construct was found to be present within the study sample. Dishman and Ickes (1981) reported a mean value of 140.5 of the self-motivation variable with 401 male and female undergraduates. This represents a 70.25% endorsement of the self-motivation variable.

A mean score of 14,153.21 for the activity score with a large standard deviation of 12,648.43 is shown in Table IV-I. Certain activity scores appeared to be exaggerated in the amount of reported involvement time. In a normal curve, 2.28% of the sample usually report mean scores of two standard deviations greater than the mean. In our sample, 5.73% of the subjects reported scores two standard

Table IV-2

Estimation and Attraction Means and Standard Deviations
for Males and Females Across Studies

Study	N	Estimation	Attraction
Dishman, 1978	a 30	M 20.43 SD 6.52	M 36.73 SD 4.27
	b 30	M 23.40 SD 5.86	M 39.13 SD 5.79
Sonstroem, 1974	c 187	M 20.40 SD 6.60	M 35.52 SD 8.99
Fox, et al., 1985	a 77	M 20.56 SD 7.19	M 36.03 SD 8.27
	b 94	M 23.42 SD 6.25	M 38.03 SD 8.46
Thunberg, 1986	d 101	M 22.02 SD 3.91	M 35.03 SD 5.33
Present Study	d 157	M 19.97	M 32.83

a- female undergraduates

b- male undergraduates

c- high school males

d- adult females

deviations or more above the mean. A seemingly unrealistic ACTSC of 74,7000 was reported by one subject. This would imply that the subject is involved in the eight activities reported for one hour each, 2.9 days per week, for 52 weeks of the year! Another ACTSC of 58,440 was recorded. With only five activities of involvement reported, the subject

would need to spend ten hours, four days per week, approximately 25 weeks of the year at these activities. Both of these subjects reported having full time work. Accordingly, the scale was revised and activities were coded in the following manner: $< 5,000=1$; $5,000$ to $9,999=2$; $10,000$ to $14,999=3$; $15,000$ to $19,999=4$; and $> 19,999=5$.

Table IV-3
Correlation Matrix of Study Variables

	<u>S.E.</u>	<u>EST</u>	<u>ATTR</u>	<u>SD</u>	<u>NACTS</u>	<u>ACTSC</u>
Age	.055	-.001	-.179 ^b	.010	-.302 ^c	-.110
Self-esteem	---	.175 ^b	-.085	.405 ^c	.040	.083
Estimation	---	---	.640 ^c	.073	.322 ^c	.373 ^c
Attraction	---	---	---	.022	.371 ^c	.469 ^c
Social Desirability	---	---	---	---	.197 ^b	.159 ^a
Number of Activities	---	---	---	---	---	.565

a $p < .05$
b $p < .01$
c $p < .001$

Tests of the Hypotheses

Hypothesis 1: Estimation scores will be significantly related to Self-Esteem scores.

Hypothesis 1 was tested by means of Pearson r correlation. Table IV-3 presents the intercorrelations of major study variables. Values in Table IV-3 indicate that estimation scores were significantly related to self-esteem scores across the 157 women ($r = +.175, p < .01$). It was concluded that estimation and self-esteem are significantly related.

Examination of Table IV-3 indicates that the estimation, self-esteem relationship may have been inflated by the presence of social desirability responding. Self-esteem was significantly related to social desirability in Table IV-3. Partial correlation was employed to determine whether a significant relationship remained between estimation and self-esteem when the effects of social desirability were controlled. The following formula (Ferguson, 1971, p. 391) was utilized:

$$r_{12.3} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{(1-r_{13}^2)(1-r_{23}^2)}}$$

In the present formula:

- r_{12} = coefficient between self-esteem and estimation
- r_{13} = coefficient between self-esteem and social desirability
- r_{23} = coefficient between estimation and social desirability

A partial correlation coefficient of + .160 was obtained. A directional test for significance by means of

a t-ratio produced a t value of 2.01. To obtain significance at the .05 level, a critical t value of 1.98 needed to be obtained. It was concluded that estimation and self-esteem are significantly ($p < .05$) related when the effects of social desirability are controlled for.

Research Hypothesis 1, consequently, was substantiated.

Hypothesis 2: Estimation scores will be significantly related to Attraction scores.

Hypothesis 2 was tested by means of a Pearson r correlation. Table IV-3 indicates that estimation scores were significantly related to attraction scores in the 157 women ($r = +.640, p < .001$). It was concluded that estimation and attraction are significantly related.

Neither estimation scores ($r = +.073$) nor attraction scores ($r = +.022$) were found to be significantly related to social desirability (Table IV-3). Testing again for the effect of social desirability on the estimation-attraction relationship by means of partial correlation produced no change in the coefficient ($r = +.640$). A directional test for significance by means of a t-ratio produced a t value of 10.34 ($p < .001$). It was concluded that estimation is significantly related to attraction and this relationship exists independent of the effects of social desirability.

Hypothesis 3: The relationship between Estimation and Self-esteem will be significantly greater than the relationship between Attraction and Self-esteem.

Table IV-3 indicates a coefficient of $+.175$ between estimation and self-esteem and a coefficient of $-.085$ between attraction and self-esteem. The difference between these coefficients was tested for significance by means of a t ratio for correlated samples (Ferguson, 1971, p. 171). With 154 degrees of freedom, a critical t value of 2.36 was required for significance at the $.01$ level. A t value of 5.66 was obtained. It was concluded that the relationship between estimation and self-esteem is significantly greater ($p < .001$) than the relationship between attraction and self-esteem. Consequently, research Hypothesis 3 was substantiated.

Distinctions in the estimation, self-esteem and attraction, self-esteem relationships were noted when applying Hypothesis 3 to women less than 35 years of age, Group 1; as compared to women over 35 years of age, Group 2 (Table IV-4). A directional test for significance by means of a t -ratio produced a t value of 3.54 ($p < .001$) for Group 1, and a t value of 2.62 ($p < .01$) for Group 2. Though Hypothesis 3 holds a somewhat greater level of significance for women under 35 years of age, it remains significant for both age groups.

Hypothesis 4: Attraction scores will be significantly related to self-reported physical activity participation.

As indicated in Chapter 3 and Tables IV-1 and IV-3, two distinct indexes, NACTS and ACTSC were utilized to measure physical activity participation. Table IV-3 reports a coefficient of .371 ($p < .001$) between attraction and number of activities participated in and a coefficient of .469 ($p < .001$) between attraction and the activity score.

Partial correlation procedures controlling for the effects of social desirability increased the attraction-NACTS coefficient to .374 and the attraction-ACTSC coefficient to .472. When tested for significance, both of these partial correlation coefficients maintained significance at the .001 level. It was concluded that attraction is significantly related to physical activity participation and that this relationship is independent of the effects of social desirability.

Hypothesis 5: Estimation and Attraction scores together will better predict physical activity participation than Attraction scores alone.

This hypothesis was tested by multiple correlation employing the following formula from Bruning and Kintz (1968, p. 172).

$$R = \sqrt{\frac{r_{12}^2 + r_{13}^2 - 2r_{12}r_{13}r_{23}}{1 - r_{23}^2}}$$

In the present formula:

r_{12} = coefficient between NACT and Attraction

r_{13} = coefficient between NACT and Estimation

r_{23} = coefficient between Estimation and Attraction

Table IV-3 documents a Pearson r coefficient of .371 between attraction and NACTS and a coefficient of .322 between estimation and NACTS. Combining relationships by use of the above formula produced a multiple correlation coefficient of .386. This improves very little on the zero order coefficient of .371 between attraction and NACTS.

The above formula was employed again to test the combined association of attraction and estimation on ACTSC. Table IV-3 lists Pearson's r 's of .469 between attraction and ACTSC and .373 between estimation and ACTSC. Combining attraction and estimation produced an R of .478 with the activity score. This again improved very little on the zero order coefficient of .469 between attraction and ACTSC.

Based on these two analyses, research Hypothesis 5 was not supported. It was concluded that estimation in the

Psychological Model for Physical Activity Participation fails to improve upon associations between attraction and number of activities and amount of physical activity participation.

Hypothesis 6: The relationship between attraction and physical activity participation will be larger than the relationship between Estimation and physical activity participation.

Hypothesis 6 was tested for both the number of physical activities reported (NACTS) and for the overall activity score (ACTSC) (Table IV-3). In the case of NACTS, the coefficient was .371 for its relationship with attraction and was .322 for its relationship with estimation. A t-ratio testing for significant difference obtained a value of 0.78 which failed to achieve significance at the .05 level of probability. In the case of ACTSC, an attraction-activity coefficient of .469 was compared to an estimation-activity coefficient of .373 (Table IV-3). The obtained t value of 1.66 indicated a significant difference in the coefficient size of the .05 level of confidence (directional test). It was concluded that attraction scores are more closely associated than estimation scores with a physical activity index reflecting number of activities participated in as well as the frequency and duration of participation. While significant differences

were not obtained for number of activities reported, the attraction coefficient was larger than the estimation coefficient, thus supporting the model in terms of direction.

Additional Analyses

Effect of age on model relationships. Little is actually known regarding the effect of age on exercise attitudes in adult women due to the scarcity of research on the attitudes of women toward exercise. Instinctively, it would appear that attitude toward exercise would change with age. Consequently, the Psychological Model for Physical Activity Participation may not be valid to the same degree for all adult female ages. Examining Table IV-3, it is noted that age does correlate significantly with attraction, and number of activities. With increasing age, women report less attraction to vigorous physical activity and report a fewer number of physical activities enlisted in.

Several additional analyses were employed to examine the applicability of the model for adult female age categories. The sample was subdivided into two separate groups by age: Group 1 consisted of women less than 35 years of age; and Group 2 consisted of women 35 years of age and older. The Oneway program of SPSSX was conducted

to test for significant group differences in study variables.

Table IV-4
Means and Tests for Significant Differences
Between Age Groups

Age		<35	35+		
Variable	Group	1	2	F	p
N		104.00	53.00		
SE		41.49	42.15	0.59	.44
EST		99.37	100.87	0.29	.59
ATTR		166.19	160.17	2.09	.15
SEM		92.38	94.98	0.54	.46
SD		79.19	79.55	0.12	.73
Child		0.42	2.19	80.21	.001
NACTS		5.72	4.19	7.67	.01
ACTSC		3.04	2.58	3.28	.07

Referring to Table IV-4, the only significant differences found between age groups was in NACTS and number of children. Women under the age of 35 reported significantly more activities which they participated in ($p < .01$) and significantly fewer children ($p < .001$) than the women 35

years of age and older. Values in attraction, self-esteem, and estimation, however, were not found to change with age.

While absolute values for model variables tended to endure across adult age groups, it remains plausible that relationships between model variables may have changed with age even though the absolute values did not. Therefore, correlation coefficients were computed for model variables within each of the age groups. These are presented in Table IV-5.

Relationships reported between model variables (SE, ATTR, EST, NACTS, and ACTSC) tended to be similar for both age groups and tended to be similar to those relationships reported in Table IV-3. They were inclined to support the rationale of the model and the study hypotheses both in magnitude and direction.

Estimation, self-esteem, and social desirability.

While the coefficient between estimation and self-esteem was not significant in the case of the older group, it approached a level of significance ($p < .08$). In as much as it improved in size as compared to the significant coefficient in the younger group, a lack of significance is directly attributable to the smaller sample size of the older group ($n=53$).

The effect of social desirability on estimation, self-esteem relationships was again tested as it had been

Table IV-5
Correlation Matrix of Study Variables
Within Age Groups¹

Variable	EST	ATTR	SEM	SD	CHILD	NACTS	ACTSC
SE	.162 ^a .198	-.090 -.048	-.424 ^c -.239 ^a	.395 ^c .438 ^c	-.086 -.057	.071 .006	.088 .111
EST	---	.712 ^c .520 ^c	-.048 ^b -.337 ^b	-.076 ^b .331 ^b	-.052 -.008	.379 ^c .252 ^a	.410 ^c .326 ^b
ATTR	---	---	-.041 -.405 ^c	-.012 .094	.035 .045	.352 ^c .373 ^b	.456 ^c .472 ^c
SEM	---	---	---	-.427 ^c -.248 ^a	.001 .189	.003 -.238 ^a	-.210 ^a -.211
SD	---	---	---	---	.013 -.210	.249 ^b .129	.147 .206
CHILD	---	---	---	---	---	-.191 ^a -.313 ^b	-.097 -.140
NACTSC	---	---	---	---	---	---	.581 ^c .468 ^c

1- First row within each variable represents women under the age of 35. Second row represents women 35 years of age and older.

a- $p < .05$
b- $p < .01$
c- $p < .001$

tested for the total sample. Partial correlation procedures controlling for the effect of social desirability increased the estimation, self-esteem coefficient from

+ .162 to + .209 ($p < .05$) in the younger age group. The same procedures in the older age group reduced the coefficient from .198 to .062. As a result, controlling for social desirability in older women reduces the estimation, self-esteem relationship.

Interesting conclusions may evolve from these sets of relationships. While social desirability is positively related to self-esteem in the younger age group, it yields a negative through non-significant relationship toward estimation. While the younger women believe in the social desirability of global self-esteem, they were inclined to value self-perceptions of athletic and physical capability (EST) in a slightly negative fashion. When the effect of this devaluation is removed, a significant relationship between estimation and self-esteem is maintained.

Hypothesis 2 was supported for both age groups (Table IV-5). Estimation scores were significantly related to attraction scores in both groups. Additionally, estimation and self-esteem relationships in both groups were significantly larger than attraction, self-esteem associations ($t = 3.54$, $p < .001$ for the younger group; $t = 2.62$, $p < .01$ for women 35 years of age and older).

Attraction, estimation and physical activity. Hypothesis 4 which predicted positive relationships between attraction and the physical activity scores of NACTS and ACTSC was substantiated for both variables in both age

groups (Table IV-5). A summary of study results is presented in Table IV-6. It is evident that Hypothesis 5 predicting an increased association when both attraction and estimation are employed to predict physical activity as opposed to attraction alone, was not supported at any point in the study. Attraction tended to be more closely associated with physical activity than was estimation (Hypothesis 6) in the case of the total sample, although the hypothesis was not supported for either of the two age groups. In the younger age group, the estimation, NACTS coefficient was in fact larger than the attraction, NACTS coefficient (Table IV-5), so a t-test was not conducted. Testing for differences in estimation, and attraction associations with ACTSC in the younger group produced a t value of 0.69 which was not found to be significant. In the group 35 years of age and older, the direction of Hypothesis 6 was supported for both NACTS and ACTSC. However, t-ratios were non-significant, 0.94 in the case of NACTS and 1.20 in the case of ACTSC.

Self-Motivation

Although it was not the principal purpose of this research to study self-motivation, the surprising relationships found between this construct and model variables must be noted. Table IV-1 exhibits small values of mean self-motivation scores.

Table IV-6
Summary of Study Results

	AGE	<35	35+	Total
Hypothesis 1		+	Ø	+
Hypothesis 2		+	+	+
Hypothesis 3		+	+	+
Hypothesis 4		+	+	+
Hypothesis 5		Ø	Ø	Ø
Hypothesis 6		Ø	Ø	+

+ values indicate model hypothesis supported

Ø values indicate lack of support for model hypothesis

Apparently the adult women in our study did not endorse the self-motivation construct to a major degree.

Self-motivation scores were shown to be inversely related to almost all model variables across the entire sample and also, within both age groups (Table IV-7).

Self-motivation was shown to be negatively but significantly related to self-esteem in both age groups. Differences in levels of significance were observed between

women in Group 1, ($r = -.424$, $p < .001$) compared with women in Group 2, ($r = -.239$, $p < .05$). Since the women in our study exhibited high levels of self-esteem, they may be reinforced through different external aspects of their lives and relate to these more so than to the internal reinforcement of self-motivation.

The estimation, self-motivation relationships were also found to differ with age groups. With the entire population, estimation was not found to be related to self-motivation. This relationship was shown to be negative but nonsignificant in the younger women ($r = -.048$). Women 35 years and older exhibited a negative though significant relationship between these two variables ($r = -.337$, $p < .01$).

The attraction, self-motivation relationship showed similar direction and significance between age groups as the estimation, self-motivation did. This may be due to the high relationship found between estimation and attraction. Group 1 values were negative though nonsignificant ($r = -.041$) and Group 2 values showed a negative but significant relationship ($r = -.405$, $p < .001$) between attraction and self-motivation.

The relationship between self-motivation and social desirability was found to be negative and significant in both age groups. The younger women obtained an r value of

Table IV-7
Correlation Matrix of Self-Motivation with Study
Variables¹

Variable	SE	EST	ATTR	NACTS	ACTS	SD
SEM	-.424 ^c	-.048	-.041	.003	-.210 ^a	-.427 ^c
	-.239 ^a	-.337 ^b	-.405 ^c	-.238 ^a	-.211	-.248 ^a
	-.272 ^c	-.025	-.036	-.086	-.214 ^b	-.214 ^a

1- First row within each variable represents women under the age of 35. Second row represents women 35 years of age and older. Third row represents total population.

a- $p < .05$

b- $p < .01$

c- $p < .001$

-.427 ($p < .001$). Older women obtained an r value of -.248 ($p < .05$). Apparently, women in the present study did not evaluate a tough-minded, stoical, persisting personality as a socially desirable characteristic.

Dishman and Ickes (1981) reported correlations which contrasted to the present study. In a study of 64 female undergraduates, correlations of .63 ($p < .05$) between the Self-motivation Inventory and the Thomas-Zander Ego Strength Scale were found. Since the ego is so closely

related to self-esteem, we would assume to find similar correlations. A significant relationship between social desirability and self-motivation was also reported ($r = .53$, $p < .01$). Additionally, Dishman and Ickes (1981) found a significant relationship between attraction and self-motivation ($r = .36$, $p < .05$) in 66 adult males. However, all of these males were reported as currently involved in an exercise program.

A possible explanation for the differences noted in the present study and Dishman and Ickes research may be obtained from the difference in study samples. Small study samples which can produce unstable coefficients were reported by Dishman and Ickes ($n=64$, $n=66$) while the present study utilized a substantial sample ($n=157$). The present research studied adult females while Dishman and Ickes studied undergraduate females and males.

Additional differences noted between the two inventories may have caused the inverse relationships found. The Self-Motivation Inventory (SMI) is designed to assess a general tendency to persevere at a task once initiated, and it may not be tapping initial interest and participation in physical activity. The SMI has been found to predict adherence while the Psychological Model and PEAS have been found to predict initial involvement and recruitment. The PEAS are sport-orientated while the SMI may not be tapping

the sport aspect of adult female self-motivation. Additionally, the physical activity index measures involvement in a variety of activities, not adherence over a period of time. From the present study it is possible to deduce that the characteristic which causes adult females to be interested in and to participate in an activity is perhaps, inversely related to the characteristic which causes adherence. Future research specifically designed to study these relationships with adult females is recommended. The present study did not involve physical characteristics such as body weight, percent fat, or metabolic capacity which have been found to be related to exercise adherence. Subsequent studies may consider adding these variables to their research study.

Discussion

The rationale for the estimation scale within the model posits that self-perceptions of physical ability and sports skills represent a sub-category of self-esteem. In the present study, self-perceptions of physical ability (EST) were significantly related to global self-esteem within the total sample.

Looking at this relationship within age groups showed slightly different results. Women aged 22-34 significantly endorsed the social desirability of self-esteem ($p < .001$)

though they viewed self-perceptions of physical abilities in a slightly negative fashion. The estimation, self-esteem relationship was not significant in the women aged 35 years and older though it approached significance ($p < .08$). This group significantly endorsed the social desirability of both of these two variables, however ($p < .001$). Social desirability appeared to be a stronger influence in older women. When controlling for social desirability, the significant self-esteem relationship was extinguished in older women. In younger women this relationship was increased.

As stated previously, (The Perrier Study, 1979; The Miller Lite Report, 1983) having a strong, fit body appears to be increasingly valued among females. Considering the high self-esteem values found within our population, perhaps the estimation scale is not tapping the specific physical abilities and skills women value as a sub-category of self-esteem. Subjects may have felt that proficiency at sports skills is not as important to them as ability in fitness-related activities. Currently popular activities such as aerobics, nautilus, jogging/walking, stress physical fitness participation more so than sport skills.

The estimation, self-esteem relationship coefficients were found to be significantly larger than the attraction, self-esteem coefficients. Distinctions were noted between

age groups in levels of significance. Though women aged 35 years and older did not endorse the fact that self-perceptions of physical ability were related to levels of global self-esteem, they did report that this variable influenced self-esteem levels more so than did an interest in physical activity (ATTR). This supported the direction of the model and paralleled results of Fox, et al., (1985) who reported estimation as the first predictor for female self-esteem.

Conversely, it is quite possible that subjects' relatively high self-esteem values stemmed preponderantly from the perception of abilities other than those concerned with fitness. While Sonstroem's model was supported, estimation and self-esteem relationships in the present study were considerably smaller than those obtained previously with younger populations.

In terms of model prediction and as supported by Sonstroem (1978) self-perceptions of physical ability (EST) have been found to be significantly related to interest in vigorous physical activity. In the model, estimation rather than self-esteem influences ones attraction to or interest in physical activity. This relationship was significantly supported in both age groups and when tested for the total sample.

In the present study, attraction was found to be significantly related to self-reports of physical activity in both the number of activities reported and in total activity involvement. These relationships supported the model and the results reported by Sonstroem (1978) with adolescent boys. In contrast, Fox, et al., (1985) reported that attraction was not selected as a significant predictor ($p < .05$) by itself of female activity, and did not contribute to the model as it does for males. In the present research, controlling for the effect of social desirability further increased relationships of attraction with the two indexes of physical activity, NACTS and ACTSC.

Within the model, attraction influenced by estimation is perceived as the major psychological determinant of physical activity (Sonstroem and Kampper, 1980). Estimation was not found to significantly help the attraction, physical activity relationship at any point in the present study. Attraction tended to be more closely related to physical activity participation than estimation within the total sample, thus supporting the model. The estimation, NACTSC relationship was found to be larger than the attraction, NACTSC relationship in the younger woman. The direction of the model was supported in women aged 35 years and older for both the number of activities and activities scored.

Practical Implications

Within the present research, the Psychological Model was essentially supported with women aged 22-65. This provides a good basis in which to study further the physical activity of female populations.

Self-perceptions of physical ability were found to be significantly related to self-esteem in younger women. This implies that exercise instructors should utilize positive feedback and encouragement as behavioral techniques during exercise sessions. This could increase self-perceptions of abilities and could therefore, lead to increased levels of self-esteem with young adult females.

Older women in the present study have estimation levels slightly higher than those of younger women. This may be due though, to a compensatory mechanism. Social desirability appears to be a factor in the estimation responses of older women. They believe it is stylish to possess good physical abilities. These perceptions appeared to be a mediating factor between older women's self-esteem and their interest in physical activity but not to the extent found in younger women and adolescent boys. Though the older women found self-perceptions to be socially desirable, they appeared to participate due to interest in activities more so than possession of good physical abilities. Therefore, specific differences in

activity interests between age groups should be assessed. This will assist in promoting activities which specific age groups will be attracted to and could increase physical activity participation within these populations.

Recommendations for Future Research

Although the present study tested women aged 22 to 65 years of age, the majority of women were found to be in the age range of 22 to 34 years of age ($n=104$). The study analyses did compare results between these women and the women age 35 years and older ($n=53$) and did note several differences. A larger population of women aged 35 and older is recommended for further research to determine whether the present results are replicable. This would provide a more accurate picture of attitudes and interests as women age.

A new revised version of the PEAS may be required to better predict interest in physical activity for adult women. This would include factors relating to specific fitness activities. This scale is presently being developed and will utilize data from the present study.

The present study relied on self-reported measures of activity levels. Several subjects exhibited slight difficulties in reporting the specificity in days, weeks, and duration of sessions asked for. This was particularly

noted in seasonal activities such as ice skating, cross country skiing, and swimming. Future studies should consider this limitation and attempt to develop a more valid or direct method of activity measurement.

Conclusions

Within experimental limitations, the present study supported the following hypotheses in relation to the Psychological Model for Physical Activity Participation as applied to women aged 22-65.

1. Self-perceptions of physical ability are significantly related to global self-esteem in middle aged women. This relationship was found to be independent of social desirability for women under the age of 35.
2. Self-perceptions of physical ability are significantly related to interest in physical activities in women aged 22-65.
3. The relationship between estimation and self-esteem is significantly greater than the relationship between attraction and self-esteem in women aged 22-65.
4. Attraction is significantly related to self-reports of physical activity participation in women aged 22-65.
5. Estimation does not significantly assist attraction in better predicting physical activity

participation than attraction alone in adult women aged 22-65.

6. Attraction is more closely associated with reports of physical activity than is estimation in the total sample.

7. Social desirability is not significantly related to either estimation or attraction scores in the total sample. However, it was found to influence older women's estimation responses.

8. Self-motivation as measured by the Self-Motivation Inventory, was found to show negative relationships with almost all model variables. Significant, though negative relationships were found with self-esteem, activities scored, and social desirability.

9. Not all of the implications of the Psychological Model for Physical Activity Participation were supported by the present study with differences being noted within age groups. To test the applicability of the present model to all adult populations requires further study of adult women and males. Separation of age groups within studies is highly recommended.

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APPENDIX A
INVENTORY COVER LETTER
for
MEETING STREET SCHOOL SUBJECTS

Dear Co-worker:

I am in the process of completing my Master of Science degree at the University of Rhode Island. My Master's thesis deals with the attitudes of adult women toward exercise. In collecting data for this project, I am asking for assistance from you and all my co-workers. your agreeing to participate would be deeply appreciated.

Involvement requires approximately 50 minutes of time during which you carefully answer each question in the enclosed inventory. There are no right or wrong answers. Please be sure to answer each item as it applies to you. Inventories will be coded and will not be identifiable by name.

As soon as you are able to, please read through the inventory, carefully reading each set of instructions as you come to them. Remember to use the enclosed answer sheet as the directions request.

School staff are asked to return their completed inventories to Liz Reiss, Physical Education teacher. Staff working at Dimensions, Forbes Street, or County Road group homes are asked to return their completed inventories to the supervisor of each respective work area so that they can then be collected by myself.

Your involvement and interest in my project is deeply appreciated and will greatly assist me in my studies.

Sincere thanks,

Liz Reiss
Physical Education Teacher
Meeting Street School
438-9500 (ext. 28)

APPENDIX B
INVENTORY COVER LETTER
for
INSTITUTE OF MENTAL HEALTH SUBJECTS

Dear Fellow Professional:

I am in the process of completing my Master of Science degree at the University of Rhode Island. My Master's Thesis deals with the attitudes of adult women toward exercise. In getting a true picture of what adult women think about exercise, it is important that I get reports from as many people as possible, including those who may or may not exercise at all. Your agreeing to participate would be greatly appreciated.

Involvement requires approximately 50 minutes of time during which you carefully answer each question in the enclosed inventory. There are no right or wrong answers. Please be sure to answer each item as it applies to you. Inventories will be coded and will not be identifiable by name.

As soon as you are able to, please read and sign the informed consent on page one of the inventory. Then proceed through the inventory, carefully reading each set of instructions as you come to it. Remember to use the enclosed answer sheet as the directions request.

Completed inventories should be returned to David Reiss' mailbox located on the first floor of the Dortha Dix building. Your involvement and interest in my project is deeply appreciated and will greatly assist me in my studies.

Sincere thanks,

Liz Reiss
Physical Education Teacher
Meeting Street School
438-9500 (ext. 28)

APPENDIX C
INVENTORY COVER LETTER
for
TRUDEAU CENTER SUBJECTS

Dear Fellow Professional:

I am in the process of completing my Master of Science degree at the University of Rhode Island. My Master's Thesis deals with the attitudes of adult women toward exercise. In getting a true picture of what adult women think about exercise, it is important that I get reports from as many people as possible, including those who may or may not exercise at all. Your agreeing to participate would be greatly appreciated.

Involvement requires approximately 50 minutes of time during which you carefully answer each question in the enclosed inventory. There are no right or wrong answers. Please be sure to answer each item as it applies to you. Inventories will be coded and will not be identifiable by name.

As soon as you are able to, please read and sign the informed consent on page one of the inventory. Then proceed through the inventory, carefully reading each set of instructions as you come to it. Remember to use the enclosed answer sheet as the directions request.

Completed inventories should be returned to the inventory return box located in Ginny Swanson's room, Preschool 1. Your involvement and interest in my project is deeply appreciated and will greatly assist me in my studies.

Sincere thanks,

Liz Reiss
Physical Education Teacher
Meeting Street School
438-9500 (ext. 28)

APPENDIX D
INVENTORY COVER LETTER
for
LAD CENTER SUBJECTS

Dear Fellow Professional:

I am in the process of completing my Master of Science degree at the University of Rhode Island. My Master's Thesis deals with the attitudes of adult women toward exercise. In getting a true picture of what adult women think about exercise, it is important that I get reports from as many people as possible, including those who may or may not exercise at all. Your agreeing to participate would be greatly appreciated.

Involvement requires approximately 50 minutes of time during which you carefully answer each question in the enclosed inventory. There are no right or wrong answers. Please be sure to answer each item as it applies to you. Inventories will be coded and will not be identifiable by name.

As soon as you are able to, please read and sign the informed consent on page one of the inventory. Then proceed through the inventory, carefully reading each set of instructions as you come to it. Remember to use the enclosed answer sheet as the directions request.

Completed inventories should be returned to Pam Thompson's mailbox located in the E and R building. Your involvement and interest in my project is deeply appreciated and will greatly assist me in my studies.

Sincere thanks,

Liz Reiss
Physical Education Teacher
Meeting Street School
438-9500 (ext. 28)

APPENDIX E
INFORMED CONSENT

Informed Consent

You are being requested to answer some questions on the following pages. The purpose of these questions is to develop ideas about what people think about physical activity, what they think about themselves, and what they think about themselves in relation to physical activity. There are no right or wrong answers to these questions! To obtain reliable results, we ask that you please respond honestly as to how the questions pertain to you. This information can be beneficial to society by its documentation of how different people feel about exercise. It will also be helpful in planning long-term or life-time exercise behaviors and programs in the future. A risk involved in answering the questionnaire might be feelings of discomfort arising from the length of time involved. We ask you, however, to take your time and to think of each questionnaire item as it applies to you.

Data will remain strictly confidential. All data will be coded and will not be identifiable by name. You may receive an interpretation of your inventory responses from the researcher if you request it. You do not have to

complete these inventories and may discontinue participation at any time. If you have any questions concerning the study, please feel free to contact either myself, Elizabeth Reiss, or my major professor, Dr. Robert J. Sonstroem.

Elizabeth Reiss
28 Pepper Bush Trail
Saunderstown, RI
295-0975

Dr. Robert J. Sonstroem
Physical Education Dept.
Tootell Building
Kingston, RI 02881
792-2976

I hereby give my permission to Elizabeth Reiss to utilize information obtained through the following questionnaire. Participation is voluntary and results will not affect my present or future employment.

Date: _____ Signature: _____

APPENDIX F
SELF-ESTEEM SCALE

The statements below reflect certain attitudes and interests of persons. There are no right or wrong answers. Read each statement and decide the degree to which it applies to you. Indicate your answer by blackening the appropriate space on the separate answer sheet. In some cases you may have difficulty deciding which response is best, but please make some decision and answer every item. Please do not attempt to be consistent in your answers during the test, but respond to each item individually. Even if an item asks about things you have not experienced, answer it as best you can on the basis of what you have heard, seen or read. Express your agreement or disagreement by filling in the appropriate circle on your answer sheet according to the following:

Strongly					Strongly
Agree	Agree	Undecided	Disagree	Disagree	
A	B	C	D	E	

You should rarely need to use C (Undecided).

The significance of this research depends upon the degree to which you express your own opinion.

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

APPENDIX G
PHYSICAL ESTIMATION AND ATTRACTION SCALES
and
SOCIAL DESIRABILITY SCALE

11. I always try to be considerate of the feelings of my friends.
12. I prefer exercising to reading.
13. Nothing that happens to me makes much difference one way or other.
14. I would rather play softball than go for a ride in a car.
15. Most of my friends work harder than I do.
16. My body is strong and muscular compared to other women my age.
17. I often take responsibility for looking out for newcomers in a group.
18. Most sports require too much energy to be worthwhile.
19. I have a number of health problems.
20. I am in better physical condition than most women my age.
21. Sewing and needlecraft interest me a great deal.
22. I really don't have the energy to exercise four times a week.
23. I am quite limber and agile compared to others my age.
24. I often stick up for my own point of view even when no one agrees with me.
25. In the long run humanity will owe a lot more to the teacher than to the salesperson.
26. I prefer team sports to individual sports because of the experience of playing with different people.
27. I like to be in sports that don't require a great amount of running.
28. I know that my health improves when I exercise.
29. I just don't have the coordination necessary to look like a graceful skier.
30. My body is capable of hard exercise.

31. I often have the feeling that I am doing something evil.
32. I would enjoy participating in activities such as cross-country skiing and channel swimming.
33. Music, art, or intellectual pursuits are more refreshing to me than physical activity.
34. I would rather visit an amusement park than watch a tennis match.
35. I like the social opportunities afforded by physical activity programs.
36. I am better coordinated than most people I know.
37. I would enjoy difficult mountain climbing.
38. Vigorous exercise leaves my body tired and sore.
39. I don't think that I'd enjoy participating in a judo program.
40. I enjoy the feeling of physical well-being one gets after a day's tramp in the woods.
41. I would rather watch a good movie than a field hockey match.
42. I would like to belong to some type of exercise group.
43. I am a good deal stronger than most of my friends.
44. I would rather play cards than softball.
45. Compared to other people I am somewhat clumsy.
46. I enjoy hard physical work.
47. I like to engage in recreational exercise rather than in organized, competitive activities.
48. I am stronger than a good many of my friends.
49. Most people I know think I have very good physical skills.
50. My friends seem to be more physically active than I am.

51. I would rather walk than run through an open meadow or field.
52. Sports provide me with a welcome escape from the pressures of present-day life.
53. I like the rough and tumble athletic competition.
54. I prefer to watch an exciting basketball game to playing it myself.
55. I rather enjoy the physical risk involved when I play sports.
56. I would enjoy participating in a vigorous weightlifting program.
57. Long distance running would seem to be an enjoyable activity.
58. I doubt that I could even get into good physical condition.
59. My legs have as much spring as those of a champion high jumper.
60. I don't enjoy doing things that get me sweaty and dirty.
61. I prefer not to participate in physical activities that involve risk of injury.
62. I would enjoy belonging to a whitewater canoe club.
63. When tensions are high, I prefer to lie down and rest rather than to absorb myself in physical activity.
64. If I wanted to, I could become an excellent tennis player.
65. I enjoy performing gymnastic stunts because of the coordinated movements involved.
66. it makes no difference to me how strong or fit I am.
67. I would like to meet more people by engaging in various types of physical activities.
68. After a day at work, I prefer to take it easy instead of participating in vigorous sport activities.

69. It is difficult for me to catch a thrown ball.
70. With a fair amount of practice I could maintain a high bowling average.
71. I enjoy the discipline of long and strenuous physical training.
72. I can run faster than most of my friends.
73. Watching an athletic contest provides a welcome relief from the cares of life.
74. With practice I could become a very good golfer.
75. I have more important things to do than to spend time on developing and maintaining physical fitness.
76. I would rather run in a track meet than play badminton.
77. I could do better at long distance hiking than the average women my age.
78. I exhibit a fair amount of leadership in a sports situation.
79. I lack confidence in performing physical activities.
80. Even with practice I doubt that I could learn to do a handstand well.
81. Playing tennis appeals to me more than does golfing.
82. I can run for longer distances than most women my age.
83. I'm a natural athlete.
84. The thought of getting sweaty and dirty often keeps me from exercising.
85. I love to run.
86. Getting into good physical shape takes too much effort to be really worth it.
87. I have a strong throwing arm for baseball or softball.
88. Karate competition must be fun.

89. It would be very difficult for me to learn to do a back dive.
90. I would prefer to listen to a concert than to watch a gymnastics match.
91. I am well-equipped to excel at physical activities.
92. Being strong and highly fit is not really that important to me.
93. Absorbing myself in a good sport activity provides an escape from the routine of a normal day.
94. Even with practice I doubt that I could learn to do a cartwheel well.
95. Exercise relieves me of emotional strain.
96. I would play sports more often if I didn't get so tired.
97. Probably I could get into good physical condition faster than most women my age.
98. I often doubt my physical abilities.
99. I would rather play touch football than go to an amusement park.
100. Participation in physical activity improves me as a social person.
101. I'm not very good at most physical skills.
102. I enjoy the exhilarated feeling one gets after doing calisthenics.
103. I'm not able to meet many worthwhile people through participation in sports.
104. Poor timing handicaps me in certain physical activities.
105. I am a natural leader in sport activities.
106. I would rather play active sports like soccer and basketball than participate in activities like badminton and softball.

107. I believe it is important that a person belongs to a group that participates in sport activities together.
108. I would rather watch either a baseball or basketball game than visit a museum or art gallery.
109. Target archery appeals to me more as an activity than does tennis.
110. I believe one of the greatest values of physical activity is the thrill of competition.
111. I am seldom ill.
112. My body adapts well to exercise.
113. I almost always feel sleepy and lazy.
114. If I wanted to, I could get into very excellent physical condition.
115. My memory is as good as other people's.
116. Very often, I don't feel like exercising.
117. I am not willing to give up my own privacy or pleasure in order to help other people.
118. I enjoy hard physical training.
119. Most of my teachers were helpful.
120. It takes me two days to recuperate from a hard physical workout.
121. We ought to let the rest of the world solve their own problems and just look out after themselves.
122. It's hard for me to find time in a day to get some exercise.
123. My life is full of interesting activities.
124. I often question whether life is worthwhile.
125. I am able to make correct decisions on difficult questions.
126. I believe people tell lies anytime it is to their advantage.

127. Rarely, if ever, has the sight of food made me ill.

128. I find it very difficult to do what is expected of me.

129. I am always prepared to do what is expected of me.

130. Many things make me feel uneasy.

APPENDIX H

SELF-MOTIVATION INVENTORY

Read each of the statements and answer it with the letter of the alternative which best describes how characteristic the statement is when applied to you. The alternatives are:

- (a) extremely uncharacteristic of me
- (b) somewhat characteristic of me
- (c) neither characteristic nor uncharacteristic of me
- (d) somewhat characteristic of me
- (e) extremely characteristic of me

Please be sure to answer every item and try to be as honest and accurate as possible in your responses. Place your answer on the separate sheet beginning with item 131.

- 131. I'm not very good at committing myself to do things.
- 132. Whenever I get bored with projects I start, I drop them to do something else.
- 133. I can persevere at stressful tasks, even when they are physically tiring or painful.
- 134. If something gets to be too much of an effort to do, I'm likely to just forget it.
- 135. I'm really concerned about developing and maintaining self-discipline.
- 136. I'm good at keeping promises, especially the ones I make to myself.
- 137. I don't work any harder than I have to.
- 138. I seldom work to my full capacity.
- 139. I'm just not the goal-setting type.
- 140. When I take on a difficult job, I make a point of sticking with it until it's completed.
- 141. I'm willing to work for things I want as long as it's not a big hassle for me.
- 142. I have a lot of self-motivation.
- 143. I'm good at making decisions and standing by them.

- 144. I generally take the path of least resistance.
- 145. I get discouraged easily.
- 146. If I tell somebody I'll do something, you can depend on it being done.
- 147. I don't like to overextend myself.
- 148. I'm basically lazy.
- 149. I have a very hard-driving, aggressive personality.
- 150. I work harder than most of my friends.
- 151. I can persist in spite of pain or discomfort.
- 152. I like to set goals and work toward them.
- 153. Sometimes I push myself harder than I should.
- 154. I tend to be overly apathetic.
- 155. I seldom, if ever, let myself down.
- 156. I'm not very reliable.
- 157. I like to take on jobs that challenge me.
- 158. I change my mind about things quite easily.
- 159. I have a lot of willpower.
- 160. I'm not likely to put myself out if I don't have to.
- 161. Things just don't matter much to me.
- 162. I avoid stressful situations.
- 163. I often work to the point of exhaustion.
- 164. I don't impose much structure on my activities.
- 165. I never force myself to do things I don't feel like doing.
- 166. It takes a lot to get me going.
- 167. Whenever I reach a goal, I set a higher one.
- 168. I can persist in spite of failure.

169. I have a strong desire to achieve.

170. I don't have much self-discipline.

APPENDIX I
PHYSICAL ACTIVITY INDEX

ACTIVITY INDEX

108

Below you will find a list of recreational activities people enjoy. Please circle the activities that you normally participate in during the year. In the second column indicate the number of days per week that you generally participate in the circled activity. In the third column indicate how long (duration) you are active each time you participate. In the fourth column please write in the number of weeks per year that you generally participate in the activity.

ACTIVITY	FREQUENCY							DURATION	WEEKS PER YEAR
Backpacking	.1	2	3	4	5	6	7	min.	
Raquetball/Paddleball	.1	2	3	4	5	6	7	min.	
Badminton	.1	2	3	4	5	6	7	min.	
Baseball/Softball	.1	2	3	4	5	6	7	min.	
Basketball	.1	2	3	4	5	6	7	min.	
Bicycling	.1	2	3	4	5	6	7	min.	
Canoeing	.1	2	3	4	5	6	7	min.	
Dance, Aerobic	.1	2	3	4	5	6	7	min.	
Dance, Ballet/Modern	.1	2	3	4	5	6	7	min.	
Dance, Disco	.1	2	3	4	5	6	7	min.	
Fitness Calisthenics	.1	2	3	4	5	6	7	min.	
Football	.1	2	3	4	5	6	7	min.	

ACTIVITY INDEX

ACTIVITY	FREQUENCY							DURATION	WEEKS PER YEAR
Golf (walking)	.1	2	3	4	5	6	7	min.	
Gymnastics	.1	2	3	4	5	6	7	min.	
Handball	.1	2	3	4	5	6	7	min.	
Hiking	.1	2	3	4	5	6	7	min.	
Jogging/Running.	.1	2	3	4	5	6	7	min.	
Karate/Judo.	.1	2	3	4	5	6	7	min.	
Raquetball/Paddleball.	.1	2	3	4	5	6	7	min.	
Rope Skipping.	.1	2	3	4	5	6	7	min.	
Rowing, Crew	.1	2	3	4	5	6	7	min.	
Skating, Ice	.1	2	3	4	5	6	7	min.	
Skating, Roller.	.1	2	3	4	5	6	7	min.	
Skiing, Cross Country.	.1	2	3	4	5	6	7	min.	
Skiing, Downhill/Water	.1	2	3	4	5	6	7	min.	
Soccer	.1	2	3	4	5	6	7	min.	
Swimming	.1	2	3	4	5	6	7	min.	
Tennis	.1	2	3	4	5	6	7	min.	

ACTIVITY INDEX

<u>ACTIVITY</u>	<u>FREQUENCY</u>							<u>DURATION</u>	<u>WEEKS PER YEAR</u>
Volleyball	.1	2	3	4	5	6	7	min.	
Weight Training.	.1	2	3	4	5	6	7	min.	
Yoga	.1	2	3	4	5	6	7	min.	
other _____		.1	2	3	4	5	6	min.	
_____		.1	2	3	4	5	6	min.	
_____		.1	2	3	4	5	6	min.	