THE EFFECT OF A PHYSICAL ACTIVITY INTERVENTION PACKAGE ON THE SELF-ESTEEM OF PRE-ADOLESCENT AND ADOLESCENT GIRLS

BY

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THE EFFECT OF A PHYSICAL ACTIVITY INTERVENTION PACKAGE ON THE SELF-ESTEEM OF PRE-ADOLESCENT AND ADOLESCENT GIRLS

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A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

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Acknowlegements

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Abstract

The purpose of this study was to examine the effects of a qualitative physical activity intervention package on the self-esteem of low self-esteem pre-adolescent and adolescent girls. Subjects were 202 female students enrolled in an independent school. The girls ranged in age from 9 to 16 years. The study consisted of an experimental design involving three levels of one independent variable (the intervention package) and three dependent variables (total self-concept, physical abilities self-concept and physical appearance self-concept). The self-esteem was measured using the Self Description Questionnaire I and II (Marsh, 1988). A two-way analysis of variance was used for the statistical analysis. The qualitative analysis was based on a social validity questionnaire completed by the subjects and their teachers. Results indicated that low-self esteem individuals benefited from a physical activity intervention. However, statistically significant results were limited to the younger age-groups.

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CHAPTER 1

Introduction

Sport and exercise literature has demonstrated that physical activity has the potential to psychologically and physically benefit the individual (Barnett, Smoll, & Smith, 1992; Leith & Taylor 1990; Leith & Taylor, 1991; Trulson, 1986; Snyder & Kivlin, 1975; Sonstroem, 1984). Specifically it has been postulated that the perception of physical prowess and increases in the levels of fitness are related to the positive development of self-esteem (Jackson & Marsh, 1986; Petruzello & Corbin, 1988; Sonstroem, 1984; Trujillo, 1983; Weiss, McAuley, Ebbeck, & Wiese, 1990). Investigations involving male and female athletes of all ages and in a variety of sports indicate that self-esteem influences feelings of physical self-efficacy, self-confidence, anxiety levels and perceptions of control (Ryckman, Robbins, Thorton, & Cantrell, 1982). These self-concepts, in turn, affect the degree of participation and attrition in sporting activities (Barnett et al., 1992).

The multidimensionality of self-esteem has been well documented (Harter, 1982;. Marsh, Barnes, Cairns & Tidman, 1984; Marsh, Barnes & Hocevar, 1985; Marsh, Parker, & Barnes, 1985). Further, Marsh (1987)

demonstrated the organization of the components of self-esteem in a hierarchical structure with global self-esteem at the apex. The farther the various facets of self-esteem are from the apex, the less stable and the more situation specific they become. Therefore, interventions aimed at affecting global self-esteem must be directed at the lower-level facets of self-concept (Battle, 1987).

Self-esteem is influenced by social interaction and the individual's experiences with the environment (Fox, 1992). Feedback from significant others and society in general will positively or negatively influence levels of self-esteem. The magnitude of the effect is dependent on the number and consistency of the appraisals resulting from the feedback, the credibility of the person providing the feedback (Marsh, Barnes, Cairns, & Tidman 1984; Rosenberg, 1979; Sonstroem, 1984) and the salience of the feedback to the individual and the situation (Anshell, Muller, & Owens, 1986; Harter, 1978). Barnett et al. (1992) and Ommundsen & Vaglum (1991) demonstrated that children are particularly affected by the feedback of others. Furthermore, those with levels of low self-esteem are most responsive to positive feedback and interventions (Sonstroem, 1984).

Although it is generally accepted that there is a relationship between physical activity and self-esteem, the theoretical basis for these beliefs is found in disciplines other than sport psychology. The theoretical models and measurement scales developed by Coopersmith (1967), Rosenberg (1965), Harter (1982), Marsh (1985), for example, are based in the broader fields of psychology and education. Consequently the primary focus of these theories is not on self-esteem as it specifically relates to sport and fitness. Harter (1982), in the analysis of her Perceived Competence Scale, cautions that its applicability to areas other than education needs to be tested. With the exception of the physical self-perception model proposed by Fox and Corbin (1989), little has been done toward the development of a sound theoretical framework within which the self-esteem and sport dichotomy may be studied (Sonstroem, 1984).

Just as Piaget identified developmental stages in the cognitive processes in children, the multidimensional models of self-esteem indicate that age-dependent changes in self-esteem exist. What has not been demonstrated is how environmental influences in general, and sport participation in particular, affect the development of self-esteem at the various stages of the child's

development (Fox, 1988). Weiss and Bredemeier (1983) suggest that a developmental approach is required to study maturational changes in children's psychological behaviours in order to bring about an understanding of how these changes are affected by the sporting experience. It is important that these studies be devised within the age-appropriate theoretical framework. Studies designed to investigate the behaviour of adults are not necessarily appropriate for younger age groups.

Traditionally, young girls and women have not been encouraged to pursue a physically active lifestyle. Stereotypical sex-role attitudes have socialized young girls to excel in the academics and social pursuits while young boys are encouraged to achieve in physical activities. If young children do, in fact, value physical prowess more than intellectual ability as Harter (1978) and Weiss & Bredemeier (1983) suggest, one would expect young girls to exhibit lower levels of physical self-concept than boys because society tends to view young boys as "big and strong", and girls as "sweet and dainty". In support, Jackson & Marsh (1986) found that women exhibited lower levels of concepts in areas normally related to socially defined male characteristics. However, female athletes generally scored higher than non-female athletes across all areas

of self-concept investigated, suggesting that involvement in sport may have a positive effect on the self-concept. Therefore, providing young girls with opportunities to develop their physical skills and making it socially desirable for girls to succeed in sport, should enhance their self-concept.

The physical self was not found to be a strong independent construct (Marsh,1987), but was closely related to the social domain. In deciding on the type of intervention to be used, the salience of the domain and the impact that social interactions have on the self-concept of the individual must be taken into account. Marsh (1984) and his colleagues determined that children's ability to differentiate the components of the self increases with age. This differentiation results in some components becoming more salient than others. Socially, the strength of parental relationships tend to wane and peer relationships and particularly opposite-sex relations strengthen. For young children (pre-adolescents) then, activities that are skill-related (i.e those that include aspects such as co-ordination, speed and agility) will be most important for the enhancement of the physical self-concept (Fox 1988, Gruber 1986). For adolescents, the perceived attractiveness or physical appearance construct becomes important and interacts

strongly with the social domain (Harter, 1982; Marsh, 1987). The concept of fitness becomes closely related to physical appearance as girls approach late adolescence. Consequently, interventions aimed at this age group should include aspects of endurance, such as aerobic dance and jogging, as well as calisthenics or strength training and dance (Fox & Corbin, 1989). An educational component should be combined with the physical activity to reinforce the salience and social aspects of the physical self-concept (Fox, 1988).

Definition of Self-esteem Constructs

A review of the literature indicates that there is no generally accepted definition of self-esteem. Similarities between the concepts of self-concept, self-esteem, self-confidence, self-acceptance and the related terms of self-worth, self-evaluation and self-regard have resulted in the tendency to use these terms interchangeably (Sonstroem, 1984). However, recent usage of the relevant terms supports the definitions which follow:

Self-esteem

Self-esteem is a subjective evaluation by the individual of his/her general self-worth (Coopersmith,

1967; Whitley, 1983; Battle, 1987). This evaluation is based on one's own strength and accomplishments and is therefore conditional upon the individual's own perception of competence in relation to others (Harter, 1978; Waite, Gansneder & Rotella, 1990). It has an evaluative component and involves affective behaviours (Weiss, McAuley, Ebbeck, & Wiese, 1990). Self-esteem is seen as an all-encompassing construct that guides behaviour in all aspects of life (Sonstroem, 1984; Whitley, 1983) and is often referred to as general self-worth and global self-esteem. Self-esteem is multidimensional, gradual in its development, remains constant over several years and tends to be resistant to change(Coopersmith, 1967; Weiss et al., 1990; Sonstroem, 1984). Because of its stability, a strong intervention is required to produce a significant change in self-esteem (Battle, 1987).

Self-concept

Self-concept is the individual's perception of the "self" (Ibrahim & Morrison, 1976; Jackson & Marsh, 1986; Wayment & Zetlin, 1989). However, it is a descriptive interpretation of the "self" as an active object (Fox, 1988) and is a component of global self-esteem (Trujillo, 1983). Unlike global self-esteem it is less stable and

tends to be domain specific (Anshel et al., 1986; Sonstroem, 1984).

Self-efficacy

Self-efficacy is the extent to which an individual feels she/he is able to complete a given task (Weiss, Wiese & Klint, 1989). It is situational, task specific (Marsh, 1986; Sonstroem, 1984) and is affected by experience (Petruzello & Corbin, 1988). Consequently, it has been suggested that positive self and social interactions across a variety of experiences may enhance self-confidence (i.e. efficacy) (Wayment & Zetlin, 1989). In the physical domain physical competence refers to the abilities and preferences for physical activity (Folsom-Meek, 1991), while sport-confidence is based on the perceptions of ability and the degree of certainty an individual has of their ability to succeed in their chosen activity (i.e. goal attainment equals competence and success) (Vealey, 1986).

Self-acceptance

Self-acceptance refers to the positive self-regard an individual ascribes to him/herself (Waite et al., 1990). Optimally, an individual will develop an unconditional self-acceptance regardless of any shortcomings. Waite et

al., (1990) found that the stability of the self-concept is greatest when an athlete has high self-esteem and high self-acceptance.

Statement of the Problem

The exact nature of the relationship between self-esteem and exercise is unclear. A number of researchers have pointed out that many of the investigations in this area suffer from methodological problems resulting from vaguely operationalized definitions of self-esteem (Harter, 1982; Marsh, 1986; Marsh, Barnes, Cairns, & Tidman, 1984), the lack of a sound theoretical framework (Marsh, Barnes, Cairns & Tidman, 1984; Sonstroem, 1984) and poor instrumentation (Leith & Taylor, 1990; Marsh, Barnes, Cairns, & Tidman, 1984; Marsh & O'Neill, 1983; Marsh, Smith & Barnes, 1983). Few self-esteem investigations examine the construct of self-esteem in the context of the sporting arena. Consequently the mechanisms leading to the development of self-esteem and of physical self-concept in children is poorly understood (Fox, 1988; Weiss & Bredemeier, 1983).

Hypotheses

1. Quality physical activity interventions will positively affect the physical self-concepts of low-esteem young and adolescent females.
2. Global self-esteem will be positively affected as a result of a physical activity intervention.
3. The greatest effects of the intervention will occur with early adolescent and pre-adolescent subjects.

Assumptions

The basic assumption of this study is that although self-esteem tends to be stable and resistant to change, it can be enhanced by means of a strong intervention. A number of successful experiences perceived as being important to a given achievement domain will generalize to other situations and result in an improved perception of the self.

The specific assumptions of this study are as follows:

1. That self-esteem is a developmental process and not a fixed character trait.
2. That participation in quality physical activity programming has the potential of positively and negatively affecting self-concept.

3. That physical self-concept is a salient component in the perceived self-concept of young girls.

Delimitations

This study wAS limited to female pre-adolescent (ages 9-10), early-adolescent (ages 12-13) and middle-adolescent (ages 14-15) students enrolled in a local independent girl's school. Subjects will be chosen in accordance with their level of self-esteem as measured by the appropriate Self-Description Questionnaire (SDQ) developed by Marsh (1988, 1990).

Limitations

The sample size was limited and random selection of subjects was not possible because of the small school population. The fact that these subjects are members of what might be defined as a select population will limit the generalization of the findings to the larger population. The time span across which the study was run and the number of sessions per week was determined by the availability of gymnasium space as well as the availability of school time in which to implement the intervention.

Significance of the Study

Leith and Taylor (1990) and Sonstroem (1984) criticised self-esteem research for its lack of sound experimental design. The majority of studies were found to be correlational which identify relationships but do not prove cause and effect. This study, in exploring the effect of a physical activity intervention on the self-esteem of young females, examined the causal relationship between self-esteem and physical activity.

In their investigations into self-esteem, Marsh (1984) and his colleagues and Harter (1982) have demonstrated that age differences in self-esteem do exist. However, the developmental process of self-esteem in children has generally been ignored (Weiss & Bredemeier, 1983). If the psychological maturation of children results in the differential evaluation of their perceived competence at the various stages of their young lives, then it is possible that an intervention may be more effective in one age group as opposed to another. The use of the three age groups in this study may provide insight into the developmental process of self-esteem.

Self-esteem research has generally ignored the female experience in sport. Coopersmith (1967), for example, developed his scale using young, middle-class, white males. In studies where both males and females are

included in the sample, gender biases were not considered in the research design. It is possible that under these circumstances uniquely female responses may be masked. This study adds to our knowledge of how self-esteem relates to the physical self-concepts of young females.

CHAPTER 2

Review of Literature

It has been theorized that physical self-worth is a mediating factor in global self-esteem and that physical activity has the potential to produce beneficial effects on the psychological well-being of the participants (Fox, 1988; Sonstroem, 1984). Despite this, little of the sport research has focused on the relationship between physical activity and the psychological domain (Leith & Taylor, 1990; Sonstroem, 1984). Even less has been done to explore the effects of sport and self-esteem, while sport psychology research involving females is almost non-existant in this area. There are also large gaps in how the physical self-concept develops in children (Fox, 1988; Weiss & Bredemeier, 1983).

This literature review examines the models and methodology upon which self-esteem research is based. The development of self-esteem is presented, followed by a discussion of how self-esteem literature relates to sport. Finally, recent research dealing with the self-esteem of chidren and females in sport is explored.

Theoretical Constructs of Self-esteem

The Unidimensional Global Model

Early investigations of self-esteem described a unidimensional global construct which focused only on the evaluation of self-esteem (Coopersmith, 1967). This construct was subsequently criticized for its failure to recognize the differential effects and relationships of the varying factors involved in the overall development of feelings of self-worth (Harter, 1982; Rosenberg, 1979).

The Multidimensional Model

The multidimensionality of self-esteem has been widely accepted (Fox & Corbin, 1989; Harter, 1982; Jackson & Marsh, 1986; Marsh, 1986; Marsh, Barnes, Cairns, & Tidman, 1984; Marsh, Barnes & Hocevar, 1985; Marsh, Smith & Barnes, 1984; Pelham & Swann, 1989; Sonstroem, 1984; Wayment & Zetlin, 1989). The underlying premise of the multidimensional model is that individuals are capable of having different perceptions of themselves across a variety of domains, such as their social relationships, academic abilities and physical competencies. This multifaceted structure of self-esteem exists from an early age. It has been shown that

children from early years on differentiate their perceived competencies in the various skill domains. Harter (1982) identified four domains: cognitive competence, social confidence, physical confidence and general self-worth. Marsh and his colleagues have developed a series of self-description questionnaires for pre-adolescents, adolescents and late adolescents in which a varying number of age-related components of self-esteem were identified (Marsh, Barnes, Cairns, & Tidman, 1984; Marsh & O'Neill, 1983; Marsh, Parker & Barnes, 1985).

The Hierarchical Model

The hierarchical model is an extension of the multidimensional model. It suggests that the components of self-esteem are organized in levels with global or general self-esteem at the top (Fleming & Courtney, 1984; Marsh, Barnes & Hocevar, 1985; Marsh, Parker & Barnes, 1985; Marsh, Smith & Barnes, 1983; Marsh, Smith & Barnes, 1984). It is hypothesized that the farther the lower-level domains are from the apex, the more situation-specific they are and therefore more responsive to interventions.

In his factor analysis of the Self Report Questionnaire III (SDQ III), Marsh (1987) found support

to divide the second level of the hierarchy into four domains: math, reading, social/physical, and moral. These domains are further subdivided into facets which, in combination, affect the domains to which they are most closely associated. Thus the physical/social domain is subdivided into the components of physical ability, physical appearance, same and opposite sex relationships, and parental relationships. The physical self was not found to be an independent construct in that physical appearance is more closely related to opposite-sex social relationships than physical abilities. This would suggest that any physical activity interventions will need to incorporate the effects of socializion on the individual's perceptions of body image and physical ability (Fox, 1988; Sonstroem, 1982).

Methodology

Research in self-esteem has been criticized for its experimental shortcomings and the lack of instruments with sound psychometric properties (Fleming & Courtney; Leith & Taylor, 1990; Ryckman, Robbins, Thorton, & Cantrell, 1982; Sonstroem, 1984). In his review of 16 self-esteem and exercise studies, Sonstroem, (1984) found that experiments were poorly controlled, used correlation designs for questions of causality, and were vague in

their reporting. Leith and Taylor (1990) were critical of the lack of follow-up and replication of studies in the psychology and exercise literature. Both Sonstroem (1984) and Leith and Taylor (1990) recommended the use of true experimental and /or carefully controlled quasi-experimental designs so that the cause and effect relationship of psychological interventions in sport may be demonstrated with confidence. Longitudinal or follow-up testing is also required to measure the long term impact on specific and global esteem.

Self-esteem is traditionally measured by self-report scales (i.e. standardized pencil and paper scales) that measure the experienced (perceived) self, peer ratings that measure the individual as presented to others (presented self), and observation (Wayment & Zetlin, 1989). Of these methods, the self-report scale is the most common. With the acceptance of the multidimensional model of self-esteem the use of uni-dimensional or global self-concept scales has become less desirable than multidimensional scales since global self-concept scales have a tendency to mask self-concept variability (Wayment & Zetlin, 1989). Because self-concept can fluctuate across settings and situations, it cannot be expressed in a single score. Consequently a combination of part scales and global scales should be

employed (Jackson & Marsh, 1986; Marsh, 1986; Sonstroem, 1984). The choice of scale used to measure self-esteem should be determined by the construct validity of the measure (Fleming & Courtney, 1984).

Unidimensional Scales

Unidimensional scales are used to measure global self-esteem. The Rosenberg Self-Esteem Scale (SES) has been determined to have a reliability of .89 to .93 (Sinclair & Vealey, 1990; Waite et al., 1990) and measures the emotional aspect of self-esteem (Fleming & Courtney, 1984). It is intended to measure self-esteem in adolescents. The Self-esteem Inventory for Children has been determined to have a 3-year test-retest reliability of .70 (Coopersmith, 1967). This scale does not include a physical concept factor. Coopersmith (1967), unlike later investigators, did not find that physical self-concept was a significant factor in the self-esteem of children.

Multidimensional Scales

The acceptance of the multidimensional model necessitated the development of scales that are psychometrically sound. The Tennessee Self-Concept Scale (TSCS) was developed to measure self-acceptance, self-

identity and behavioural items other than self-esteem (Fleming & Courtney, 1984). Reliability has been reported to range from 0.88 to 0.92, however it has been criticized for lack of construct validity. Testing of this scale indicated that it did not measure self-esteem (Marsh, 1987; Ryckman et al., 1982).

The Perceived Competence Scale for children (Harter, 1982) was developed to provide a profile of children's competence in the cognitive, social and physical domains and to explore the child's general sense of self-worth. The scale is geared to children in grades 3-6 and assumes that children from about age eight on do not feel equally competent in all of the above mentioned subscales. Analysis of this scale showed that the factor pattern was stable across grades 3-6 and 7-9, and that reliability of the four subscales ranged from 0.75-0.86 on the specific domain scales and from 0.73-0.82 on the general esteem scale In addition social desirability responses were not affecting results (Harter, 1982). Although Harter developed this scale for the school setting, support for the effectiveness of this scale can be found in the sport and exercise literature (Brustad, 1988; Brustad & Weiss, 1987; Sonstroem, 1984; Ommundsen & Vaglum, 1991; Walker & Greene, 1986; Weiss et al., 1990).

The Self-Description Questionnaires are a series of self-concept measures developed by Marsh and his colleagues to investigate the multidimensionality and hierarchical structure of self-concept and to explore developmental issues. The underlying premise is that self-concept is a perception of the self and is formed through the individual's experience with the environment and interactions with significant others (Marsh, Barnes, Cairns, & Tidman, 1984). Three instruments were developed. The Self-Description Questionnaire I (SDQ I) was developed for pre-adolescent children. It consists of seven components, four of which are non-academic including two physical concept scales (Marsh, 1985). Subsequent testing of this scale demonstrated the construct validity of the scale (Marsh, Barnes, Cairns, & Tidman, 1984; Marsh, Smith & Barnes, 1983) with a reliability of .82, and no influence of a social desirability factor (Marsh, Smith & Barnes, 1983). The SDQ II is geared to early adolescents and was found to have a reliability co-efficient of .86 (Marsh, Parker & Barnes, 1985). The SDQ III was developed to be used with older adolescents and university students (Marsh & O'Neill, 1983). In a subsequent study this scale was found to be a well developed instrument for the measurement of self-concept. The reliability of this

instrument was reported to be .89 (Marsh, Barnes & Hocevar, 1985).

The Physical Self-Perception Profile (PSPP) was developed by Fox and Corbin (1989) to test self-perception within the physical domain. Its development is based on Harter's methodology and attempts to reflect the salient self-perception content and to test the hierarchical structuring within the physical self-concept. The resulting model proposed a three-tiered hierarchical organization consisting of global self-esteem at the apex, physical self-worth at the domain level and four subdomains identified as: sport competence, attractive body, physical strength and physical condition. The test-retest reliability coefficients for this instrument were found to range between 0.74 and 0.92 for a 26 day lapse, and 0.81 and 0.88 over a 23 day lapse period. It was also found to be resistant to a social response bias. Further investigations using this profile are required to determine its validity with populations other than University students and to confirm the reported results of the analysis.

Development of self-esteem

An individual's self-worth is influenced by a number of factors. These include positive and negative feelings of the self as a result of appraisals by society and significant others, the number and consistency of appraisals, the credibility and the empathy of the appraiser, and the meaning the individual ascribes to these beliefs (Marsh, 1986; Marsh, Barnes, Cairns, & Tidman, 1984; Rosenberg, 1979; Sonstroem, 1984). The relative importance of any given variable in the development of self-esteem is dependent on the importance the individual and the social milieu place upon the variables (Coopersmith, 1967; Marsh, 1986; Sonstroem, 1984). Therefore an intervention intended to have an effect must be salient to the component of self-concept in which change is desired (Anshell et al., 1986; Harter, 1978). Although general self-esteem tends to be stable and resistant to change (Sonstroem, 1984) it is posited that increasing the number of successful experiences that are perceived as being important in a given achievement domain, will generalize to other situations and to an improved concept of the self (Sonstroem, 1984; Petruzello & Corbin, 1988; Weiss et al., 1990). This would suggest that an athlete who has a number of positive sport

experiences will eventually generalize the resulting increase in self-concept to his/her general self-worth.

Developmental issues as they pertain to children are a key factor in self-esteem. Coopersmith (1967) suggested that children develop self-worth appraisals at some time in middle childhood and that the relative importance of any given appraisal was not important in general self-esteem. Thus a child's self-appraisal of his/her academic competence would affect self-esteem equally as much as social competence, for example, regardless of how important or unimportant academic or social achievement might be to that child. This conclusion may be related to the use of unidimensional scales which do not reflect the multidimensionality of self-esteem. Harter(1982) and Marsh, Barnes, Cairns, & Tidman (1984), however have demonstrated the multidimensionality of self-concept in young children. The age effect appears to be curvilinear in that self-esteem rises through the elementary school years, shows a drop during early adolescence and then increases during middle to late adolescence. These studies indicate that young children are able to differentiate between the broad academic and non-academic components of self-concepts. Their responses tended to be internally consistent with older children on the broad categories,

but less differentiated and less consistent on specific components (Marsh, Barnes, Cairns, & Tidman, 1984). Marsh (1985) suggested that as children become older their self-perceptions are more responsive to the interactions with their environment which results in a more realistic re-evaluation of their self-worth. Hence the drop in self-concept during early adolescence. The self-concepts of early adolescents are more differentiated and distinct (Marsh, 1985) than those of pre-adolescents but do not appear to become much more differentiated during late adolescence (Marsh, Parker & Barnes, 1985). Another factor in the variability of the self-concept in children is the decline in the parent relationship and the concomitant increase in peer comparisons during the early adolescent years (Weiss & Glenn, 1993). Dependence on peer evaluations decreases during the late teens as the individual's responses and motivations become increasingly intrinsic (Horn & Hasbrook, 1978; Harter, 1978). This would explain the increase in self-concept with this age group.

While age effects were demonstrated, sex effects were not significant other than those consistent with sex stereotypes (Jackson & Marsh, 1986; Marsh, Parker & Barnes, 1985; Marsh, Barnes, Cairns, & Tidman, 1984). On two of the SDQ factors boys tended to have a higher self-

concept in physical abilities while girls showed higher self concepts in reading. Harter (1978) suggested that children appreciate physical prowess more than intellectual ability. Bearing this in mind, self-concept in young girls might well be enhanced through sport and exercise interventions.

Self-esteem in Sport

Self-esteem is most closely related to the individual's perception of his/her personal fitness and physical prowess (Sonstroem, 1984; Harter, 1982; Harter, 1978; Sonstroem, 1984; Trujillo, 1983; Vealey, 1986). The inclusion of a physical self-concept component in the measurement scales also supports the importance of physical activity in the development of self-esteem (Sonstroem, 1984). Vincent (1976) in his comparison of the self-concept of college women found that physical education majors exhibited higher total self-concept than non-physical education majors; that participation in competitive high school athletics was a factor in the higher total self-concept of women except for physical education majors; and that college athletic participation seemed to be an influencing factor of self-concept. However, the causal effects of sport on self-esteem are equivocal as some studies involving athletes and non-

athletes failed to find significant differences in esteem between the two groups (Hall, Durburow & Progen, 1986; Ibrahim & Morrison, 1976; Snyder & Kivlin, 1975; Snyder & Kivlin, 1977). These studies involved university students who may have had enough successful experiences in other domains to have affected their global self-esteem.

Sport and Children's Self-Esteem

Studies on young athletes support the findings of the multidimensionality models of self-esteem as it relates to children. Horn and Hasbrook (1987) found that perceived competence in 8-9 year olds was not consistently related to feedback they received from significant others. Older children (10-11 years) showed a greater dependence on peer comparisons than younger children. Their reactions to these comparisons tended to be more affective than for either of the other two age groups. The perceived competence of 12-14 year olds was more positively correlated to peer comparisons and coach-peer feedback than their younger counterparts.

The notion that feedback provided by adults (e.g. parents, coaches, teachers) affects children's perceptions of their ability is supported in several studies. Sinclair & Vealey (1990) found that self-

confidence was affected by the immediacy of feedback received and that self-confidence was the only self-perception to change over the course of the season. Walker & Greene (1986) demonstrated the existence of a relationship between coaching behaviours and children's perceptions of their ability. Similarly, Barnett et al. (1992) reported that supportive coaching behaviour was most effective with children of low self-esteem. In a cross-cultural study based on Harter's theories of self-esteem, high soccer self-esteem was found to be related to positive parental behaviour (Ommundsen & Vaglum's 1991). Children's evaluations of their abilities as a result of the feedback they receive from significant others affected their feelings of self-efficacy (Weiss et al., 1989; Walker & Greene, 1986) and consequently their expectancy of positive goal achievements (Sinclair & Vealey, 1990). This is important for young athletes as self-efficacy has been found to be a strong predictor of performance (Weiss et al., 1989).

A significant relationship has been found between competitive trait anxiety (CTA) and self-esteem for both boys and girls (Lethwaite & Scanlan, 1989; Ommundsen & Vaglum, 1991; Jackson & Marsh, 1986) which seems to indicate that self-esteem is related to higher levels of enjoyment and lower levels of CTA (Brustad, 1988). High

levels of CTA and low levels of self-esteem are also related to feedback in that children with high levels of CTA perceive their coaches and/or parents as having unrealistically high expectations of their performance, providing little positive re-enforcement, and exerting too much pressure on the child to participate and perform well (Lethwaite & Scanlan, 1989).

It has been demonstrated that low self-esteem children benefit the most from positive sporting activities (Barnett et al., 1992; Sonstroem, 1984). Fox (1988) posited that low self-esteem children and children whose self-esteem is constantly under threat because of their negative perceptions of physical abilities and/or attractiveness would benefit from a remedial physical fitness package.

Self-Esteem and the Female Athlete

Investigations of gender differences in self-esteem report little or no difference (Horn & Hasbrook, 1987; Weiss et al., 1990; Marsh, Barnes, Cairns & Tidman, 1984; Vealey, 1988) except for the self-concepts that are most related to sex stereotypes (Jackson & Marsh, 1986). Society has consistently viewed physical abilities, physical appearance, general self-esteem, math, and emotional stability more positively in males than in

females. Consistent with social stereotypes, females tended to score lower on these facets of self-concept. However, female athletes were found to exhibit higher self-concepts than female non-athletes (Vincent, 1976) particularly in the areas most logically related to the sporting experience (Colker & Widom, 1980; Jackson & Marsh, 1986; Snyder & Kivlin, 1975). Since these studies report correlations between self-concepts and athletic participation, it is not clear whether female athletes gravitate toward sports because of their level of self-confidence and perceived ability or whether these traits were developed as a result of the sporting experience (Vealey, 1988; Whitley, 1983).

Sport has traditionally been seen as a male pursuit and defined by the stereotypical male traits of competitiveness, strength, aggressiveness, determination and tough-mindedness. Females, on the other hand, have been encouraged to succeed in social areas as opposed to showing prowess on the athletic field (Weiss & Bredemeier, 1983; Weiss & Glenn, 1993). The female athlete may therefore be placed in a sex-role orientation conflict with a concomitant loss of self-esteem (Hall et al., 1986; Snyder & Kivlin, 1975). Three models of sex-role orientation have been identified (Whitley, 1983). These models are congruence, androgeny and masculinity.

Congruence, assumes that masculinity and femininity are at opposite poles of a single dimension. In this case, psychological well-being is dependent on males and females having the sex-role characteristics traditionally ascribed to them. Androgeny, posits masculinity and femininity to be two separate dimensions which are independent and complimentary (Spence, Helmreich & Stapp, 1975). Well-being is maximized when the individual possesses high levels of femininity and masculinity. Finally, the masculinity model suggests that the relation between androgyny and psychological well-being is primarily based in the masculinity component and that femininity is negligible.

There was no support in the sport literature for the congruency model. Masculinity was found to be positively correlated with self-esteem by Antill & Cunningham (1979) and Whitley (1983). Those who reported support for the androgyny model (Colker & Widom, 1980; Del Rey & Sheppard, 1981; Jackson & Marsh, 1986; Spence et al., 1975) found that psychological androgyny is positively associated with sex-role adaptability across a variety of situations. Androgynous female athletes displayed significantly higher levels of self-esteem. For both the masculinity and androgyny models, the masculinity

component was most closely related to high self-esteem followed by femininity and undifferentiated subjects (Del Rey & Sheppard, 1981). The femininity sex-role type non-athlete had a significantly lower level of self-esteem than all the other sex-role types (Hall et al. (1986). These researchers reported a larger percentage of androgynous females among athletes and although they were unable to find differences in self-esteem between athletes and non-athletes, they concluded that androgyny had no negative effects on self-esteem. Earlier studies found that female athletes, in spite of negative attitudes toward female participation in sport did not suffer from sex-role conflicts (Snyder & Kivlin, 1975; 1977) nor did sport have a masculizing influence (Colker & Widom, 1980). Jackson and Marsh (1986) in their examination of the relationship between women's involvement in sports and sex-role identities and self-concepts determined that women's involvement in sports has positive benefits and did not affect their femininity.

Summary

This chapter reviewed the more recent work that has been reported in research linking the development of self-esteem to physical activity. Although

methodological problems have been identified, it would appear that there is a positive relationship between the sporting experience and self-concept. Future directions in this field must be directed toward a clarification and standardization of the terminology used, an increase in the use of experimental designs, and more extensive follow-ups to determine the long-term effects of any interventions used.

Implications for Future Research

The review of the relevant literature has uncovered gaps in our knowledge of how self-esteem and self-concepts are affected by participation in physical activity. As has been previously mentioned, the development of physical concepts in children is poorly understood. A better understanding of the differing physical self-perception elements may help in determining which factors (e.g. type of activity, degree of involvement), are most effective in enhancing physical self-concepts in children and adults.

Physical appearance is an important factor in physical and global self-esteem, particularly for young adolescent girls. The relationship of physical fitness to perceived physical competence and attractiveness in young girls and women is worth pursuing. Determining the

age at which fitness oriented activities are most effective for the enhancement of self-esteem will have implications for physical education programmes in schools.

A number of studies on females have explored the issues of psychological androgeny. The issues have primarly concerned themselves with the correlation of the degree of androgeny to self-esteem. Neither the development of androgeny in females nor its role in the development of self-concept in girls has specifically been explored . If psychological androgeny plays a role in self-esteem enhancement, an understanding of which physical activities are a factor in the development of androgeny is required.

CHAPTER 3

Methodology and Procedures

Subjects

The subjects were pre-adolescent, early-adolescent and middle-adolescent girls ranging in age from 9 to 16 years. They were selected from a local independent school which provided consistency in background and educational experience. The population of the school was primarily from middle and upper-class families. Although the majority of students were Caucasian, a variety of ethnic groups were represented in the school population. Approximately thirty percent of the middle and upper school (grades 7-12) students lived in residence at the school.

The original intent was to select three groups of subjects by grade: grades 5 and 6; 8 and 9; and 11 and 12 to provide a pre-adolescent group, an early-adolescent group, and a late adolescent group. The age of these groups would have been approximately 10 and 12 years, 13 and 14 years, and 16 and 17 years respectively. Unfortunately, the grade 6, 11, and 12 students were not available for the study because of scheduling conflicts within the school. Therefore, the groups selected consisted of one pre-adolescent group of grades 4 and 5,

one early-adolescent group of grades 7 and 8, and one middle-adolescent group of grades 9 and 10. The approximate ages of these groups were 9 and 10 years, 12 and 13 years, and 14 and 15 years respectively.

Each grade consisted of two classrooms of 14 to 23 girls, who were randomly assigned to their classrooms at the beginning of each school year. One class per grade was selected to receive the intervention and the second class served as the control group. The latter group provided a comparison for the intervention group, serving as a control for maturation and history effects. The decision as to which class would receive the intervention and which would be the control, was made by the investigator and the head of the school's Physical Education Department. The criteria for this selection was based on where a class fit into the physical education timetable as classes for the Junior School and the Upper and Middle School often ran concurrently in two different gymnasia. Because the investigator of this study ran all the classes involved in the intervention, an integral part of the study was that there be no timetabling conflicts among the classes.

Subject Selection

A total of 202 subjects were initially tested for their level of self-esteem. Nine of these subjects voluntarily withdrew from the study. Four subjects were absent from school during the post-test phase and therefore did not complete the second questionnaire. Questionnaires of twelve of the subjects were deleted from the study because the girls had not answered the requisite number of questions to allow for a valid interpretation of their results (Marsh, 1988; Marsh, 1990). Finally, three of the subjects did not attend enough classes (83.3% or less) to warrant their inclusion in the study.

The self-esteem of the remaining 181 subjects was assessed with the Self Description Questionnaire (SDQ) I and II (Marsh, 1985; Marsh, Parker, & Barnes,.1985). Low self-esteem subjects were identified according to their scores on the Total Self-Concept Scale of the relevant SDQ. The scores were ranked. As there are no absolute cut-offs as to what constitutes high or low self-esteem (Marsh, 1988) the 50 percent cut-off point was arbitrarily set. Subjects scoring in the 50th percentile or lower were assigned to the low self-esteem group. Students at all levels of self-esteem were included in both the intervention and control groups. The

investigator was not aware of the subjects' level of self-esteem until the intervention phase of the study had been completed and the post-intervention data had been collected.

Instrumentation

A self-report scale is the standard measure of self-esteem. This study used the Self-Description Questionnaire (SDQ) I & II self-report scales developed by Marsh (1985) and Marsh & O'Neill (1983) to measure the subjects' general self-esteem and physical self-concept. The SDQ I was developed to measure the self-concepts of pre-adolescent children (ages 9 to 11). It consists of seven scales of 8 items each, to which subjects respond on a 5-point likert scale. The SDQ II, consisting of eleven individual scales, is designed to measure the self-concepts of early and middle-adolescents (ages 13 to 16). The scales contain 8 or 10 items, and responses are scored on a 6-point likert scale. The categories of the likert scales for both questionnaires range from "Definitely False (1) to Definitely True (5 and 6 respectively)". The Physical Abilities Scale and the Physical Appearance Scale of both questionnaires measure physical self-concept. The scores of the individual

scales are combined to produce the Total Self-concept score which serves as a measure of general self-esteem.

The SDQ scales are reported to have a reliability co-efficient of 0.82 and 0.86 respectively. In addition, the construct validity of the SDQ has been demonstrated and the scales were not found to be influenced by a social desirability factor (Marsh, Barnes, Cairns & Tidman, 1984; Marsh Barnes & Hocevar, 1985; Marsh, Smith & Barnes, 1983).

Materials

The physical activity intervention for this study was conducted in the school's two gymnasia. The Junior School gymnasium, located in an older section of the school, had a floor area approximately equal to a basketball court. The entire length of one wall was lined with wall bars. The opposite wall supported a moveable climbing frame. Because of the fixed equipment installed on the walls and the windows at the top of the two long walls, very little usable wall-space was available. Small equipment included tumbling mats and a "port-a-pit", skipping ropes, balls, hoops, bean bags, small wooden climbing frames, balance benches and soft-centred gymnastic vaulting equipment. All of which were utilized as part of the physical activity intervention.

The Middle and Upper School students utilized a newer gymnasium in another section of the school. This gym accommodated two volleyball courts side by side, across the width of its floor. This gym had a stage at one end and doubled as an auditorium. It was equipped with a sound system. The walls were generally free of encumbrances and therefore provided a great deal of open wall space. Small equipment used for the physical activity intervention included light hand-weights and mats. The majority of the hand-weights were 3-pound weights, although a few 5-pound weights were available. There were enough hand-weights for the weight circuit, although additional heavier weights could have been used. The sound system was utilized for the aerobics component of the intervention and to play music recorded to play at thirty second intervals for the weight circuit. Excerpts from a videotaped program "For The Love Of The Game" were used to illustrate women as positive role models at the beginning of one of the classes.

Procedure

Permission to conduct this study in the selected school was obtained from the school's Headmaster (see Appendix B). A letter requesting informed consent (see Appendix A) was distributed to the parents or legal

guardians of the students involved. Human ethics approval for this study was granted by the Committee for Research Involving Human Subjects of the Faculty of Physical Education and Recreation Studies.

The appropriate SDQ scale was administered to the subjects during class time prior to the intervention. Students were assured that their anonymity would be strictly protected. Scores obtained on the SDQ were kept confidential by assigning an identification number to each student who participated in the study.

The physical activity intervention was administered over a period of 6 weeks during the regularly scheduled physical education classes. The intervention classes were administered by the investigator. The control classes continued with their regularly scheduled physical education classes which were conducted by the school's physical education instructors.

Classes were scheduled for a duration of forty minutes. Time was allotted at the beginning and end of each class to allow the students to change into and out of their physical education class uniforms. Therefore, the actual teaching time available for the class was approximately 30 minutes.

The Junior School students (grades 4 & 5) were scheduled to participate in physical education for 3

classes per six-day cycle. Due to scheduling conflicts within the school, this group of students participated in physical education classes for only 9 sessions during the 6 week period allocated to the study by the school. Students in grades 7 to 10 (Middle and Upper School) were scheduled for five classes per 6-day cycle, three of which were available to the investigator to administer the intervention. The students receiving the intervention participated in their regular physical education classes for the remaining two scheduled classes of the school cycle. The Middle and Upper School students were administered the intervention for 12 sessions over the 6 week period made available by the school.

Upon completion of the intervention phase of the study, all subjects were again administered the SDQ during their regularly scheduled physical education class. Students participating in the intervention were also asked to fill in a social validity questionnaire (see Appendix H). All subjects were then debriefed and given the opportunity to ask questions regarding the study.

Intervention

Azrin (1977) recommends the use of a multiple-component intervention package when attempting to effect change. The intervention package of the study consisted of three components: physical activity, educational, and self-report. The physical activity component of the intervention package consisted of an age-appropriate programme which focused on positively affecting the students' physical self-image by increasing their physical prowess, physical strength and aerobic conditioning. (Harter, 1982; Fox & Corbin, 1989). The programme stressed cooperative physical fitness rather than competitive sports. The latter were not included as they contain too great a potential for perceived negative feedback and perceived failure situations (Fox, 1988; Gruber, 1986; Marsh & Peart, 1988).

The classes were divided into the warm-up, the work-out, and a cool-down. The educational components and self-report component were incorporated into each of the classes. The first class for the grade 7 to 10 girls was used as an orientation in which they were instructed on the proper techniques and rules of strength training as well as the use of log books. Classes then alternated between aerobics and strength training. One entire class

was devoted to educating the subjects on effective weight management through physical activity and sound nutrition.

Physical Activity Component

For the pre-adolescent group, strength training exercises using body weight and light implements as resistance were used to develop strength and muscular endurance. Cardio-vascular endurance activities included skipping exercises and running games. Locomotor movements with changes in direction and body levels such as shuttle runs and obstacle courses which require climbing over, crawling through or under, and moving around objects were used to develop agility (Helleson, 1985).

For the early-adolescent and middle adolescent groups, strength training involved a 12-station weight circuit. The exercises used a combination of light weights and the student's own body weight as resistance. Each exercise was performed for a period of thirty seconds followed by a thirty second rest period. This allowed the students to complete one full cycle during the class. When this became too easy, the rest period was deleted and the number of circuits completed was increased to two. To increase cardiovascular conditioning and agility an aerobics programme geared to

the fitness level of the participants was used. For all three groups of subjects, flexibility was maintained and/or improved by the use of stretching exercises during the warm-up and cool-down phases of the work-outs.

Educational Component

The aim of the educational component was to develop a positive physical self-image through an awareness of the benefits of a physically active lifestyle and an understanding of the importance of physical strength, endurance, flexibility and agility (Harter, 1982; Fox & Corbin, 1989). In addition, the two adolescent groups were involved in discussions relating to effective weight management through exercise and sound nutrition; the definition of beauty and how it relates to body image in today's society; and women in athletics as a positive role model. Posters, referred to as the "thirty second commercials", on which relevant comments were written were displayed on the gym wall while the girls performed the weight circuit and during the aerobics classes.(See Appendix D for examples). These were used to reinforce the most important points covered in the discussion topics.

Self-Report Component

The self-report component was intended to help the girls to become more aware of their physical strength and weaknesses, to reinforce their accomplishments and help them focus on the objectives and salience of the activity. Log books were used for this purpose. The log books of the pre-adolescent group were, out of necessity, much simpler than that of the two adolescent groups. In general the log books were used to keep track of the girls' performance on the skills circuit in the case of the pre-adolescent girls and the weight circuit for the older girls. All handouts were kept in the log books. Refer to Appendices E and F for examples of the log books used in this study.

Experimental design

This study involved the testing of the effect of three levels of one independent variable on three dependent variables. An experimental pre-test/post-test design was used for this study. Prior to the administration of the intervention package, subjects were tested for their levels of self-esteem and their physical abilities and physical appearance self-concepts. The investigator was not aware of the subjects' level of self-esteem and self-concept. Subjects were then

assigned to either an intervention or a control group. Following the intervention, all subjects were retested for their level of self-esteem and self-concept.

Independent Variable

The independent variable for this study consisted of the intervention package as previously described. Subjects were divided into three age groups to produce the three levels of the independent variable.

Dependent Variables

Physical abilities, physical appearance and general self-esteem measurement scores as determined by the SDQ I and II scales constituted the dependent variables in this study.

Statistical Analysis

The existence of three independent variables in this study would require the use of a multivariate analysis of variance (MANOVA). However, in order to provide enough power to detect an effect produced by the physical activity intervention, a minimum sample size of 132 subjects per age group is required (Kres, 1983). This criteria was not met, therefore, a repeated measures two-way analysis of variance (ANOVA) was used. The first

factor (A) of the ANOVA consisted of the comparison of the intervention and control groups. The second factor (B) compared the level of self-concept (e.g. high/low). The level of significance was set at 0.05

Conversion of the raw data from the individual items of each scale to the individual scale scores was done with the aid of the computer scoring programme provided with the two SDQ manuals. The item scores of the SDQ I scales were added to produce a total score for each scale which ranged from a minimum of 8, to a maximum of 40. If three or fewer scores were omitted, a mean response for the missing score was substituted. Questionnaires with more than three missing responses were deleted from the study. The SDQ II total scale scores were converted to mean scores and ranged from a minimum of 1 to a maximum of 6. If a subject omitted five or fewer responses on the questionnaire, then the missing items were replaced with a mean response. Six or more missing responses resulted in the deletion of that subject from the study.

The pre-intervention scores of the Total Self-concept, Physical Abilities and Physical Appearance scales were subtracted from their corresponding post-intervention scores. An initial analysis for main and interaction effects was then performed on the resulting difference scores of each of the three individual scales. The

ranking into high and low self-esteem groups for all three scales was based on the pre-test scores of the Total Self-Concept scale.

Following the examination of the data, it became evident that some of the low self-esteem subjects scored in the high self-concept range on the Physical Abilities and the Physical Appearance Scales. The reverse was also true for some of the high self-esteem subjects. Consequently, subjects were re-ranked on each of the two subscales to determine the changes in the high and low self-esteem groupings. A secondary analysis of variance for main and interaction effects was then calculated independently on each of the re-ranked Physical Abilities and Physical Appearance Scales.

CHAPTER 4

Results and Discussion

Statistical Analysis

The statistical analysis of the effect of the intervention on the self-esteem and the physical self-concepts of the subjects as measured by the Total Self-concept Scale, the Physical Abilities and Physical Appearance Scales is presented in two parts. In the first analysis descriptive statistics and an analysis of variance on the difference of the scores between the pre-test and post-test are presented for each of the three age-groups. These results, based on the level of the subjects' self-esteem and physical self-concepts as derived from the pre-test scores of the Total Self-Concept Scale are discussed and presented in tabular form. The second analysis examines the effect of the intervention when the level of self-concept is determined by the separate ranking of the Physical Abilities Scale and the Physical Appearance Scale. As with the first analysis, descriptive statistics and the results of the analysis of variance are presented and discussed.

Analysis 1: The Effect of the Intervention on the Levels of Self-Esteem as Determined by the Total Self-Concept Scale

Descriptive Statistics

Tables 4-1 through 4-3 present the means, standard deviations and case numbers for the high and low self-esteem subjects of the control and intervention groups for each of the three age-groups. The standard deviations indicate that the three groups were relatively homogeneous, although the pre-adolescent group was somewhat more disparate on the Physical Appearance Scale.

The group means for the pre-adolescent group indicate that the intervention group difference scores changed more than the control group. Similarly, the low self-esteem intervention subjects produced greater difference scores than the high self-esteem intervention subjects.

The early-adolescent intervention group showed greater mean increases than the control group on the Total Self-Concept and Physical Abilities Scales, but not on the Physical Appearance Scale; while the low self-esteem intervention subjects produced larger mean difference scores than the high self-esteem subjects only on the Total Self-concept Scale. In fact, the mean difference on the Physical Appearance Scale presented a negative value

for the low self-esteem intervention subjects for this age-group.

Although the group means of the three self-concept scales for the middle-adolescent intervention group increased in size, the increases were not as great as those for the control group. The self-concept group means increased for each of the three scales. Within the intervention group, the low self-esteem subjects' mean difference score increases were greater than those for the high self-esteem intervention subjects for all but the Physical Abilities Scale.

Table 4-1: Descriptive Statistics for the Difference Scores Ranked on the Total Self-Concept Scores: Pre-Adolescents

Variable	Group	Mean	Std Dev	Cases
Self-esteem	CL	1.59	2.34	18
	CH	0.10	1.56	12
	IL	2.05	2.69	10
	IH	1.15	1.30	15
Physical Abilities	CL	1.33	2.80	18
	CH	0.17	2.76	12
	IL	1.40	2.55	10
	IH	1.40	3.18	15
Physical Appearance	CL	0.78	4.31	18
	CH	-1.17	2.95	12
	IL	2.30	3.89	10
	IH	3.33	3.83	15

*Legend: CL = Control Group/Low Self-esteem
IL = Intervention Group/Low Self-esteem
CH = Control Group/High Self-esteem
IH = Intervention Group/High Self-esteem

*This legend applies to each of the following Descriptive Statistics Tables.

Table 4-2: Descriptive Statistics for The Difference Scores Ranked on the Total Self-Concept Scale: Early-Adolescents

Variable	Group	Mean	Std Dev	Cases
Self-esteem	CL	0.02	0.43	13
	CH	0.12	0.22	18
	IL	0.15	0.34	17
	IH	0.06	0.18	12
Physical Abilities	CL	0.10	0.68	13
	CH	0.09	0.36	18
	IL	0.18	0.59	17
	IH	0.26	0.45	12
Physical Appearance	CL	0.04	0.55	13
	CH	0.26	0.60	18
	IL	-0.10	0.87	17
	IH	0.08	0.47	12

Table 4-3: Descriptive Statistics for The Difference Scores Ranked on the Total Self-Concept Scale: Middle-Adolescents

Variable	Group	Mean	Std Dev	Cases
Self-esteem	CL	0.25	0.47	18
	CH	0.13	0.23	13
	IL	0.09	0.32	15
	IH	-0.03	0.33	20
Physical Abilities	CL	0.27	0.59	18
	CH	0.19	0.42	13
	IL	0.11	0.87	15
	IH	0.13	0.45	20
Physical Appearance	CL	0.32	0.64	18
	CH	0.26	0.54	13
	IL	0.32	1.00	15
	IH	-0.02	0.43	20

Analysis of Variance

The results of the analysis of variance are set out in tables 4-4 through 4-12. Two significant main effects were found in the pre-adolescent age group. The low self-esteem subjects scored significantly higher on total self-concept $F(1,51)=4.845$, $p<0.05$ than the high self-esteem subjects (see Table 4-4) and the intervention group scores

were significant, $F(1,51)=8.195$, $p<0.01$ on the Physical Appearance Scale (see Table 4-6).

The early-adolescents produced no significant main effects on any of the self-concept scales. The middle-adolescent intervention group difference scores, though not significant, indicated an upward trend on the Total Self-Concept Scale: $F(1,62)=3.293$, $p>0.07$ (see Table 4-10). No significant interaction effects were found among any of the three age groups.

Table 4-4: Analysis of Variance Summary Table for Pre-Adolescents Ranked on Levels of Self-Esteem: Total Self-Concept Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	7.523	1	7.523	1.833	0.182
Self-concept(B)	19.882	1	19.882	4.845	0.032*
Group by self-concept (AxB)	1.158	1	1.158	0.282	0.589
Within groups	209.281	51	4.104		
Total	233.902	54			

*p<.05

Table 4-5: Analysis of Variance Summary Table for Pre-Adolescents Ranked on Levels of Self-Esteem: Physical Abilities Scale

Source of variation	SS	df	MS	F	Sig of F
Group(A)	5.715	1	5.715	0.698	0.407
Self-concept (B)	5.345	1	5.345	0.653	0.423
Group by self-concept (AxB)	4.455	1	4.455	0.544	0.464
Within groups	417.667	51	8.190		
Total	431.345	54			

Table 4-6: Analysis of Variance Summary Table for Pre-Adolescents Ranked on Levels of Self-Esteem: Physical Appearance Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	120.876	1	120.876	8.195	0.006*
Self-concept (B)	4.609	1	4.609	0.312	0.579
Group by self-concept(AxB)	29.020	1	29.020	1.968	0.167
Within groups	752.211	51	14.749		
Total	902.109	54			

*$p < .01$

Table 4-7: Analysis of Variance Summary Table for Early-Adolescents Ranked on Levels of Self-Esteem: Total Self-Concept Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.021	1	0.021	0.223	0.639
Self-concept (B)	0.000	1	0.000	0.003	0.955
Group by self-concept (AxB)	0.125	1	0.125	1.321	0.255
Within groups	5.295	56	0.095		
Total	5.441	59			

Table 4-8: Analysis of Variance Summary Table for Early-Adolescents Ranked on Levels of Self-Esteem: Physical Abilities Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.240	1	0.240	0.859	0.693
Self-concept (B)	0.017	1	0.017	0.060	0.955
Group by self-concept (AxB)	0.025	1	0.025	0.088	0.255
Within groups	15.673	56	0.280		
Total	15.940	59			

Table 4-9: Analysis of Variance Summary Table for Early-Adolescents Ranked on Levels of Self-Esteem: Physical Appearance Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.359	1	0.359	0.828	0.358
Self-concept (B)	0.601	1	0.601	1.386	0.808
Group by self-concept (AxB)	0.008	1	0.008	0.018	0.767
Within groups	24.286	56	0.434		
Total	25.440	59			

Table 4-10: Analysis of Variance Summary Table for Middle-Adolescents Ranked on Levels of Self-Esteem: Total Self-Concept Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.419	1	0.419	3.293	0.074
Self-concept (B)	0.243	1	0.243	1.910	0.172
Group by self-concept (AxB)	0.000	1	0.000	0.001	0.976
Within groups	7.887	62	0.127		
Total	8.664	65			

Table 4-11: Analysis of Variance Summary Table for Middle-Adolescents Ranked on Levels of Self-Esteem: Physical Abilities Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.215	1	0.215	0.588	0.446
Self-concept (B)	0.013	1	0.013	0.034	0.854
Group by self-concept(AxB)	0.036	1	0.036	0.099	0.754
Within groups	22.710	62	0.366		
Total	22.960	65			

Table 4-12: Analysis of Variance Summary Table for Middle-Adolescents Ranked on Levels of Self-Esteem: Physical Appearance Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.317	1	0.317	0.707	0.404
Self-concept (B)	0.702	1	0.702	1.565	0.216
Group by self-concept(AxB)	0.294	1	0.294	0.655	0.421
Within groups	27.807	62	0.448		
Total	29.290	65			

Analysis 2: The Effect of the Intervention on Physical Self-Concepts as Determined by the Physical Abilities and Physical Appearance Scales

An examination of the data indicated that some of the low self-esteem subjects scored in the high self-concept range on either or both of the Physical Abilities and the Physical Appearance Scale. The reverse was also true for some of the high self-esteem subjects. Consequently, subjects were re-ranked on each of the two subscales to determine the changes in the high and low self-esteem groupings. When each of the two subscales was re-ranked, changes did occur. An analysis was then calculated independently on each of the Physical Abilities and Physical Appearance Scales. In general the differences in the means were more pronounced than in the first analysis and the standard deviations were somewhat less homogeneous. There were shifts in the case distributions of all the sub-populations between the two analyses. The most dramatic shift in case sample population distribution occurred in the pre-adolescent Physical Appearance sub-populations.

Descriptive Statistics

Tables 4-13 through 4-15 present the descriptive statistics for the second analysis. Although the standard deviations continue to indicate that the sample is relatively homogeneous, they tend to vary a little more than in the first analysis. This is particularly true for the pre-adolescent Physical Appearance scores.

The group means for both scales of the pre-adolescent age group were greater for the intervention group than for the control group. In both scales the low self-concept subjects produced greater mean difference scores than the high self-concept subjects. For the Physical Appearance Scale the means for the high self-concept subjects in both the control and intervention groups declined, but the intervention group's negative change was of a lesser magnitude than that of the controls.

The mean differences for the two adolescent intervention groups indicated less change than the pre-adolescent intervention group. Except for the early-adolescent Physical Appearance Self-Concept intervention group mean, the group means for these two age groups increased in size. However, the control group means tended to be higher than the intervention group means. The exception to this trend was the early-adolescent Physical Abilities Self-Concept intervention group. The

low self-concept subjects, however, tended toward greater mean difference scores than the high self-concept subjects. The high self-concept means for the pre and early-adolescent age groups indicated a downward trend, but in general the negative trend was less pronounced for the intervention subjects. The middle-adolescent high self-concept intervention group produced negative scores for both scales, while the comparable control groups produced positive scores.

Table 4-13: Descriptive Statistics for the Difference Scores Ranked Individually on the Physical Abilities and Physical Appearance Scales: Pre-Adolescents

Variable	Group	Mean	Std Dev	Cases
Physical Abilities	CL	1.89	2.78	18
	CH	-0.67	2.10	12
	IL	3.70	2.00	10
	IH	-0.13	2.33	15
Physical Appearance	CL	0.64	5.05	11
	CH	-0.37	3.13	19
	IL	3.56	4.23	18
	IH	1.29	1.70	7

Table 4-14: Descriptive Statistics for the Difference Scores Ranked Individually on the Physical Abilities and Physical Appearance Scales: Early Adolescents

Variable	Group	Mean	Std Dev	Cases
Physical Abilities	CL	0.25	0.56	17
	CH	-0.10	0.37	14
	IL	0.49	0.60	14
	IH	-0.04	0.29	15
Physical Appearance	CL	0.27	0.56	18
	CH	0.03	0.61	13
	IL	0.11	0.76	12
	IH	-0.12	0.71	17

Table 4-15: Descriptive Statistics for the Difference Scores Ranked Individually on the Physical Abilities and Physical Appearance Scales: Middle-Adolescents

Variable	Group	Mean	Std Dev	Cases
Physical Abilities	CL	0.20	0.65	16
	CH	0.28	0.34	15
	IL	0.31	0.79	18
	IH	-0.08	0.43	17
Physical Appearance	CL	0.38	0.71	15
	CH	0.22	0.46	16
	IL	0.31	0.96	18
	IH	-0.07	0.30	17

Analysis of Variance

Tables 4-16 through 4-21 of the analysis of variance on the three age-groups indicate that the most noticeable effects of the intervention occurred with the pre-adolescent age group. Specifically, the results for the pre-adolescent self-concept on the Physical Abilities Scale was significant, $F(1,51)=22.657$, $p<0.01$ (see Table 4-16). The intervention group score on the Physical Appearance Scale: $F(1,51)=4.573$, $p<0.05$ (see Table 4-17) was also significant. The $F(1,51)=3.078$, $p>0.08$ for the total intervention group (see Table 4-16), though not

significant, suggests that a trend may exist. These results would suggest that the intervention had the greatest effect on the low self-concept pre-adolescent subjects.

The intervention's effect on the early-adolescent group's Physical Abilities self-concept was significant, $F(1,56)=12.580$, $p<0.01$ (see Table 4-18). There were no significant effects for either of the middle-adolescent age-group scales.

Table 4-16: Analysis of Variance Summary Table for Pre-Adolescents Ranked on Levels of Physical Self-Concept: Physical Abilities Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	17.639	1	17.639	3.078	0.085
Self-concept(B)	129.845	1	129.85	22.657	0.000*
Group by self-concept(AxB)	5.343	1	5.343	0.932	0.339
Within groups	292.278	51	5.731		
Total	431.345	54			

*p<.01

Table 4-17: Analysis of Variance Summary Table for Pre-Adolescents Ranked on Levels of Physical Self-Concept: Physical Appearance Scale

Source of variation	SS	df	MS	F	Sig of F
Group(A)	67.499	1	67.499	4.573	0.037*
Self-concept(B)	28.32	1	28.32	1.919	0.172
Group by self-concept(AxB)	4.682	1	4.68	0.317	0.576
Within groups	752.84	51	14.762		
Total	902.109	54			

*p<.05

Table 4-18: Analysis of Variance Summary Table for Early-Adolescents Ranked on Levels of Physical Self-Concept: Physical Abilities Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.342	1	0.342	1.507	0.225
Self-concept (B)	2.859	1	2.859	12.58	0.001*
Group by self-concept(AxB)	0.127	1	0.127	0.588	0.458
Within groups	12.728	56	0.227		
Total	15.94	59			

*p<.01

Table 4-19: Analysis of Variance Summary Table for Early-Adolescents Ranked on Levels of Physical Self-Concept: Physical Appearance Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.334	1	0.334	0.776	0.382
Self-concept (B)	0.821	1	0.821	1.91	0.172
Group by self-concept(AxB)	0	1	0	0.001	0.977
Within groups	24.073	56	0.43		
Total	25.44	59			

Table 4-20: Analysis of Variance Summary Table for Middle-Adolescents Ranked on Levels of Physical Self-Concept: Physical Abilities Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.236	1	0.236	0.682	0.412
Self-concept (B)	0.483	1	0.483	1.399	0.241
Group by self-concept(AxB)	0.862	1	0.862	2.497	0.119
Within groups	21.414	62	0.345		
Total	22.996	65			

Table 4-21: Analysis of Variance Summary Table for Middle-Adolescents Ranked on Levels of Physical Self-Concept: Physical Appearance Scale

Source of variation	SS	df	MS	F	Sig of F
Group (A)	0.537	1	0.537	1.219	0.274
Self-concept (B)	1.301	1	1.301	2.955	0.091
Group by self-concept(AxB)	0.206	1	0.206	0.467	0.497
Within groups	27.296	62	0.44		
Total	29.29	65			

Qualitative Analysis

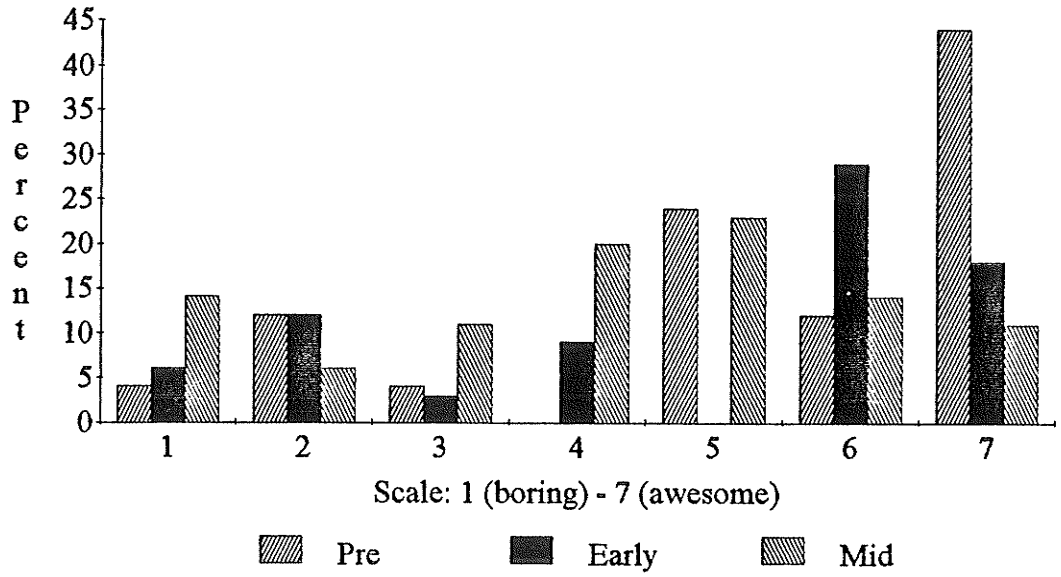
Students participating in the intervention were asked to complete a social validity questionnaire to provide feedback regarding their participation in the study. Homeroom teachers of these students and the physical education instructors were also surveyed. Appendix H contains copies of the questionnaire distributed to the students and teachers involved. Of the questionnaires distributed to the teachers, only the physical instructors' questionnaires were returned. When asked, the homeroom teachers indicated verbally that they had not noticed any changes nor heard any feedback from the

students and therefore felt it was unnecessary to complete the surveys. All students responses were included in the results, even if they were not included in the statistical analyses for any of the reasons previously outlined.

Student Evaluation

A graphic illustration of the students overall evaluation of the programme is presented in Figure 4-1. In general, the majority of the students enjoyed the programme and thought that their participation in the study was beneficial. However the degree of enjoyment seemed to decrease with the increasing age of the subjects.

Figure 4-1: Student Evaluation of the Physical Intervention Package: Approval Rating



Pre-adolescent Evaluation

Eighty percent of the pre-adolescents rated the programme at 5 or better on the 7-point rating scale for the overall evaluation of the programme. Within that group, grade five subjects felt that the physical activities could have been more challenging.

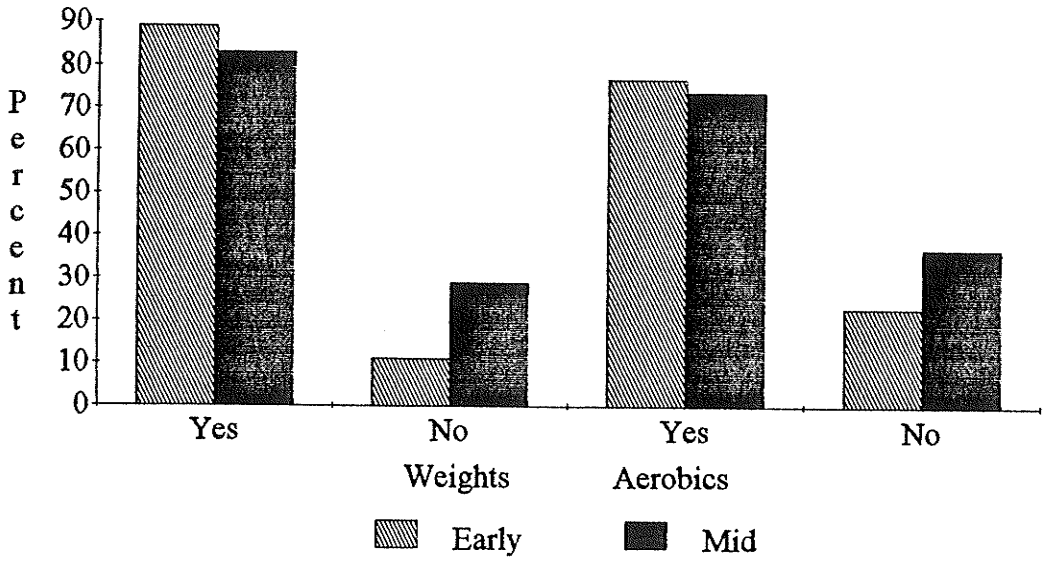
Early and Middle-Adolescent Evaluation

The programme evaluation for these two age groups was somewhat less enthusiastic than that of the younger age group. However, 71 percent of the early adolescent and 48

percent of the middle adolescents rated the programme at 5 or higher. Both groups seemed to prefer the weight training slightly more than the aerobics. When asked in which area these students showed the most improvement, the majority of students indicated that they had gained the most in fitness knowledge and secondly had shown the most improvement in muscular strength. In all cases the reported improvements were of a greater magnitude among the early-adolescent subjects.

As can be seen in figure 4-2, the programme had enough impact on the girls that the majority have indicated an interest in continuing a weight or aerobics training programme outside class. Also, the school's Physical Education Department Head indicated that the students have requested a fitness class every cycle.

Figure 4-2: Indication of Students' Intent to Continue a Weight and/or Aerobics Programme



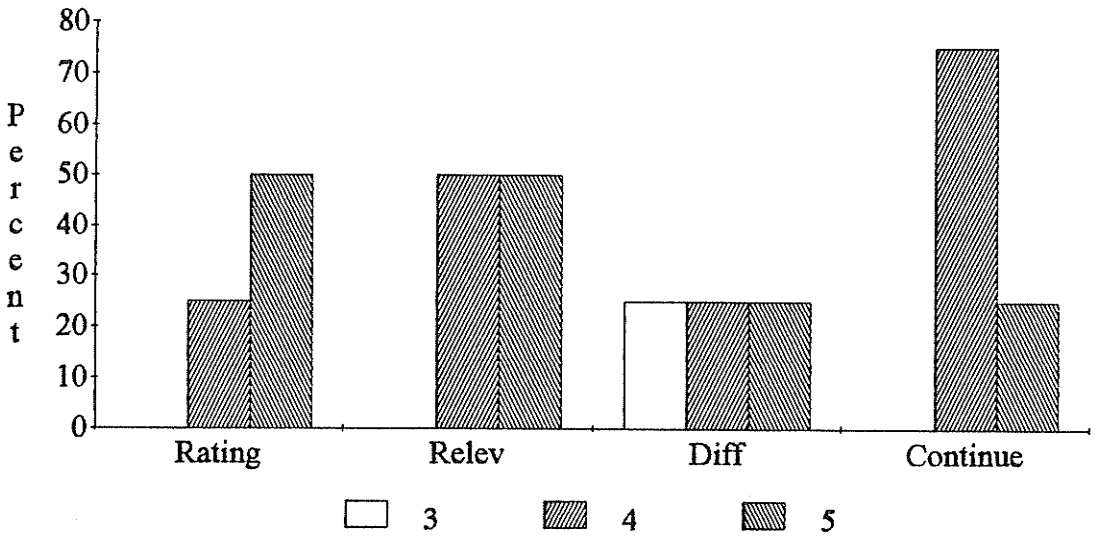
Teacher Evaluation

Teachers were asked to rate the program on: its general merit, its relevance to the students, whether or not there were any observed differences in the intervention subjects, and if they would like to see a similar programme instituted in the school. Figure 4-3 summarizes the results.

The pre-adolescent age group instructor did not numerically rate the programme on general merit nor observed student differences. However, she did indicate that the grade five students felt the programme needed to be more challenging, but that the grade four students

really enjoyed the classes. The adolescent age group physical education teachers found the programme to be very relevant to their students although the amount of observed difference in the girls varied between the three instructors. All of the adolescent age group instructors felt that the aerobics had the greatest impact on their students. The pre-adolescent group teacher stated that she did not wish to see a similar programme offered in the school on a regular basis.

Figure 4-3: Teacher Evaluation of the Physical Intervention Package



Discussion

Until recently, few studies have investigated the causal relationship between self-esteem and exercise in children. The majority of the existing studies were correlational investigations (Gruber, 1986) and therefore did little to further our understanding of the mechanisms that affect the development of self-esteem in children (Fox, 1988; Weiss & Bredemeier, 1983). The goals of this study, therefore, were to: 1) examine the effects of a physical activity intervention package on the self-esteem of pre-adolescent and adolescent girls and 2) to determine if there is a critical age at which such an intervention might be most effective.

Effectiveness of the Intervention Package

The first hypothesis postulated that a physical activity intervention would positively affect the physical self-concepts of low self-esteem pre-adolescent and adolescent females. When the effect of the intervention package was examined in relation to the level of self-esteem ranked on the basis of the total self-concept, only the Physical Appearance self-concept of the pre-adolescent girls was significantly impacted. Thus, only partial support for the first hypothesis was found for the pre-

adolescents. In the case of the early and middle-adolescents, the results did not support the hypothesis.

Both the SDQ I and SDQ II are multidimensional measures of self-esteem in which the global self-esteem measure (Total Self-Concept Scale) is a function of the combination of all the self-concept subscales. The Physical Abilities and the Physical Appearance Scales are subscales of the SDQ and as such contribute only a part of the Total Self-Concept Scale score. Additional scales include: parental relationships, reading, math, general school, emotional stability, honesty-trustworthiness, peer relationships which is divided into opposite sex and same sex relationships in the SDQ II, and verbal (SDQ II only). Any of these scales may exert a greater or lesser influence on the level of self-esteem. Thus, a high level of global self-esteem does not preclude an equally high degree of physical self-concept. This means that, when subscales are separated into low and high levels of self-concept on the basis of the Total Self-Concept scores, a clear separation of the two levels of physical self-concepts may not occur. An examination of the data indicates that this was, in fact, the case. Interventions are most effective on low self-esteem subjects (Barnett et al., 1992; Gruber, 1986, Page, Fox, McManus & Armstrong, 1993). Thus, the obscuring of the division between high

and low self-concept subjects as measured by the Total Self-Concept Scale may, in part, explain the lack of a significant effect on Physical Abilities and Physical Appearance subscales.

The results of the second analysis indicate that the strongest effects of the intervention was on the physical abilities self-concept of both the pre-adolescent and adolescent females. Since the most effective interventions are those that emphasize the facets of self-concept that are most closely related to the goals of the intervention (Marsh, Richards & Barnes, 1986a), the hypothesis that a physical activity intervention would positively affect physical self-concepts was partially supported.

The weaker effect of the intervention on the physical appearance self-concept is consistent with previous investigations that found no relationship between physical prowess and physical attractiveness (Marsh, 1987; Marsh & Peart, 1988). In light of those studies, the significant result for physical appearance in both analyses for the pre-adolescents seems somewhat surprising. An explanation for the apparently contradictory result may be that young children do not differentiate between the various self-concepts to the same extent as older children. As a result the effects of changes in one self-concept facet

may be generalized to another self-concept (Marsh et al., 1984; Marsh & O'Neill, 1983). The tendency of young children to be less critical and less analytical in their approach to new experiences allows them to exhibit a greater flexibility in their responsiveness to change.

Support for the second hypothesis was evident only with the pre-adolescent group which experienced a significant change in global self-esteem. Adolescent global self-esteem was not significantly increased as a result of the physical intervention package in the study and therefore the hypothesis did not hold true for this age group. Since global self-esteem is at the apex of a hierarchical multidimensional model of self-esteem, any changes to self-esteem would be the result of changes to the self-concept facets that are found at the base of the model. The early-adolescent and middle-adolescent subjects in the study experienced no significant changes in the two lower level self-concepts (i.e. Physical Abilities and Physical Appearance) measured. With increasing age, the independence of the self-concept facets increase, resulting in the concomitant weakening of the interactive potential of the hierarchical structure (Byrne & Shavelson, 1986; Marsh, Smith & Barnes, 1983). Consequently, global self-esteem is less likely to be affected by changes to the various self-concept facets

(Page et al., 1993). When the changes to the self-concept facets are not significant, as was the case with the two adolescent age-groups of the study, a change in global self-esteem would not be expected to occur.

The third hypothesis postulated that the greatest effect of the intervention would be on the early adolescents and then the pre-adolescents. The data provided some support for this hypothesis in that the pre-adolescents appeared to benefit the most from the intervention package, while the early adolescents showed somewhat mixed results, and the middle adolescents experienced no significant effects.

From a developmental point of view, the statistically significant results for the pre-adolescents and the general lack of statistically significant results for the adolescent age groups, suggest that a physical activity intervention package is most likely to effect changes to the physical self-concepts of children during the pre-adolescent years. However, the lack of significant results in a study may also come about if a powerful intervention has too few subjects for statistical analysis or if the intervention is weak (Marsh, Richards & Barnes.1986a, 1986b).

Sample size and sample composition may well have affected the results of the study. The student population

of the school from which the sample was drawn was smaller than most public schools, therefore sample size was limited. Attrition further reduced the sample from 202 subjects to 174 for all three age groups. When 5 of the grade five students withdrew from the study and two others did not complete the SDQ, the pre-adolescent intervention group was biased toward the 9-year old subjects. Because whole classroom groupings were used, random selection of subjects was not possible and the ratio of high to low self-esteem subjects in the two treatment conditions could not be controlled. The resulting unequal number of cases in each of the analysis of variance cells and the small sample size may have affected the power of the analysis (Fox, Levin & Harkins, 1993; Kres, 1983).

There are indications that the intervention may not have been powerful enough to bring about significant change in self-esteem. Student criticisms of the intervention revolved around the length of the programme and the lack of intensity. These students felt the programme was not long enough nor that there was enough time in the class for an adequate workout. Certainly, the amount of actual class time in which to conduct the intervention package was not long enough to meet all the objectives of the daily lesson plan. The perceived lack

of intensity could have affected the subjects' sense of improvement and thus reduced the salience of the activity.

Both of the adolescent groups were administered the same intervention package. The differing results in the two self-concepts may be an indication that the intervention package needed to be more specifically geared to each of the age groups. For example, the educational component of the package contained materials that the early-adolescents had not previously encountered but were more familiar to the middle adolescents. Therefore, the impact of the information on the girls may have been reduced. It is also possible that early and middle adolescents may benefit more from an intervention that stresses general physical prowess, similar to the one administered to the pre-adolescents, than from one that focuses on one or two specific activities.

A ceiling effect may have reduced the possibility of achieving a statistically significant effect in this study. It has been demonstrated that those who have the lowest levels of self-concept before the administration of an intervention benefit the most, while those with an initially high level of self-esteem are less likely to be responsive to an intervention (Barnett, Smoll & Smith, 1992; Page et al, 1993). The general school environment which stressed the development of positive self-image and

the generally upper socio-economic background of these students may have contributed to a higher level of global self-esteem and physical self-concepts in the sample than the general population. Although standards for self-esteem scores are not available in the literature, the initial scale scores of this sample population appears to be fairly high (e.g. total self-concept mean for pre-adolescents = 33.13 for a total possible score of 40; early-adolescent mean = 4.76; and middle adolescent mean = 4.35, both of which have a possible total of 7.00). If these means are in fact an indication of an initially high level of self-concept, a significant effect, may have been more difficult to achieve with this particular sample.

Social Validity

Social validity questionnaires serve as a subjective adjunct (Azrin, 1977) to a statistical analysis. It allows participants in the study to provide insights into the effectiveness of an intervention that are not discernible from the statistical analysis of the data.

Although statistically significant differences were generally lacking across two of the three age groups, the participants in the programme suggested that the intervention was relevant to them. The lower rating given the programme by the middle-adolescents may be an

indication that the intervention was not powerful enough to effect change in this particular age group (Marsh, Richards & Barnes 1986a). Both adolescent groups were administered exactly the same intervention package. Comments by the older girls indicated that the materials presented were not as novel to them and therefore were received with less enthusiasm than the younger adolescents. This response may have resulted in a decrease in the salience of the intervention thus reducing its effectiveness.

Special Cause Variation of a Field Study

In developing an experimental design the investigator attempts to account for any variation that may exist. However, despite the most stringent efforts, field studies present the possibility of special cause variations that may impact on the outcome of the results.

One of the problems encountered in this study affected the sample size of the pre-adolescent intervention group. After the first class, the parent of one of the subjects chose to withdraw her child from the study so that she could continue with the regular physical education programme. She and her daughter were very expressive in their opinions on the relative merits of the study. As a result, four additional students withdrew

their participation reducing the intervention class size from 15 to 10 students. At least one of the remaining students requested her parents to withdraw her from the study, but they refused. The resulting hostility created a great deal of tension within the class. A further two students in this class were deleted from the study because of incomplete self-esteem questionnaires. Consequently, the pre-adolescent intervention group contained a disproportionate number of 9-year old subjects. It is possible, that this imbalance in age between the intervention and control groups may have affected the results.

Another possible contributing factor to special cause variation in this study was the lack of effective communication within the physical education department. This problem resulted in some initial hostility by the staff toward the study which was indirectly transferred to the students. The extent to which this affected the study is difficult to determine, but some intervention class-time was lost so that misunderstandings could be cleared up and tensions reduced.

Results of the study may also have been affected by a few students who were not committed to full participation in the study. With intervention class students this lack of commitment, on occasion, resulted in class disruptions.

It was necessary to delete two of the control subjects in the middle-adolescent group from the study when it became obvious that they were comparing answers while completing the SDQ.

Summary

The statistical analysis of the results indicated that the pre-adolescent low self-esteem and low physical self-concept groups benefited most from the intervention. The mean difference scores for two of the three scales in the first analysis and both scales in the second analysis were significant. The early-adolescent low self-esteem intervention group appears to have experienced some benefits as the means for this group showed greater improvement than any of the other three sample groups in this age group. However, only the change in the means of the Physical Abilities Scale on the second analysis was significant. The middle-adolescent age group experienced very little change as a result of the intervention. There were no significant effects on any of the scales and no trends as a result of the intervention were identified.

The age group that experienced the most significant results, also viewed the programme in the most positive light. Although the older girls felt the programme was generally relevant, their evaluation of the programme was

somewhat more conservative than the younger students. The approval rating tended to be in inverse proportions to the age of the subjects. The teachers most closely associated to the study stated that, in their opinion, the programme was of benefit to their students.

CHAPTER 5

Summary and Conclusions

This study investigated the effect of a physical intervention package on the global self-esteem and physical self-concepts of pre-adolescent, early-adolescent and middle adolescent females. The subjects were students enroled in grades 4 and 5, and grades 7 to 10 in an independent school and ranged in age from 9 to 16 years. Permission to conduct the study in the school was obtained from the school's Headmaster and informed consent was obtained from the subjects' parent(s) or legal guardian. Human ethics approval was also obtained from the Committee for Research Involving Human Subjects of the Faculty of Physical Education and Recreation Studies.

An experimental design was used for this study. Subjects were divided into high and low self-esteem groups on the basis of their initial Total Self-Concept scores as measured by the appropriate Self Description Questionnaire (Marsh, 1988). Subjects were assigned to control groups or intervention groups on the basis of their physical education timetable.

The intervention was administered over a six week period for 9 sessions for the pre-adolescent age group and 12 sessions for the early and middle adolescent age

groups. The intervention package consisted of three components: a physical activity component, an educational component and a self-report component.

The results of the present study found limited support for the contention that self concepts can be changed through effective interventions (Marsh, Richards & Barnes, 1986b). Furthermore, in agreement with findings by Gruber (1986) and Marsh & Peart (1988), non-competitive physical activities that emphasize the development of physical prowess and physical fitness, can be effective interventions that enhance the physical self-concepts of pre-adolescent and adolescent females. The intervention of the present study appeared to be most effective with pre-adolescent girls. Physical appearance self-concept was less influenced by the intervention than physical abilities self-concept.

The generalization of the results of this study is somewhat limited by the socio-demographic characteristics of its subjects. The subjects belong to a group of young females whose daily experiences are limited to a relatively homogeneous and privileged environment. Replication of this study with a larger and more diverse population may provide further support for the effectiveness of physical activity interventions in enhancing self-concepts.

Conclusions

1. The physical activity intervention package utilized in this study effected change in the level of self-esteem of pre-adolescent females.

2. The level of the physical self-concepts of pre-adolescent and early-adolescent females were increased as a result of the administration of the physical activity intervention package.

3. The statistically significant results for the pre-adolescent and early-adolescent age groups indicate that the pre-adolescent subjects were more responsive to the intervention package than the early-adolescent subjects.

4. The majority of the adolescent subjects indicated that they felt that they had improved their fitness knowledge and physical strength. Perceptions of improvement can be produced with a physical activity intervention.

5. A co-operative, non-competitive fitness programme such as the physical activity intervention used in this study can be a beneficial component of the physical education curriculum.

Recommendations

1. The study should be replicated using a larger and more diverse sample population.

2. Further study should be undertaken to determine the long term effects of interventions on the physical self-concept to determine if these effects are lasting.

3. Further studies investigating the effect of physical activity on the relationship between physical appearance self-concept and physical abilities self-concept should be undertaken.

4. It is possible that certain components are more relevant than others at any given age in the development of the self-concepts and the enhancement of self-esteem. Further research is needed to identify the specific components most relevant for a specific age group.

5. Although the study seemed to indicate that the intervention was most effective for the pre-adolescent females, further investigation into the effect of physical activity interventions on the development self-concepts in young girls is warranted.

6. The time frame within which an intervention is most effectively administered has not been determined. Investigations into the optimal length and intensity of interventions (i.e. frequency vs time span) should be undertaken.

Practical Implications

Physical education programmes in the school system should consider the implementation of non-competitive physical fitness programmes and programmes that stress the development of physical prowess to enhance self-esteem in all age-groups. Enthusiastic skilled leadership is needed to emphasize positive self-concept development through the reinforcement of physical self-acceptance and acceptance of others (skill levels and appearance). Self-acceptance is best fostered by means of an age-appropriate educational component which stresses the benefits of a physically active life-style as it applies to the individual student. Nutrition, the development of a positive body image, and techniques for effective weight management should be targeted. Negative self-concept development can be avoided by reducing the number of comparisons made to unrealistic role-models.

Personal skill development without formalized comparisons and ranking (Fox, 1992) should be emphasized. For all age groups, co-ordination/agility and flexibility are important components of physical prowess and can be improved and/or maintained with a variety of activities. For pre-adolescents, strength training should be developed through activities that use the student's body for resistance. Aerobic conditioning involves locomotor games

and activities. For adolescents, strength training and aerobics for cardiovascular training are enjoyable physical fitness activities and should be incorporated into the physical education curriculum on a regular on-going basis. Strength training using light weights needs to be tailored to the strength and ability of the student.

A minimum of 45 minutes 3 times a week of actual physical activity is required for effective skill and fitness development, particularly for the older age groups. Support from the school administration and teaching staff, as well as access to adequate equipment and facilities are required to ensure a quality programme.

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Appendix A

Copy of Consent Form for Parents

University of Manitoba

Faculty of Physical Education and Recreation Studies

"The effect of a qualitative physical activity intervention package on the self-esteem of pre-adolescent and adolescent girls"

Dear Parent:

I would like to request your consent to allow your daughter to participate as a subject in a study to investigate the effects of a physical activity intervention on the self-esteem of pre-adolescent and adolescent girls. This study is a partial requirement for a Masters of Science Degree specializing in Sport Psychology.

You will be free to withdraw your daughter at any time throughout the study without any prejudice or penalty. The study will be conducted during your daughter's regular physical education class and will not interfere with her regular school work. There will be no cost incurred to you or your daughter as a result of her participation. Her anonimity as a subject in this study will be strictly protected.

For the purposes of this study she will be asked to fill out a questionnaire to determine her level

of self-esteem. She will then be randomly assigned to one of two groups. One group will participate in a physical activity programme which will concentrate on the improvement of general physical skills and physical fitness. This programme will also include an educational component dealing with the benefits of being physically active. The second group will not participate in this programme, but will serve as a control group (i.e. they will provide the basis for comparison which will allow me to determine if any changes in self-esteem occurred as a result of the physical activity package). Both groups will be re-tested for levels of self esteem after eight weeks when the programme is completed.

Following the conclusion of the study, upon request, you will be provided with a summary of the findings

Thank you in advance for your co-operation.

Karin R. Boyd

I,_____, give my consent for my daughter, _____, to participate as a subject in the study as described above. I undestand the purpose of the study, the intervention, and testing procedure. I also understand that I or my daughter may request to withdraw from the study without penalty, and that any reference to specific subjects will be excluded from the study and any further reports.

I would like to receive a summary of the findings of the study. YES NO

Appendix B

Copy of Consent Form for the School Principal

University of Manitoba
Faculty of Physical Education and Recreation Studies

"The effect of a qualitative physical activity intervention package on the self-esteem of pre-adolescent and adolescent girls"

Dear Mr. Porter:

I would like to request your permission to use the grade 5 to grade 12 students in your school as subjects in a study to investigate the effects of a physical activity intervention on the self-esteem of pre-adolescent and adolescent girls. This study is a partial requirement for a Master of Science Degree specializing in Sport Psychology.

Your students will be free to withdraw from the study at any time without any prejudice or penalty. The study would be conducted during regular physical education classes and will not interfere with their regular school work. There will be no cost incurred to the students as a result of their participation. Their

anonymity as subjects in this study will be strictly protected.

For the purposes of this study each student will be asked to fill out a questionnaire to determine her level of self-esteem. She will then be assigned to one of two groups. One group will participate in a [physical activity programme which will concentrate on the improvement of general physical skills and physical fitness. This programme will also include an educational component dealing with the benefits of being physically active. The second group will not participate in this programme, but will serve as a control group (i.e. they will provide the basis for comparison which will allow me to determine if any changes in self-esteem occurred as a result of the physical activity package). Both groups will be re-tested for levels of self esteem after eight weeks when the programme is completed.

Following the conclusion of the study, you will be provided with a summary of the findings

Thank you in advance for your co-operation.

Karin R. Boyd

I, Brian W. Porter, give my permission for Karin Boyd to conduct the above discussed study at Balmoral Hall School. I understand that the students and their parents/guardians must give their informed consent before participating in the study, and that they may withdraw from the study at any time.

Signed: Brian W. Porter Date: Jan. 28th, 1994.

Appendix C

Copy of the SDQ I

SELF-DESCRIPTION QUESTIONNAIRE-I

Your Name:_____ Circle one: Boy Girl

School:_____ Grade:_____ Age:_____

Teacher: _____ Date:_____

This is a chance to look at yourself. It is not a test. There are no right answers, and everyone will have different answers. Be sure that your answers show how you feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE. We will keep your answers private and not show them to anyone.

When you are ready to begin, please read each sentence and choose an answer. (You may read quietly to yourself as I read aloud.) There are five possible answers for each question: "True," "False," and three answers in between. There are five boxes next to each sentence, one for each of the answers. The answers are written at the top of the boxes. Choose your answer to a sentence and make a check mark in the box under the answer you choose. DO NOT say your answer out loud or talk about it with anyone else.

Before you start, there are three examples below. A student, Bob, has already answered two of these sentences to show you how to do it. In the third example you must choose your own answer and put in your own check mark.

EXAMPLES		FALSE	MOSTLY FALSE	SOME-TIMES FALSE/ SOME-TIMES TRUE	MOSTLY TRUE	TRUE	
1. I like to read comic books	1	☐	☐	☐	☐	☑	1
2. In general, I am neat and tidy	2	☐	☐	☑	☐	☐	2
3. I like to watch TV.	3	☐	☐	☐	☐	☐	3

Bob checked the box under the answer "True." This means that he really likes to read comic books. If Bob did not like to read comic books very much, he would have answered "FALSE" or "MOSTLY FALSE."

Bob answered "SOMETIMES FALSE, SOMETIMES TRUE," because he is not very neat, but he is not very messy either.

For this sentence you have to choose the answer that is best for you. First you must decide if the sentence is "TRUE," or "FALSE," or somewhere in between. If you really like to watch TV. a lot, you would answer "TRUE" by making a check mark in the last box. If you hate watching TV., you would answer "FALSE" by making a check mark in the first box. If your answer is somewhere in between, then you would choose one of the other three boxes.

If you want to change an answer you have marked, you should cross out the check mark and put a new check mark in another box on the same line.

For all the sentences be sure that your check mark is on the same line as the sentence you are answering. You should have one answer and only one answer for each sentence. Do not leave out any of the sentences. Once you have started, PLEASE DO NOT TALK. Turn over the page and begin.

	FALSE	MOSTLY FALSE	SOME-TIMES FALSE/ SOME-TIMES TRUE	MOSTLY TRUE	TRUE	
1. I am good looking	1					1
2. I'm good at all **SCHOOL SUBJECTS**	2					2
3. I can run fast	3					3
4. I get good marks in **READING**	4					4
5. My parents understand me	5					5
6. I hate **MATHEMATICS**	6					6
7. I have lots of friends	7					7
8. I like the way I look	8					8
9. I enjoy doing work in all **SCHOOL SUBJECTS**	9					9
10. I like to run and play hard	10					10
11. I like **READING**	11					11
12. My parents are usually unhappy or disappointed with what I do	12					12
13. Work in mathematics is easy for me	13					13

	FALSE	MOSTLY FALSE	SOME-TIMES FALSE/ SOME-TIMES TRUE	MOSTLY TRUE	TRUE	
14. I make friends easily	14					14
15. I have a pleasant looking face	15					15
16. I get good marks in all **SCHOOL SUBJECTS**	16					16
17. I hate sports and games	17					17
18. I'm good at **READING**	18					18
19. I like my parents	19					19
20. I look forward to **MATHEMATICS**	20					20
21. Most kids have more friends than I do	21					21
22. I am a nice looking person	22					22
23. I hate all **SCHOOL SUBJECTS**	23					23
24. I enjoy sports and games	24					24
25. I am interested in **READING**	25					25
26. My parents like me	26					26

		FALSE	MOSTLY FALSE	SOME-TIMES FALSE/ SOME-TIMES TRUE	MOSTLY TRUE	TRUE	
27. I get good marks in **MATHEMATICS**	27	☐	☐	☐	☐	☐	27
28. I get along with kids easily	28	☐	☐	☐	☐	☐	28
29. I do lots of important things	29	☐	☐	☐	☐	☐	29
30. I am ugly	30	☐	☐	☐	☐	☐	30
31. I learn things quickly in all **SCHOOL SUBJECTS**	31	☐	☐	☐	☐	☐	31
32. I have good muscles	32	☐	☐	☐	☐	☐	32
33. I am dumb at reading	33	☐	☐	☐	☐	☐	33
34. If I have children of my own, I want to bring them up like my parents raised me	34	☐	☐	☐	☐	☐	34
35. I am interested in **MATHEMATICS**	35	☐	☐	☐	☐	☐	35
36. I am easy to like	36	☐	☐	☐	☐	☐	36
37. Overall, I am no good	37	☐	☐	☐	☐	☐	37
38. Other kids think I am good looking	38	☐	☐	☐	☐	☐	38
39. I am interested in all **SCHOOL SUBJECTS**	39	☐	☐	☐	☐	☐	39

		FALSE	MOSTLY FALSE	SOME-TIMES FALSE/ SOME-TIMES TRUE	MOSTLY TRUE	TRUE	
40. I am good at sports	40	☐	☐	☐	☐	☐	40
41. I enjoy doing work in **READING**	41	☐	☐	☐	☐	☐	41
42. My parents and I spend a lot of time together	42	☐	☐	☐	☐	☐	42
43. I learn things quickly in **MATHEMATICS**	43	☐	☐	☐	☐	☐	43
44. Other kids want me to be their friend	44	☐	☐	☐	☐	☐	44
45. In general, I like being the way I am	45	☐	☐	☐	☐	☐	45
46. I have a good looking body	46	☐	☐	☐	☐	☐	46
47. I am dumb in all **SCHOOL SUBJECTS**	47	☐	☐	☐	☐	☐	47
48. I can run a long way without stopping	48	☐	☐	☐	☐	☐	48
49. Work in **READING** is easy for me	49	☐	☐	☐	☐	☐	49
50. My parents are easy to talk to	50	☐	☐	☐	☐	☐	50
51. I like **MATHEMATICS**	51	☐	☐	☐	☐	☐	51
52. I have more friends than most other kids	52	☐	☐	☐	☐	☐	52

	FALSE	MOSTLY FALSE	SOME-TIMES FALSE/ SOME-TIMES TRUE	MOSTLY TRUE	TRUE	
53. Overall I have a lot to be proud of 53	☐	☐	☐	☐	☐	53
54. I'm better looking than most of my friends 54	☐	☐	☐	☐	☐	54
55. I look forward to all **SCHOOL SUBJECTS** 55	☐	☐	☐	☐	☐	55
56. I am a good athlete 56	☐	☐	☐	☐	☐	56
57. I look forward to **READING** 57	☐	☐	☐	☐	☐	57
58. I get along well with my parents 58	☐	☐	☐	☐	☐	58
59. I'm good at **MATHEMATICS** 59	☐	☐	☐	☐	☐	59
60. I am popular with kids of my own age 60	☐	☐	☐	☐	☐	60
61. I can't do anything right 61	☐	☐	☐	☐	☐	61
62. I have nice features like nose, and eyes, and hair . 62	☐	☐	☐	☐	☐	62
63. Work in all **SCHOOL SUBJECTS** is easy for me . 63	☐	☐	☐	☐	☐	63
64. I'm good at throwing a ball 64	☐	☐	☐	☐	☐	64

	FALSE	MOSTLY FALSE	SOME-TIMES FALSE/ SOME-TIMES TRUE	MOSTLY TRUE	TRUE	
65. I hate **READING** 65	☐	☐	☐	☐	☐	65
66. My parents and I have a lot of fun together 66	☐	☐	☐	☐	☐	66
67. I can do things as well as most other people 67	☐	☐	☐	☐	☐	67
68. I enjoy doing work in **MATHEMATICS** 68	☐	☐	☐	☐	☐	68
69. Most other kids like me 69	☐	☐	☐	☐	☐	69
70. Other people think I am a good person 70	☐	☐	☐	☐	☐	70
71. I like all **SCHOOL SUBJECTS** 71	☐	☐	☐	☐	☐	71
72. A lot of things about me are good 72	☐	☐	☐	☐	☐	72
73. I learn things quickly in **READING** 73	☐	☐	☐	☐	☐	73
74. I'm as good as most other people 74	☐	☐	☐	☐	☐	74
75. I am dumb at **MATHEMATICS** 75	☐	☐	☐	☐	☐	75
76. When I do something, I do it well 76	☐	☐	☐	☐	☐	76

Appendix D

Copy of the SDQ II

SELF-DESCRIPTION QUESTIONNAIRE-II

HERBERT W. MARSH

Your Name: _____ Circle one: Male Female

School: _____ Grade: _____ Age: _____ Date: _____

This is a chance to look at yourself. It is not a test. There are no right answers, and everyone will have different answers. Be sure that your answers show how you feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE We will keep your answers private and not show them to anyone.

When you are ready to begin, please read each sentence and choose an answer. There are six possible answers for each question: "True," "False," and four answers in between. There are six blanks next to each sentence, one for each of the answers. The answers are written at the top of each column. Choose your answer to a sentence and make a check mark in the blank for the answer you choose. **DO NOT** say your answer aloud or talk about it with anyone else.

Before you start, there are three examples below. A student, Bob, has already answered two of these sentences to show you how to do it. In the third example you must choose your own answer and put in your own check mark.

EXAMPLES	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
1. I like to read comic books	☐	☐	☐	☐	☐	☑	1
2. In general, I am neat and tidy	☐	☐	☑	☐	☐	☐	2
3. I like to watch TV.	☐	☐	☐	☐	☐	☐	3

Bob checked the blank under the answer "TRUE." This means that he really likes to read comic books. If Bob did not like to read comic books very much, he would have answered "FALSE" or "MOSTLY FALSE."

Bob answered "MORE FALSE THAN TRUE" because he is definitely not very neat, but he is not really messy either.

For this sentence you have to choose the answer that is best for you. First you must decide if the sentence is "TRUE" or "FALSE" for you, or somewhere in between. If you really like to watch TV. a lot you would answer "TRUE" by putting a check mark in the last blank. If you hate watching TV. you would answer "FALSE" by putting a check mark in the first blank. If you do not like TV. very much, but you watch it sometimes, you might decide to put a check mark in the blank that says "MOSTLY FALSE" or the blank for "MORE FALSE THAN TRUE."

If you want to change an answer you have marked you should cross out the check mark and put a new check mark in another blank on the same line.

For all the sentences be sure that your check mark is on the same line as the sentence you are answering. You should have one answer and only one answer for each sentence. Do not leave out any of the sentences. Once you have started, **PLEASE DO NOT TALK**. Turn over the page and begin.

	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
1. Mathematics is one of my best subjects 1	☐	☐	☐	☐	☐	☐	1
2. Nobody thinks that I'm good looking 2	☐	☐	☐	☐	☐	☐	2
3. Overall, I have a lot to be proud of 3	☐	☐	☐	☐	☐	☐	3
4. I sometimes take things that belong to other people 4	☐	☐	☐	☐	☐	☐	4
5. I enjoy things like sports, gym, and dance 5	☐	☐	☐	☐	☐	☐	5
6. I'm hopeless in English classes 6	☐	☐	☐	☐	☐	☐	6
7. I am usually relaxed 7	☐	☐	☐	☐	☐	☐	7
8. My parents are usually unhappy or disappointed with what I do 8	☐	☐	☐	☐	☐	☐	8
9. People come to me for help in most school subjects 9	☐	☐	☐	☐	☐	☐	9
10. It is difficult to make friends with members of my own sex 10	☐	☐	☐	☐	☐	☐	10
11. People of the opposite sex whom I like don't like me 11	☐	☐	☐	☐	☐	☐	11
12. I often need help in mathematics 12	☐	☐	☐	☐	☐	☐	12
13. I have a nice looking face 13	☐	☐	☐	☐	☐	☐	13
14. Overall, I am no good 14	☐	☐	☐	☐	☐	☐	14
15. I am honest 15	☐	☐	☐	☐	☐	☐	15
16. I am lazy when it comes to things like sports and hard physical exercise 16	☐	☐	☐	☐	☐	☐	16
17. I look forward to English classes 17	☐	☐	☐	☐	☐	☐	17
18. I worry more than I need to 18	☐	☐	☐	☐	☐	☐	18
19. I get along well with my parents 19	☐	☐	☐	☐	☐	☐	19
20. I'm too stupid at school to get into a good university 20	☐	☐	☐	☐	☐	☐	20

	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
21. I make friends easily with boys 21	☐	☐	☐	☐	☐	☐	21
22. I make friends easily with girls 22	☐	☐	☐	☐	☐	☐	22
23. I look forward to mathematics classes 23	☐	☐	☐	☐	☐	☐	23
24. Most of my friends are better looking than I am 24	☐	☐	☐	☐	☐	☐	24
25. Most things I do, I do well 25	☐	☐	☐	☐	☐	☐	25
26. I sometimes tell lies to stay out of trouble 26	☐	☐	☐	☐	☐	☐	26
27. I'm good at things like sports, gym, and dance 27	☐	☐	☐	☐	☐	☐	27
28. I do badly on tests that need a lot of reading ability 28	☐	☐	☐	☐	☐	☐	28
29. I don't get upset very easily 29	☐	☐	☐	☐	☐	☐	29
30. It is difficult for me to talk to my parents 30	☐	☐	☐	☐	☐	☐	30
31. If I work really hard I could be one of the best students in my school year 31	☐	☐	☐	☐	☐	☐	31
32. Not many people of my own sex like me 32	☐	☐	☐	☐	☐	☐	32
33. I'm not very popular with members of the opposite sex 33	☐	☐	☐	☐	☐	☐	33
34. I have trouble understanding anything with mathematics in it 34	☐	☐	☐	☐	☐	☐	34
35. I am good looking 35	☐	☐	☐	☐	☐	☐	35
36. Nothing I do ever seems to turn out right 36	☐	☐	☐	☐	☐	☐	36
37. I always tell the truth 37	☐	☐	☐	☐	☐	☐	37
38. I am awkward at things like sports, gym, and dance 38	☐	☐	☐	☐	☐	☐	38
39. Work in English classes is easy for me 39	☐	☐	☐	☐	☐	☐	39
40. I am often depressed and down in the dumps 40	☐	☐	☐	☐	☐	☐	40

	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
41. My parents treat me fairly 41	☐	☐	☐	☐	☐	☐	41
42. I get bad marks in most school subjects 42	☐	☐	☐	☐	☐	☐	42
43. I am popular with boys 43	☐	☐	☐	☐	☐	☐	43
44. I am popular with girls 44	☐	☐	☐	☐	☐	☐	44
45. I enjoy studying for mathematics 45	☐	☐	☐	☐	☐	☐	45
46. I hate the way I look 46	☐	☐	☐	☐	☐	☐	46
47. Overall, most things I do turn out well 47	☐	☐	☐	☐	☐	☐	47
48. Cheating on a test is OK if I do not get caught 48	☐	☐	☐	☐	☐	☐	48
49. I'm better than most of my friends at things like sports, gym, and dance 49	☐	☐	☐	☐	☐	☐	49
50. I'm not very good at reading 50	☐	☐	☐	☐	☐	☐	50
51. Other people get more upset about things than I do 51	☐	☐	☐	☐	☐	☐	51
52. I have lots of arguments with my parents 52	☐	☐	☐	☐	☐	☐	52
53. I learn things quickly in most school subjects 53	☐	☐	☐	☐	☐	☐	53
54. I do not get along very well with boys 54	☐	☐	☐	☐	☐	☐	54
55. I do not get along very well with girls 55	☐	☐	☐	☐	☐	☐	55
56. I do badly in tests of mathematics 56	☐	☐	☐	☐	☐	☐	56
57. Other people think I am good looking 57	☐	☐	☐	☐	☐	☐	57
58. I don't have much to be proud of 58	☐	☐	☐	☐	☐	☐	58
59. Honesty is very important to me 59	☐	☐	☐	☐	☐	☐	59
60. I try to get out of sports and physical education classes whenever I can 60	☐	☐	☐	☐	☐	☐	60

	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
61. English is one of my best subjects 61	☐	☐	☐	☐	☐	☐	61
62. I am a nervous person 62	☐	☐	☐	☐	☐	☐	62
63. My parents understand me 63	☐	☐	☐	☐	☐	☐	63
64. I am stupid at most school subjects 64	☐	☐	☐	☐	☐	☐	64
65. I have good friends who are members of my own sex 65	☐	☐	☐	☐	☐	☐	65
66. I have lots of friends of the opposite sex 66	☐	☐	☐	☐	☐	☐	66
67. I get good marks in mathematics 67	☐	☐	☐	☐	☐	☐	67
68. I am ugly 68	☐	☐	☐	☐	☐	☐	68
69. I can do things as well as most people 69	☐	☐	☐	☐	☐	☐	69
70. I sometimes cheat 70	☐	☐	☐	☐	☐	☐	70
71. I can run a long way without stopping 71	☐	☐	☐	☐	☐	☐	71
72. I hate reading 72	☐	☐	☐	☐	☐	☐	72
73. I often feel confused and mixed up 73	☐	☐	☐	☐	☐	☐	73
74. I do not like my parents very much 74	☐	☐	☐	☐	☐	☐	74
75. I do well in tests in most school subjects 75	☐	☐	☐	☐	☐	☐	75
76. Most boys try to avoid me 76	☐	☐	☐	☐	☐	☐	76
77. Most girls try to avoid me 77	☐	☐	☐	☐	☐	☐	77
78. I never want to take another mathematics course 78	☐	☐	☐	☐	☐	☐	78
79. I have a good looking body 79	☐	☐	☐	☐	☐	☐	79
80. I feel that my life is not very useful 80	☐	☐	☐	☐	☐	☐	80
81. When I make a promise I keep it 81	☐	☐	☐	☐	☐	☐	81

	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
82. I hate things like sports, gym, and dance 82	☐	☐	☐	☐	☐	☐	82
83. I get good marks in English 83	☐	☐	☐	☐	☐	☐	83
84. I get upset easily 84	☐	☐	☐	☐	☐	☐	84
85. My parents really love me a lot 85	☐	☐	☐	☐	☐	☐	85
86. I have trouble with most school subjects 86	☐	☐	☐	☐	☐	☐	86
87. I make friends easily with members of my own sex 87	☐	☐	☐	☐	☐	☐	87
88. I get a lot of attention from members of the opposite sex ... 88	☐	☐	☐	☐	☐	☐	88
89. I have always done well in mathematics 89	☐	☐	☐	☐	☐	☐	89
90. If I really try I can do almost anything I want to do 90	☐	☐	☐	☐	☐	☐	90
91. I often tell lies 91	☐	☐	☐	☐	☐	☐	91
92. I have trouble expressing myself when I try to write something 92	☐	☐	☐	☐	☐	☐	92
93. I am a calm person 93	☐	☐	☐	☐	☐	☐	93
94. I'm good at most school subjects 94	☐	☐	☐	☐	☐	☐	94
95. I have few friends of the same sex as myself 95	☐	☐	☐	☐	☐	☐	95
96. I hate mathematics 96	☐	☐	☐	☐	☐	☐	96
97. Overall, I'm a failure 97	☐	☐	☐	☐	☐	☐	97
98. People can really count on me to do the right thing 98	☐	☐	☐	☐	☐	☐	98
99. I learn things quickly in English classes 99	☐	☐	☐	☐	☐	☐	99
100. I worry about a lot of things 100	☐	☐	☐	☐	☐	☐	100
101. Most school subjects are just too hard for me 101	☐	☐	☐	☐	☐	☐	101
102. I enjoy spending time with my friends of the same sex 102	☐	☐	☐	☐	☐	☐	102

Appendix E

Class Lesson Plans and Supplementary Class Materials

Grades 4 and 5 Lesson Plan

Lesson	Topic
	Pre-test: SDQ I Questionnaire Explanation of procedure
1	Introduction - log books Skills Circuit
2	Skills Circuit
3	Skipping skills Relay: "Rodeo" Bean Bags "Why be Strong" (handout)
4	Dribbling Skills Circle chase Strengthening exercises with body weight "Healthy Body" - handout
5	Skipping skills Fun relays Jumping skills
6	Ball skills Dribbling around obstacles Strengthening exercises with body weight "Posture"
7	Obstacle Course - "Lion Hunt"
8	4-station strength circuit - seal drag, balancing skills, jumping, obstacle run
9	Skills circuit Trial II "Fitness principles"

Post-test: SDQ I Questionnaire
Social Validity Questionnaire: Intervention Group
Debriefing

Grades 7 to 10 Lesson Plans

Lesson	Topic
	Pre-test: SDQ II Questionnaire Explanation of procedure
1	Introduction to Weight Training Weight exercise handouts Log books
2	Weight Circuit
3	Aerobics Body image
4	Weight Circuit Body image and Beauty
5	Aerobics Definition of Beauty and how it affects self image
6	Weight Circuit Principles of Goal setting
7	Aerobics Using Goal Setting techniques for fitness
8	Weight Management Lecture
9	Weight Circuit Posture

Body profile handout

10 Aerobics
Fitness principles I
Handout

11 Weight Circuit
Fitness Principles II

12 Aerobics
For the love of the Game video

Post-test: SDQ II Questionnaire
Social Validity Questionnaire:
Intervention Group Debriefing

The "Thirty Second Commercials

Beauty is: Found in accepting yourself as you are and to love yourself. YOU ARE WORTH IT!

Negative body image is all in our minds. Our minds can be changed by accentuating the positive

Body Image: What we see in the mirror and how we feel about what we see

Positive body image: when we accept ourselves, for ourselves

A positive self-image leads to self-confidence.

Fitness is a lifestyle

Good health requires physical exercise, sound nutrition, adequate rest.

Beauty depends on good health.

Body image is: How we see ourselves

Affected by social standards

Not always a true reflection of ourselves

Beauty:

A matter of definition

Culturally explicit

In the eye of the beholder

Dependent on good health

Affected by a positive attitude

Exercise to feel good not just to look good

Weight management takes time. It is not a quick fix.

Good nutrition + increased exercise + time = successful fat reduction.

Managing your weight will help you feel good about yourself.

Exercise to reduce fat and increase muscle.

Ideal weight is what suits you best.
(Bone structure + muscle + Height + fat + weight)

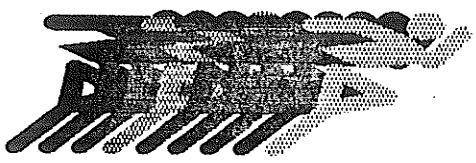
Exercise will decrease inches, but may increase weight.

Exercise needs to be regular and consistent to be effective.

Appendix F

Sample Log Book: Pre-Adolescent Group

EXERCISE	TRIAL 1	TRIAL 2
SIT-UPS		
SHUTTLERUN		
TOE REACH		
MEDICINE BALL PUSH		
PUSH-UPS		
STORK STAND		
MIRROR TRACE		
BALANCE BEAM		
BEAN BAG TOSS		
FLEXED ARM HANG		



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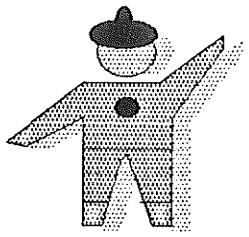


Why is it important to be fit?

So that:

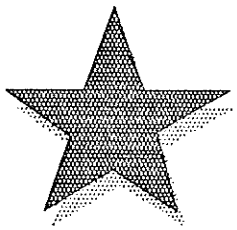
I can have strong muscles	yes	no	don't care
I can run fast	yes	no	don't care
I can jump high	yes	no	don't care
I can run far	yes	no	don't care
I can jump far	yes	no	don't care
I can play games and not get too tired	yes	no	don't care
I don't hurt myself when I try new things	yes	no	don't care

Do you think your fitness level is:

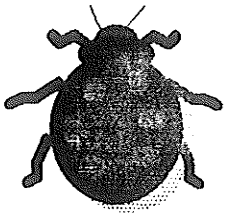
excellent	very good	good	ok	so so	could be better	I do not care

How fit would you like to be?

excellent	very good	good	ok	so so	could be better	I do not care



* Adapted from Helleson (1985)



Name:_____

I take part in sports to:

___**B**e healthy

___**H**ave fun

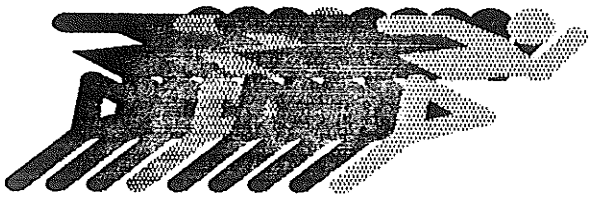
___**B**e strong

___**B**e with my friends

___**L**earn new skills

___**F**eel good about myself

___**G**et exercise



These are the activities I like to do that will help keep me fit:

___Swimming

___Running

___Baseball

___Skating

___Track and Field

___Downhill Skiing

___Walking

___Hiking

____Soccer

____Volleyball

____Basketball

____Horseback riding

____Cross-country Skiing

____Skipping

____Bicycling

____ Other _____

* Adapted from Helleson (1985)

Appendix G

Sample Log Book: Early and Middle Adolescent Group

BASIC RULES FOR SAFE STRENGTH TRAINING WITH WEIGHTS

1.Begin with a slow, thorough warm-up to prevent muscle injury.

2.Concentrate on using correct lifting postion:

a. Feet parallel, shoulder width apart

b. Lower hips by bending the knees

c. Keep back straight

3.Breathe: Inhale at starting position. Exhale during lift.

4.Use a smooth rhythm and go through the full range of motion.Avoid fast, jerky, throwing movements.

5.Begin with a light weight until the correct lifting position has been mastered.

6.Increase the weight gradually.

7.Rest between each set of repetitions and between each exercise.

8.Cool-down by stretching each of the muscle groups used during the strength training session to maintain FLEXIBILITY.

9.Get plenty of rest and a well-balanced diet between work-outs.

STRENGTH is developed by increasing the load.

POWER is developed by decreasing the load and increasing the rate throughout the range of motion.

MUSCLE ENDURANCE is developed by decreasing the load, increasing the number of repetitions and exercising at a slower rate.

Exercise	Muscle group	Date Reps/increments							
Shoulder shrug	shoulder & neck								
Arm curl	biceps								
Side bend	waist								
Arm extension	triceps								
Half squat	gluts and hamstrings								
Upright row	chest								
Squat	inner thighs								
Push ups	chest								
Side leg raises	outer thigh								
Hip raises	back								
Toe raises	calves								
Sit ups	abdomen								

GOAL SETTING FOR FITNESS

Name: _____

Date: _____

Rate your present fitness level.

excellent	very good	good	ok	so so	could be better	I do not care

Where would you like to be?

excellent	very good	good	ok	so so	could be better	I do not care

Choose one or more of the following goals. Only pick goals you are sincere about working on.

1.____ Cardiovascular endurance
2.____ Muscular endurance
3.____ Strength
4.____ Flexibility
5.____ Other _____
6._____ Losing weight
7._____ Gaining weight
8._____ Toning muscles
9._____ Relaxation
10.____ Other _____

Based on these goals, decide on the method of attaining these goals. Also set long range and short range goals:

Exercise or activity	For which goal	How much	Date Long-range	Date short-range
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

* Adapted from Helleson (1985)

BODY PROFILE

Body Measurements:

Date	Initial	2nd	Change	3rd	Change
Bicep (arm					
Neck					
Chest					
Waist					
Hips					
Thigh					
Calf					
Weight					
Height					

* Pull tape measure snug but not tight.

* Make sure measurement is made at the same spot each time.

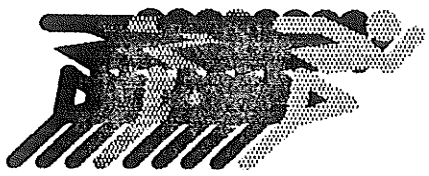
* *Weight* is related to height, bone structure, and muscle to fat ratio.

* It is possible to **decrease** body measurements while **increasing** body weight.

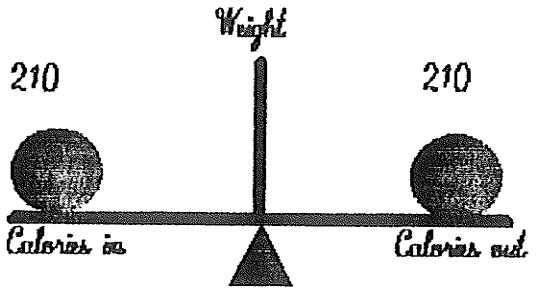
* There is no "*ideal*" body weight nor muscle to fat ratio.

* **Fat is required** for the maintenance of good health (i.e. maintenance of body temperature, meeting energy requirements).

* Spot reduction of fat is not possible. Distribution of fat is genetically predetermined.



Weight Management is a Balancing Act



Not all calories are created equal

Calories: the measure of energy produced by the consumption of food.

"Empty" calories are a waste of energy

Ideal Weight

The OIL of OLAY commercial : *"How much do you think she weighs?"*

Nutrition is key

"Life ain't simple" - five factors that affect weight

Bone structure
Height
Basal metabolic rate (BMR) : The rate at which the body converts food to energy
Fat to muscle ratio
Genetic disposition

DIET

is a four letter word

or

why diets don't work

A diet is what you eat on a daily basis

Restricting calories = starvation

The Exercise Connection

" Having your cake and eating it"

FITNESS PRINCIPLES

1. Choose an activity you enjoy.
2. Cross-train for total body fitness and to prevent burn-out.
3. Increase exercise workload gradually
4. Three one-half hour work-outs per week are sufficient to improve fitness.
5. It is possible to over-exercise.
6. Allow sufficient time between work-outs to allow the body to overcome fatigue. Insufficient rest between work-outs can result in injury and a decrease in the level of conditioning
7. There is gain without gain. Pain is a warning signal to stop: LISTEN TO IT!
8. Exercise intensity + time = number of calories burned.
9. Low intensity exercise (walking) can burn as many calories as high intensity (running) - it just takes longer.

Appendix H

Social Validity Questionnaires

Social Validity Questionnaire
Grades 7 to 10

#_____
Date:_____

1. Overall how would you rate this experience?

boring	could be better	so so	ok	good	very good	awesome

2. Which of these did you like the best?
   Weight circuit____
   Aerobics_____
   Discussion topics_____

3. Rate how you liked the discussion topics:

	boring	so so	ok	very good	awesome
Beauty	1	2	3	4	5
Body image	1	2	3	4	5
Goal setting	1	2	3	4	5
Weight management	1	2	3	4	5
Fitness principles	1	2	3	4	5

4. How would you rate the following activity?

Weight training	1	2	3	4	5
Aerobics	1	2	3	4	5

5. Do you feel there was improvement in your:

Muscular strength	none	a little	some	a lot
Muscular endurance	none	a little	some	a lot
Cardiovascular endurance	none	a little	some	a lot
Flexibility	none	a little	some	a lot
Fitness knowledge	none	a little	some	a lot

6. Would you continue the following outside the classroom

Weight training	yes	no
Aerobics	yes	no

7. Do you have any general comments about this programme?

Social Validity Questionnaire
Grades 4 and 5

#_____
Date:_____

1. How did you enjoy the classes?

boring	could be better	so so	ok	good	very good	awesome

2. Was it fun?

yes no

3. What did you like the best?
   - Relays_____
   - Ball skills_____
   - Skipping_____
   - Obstacle course_____
   - Skills circuit_____

4. What would you like to tell me about the classes?

Social Validity Questionnaire

Dear Staff Member:

Would you please fill out the following evaluation to the best of your knowledge and return it to me or Heather Westdal by March 15th. Thank you. Your co-operation is greatly appreciated.

Karin Boyd

SELF-ESTEEM STUDY EVALUATION

1. How would you rate this programme?

poor				excellent
1	2	3	4	5

2. Do you think the programme was relevant to the girls?

no at all				extremely
1	2	3	4	5

3. Did you find any difference in the students?

none some a lot

4. Based on any feedback from the girls, which of the following activities had the greatest impact on the girls?

Aerobics_____
Weight circuit_____
Discussion topics_____

5.Would you like to see a programme like this offered on a regular basis?

yes_____ no_____

6. Please provide any other insights regarding this programme you might have.