

# **THE INFLUENCE OF COMPETITION AND COOPERATION ON CHILDREN'S MOVEMENT COMPETENCE AND SELF-ESTEEM**

Justin Wakelin



Thesis presented in partial fulfillment of  
the requirements for the degree of  
Master of Sport Science  
Stellenbosch University

Study Leader: Prof ES Bressan

December 2007

## Declaration

I, the undersigned, hereby declare that the work contained in this thesis is my own original work, and that I have not previously in its entirety or in part, submitted it to any university for a degree.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Copyright ©2007 Stellenbosch University  
All rights reserved

## **Abstract**

The purpose of this study was to determine the effects of two different approaches to presenting content during a sport module in physical education on the movement competence and self-esteem of children ages 11 - 12. One approach consisted of competitive activities and the other approach consisted of cooperative activities and cooperative learning. The following measurement criteria were selected to assess movement competence: response time, coincident timing, eye-hand coordination (throwing and catching) and eye-hand coordination (striking). Harter's (1982) Perceived Competence Scale for Children was used to measure children's perceptions their competence in terms of cognitive, social and physical competence and general self-esteem.

Pre-tests were administered to a competitive activities group (n=14), a cooperative activities group (n=14) and a control group (n=25). Following a 10-week intervention programme, the competitive group achieved significant improvements in response time and eye-hand coordination (striking). The cooperative group improved significantly in their response time. There were no significant improvements in the control group. None of the groups demonstrated significant changes in perceptions of cognitive, social or physical competence or on general self-esteem.

This study concluded that participation in cooperative activities as well as competitive activities can help children develop their movement competence. Approaches to the development of positive self-perceptions and self-esteem still require further research. Neither the nature of competitive activities nor cooperative activities seemed sufficient to produce changes.

# Opsomming

Die doel van die studie was om die effek van twee verskillende aanbiedingsbenaderings op die bewegingsvaardigheidsvlak en selfbeeld van deelnemers te bepaal. Praktiese sessies van die sportmodule gedurende die liggaamlike opvoedingprogram van 11-12 jarige leerlinge is hiervoor gebruik. Een aanbiedingsbenadering was die gebruik van kompeterende-aktiwiteite en die ander die benutting van saamwerk-aktiwiteite. Om bewegingsvaardigheid te bepaal is die volgende nagegaan: responstyd, toevallige tydsberekening, oog-handkoördinasie (gooi en vang) en oog-handkoördinasie (slaan). Die Harter's Perceived Competence Scale for Children (1982) is gebruik om leerders se persepsies van hul eie kognitiewe-, sosiale- en fisieke vaardigheidsvlak, asook algemene selfbeeldvlak te bepaal.

Vooraf-toetsing is gedoen met 'n kompetisie-aktiwiteitsgroep (n=14), 'n saamwerk-aktiwiteitsgroep (n=14) en 'n kontrolegroep (n=25). Na afloop van 'n 10 weke intervensieprogram is gevind dat die kompetisie-aktiwiteitsgroep beduidende verbeterings toon in responstyd en oog-handkoördinasie (slaan). Die saamwerk-aktiwiteitsgroep het beduidend in responstyd verbeter terwyl daar geen beduidende verbetering by die kontrole groep waargeneem is nie. Geeneen van die groepe het beduidende veranderinge ten opsigte van eie persepsies van kognitiewe-, sosiale- of fisieke vaardigheidsvlak of eie selfbeeld getoon nie.

Die gevolgtrekking dui aan dat deelname in sowel saamwerk- as kompetisie-aktiwiteite leerders kan help om hul bewegingsvaardigheidsvlak te verbeter. Verdere navorsing word benodig om te bepaal watter aanbiedingsmetodes gebruik kan word om persepsies van eie vermoëns en van selfbeeld, positief te beïnvloed. Nie die kompetisie-aktiwiteitsbenadering of saamwerk-aktiwiteitsbenadering blyk voldoende te wees om positiewe veranderinge teweeg te bring nie.

# Table of Contents

	Page
<b>Chapter One    Setting the Problem</b>	<b>1</b>
Purpose of the Study	4
Significance of the Study	4
Hypotheses	7
Methodology	8
Limitations	8
Definitions	9
<b>Chapter Two    Review of Literature</b>	<b>11</b>
Perceived Competence and Self-esteem	11
Perceived Competence	14
Intrinsic Motivation	14
Developmental Considerations	15
Self-esteem	15
Self-esteem and Perception of Physical Self	16
Sources of Competence Information	17
External Sources	18
Developmental Considerations	19
Movement Competence	19
Instructional Strategies	20
Perceptions of Physical/Movement Competence	20
Implications for Teaching and Coaching	21
The Teacher as a Model	22
Peer Relations	22
Competitive and Cooperative Contexts	23
Competitive Activities	24
Cooperative Activities	26
Cooperative Learning Strategies	28
Physical Education and Competence Motivation Theory	34
Motivation in Physical Education	34

Competitive and Cooperative Contexts	36
Conclusion	38
<b>Chapter Three   Methodology</b>	<b>39</b>
Assessment Instruments	39
Assessment of Movement Competence	39
Assessment of Self-esteem	42
Procedures	43
Selection of Subjects	43
Pretest	45
Intervention Programme	46
The Competitive Activities Programme	46
The Cooperative Activities Programme	47
Posttest	48
Debriefing of Subjects	48
Treatment of the Data	49
<b>Chapter Four   Results and Discussion</b>	<b>50</b>
Descriptive Data	50
Hypothesis One	51
Hypothesis Two	53
Hypothesis Three	56
Conclusion	61
<b>Chapter Five   Conclusions and Recommendations</b>	<b>63</b>
Conclusions	64
Movement Competence	64
Self-esteem	67
Recommendations	70
Final Remarks	71
<b>References</b>	<b>73</b>

<b>Appendix A</b>	81
Consent	
<b>Appendix B</b>	82
Competitive and Cooperative Lesson Plan Samples	
<b>Appendix C</b>	91
Statistics printout	

## List of Tables

<b>Table 1</b>	50
Descriptive data for the subjects participating in the study	
<b>Table 2</b>	51
Comparison of pretest scores of movement competence for the competitive and cooperative activities groups	
<b>Table 3</b>	52
Results for the Competitive Activities Group (Group 1) on movement competence	
<b>Table 4</b>	53
Results of participation in a 10-week competitive activities programme (Group 1) on movement competence	
<b>Table 5</b>	54
Pretest to Posttest results for the Cooperative Activities Group (Group 2) on the tests of movement competence	
<b>Table 6</b>	55
Results of participation in a 10-week cooperative activities programme (Group 2) on movement competence	
<b>Table 7</b>	56
Pretest to Posttest sub-scale scores on Harter's (1982) Perceived Competence Scale for Children	
<b>Table 8</b>	57
Results of Competitive Activities (Group 1) on subscales of perceived competence	
<b>Table 9</b>	58
Results of Cooperative Activities (Group 2) on subscales of perceived competence	
<b>Table 10</b>	58
Results for the Control Group (Group 3) on subscales of perceived competence	



**Table 11**

60

Results of comparison among the three groups on the results of their pretest and posttest scores on the four subscales of self-esteem

## List of Figures

<b>Figure 1</b>	2
A modification of Harter's multidimensional model of global self-worth customized for the physical domain by Weiss and Ferrer-Caja (2002, p. 125)	
<b>Figure 2</b>	6
A part of Fox's presentation of the levels of specificity of self-perception in the physical domain (from Fox, 2002, p. 89)	
<b>Figure 3</b>	13
A three-phase conception of the development of Harter's model of competence motivation as presented in Weiss and Ferrer-Caja (2002, p. 108)	
<b>Figure 4</b>	30
Hellison's (1995) presentation of the five levels that define the progression of responsibility in the TPSR model (p. 11)	
<b>Figure 5</b>	31
Behavioural descriptors at Hellison's (1995) different levels of social responsibility (p. 20)	

## Chapter One

# Setting the Problem

Physical activity and sport have long been recognised as a means for children to achieve positive outcomes such as competence in motor skills, self-confidence, sportspersonship and interpersonal skills (Weiss, Smith & Theeboom, 1996). Included in this recognition was the acknowledgement that sport can provide socialising experiences where teachers and coaches can help children develop cohesive relationships with peers as well as cooperative behaviours and leadership skills. However, these developmental contributions associated with physical activity and sport can only be realised if children have the opportunity to participate and if they are motivated to become involved. This means that any effort to understand how positive outcomes can be achieved through participation in physical activity, must take into account both the nature of the opportunities provided and considerations about children's motivation.

Research is one approach to understanding the relationship between positive outcomes and participation in physical activity. Fox (2002) emphasised that finding an appropriate theoretical model and valid assessment instrumentation was essential for conducting research. In their extensive review of literature about motivational orientations and sport behaviour, Weiss and Ferrer-Caja (2002) identified Competence Motivation Theory (and the complementary measurements instruments developed by Harter), as an educationally relevant approach to studying the multidimensional outcomes linked to participation in sport and physical activity. The logic for choosing this theoretical approach is based on its inclusion of children's perception of their physical competence as one aspect of self-esteem. Because opportunities to improve physical competence are central to sport, recreation and physical education programmes for children, attention to both actual and perceived physical competence are seen as important outcomes of any educationally driven physical activity programme (Corbin, 2002).

Because Competence Motivation Theory is multidimensional, it does not restrict its focus to the physical domain. Weiss and Ferrer-Caja (2002) provided their conception of how perceptions of competence across multiple domains may be linked to the widely identified educational outcome of global self-worth (see Figure 1). Within their interpretation, self-worth is defined as a global feeling about the self and is equated with self-esteem. It is conceived to be a consequence of:

1. Perceptions about competence to achieve success in a particular context.
2. Perceptions of social support/regard (e.g., approval from peers, family, value to society, etc.).

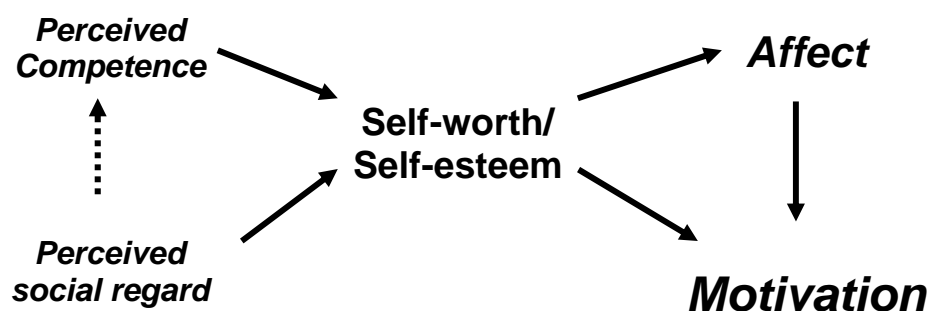
Self-worth/self-esteem then mediates:

1. The child's motivation to participate (his/her choice, effort and persistence in participation).
2. His/her affective response to (emotions or feelings about) participation. The affective response is also a mediator of motivation.

Weiss and Ferrer-Caja elevated the importance of perceptions of social regard on self-worth/self esteem by suggesting they could also have an impact on perceptions of competence (indicated by the arrow with the broken line).

*Figure 1*

A modification of Harter's multidimensional model of global self-worth customised for the physical domain by Weiss and Ferrer-Caja (2002, p. 125)



Weiss and Ferrer-Caja (2002) cited substantial support for Harter's model. They stated that "Perceptions of competence are consistently related to motivation orientation, perceived control, self-esteem and attraction to physical activity" (p. 123). In an example from sport psychology research, Ebbeck and Stuart (1996) found that perceived physical competence was a predictor of global self-worth/self-esteem among three different age groups of youth basketball players (8-9, 10-11 and 12-13 years old).

It would seem that there is a powerful relationship among perceptions of competence, self-esteem and motivation to participate in physical activity. Fox (2002) summarised the impact of self-esteem on motivation in this way: "Self-esteem and specific self-perceptions are closely tied to how we choose to invest our time and effort, and whether or not we persist..." (p. 84). He then concluded: "Sport has particular potential to affect the individual and his or her sense of self" (p. 84). These reasons support the implementation of an educationally-oriented sport programme as a means for the development of self-esteem as well as a positive attitude toward sustaining participation in physical activity.

Chairopoulou (2005) maintained that when sport is "used" properly, the mental, physical, emotional and social character of the participants could be cultivated. During the various situations that arise in sport, players repeatedly encounter the interaction of their own capabilities in relation to other players. This interaction can produce changes in both the actual and perceived competence of the players. Within Competence Motivation Theory, the perception of competence has been frequently studied and found to be a predictor of self-esteem (Weiss & Ferrer-Caja, 2002), so the goal of helping children gain physical competence in the physical domain (a unique objective of sport in education) is associated with the educational outcome of self-esteem.

Sport activities for children carry with them the notion of balancing competition with cooperation in order to create a context in which skill in performance is directly related to achievement. This would mean that both physical and social competences are needed for success. However, it must be remembered that it is not actual competence, but *perceived* competence

(seeing one's self as adequate and/or successful) that is the key to the impact of participation on self-esteem. In terms of designing children's sport programmes, this would suggest that managing the balance between competitive-cooperative relationships among the children is as important as managing the physical performance challenges. Weiss and Ferrer-Caja (2002) noted that because success in competitive activities relies on winning, they are regarded as ego-centered, while success in cooperative activities includes a strong element of social acceptance. In comparing participation in the two different types of activities, neither competitive activities nor cooperative activities were found to be better than the other in terms of developing children's perceived competence and self-esteem. They concluded that more research must be pursued before we understand how different contexts may create opportunities for the development of perceived competence and self-esteem.

### **Purpose of the Study**

The purpose of this study was to determine the effects of two different approaches to presenting content during a sport module in physical education on children's movement competence and self-esteem. One approach consisted of competitive activities and the other approach consisted of cooperative activities.

### **Significance of the Study**

Erpic, Skof, Boben and Zabukovec (2006) stated that involvement in physical activity is important during all periods of life. It is not only critical to the physical, social and mental development of young people, but also it helps older adults maintain vitality and may even prevent some illnesses. It was the lifespan importance of participation in physical activity that led them to conclude that school physical education was one of the most important means for the promotion of physical activity. They offered the following reasons:

- The years that children spend in school include those developmental periods that are most receptive to the educational outcomes of participation in physical activity.

- A quality physical education programme is sustained over many years, which increases the likelihood that it can achieve developmental outcomes.
- The school environment provides both the professional approach and the physical infrastructure needed to support an effective programme.

Despite statements of support for the potential of school physical education as a viable means for implementation of sport and physical activity programmes aimed at holistic development, there have also been expressions of concern. For example:

- Speednet (in Wright, 2004) found that increases in the time allocated in the curriculum to requirements for numeracy and literacy has resulted in a drastic reduction in the time allocated to physical education.
- Warburton (2001) completed a survey in 228 primary schools in the north east of England. He found over half the schools offered only one 30-minute lesson of physical education a week.

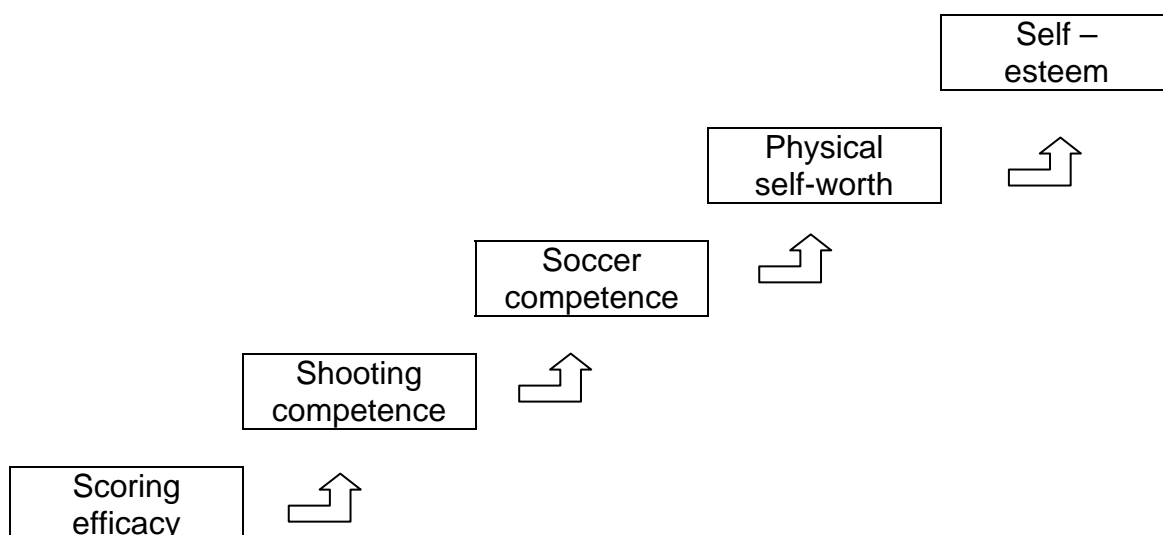
Physical education appears to be in the position where it must prove it can achieve educational outcomes if it is to regain its rightful place in the curriculum. This study will focus on the potential of sport as one content area in the physical education curriculum, with specific attention to the potential of competitive sport activities and cooperative sport activities as means for achieving the outcomes of movement competence and perceived competence associated with self-esteem. In other words, this study compares the potential of the specific situations created by competitive relationships on the one hand, to those created by cooperative relationships on the other.

Although Weiss and Ferrer-Caja (2002) found no difference between the effects of competitive and cooperative activities, they stated that additional research was needed. It is well accepted that perceptions of competence begin as situation-specific perceptions. For example, Fox (2002) used an example from soccer to describe a hierarchical model in which experiences in specific

situation can ultimately contribute to a domain-specific perceptions of self-worth and ultimately to self-esteem (see Figure 2).

*Figure 2*

A part of Fox's presentation of the levels of specificity of self-perception in the physical domain (from Fox, 2002, p. 89)



Within this Fox presentation, experiencing one's self as successful at scoring in soccer will lead to a perception of self as a competent shooter. This in turn can develop further to the perception of self as a competent soccer player, which in turn enhances feelings of physical self-worth. Feelings of physical self-worth will contribute to self-esteem. However, Fox (2002) was careful to point out that global self-esteem has been found to be distinct from, for example, either physical self-esteem or social self-esteem. This means that any conclusions about the impact of participation in physical activity on global self-esteem must be based on a multi-dimensional measurement instrument, such as Harter's (1982) Perceived Competence Scale for Children, the instrument used in this research.

Because this study was focused specifically on comparing two different interaction contexts in sport (competitive vs. cooperative), it was important to control for different teaching styles and different means for delivering feedback



during instruction. Fortunately, a variety of teaching styles (direct and indirect) and positive affective feedback can be provided in both competitive and cooperative sport (Mitchell, Oslin & Griffin, 2006). The meant that the same instructor could teach the two intervention groups in as similar a manner as possible in order to emphasise content/situation differences. In this way, this research will contribute to our understanding of the developmental potential of competitive and cooperative sport contexts as content areas in physical education.

A secondary contribution of this study will be to the study of self-esteem and perceived competence within an African – specifically a South African setting. Maleté (2004) observed that although much research using Harter's Self-Perception Profile model has been conducted in other parts of the world, very little is known about the role of perceived competence in sport and physical activity behaviours of youths in Africa. The lack of research in African contexts presents major challenges in any effort to understand the psychological determinants of the involvement of African youth in sports. This lack of understanding contributes to difficulties in designing and implementing either sport or physical education programmes in Africa that have the potential to achieve developmentally significant outcomes.

## **Hypotheses**

The following research questions guided this investigation:

1. There will be no significant improvements in the selected movement competence variables of response time, coincident timing, eye-hand coordination (striking) eye-hand coordination (throwing and catching) following participation in a 10-week competitive activities intervention programme.
2. There will be no significant improvements in the selected movement competence variables of response time, coincident timing, eye-hand coordination (throwing) and eye-hand coordination (striking) following participation in a 10-week cooperative activities intervention programme.

3. There will be no significant changes in the self-esteem (perceived competence) of children following participation in a 10-week games education programme focused on either competitive activities or cooperative activities.

## **Methodology**

This study followed a repeated measures design. Although an experimental study, it was necessary to work with groups (classes) already established in the schools where the data was collected and the programmes implemented. This means that rather than random samples for the two intervention groups, this study used samples of convenience. It was also necessary to identify a control group from a similar school, rather than the same school. It may be more accurate to describe the control group as a comparison group.

## **Limitations**

The following limitations must be acknowledged when considering the results of the study:

1. The number of subjects used in the study was small ( $n=14$ ) in both of the intervention groups, which constitutes a limitation in terms of generalisations to larger populations. This low number can be attributed to the fact that the classes in this school are small (with 20 being the maximum) and of this number, some of the class members weren't present at some of the testing days. This led to their exclusion from the final results.
2. All the subjects in the study were from the same age group. The results of the study may have been different if the subjects came from a different age groups
3. All of the subjects in the study were from a similar socioeconomic background. The results of the study many have been different if the

subjects came from a different socioeconomic background. The subjects were all from very wealthy and affluent backgrounds.

4. The assessment of movement competence was limited to four motor performance variables, and the tests were all field tests. This may have had an influence on the accuracy of these measurements.
5. Although all of the learners appeared to enjoy themselves and apply themselves during the activity sessions, neither their affective experience nor their motivation was assessed. Perceived social regard (social support for participation) was not assessed either. This means that only one aspect of the Competence Motivation Theory was studied.
6. Hellison's (1995) Teaching Personal and Social Responsibility (TPSR) was used to guide the facilitation of the cooperative games lessons. This may have added the variable of teaching strategies to the cooperative games experience, although there is literature to suggest that cooperative activities implicitly include cooperative learning strategies. Hellison stated that the TPSR model could be employed in teaching competitive activities and sport as well as cooperative activities. However, a close look at the TPSR model by the investigator led to the conclusion that the strategies would have been very new and different for the children in the competitive activities group. It was decided to approach the competitive activities in a straightforward traditional format where the skill development and game play outcomes guided the lessons.

## **Definitions**

### **Movement Competence**

"Competence signifies a level of proficiency in executing a task that is higher than that of a novice, but not as high as the level of an expert. It is considered to be situation-specific and dependent upon interaction "between knowledge and skill" (Connell, Sheridan & Gardner, 2003, p. 141).

“Movement Competence is a level of proficiency in achieving a common goal of a particular skill performance that requires support from an individual’s fitness, skill, knowledge, and psychological resources” (Nel, 1999, p. 30).

### **Competitive Activities**

Competitive activities is defined as students working against one another in attempting to achieve a goal that can only be achieved by one student or group of students. Goal achievement is mutually exclusive, which means that only one individual or group can be successful in achieving the goal of the activity (Grineski, 1996).

### **Cooperative Activities**

Cooperative activities are defined as students working together to achieve a goal. All students must make a contribution to goal achievement and are held accountable for their contributions. Goal achievement is mutually inclusive (Grineski, 1996).

Cooperative activities provide an instructional format in which students work together in small, structured, heterogeneous groups to master the content of the lesson. In cooperative activities, students can improve motor skills, work together as a team, help others improve skills, and take responsibility for their own learning (Dyson, 2001).

### **Self-concept**

Self-concept is one’s idea about one’s self. It is a kind of description of the self, based on abilities, activities, qualities, traits, etc. (Fox, 2002).

### **Self-esteem**

Self-esteem is an assessment or evaluation of self-worth. According to Fox (2002), the criteria used for self-assessment will vary among individuals and can be both situation-specific and culturally influenced.

## Chapter Two

# Review of Literature

A substantial amount of literature dealing with the self, self-concept, self-esteem, etc., has been published in both popular and academic formats (Fox, 2002). In an attempt to provide focus for this study, it was necessary to limit the scope of the literature reviewed. Horn (2004) provided some helpful definitions that allowed a purposeful search for information and concepts relevant to the aims of this investigation.

- Self-perception is an individual's beliefs, attitudes, thoughts and feelings about himself/herself. It may be either a general self-perception or a specific perception of his/her abilities, skills, competencies, characteristics, etc. (Horn, 2004).
- A variety of specific terms have been used to describe an individual's self-perception in achievement contexts. These terms include self-worth, self-esteem, perceived competence, perceived ability, self-efficacy, and self-confidence (Horn, 2004).

Because sport activities are definitely achievement contexts, the following sections try to establish a relationship among perceived competence and self-esteem, movement competence as a source of competence information, the unique contexts of competitive and cooperative activities, and the compatibility between competence motivation theory and physical education. A special effort was made to find literature related to children as opposed to adults since developmental differences in the formulation and maintenance of self-esteem has been well documented (Weiss & Ferrer-Caja, 2002).

## Perceived Competence and Self-esteem

As mentioned in Chapter One, the theoretical point of departure for this research was Competence Motivation Theory. Although based on early work

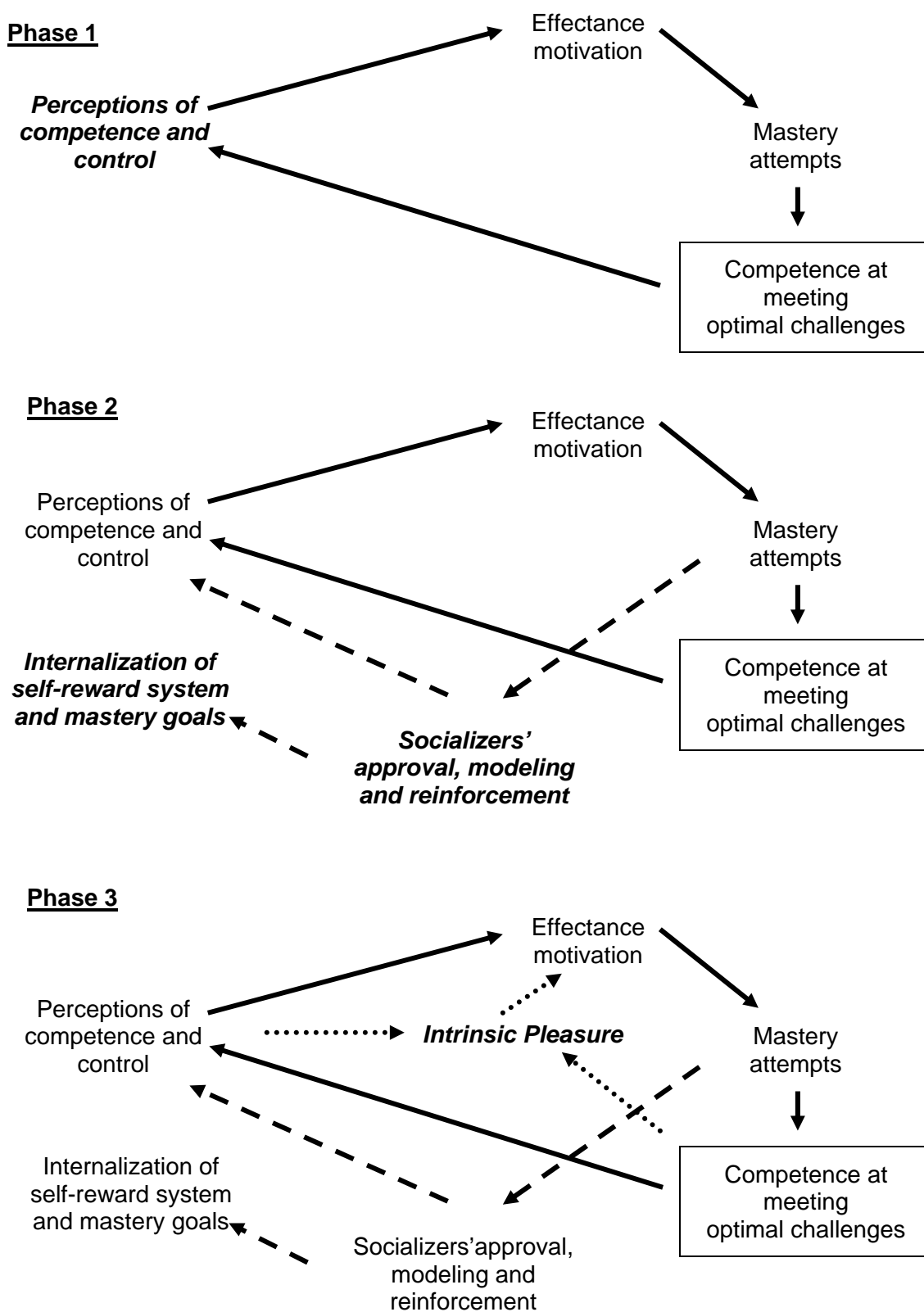
by Robert White, Susan Harter is acknowledged as the chief contributor to the development of the theory (Weiss & Ferrer-Caja, 2002). White's original conception was that feelings of efficacy, experienced as an outcome of being competent in an achievement situation, had motivational properties that he labeled "effectance motivation." Effectance motivation was proposed to lead a person to be more attracted to additional mastery attempts, which resulted in competence in the situation, and so on. It was a positive cycle in which competence bred positive motivation to strive for more competence.

Weiss and Ferrer-Caja (2002) identified the substantial developments to the theory made by Harter (1978) (see Figure 3).

- First, Harter specified that competence in meeting optimal challenges – not just experiencing one's self as competent - was required in order to have an impact on motivation. In other words, the task to be accomplished had to be sufficiently difficult to extend the performer. She also noted that if tasks were too challenging and failure was the result, the potential for a negative impact on self-esteem was possible as the individual would perceive himself/herself to be non-competent and not in control.
- Second, Harter specified that socialising agents such as important adults and peers were crucial in determining how children approach mastery attempts (e.g. whether they are encouraged to do so, etc.), the development of an internal reward system and their perceptions of competence and control (e.g. whether they are reinforced for effort or only for success, etc.).
- Third, Harter identified that intrinsic pleasure or personal enjoyment found in meeting optimal challenges should be regarded as a primary mediator of motivation. Intrinsic pleasure and enjoyment are possible in meeting optimal challenges and in perceiving one's self as competent and in control. These emotional responses contribute substantially to effectance motivation – the motivation to feel competent in achievement settings.

Figure 3

A three-phase conception of the development of Harter's model of competence motivation as presented in Weiss and Ferrer-Caja (2002, p. 108)



## **Perceived Competence**

Perceived competence holds a central role in Competence Motivation Theory. Weiss and Ferrer-Caja (2002) stated that Harter's theory predicts that an individual will be motivated to develop competence in a particular achievement domain (e.g., academic, physical, social, etc.), if that domain is valued by the individual. If their mastery attempts are successful, the child will experience increased perceptions of competence and control.

Perceived competence has been defined as an individual's perception of his/her capabilities in a specific domain (Harter, 1982). Fairclough (2003) described perceived competence as one's beliefs about his/her ability in an achievement domain that are formed from information gathered from the performance environment, including input from significant others. Perceived competence has also been defined as how an individual perceives her/his own ability to perform a specific task or a role-appropriate behaviour.

Horn (2004) stated that it is important to recognize that the changes in children's self-perceptions are due to the complex interrelationships between cognitive, physical and socio-environmental factors, and that the relationship among these factors will change as children become older.

## **Intrinsic Motivation**

The popularity of sport for children has produced sustained interest in research into children's participation motivation. Three variables thought to be important determinants of participation motivation in young athletes were identified as perceived competence, intrinsic motivation, and perceptions of control over the environment (Harter & Connell, 1984).

A number of studies have found that intrinsic motivation is positively related to perceived competence (Harter & Connell, 1984). Weigand and Broadhurst (1998) observed that the more intrinsically motivated people are, the more likely they are to view themselves as competent. Research in sport and physical education (Ntoumanis, 2001) has shown that intrinsic motivation to participate in physical activity is positively related to students' reports that they



feel less bored, invest greater effort, and are more interested in future participation. It is therefore might be useful to point out that that the higher perceived competence, brought into effect by competitive and cooperative strategies might lead to this increased intrinsic motivation.

Vallerand and Reid (1984) suggested that increased levels of intrinsic motivation are also an outcome of perceived competence. For example, Vallerand (1983) found that increases in intrinsic motivation were associated with increases in perceptions of competence among male ice hockey players ages 13 to 16. Thus, there seems to be a reciprocal relationship between perceived competence and intrinsic motivation, although less is known about their causal association (Weigand & Broadhurst, 1998).

### **Developmental Considerations**

Xiang, Solmon and McBride (2006) reported that the ways in which ability and competence are evaluated, change with age. They found that most young children do not clearly differentiate between ability and effort or “trying”. If they believe that they are “trying hard” they tend to consider themselves to be capable. By the time children reach late elementary school years, they are able to make distinctions between ability and effort and can determine the contribution that each makes to their performance in achievement settings.

Shapiro, Yun and Ulrich (2002) stated that from approximately age 9, children are able to distinguish between different achievement domains and they can make judgments about their self-worth in relation to those specific domains. In order to assess the domain specific self-concept, then, Harter developed multidimensional instruments that are sensitive to these developmental and domain specific differences, e.g., the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter & Pike, 1984) and the Perceived Competence Scale for Children (Harter, 1982).

### **Self-esteem**

In Chapter One, a sketch of Harter’s multidimensional model of global self-worth (Weiss & Ferrer-Caja, 2002) was presented to illustrate the

theoretical point of departure for this research in terms of the relationship between perceived competence and self-worth (which Harter equated with self-esteem). In this model, self-worth/self-esteem is conceived to be influenced by perceived competence and perceived social regard toward the specific achievement domain. It is self-worth/self-esteem that then serves to mediate motivation for continued participation, as well as the emotional response to achievement.

Burkhalter and Wendt (2001) reported that perceived competence reflects on an individual's self-esteem and self-confidence. Ebbeck and Gibbons (2003) confirmed that factors associated with positive self-esteem include achievement in a variety of competence domains.

Because of positive correlations found between situation-specific perceptions of competence, self-esteem and motivation in achievement situations, Weiss and Ferrer-Caja (2002) concluded that understanding how children's self-esteem is related to perceptions of competence and motivation will help explain variations in children's achievement behavior and help teachers and coaches devise strategies for enhancing positive competence perceptions, encouraging positive affective responses, and developing intrinsic motivation. For example, Weiss and Ebbeck (1996) designed intervention strategies for enhancing perceived physical competence in children that in turn facilitated positive self-evaluations, positive emotional responses, and motivation to continue participation.

### **Self-esteem and Perception of the Physical Self**

Fox (2000) stated that perceptions of the physical self occupy a central position in studies of the self because the body, through its appearance, attributes and performance serves as the interface between the individual and the world. It was his position that perceptions of the physical self have demonstrated fairly strong correlations with global self-esteem across the lifespan. Included in self-perception of the physical self were perceptions of physical appearance and body image, as well as specific physical

competencies such as sports competence, perceived fitness and physical health.

Fredenburg, Lee and Solmon (2001) noted that it is not as important to understand what ability is as it is to understand what children think ability is. In other words, it is a child's perceptions of ability or competence that will impact on his/her perception of the physical self, which will impact self-esteem. Whether identified in the research as perceived competence, self-efficacy or perceived ability, it is the child's interpretation of his or her ability that has been linked to the nature of the impact on self-esteem. Horn (2004) concluded that given the extent of research about the role of children's and adolescents' perceptions of themselves and their abilities in the development of self-esteem, it is no surprise that both researchers and practitioners seek to identify strategies and intervention programmes that will enhance perceptions of competence and self-esteem.

## **Sources of Competence Information**

If perceptions of competence can have such a powerful effect on self-esteem, then it is important to identify the sources of information that children use when arriving at their perceptions. Such information would be valuable, not only for understanding children's sport-related behaviors but also for implementing programmes that are sensitive to the development and maintenance of self-esteem. .

Weiss, Ebbeck and Horn (1997) found that the judgments children form about their competence have an impact on their self-esteem. Perceptions of competence also have been associated with emotional responses in participation (e.g., enjoyment, anxiety, etc.) and motivation to sustain involvement in physical activity (Weiss & Ebbeck, 1996), therefore it is critical for researchers and educators come to identify the sources of information children use when judging their competence.

Horn (2004) reviewed recent literature in which efforts were made to identify the sources of information that children, adolescents, college

students/athletes, and adults use to evaluate their competence in sport and physical activity contexts. She reported the following as the most common sources identified:

- Self-comparison information (in relation effort and past performances).
- Achievement of self-set goals.
- Physiological responses to goal achievement and participation.
- Social comparison information (comparison to peers).
- Evaluative feedback received from parents, peers, coaches, teachers, friends, etc.

Information such as amount of effort exerted, achievement of self-set goals, and the physiological response to participation confirm the personal experience of movement because they are sources found within the individual. However, the role of external evaluation in terms of social comparison and evaluative feedback underscores the role of external sources in the formulation of perceived competence.

## **External Sources**

An important source of external information is undoubtedly the feedback provided by teachers and significant others (Magill, 2003). Ewing (2005) stated that self-esteem is developed not only by evaluating our own abilities, but also by evaluating how other people respond to us. Children in particular actively look to parents and coaches for signs – verbal and non-verbal - that will help them determine the success or failure of their performances. Feedback may be so important to children that “no feedback” may be interpreted as disapproval.

It has been repeatedly demonstrated in research that teachers and parents influence how children perceive their own ability (Dweck, 2002). The research pertaining to sport socialisation has identified parents, peer groups, teachers and coaches as the most important sources (Lewko & Greendorfer, 1988). These studies have shown that the values, perspectives and behaviours

of significant others have an important impact on self-esteem in sport activities as well as motivation in sport, especially in childhood and adolescence.

## **Developmental Considerations**

(Weiss et al., 1997) stated that there is an age effect on the sources which are regarded as important in self-evaluation. Children gradually replace adult feedback with peer feedback as a source of perceived competence. Only in later adolescence is more self-reference criterion achieved. This focus on peer evaluation and social comparison during middle childhood (ages 9 -14) makes the sport setting a particularly powerful environment for learning about the self.

In their study of children in Kindergarten and Grades 1, 4 and 5, Lee et al. (1995) found that children used their class behavior, effort and task mastery as the criteria for assessing their own ability. In a similar study of students in Grades 4, 8 and 11, Xiang, Lee and Williamson (2001) reported that both children and adolescents regarded their class behavior, effort, task mastery, and natural ability as indicators of their ability. They also often compared themselves to their peers in judging their own ability.

## **Movement Competence**

A motor skill is a pattern of observable muscle movements that are organized to achieve a specific goal (Bressan, 1995). The movements found in sports, games, dance and exercise activities are considered to be motor skills because they are performed in order to achieve a specific outcome. If the outcomes are achieved successfully over an extended period of time, the performer is considered to be competent. Keogh and Sugden (1985) advocated the importance in studying of movement competence for researchers in the field of movement skill development. They presented their argument in the following words:

Achievement needs to be measured and studied in a broader perspective of effective participation or competence. This is a functional rather than a skill perspective that tells whether a person is

effective in a situation...Competence implies that an individual can adapt and adjust to get the job done. (p. 200)

### **Instructional Strategies**

Alderman, Beighle and Pangrazi (2006) described some essential instructional strategies to promote children's development of movement competence. They highlighted that it was essential that children be given enough time to practice skills with an emphasis on quality of movement (i.e. practicing correctly). They also indicated that if the outcome of a skill, or product (e.g., successfully making a free-throw, etc.), was over-emphasised, a decrease in children's willingness to take risks or perform the skill in the future might be the result. There appears to be a balance needed in helping children become successful in achieving specific performance outcomes and maintaining their interest in continued motivation.

Corbin (2002) provided an important clarification that is applicable to this study. He cautioned that teachers and coaches must not make the assumption that competence equals self-esteem or that increases in competence will necessarily produce increases in self-esteem. He reminded professionals that although they should focus on developing physical/movement competence in each child, there are factors other than actual physical/movement competence that will affect self-esteem. In other words developing positive perceptions of competence are as important as actual competence.

### **Perceptions of Physical/Movement Competence**

Actual physical/movement competence appears to have an impact on both self-perception and perception of self by others. For example, research has shown that a significant relationship may exist between physical competence, interpersonal skills, and peer acceptance (Weiss & Duncan, 1992). Ewing (2005) found children who believed they were physically competent in sport were rated by their teachers as having a higher physical competence. In addition, children who perceived themselves as physically competent were also those who perceived themselves to be more popular with their peers and more competent in social relationships.

Horn (cited in Ewing, 2005) discovered that among 13 to 15 year old female softball players, actual skill development was the most powerful contributor to positive changes in their perceptions of their own ability. Physical competence was frequently identified as an important dimension of popularity among youth (Coie, Dodge & Kupersmidt, 1991). Of course, this relationship between physical competence and social recognition may be limited to competence in those physical activities that are highly regarded by one's social group. However, several studies have demonstrated that among children – especially boys- physical competence has a positive impact on children's status in their peer group (Seráfica & Blyth, 1985).

### **Implications for Teaching and Coaching**

Ewing (2005) explained that the development of self-esteem and perceptions of competence involved much more than providing positive feedback. Horn (cited in Ewing, 2005) described how coaching behaviours may influence self-esteem. She found that players who received more frequent positive feedback or no feedback during practice sessions scored lower in perceived physical competence than those players who received what might be considered criticism of their performance. These results appear to contradict the notion that approval from a coach would have a positive impact and disapproval from a coach would have a negative impact on players' self-perception. Horn explained the results by referring to the content of the feedback. The feedback that was critical of performance contained skill relevant information, which sent a message to the players that they were capable of improvement and that more was expected from them. This had a positive impact on self-perception.

Bressan (1995) stated that this type of critique of performance is effective if it contains corrective feedback. Corrective feedback provides the player with information about what they can do to improve their performance. It is widely accepted to be the most helpful as it provides players with specific suggestions about how they can make adjustments to their motor performance in order to become more successful. It appears that the content of the feedback is not only the key to helping players develop skills, but also sends a message to players

about the expectations of the coach. It is this expectation that may have an effect on the players' perceived competence.

### **The Teacher as a Model**

Laios, Theodorakis and Gargalianos (2003) found that the physical education teacher/coach was considered the most important external motivational factor for participation. They concluded that the perception of the teacher by the students influences their students' performance improvement and their behaviour in class. Their perception included the physical education teacher-coach's knowledge, teaching ability, their devotion and their behaviour. This suggests that only some teachers will have a positive impact on students.

### **Peer Relations**

Evans and Roberts (1987) conducted a sport-specific study that examined the relationship between physical competence and peer relations. Specifically, this study examined the organisational technique called "choosing up sides." A close relationship was found among sport ability, social status and popularity among peers. For example,

- Group leaders were also the most competent players.
- The selection of teammates followed a hierarchy of sporting ability, with the less skilled children selected last.
- The most skilled boys occupied dominant roles on the teams.
- Decisions made during the game on who could or could not play followed the hierarchy of sporting ability, and the less skilled children were the least empowered.

Looking at this report of the process of team selection on the playground provides evidence of a relationship between a child's movement competence and his/her social standing within the peer group. For teachers and coaches, it may serve as a reminder of how important it is to help children develop actual movement competence; it also underscores how the manner in which they allow



children to self-select and control their own games may have a negative and undesirable impact on some participants.

## **Competitive and Cooperative Contexts**

Weiss and Duncan (1992) identified sport and physical education as highly promising means for the development of selected cognitive and social competencies as well as physical competencies. If presented using appropriate instructional strategies, they concluded that it was possible to achieve physical, social and cognitive skills development outcomes.

The key to developing positive perceptions of ability is to provide children with opportunities in which they can demonstrate success or effectiveness in a specific achievement domain (Ebbeck & Gibbons, 2003). Physical education classes can provide children with an environment in which they can acquire competence in a variety of domains. Of course, when positive outcomes are possible, so are negative outcomes. Suomi, Collier and Brown (2003) warned that physical education may be a source of negative social experiences. This is why it is important to understand what kinds of social interactions are encouraged by different approaches to physical education content.

Wright (2004) stated that competitive games may be a part of the content of a physical education programme, but they must not be considered the most important part. The focus in an educational approach is on the achievement of educational outcomes. The teacher tries to choose the means that will provide opportunities for students to realise those outcomes. In some cases, the means will be competitive activities, in other cases, non competitive activities.

### **Competitive Activities**

Competitive activities involve students working against one another alone or in groups, in an attempt to achieve a goal (Grineski, 1996). Goal achievement is mutually exclusive, which means that only one individual or group can be successful in achieving the goal of the activity.

Teachers have encountered a difficult task in ensuring that competition remains a healthy part of the physical education programme. Cheffers (1996) suggested a broad conception of competition as a goal-directed activity against a standard or task as well as another person or team. He noted that competitive sport tends to exclude less-skilled children, while education should include everyone. However, he was also hopeful that there could be modifications in the approach to sport and competitive activities that would find a way to continue to include all children.

Competitive team sports as part of the physical education curriculum will too often favour the athletically gifted students while failing to meet the needs of others (Ballard & Chase, 2004). However, selecting appropriate means is no easy task. The students in a physical education classes often come from very diverse backgrounds. In addition to lacking the necessary physical skills to be successful in competitive activities, there may be students who simply do not like a competitive environment.

Competitive contexts are not always compatible with personal development (Hastie & Buchanan, 2000). Competitive contexts can shift attention away from what is happening to the self and to others in order to focus only on winning. Team sports are sometimes promoted as a means for promoting social and emotional development. However, when too much emphasis is placed on winning, development can actually be in a negative direction (Ballard & Chase, 2004):

Halls (2006) felt that sport practitioners could reduce the overemphasis on competition and encourage the enjoyment of competition. Enjoyment was identified as one of the primary reasons children play organized sport. Research has shown that an overemphasis on competition by a coach or parent is often the reason why young people drop out of sport. MacPhail, Kirk and Eley (2003) suggested that a climate that rewards hard work and improvement is more conducive to continued participation than a climate that over-emphasises the value of winning.

Chairiopolou (2003) was convinced that excessive competition would spoil the educational potential of participation in sport unless the competitive dimension of the environment was effectively managed. The results of the Causegrove Dunn and Watkinson (1994) research supported this position. They reported that low self-esteem was a possible outcome of social comparison in achievement domains, which highlighted the need to carefully manage social comparison situations. None of the research concluded that competition is inherently “bad”, but rather that it is a powerful social comparison context that must be carefully managed. It is important for physical educators and coaches to shape competitive activities and sport into means that encourage all students to work toward improvement. Halls (2006) stated that even in youth sport, success should not be measured by winning, but rather by the application of effort and by improvement.

A learning environment that is focused on improvement has been referred to as mastery or a task-oriented environment, and it is considered by many to provide an optimal instructional climate (Xiang et al., 2001). Students who are task-oriented place a high value on self-improvement. This can be contrasted to the climate created by the competitive environment. In this environment, students are more ego-involved and are interested in demonstrating their superiority over others. Biddle (cited in Solmon, 2006) stated that there have been many studies conducted that support the idea that a focus on personal improvement and mastery of tasks, rather than on outperforming others, provides an environment that promotes learning for all children.

When teachers encourage students to work to improve their skills, and redefine success as either meeting a criterion standard or achieving personal goals, then all children in a class have the opportunity of becoming successful (Solmon, 2006). If teachers emphasise outperforming other students and define success only in terms of being the best in the class when compared to the others, only a very few students can experience success.

## Cooperative Activities

In cooperative activities, all participants must make a contribution to goal achievement and are held accountable for their contributions (Grineski, 1996). Dyson (2001) referred to cooperative activities as opportunities for students work together in small, structured, heterogeneous groups to achieve the goal of the activity. Because cooperative activities encourage social and emotional development without competition, they are considered to have a greater potential to accommodate individual differences than competitive activities do (Ballard & Chase, 2004).

Cooperative activities include recreational and non-traditional activities. When introduced into a physical education setting, nontraditional activities have often proven effective because success relies on group cooperation, not the skill of one or two participants. Ballard and Chase (2004) identified one benefit of including cooperative activities is that the activity can be shaped to achieve important social and emotional development outcomes. For example, they reported that students often experience enhanced self-perceptions through participation in adventure activities.

Of course, social comparison occurs in cooperative activities. Most physical activity settings provide the opportunity for learners to observe each other. Lee (2003) stated that as children age they understand that social comparison may indicate how much ability they have compared with others. It has been argued, however, that the understanding of one's own ability does not necessarily have to depend on social comparison. Teachers can encourage students to observe their peers in order to learn, not to judge their ability. If success is defined as accomplishing a goal rather than outperforming others, then classmates become helpful resources rather than competitors. One approach used by teachers to accomplish this relationship among peers is setting up cooperative group activities where students interact in small groups and learn from their peers.

Xiang et al. (2006) confirmed that cooperative activities create a task-oriented climate. In this type of climate a teacher will present students with an

assortment of tasks and allow them to make choices at either an individual or a group level. Teachers recognise individual accomplishments and evaluate students on mastery, skill development, and effort rather than on ability. This type of climate is also compatible with the inclusion of students with physical and learning disabilities. Research has found that the interactions provided in an inclusive setting may result in improved self-perceptions for all students involved (Lieberman, James & Ludwa, 2004).

Cooperative activities call for cooperative learning, which include the development of positive verbal interactions among students and an orientation toward the achievement of group goals. Programmes that use cooperative learning have been found to improve motor skills as well as social skills (Grenier, Dyson & Yeaton, 2005). Studies have also shown that cooperative learning situations have led to enhanced fitness and improvements in the sport skills of less skilled students (Grineski, 1996).

Participation in cooperative activities is thought to enhance motivation for learning because it encourages students to work together (Grenier et al., 2005). They identified the following four required characteristics of a cooperative activity that creates the opportunity for cooperative learning:

1. Positive interdependence (all group members complete the task, even if it takes extra time and effort to help everyone be successful).
2. Individual accountability (every member of the group must contribute and do their share during the activity).
3. Face-to-face interactions (students interact directly with each other and talk to each other).
4. Group processing (the group evaluates together how well their group functioned).

Grineski (1996) contended that when teachers focus on cooperative learning, the quality of the physical education programme will be improved. As his rationale for this statement, he identified the inclusive rather than exclusive nature of cooperative learning: All students work together, with each student's

contribution needed for goal achievement. Dyson (2001) affirmed that cooperative learning has also been associated with positive self-esteem outcomes.

The initial implementation of a new cooperative activities/learning programme takes a lot of work (Dyson & Rubin, 2003). Teachers developing this approach may find that in addition to students improving their motor skills, social skills can be developed, such as working together as a team, helping others improve their skills, and learning to give and receive feedback. However, physical educators who use cooperative activities may find they do not get the full benefit of the context unless they also incorporate cooperative learning (Dyson, 2001). The approach used in this study was first to design cooperative activities that rely on positive interdependence (players must cooperate in order to succeed), and individual accountability (each player must do his/her part in order for the group to succeed). Then, because cooperative learning is recommended to activate the unique educational potential of cooperative activities, cooperative learning strategies were identified and employed in every lesson.

## **Cooperative Learning Strategies**

The inherent dependence on social interaction for success in cooperative activities led to a search for a conception of teaching strategies that were compatible social development outcomes. Suomi et al. (2003) identified Hellison's (1995) Teaching Personal and Social Responsibility (TPSR) model as a respected approach to teaching social skills through participation in physical activity. Hellison has been a leader in physical education pedagogy and has worked for years on strategies for using sport and exercise as a vehicle for social development. This effort has included finding ways for helping at-risk youth take more responsibility for their own well-being as well as becoming more responsive to the well-being of others. He is regarded as a pioneer in using playgrounds and gymnasiums as centres for developing students' self-esteem.

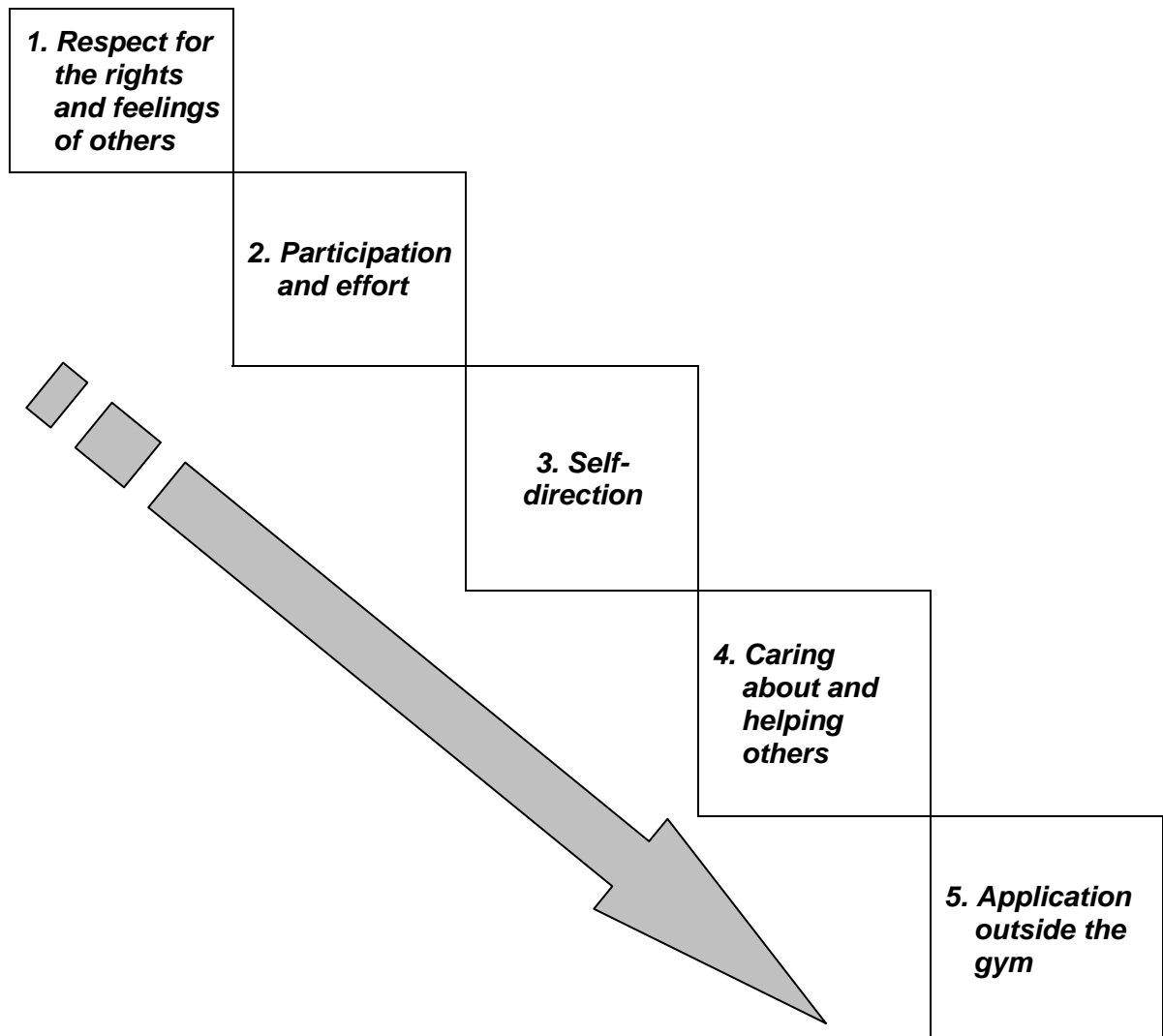
Hellison (1995) presented the case that physical activity and sport situations are filled with opportunities for children and youth to learn about self and others. He identified the following key points in his presentation:

- The situations are interactive and can be emotionally involving.
- The situations are attractive to many children and youth (they value the activities).
- The situations can be structured and re-structured to give participants opportunities to explore personal and social behaviour in reasonably controlled settings.

Hellison (1995) was particularly committed to working with children and youth who had personal and social problems. He was convinced that these students required more than learning motor skills, playing games, and developing fitness. He felt that they also needed to learn about themselves in relation to both personal and social values and skills. His intention was that the TPSR model would be the framework for his programme (see Figure 4). His idea was that while students were learning a motor skill or developing fitness, they would also be learning about personal and social responsibility. His plan was to use each level progressively to guide lessons, for example, initial lessons would focus on developing respect for the rights and feelings of others. Once success was achieved on this level, lessons would progress to focus on students putting effort into their participation. Self-directed learning became the third level

Figure 4

Hellison's (1995) presentation of the five levels that define the progression of responsibility in the TPSR model (p. 11)



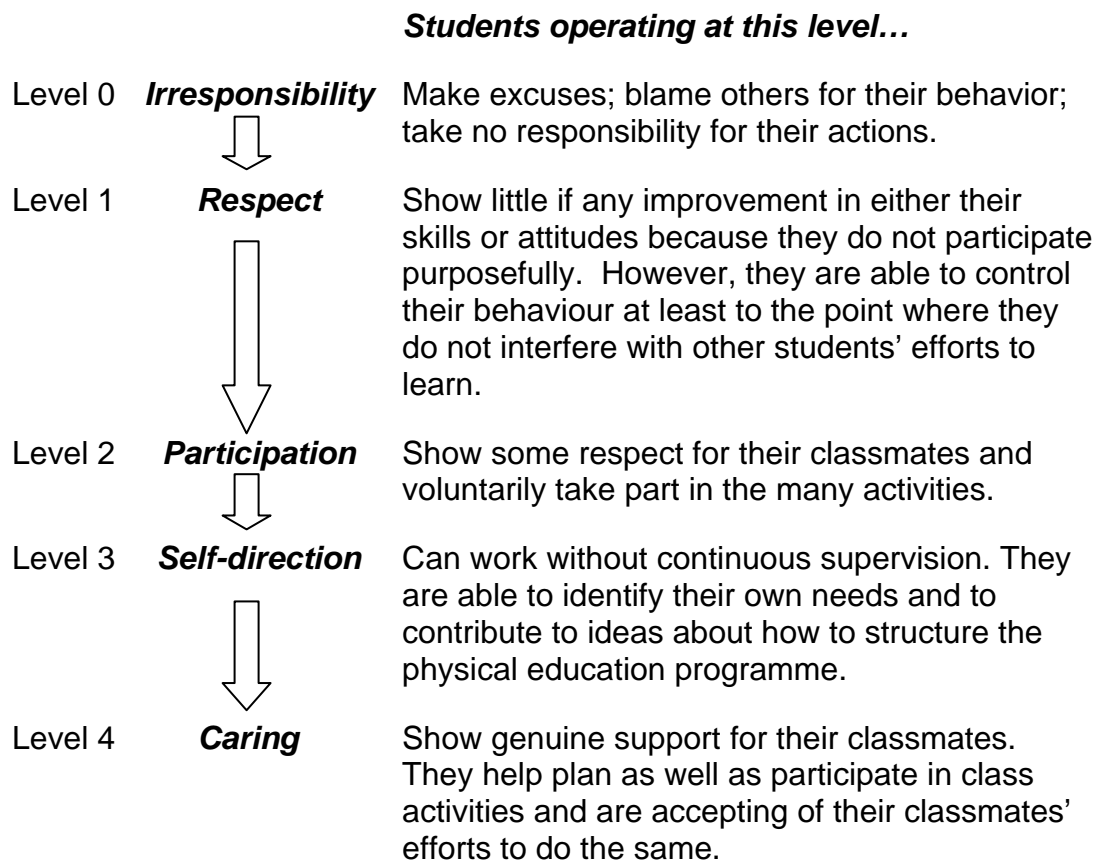
attempted, followed by lessons focused on caring about and helping others. Once students appeared able to operate on this level, he wanted to work with the students on thinking of ways what was learned in physical education could be transferred to everyday life.

Hellison (1995) found that the TPSR model provided him with general direction, but was not specific enough to guide lesson implementation. He decided that he first needed a way to keep track of progressive changes in students' behaviour. He shared this example in his textbook:



Figure 5

Behavioural descriptors at Hellison's (1995) different levels of social responsibility (p. 20)



He found that these levels were very practical in terms of students' self-evaluation of behaviour in addition to providing a common reference point for his discussions with students about the development of socially responsible behaviour. Students could relate to the levels and assess their own behaviour at different levels at different times and in different situation. In other words, he encouraged them to realise that they had a choice about their behaviour. Hellison's hope was that they would begin to choose participation, self-direction and caring more often.

Hellison's (1995) second contribution to bringing the framework closer to practical application was in his identification of specific teaching strategies. He found that the following six strategies could be used at any level in the students'

development and were helpful in facilitating students' progress toward more socially responsible behaviour.

1. Awareness talks.

The students cannot relate to the levels if they are not aware the levels exist. Awareness talks do not have to be mini-lectures. They can be brief introductions or closings to lessons, individual or group chats during class, or even putting a poster up on the wall that describes each level, then referring to the chart from time to time.

2. Levels in action.

Each progressive level challenges the students to behave in a more responsible way. These techniques are central to making the module work. For example, if students are operating on Level Zero Irresponsibility, then a technique called "five clean days" can be helpful. In this technique, students who behave on Level One Respect for five consecutive class periods may do what they want for the sixth class period. It is a simple behavioural modification technique, but effective at the lower levels. On Level Four (Caring), students can be involved in reciprocal teaching where the focus is in helping a classmate improve.

Levels in action activities are usually combined with an awareness talk to ensure students understand the implications of their behaviours.

3. Reflection time.

Reflection time is time set aside for students to consider their actions and to evaluate their behaviour. Although it often occurs at the end of a class, it can also be accomplished by having the students write descriptions of their experiences in journals. The key to the success of reflection is finding a balance between specific issues that the students should address, and giving them the opportunity to freely express their thoughts.

#### 4. Individual decision-making.

Techniques to promote individual decision-making introduce the concepts of negotiation as well as choices into lessons. Negotiation may involve students getting together to decide how to fairly distribute practice time, or approaching the teacher with a plan for modifying lesson content.

#### 5. Group meetings.

Group meetings are aimed at helping students learn to participate in group processes. In addition to expressing thoughts and listening to the thoughts of others, group meetings can be aimed at making group decisions, an important step in thinking about socially responsible behaviour.

#### 6. Counseling time.

The need for one-to-one conversations with students is recognised as an integral part of this approach.

Hellison (1995) expressed his belief that the model of goal levels focuses on developing self-awareness while becoming socially effective, which puts personal well-being at the centre of the programme. It was his hope that teachers and coaches who use the TPSR programme strategies will be able help students to interact more effectively with others and consequently develop social competence.

Hastie and Buchanan (2000) conducted a study to examine the extent to which the TPSR model could be combined with a Sport Education model. They found that some of the features of TPSR strengthened the foundation of Sport Education, but that new tasks and problems for students to solve had to be introduced. This led to their proposal of a kind of hybrid model they called "Empowering Sport." This hybrid organised learning experiences around a triangle of goals: sport skill competence, social responsibility, and personal empowerment.

Suomi et al., (2003) recognised Hellison's approach as one that holds great promise for teaching social responsibility. However, they reminded us that most educational environments are multifaceted and complex. The environment becomes even more complex as students with disparate motor, intellectual, and social abilities are included in the same class. They encouraged teachers and coaches to be flexible when presenting lessons and to be open to designing new programmes and strategies to meet unique student needs.

## **Physical Education and Competence Motivation Theory**

According to Alderman et al., (2006), a major objective of a quality physical education programme is to empower students with the skills needed to enjoy the benefits of regular physical activity for the rest of their lives. They specified that a willingness to try new experiences and continue involvement in physical activity often depends on a student's perceived competence as a participant. They continued that if students do not have the opportunity to develop positive perceptions of their physical competence, they will probably develop negative feelings toward participation, which makes it less likely that they will become active adults. Weigand and Broadhurst (1998) concluded that children with positive perceptions competence persist longer at challenging tasks and have more positive expectations for future participation, probably increasing their chance of an active and healthy lifestyle.

### **Motivation in Physical Education**

It is the position of this research that physical education is fundamentally concerned with the development of movement competence. Corbin (2002) firmly supports this position, although he cautions that students must also perceive themselves to be competent if the value of participation is to be fully realised. Cheffers (1996) might disagree that competence is an actual outcome of physical education, since he described one of the major differences between sport and physical education was that sport was involved ultimately with the pursuit of excellence and physical education, as with many educational

endeavors in his opinion, was satisfied with mediocrity. Of course, it is possible that he would evaluate “competence” as a lower standard of performance than might be acceptable in sport. Physical education is a task-oriented context, but there is uncertainty about whether or not achievement in physical education is valued by children (Xiang et al., 2003).

Somehow, physical education must be established as an achievement setting. The key to developing positive perceptions of ability is to provide children with opportunities in which they can demonstrate success or effectiveness in a specific achievement domain (Ebbeck & Gibbons, 2003). Individuals enter achievement settings with the goal of demonstrating competence (Solmon, 2006). This means that if individuals do not believe that they can be successful, then they are likely to withhold effort or choose to withdraw from participation. It is therefore important for teachers to structure the learning environment in such a way that students are able to experience some level of success. This is compatible with Harter’s (1982) concept of setting optimal challenges.

One challenge to physical educators is that the students may be required to participate, rather than choose to participate. This makes the application of any achievement motivation theory tenuous. Xiang et al. (2003) argued, however, that to counter the lack of motivation in school physical education, it is important that we understand how motivational processes develop in children. This means that by using an achievement motivation theory to guide research, more can be learned about achievement behaviours in physical education settings. Recognising that physical education must be part of a holistic approach to the development of children, the selection of Harter’s (1978) presentation of Competence Motivation Theory and her subsequent association of self-esteem with perceived competence (Harter, 1987) appears justified.

## **Competitive and Cooperative Contexts**

The social context in which performance occurs has a critical impact on how an individual may interpret his/her performance (Weiss & Ferrer-Caja, 2002). It is not possible for all students to achieve success against teammates

in competitive games, if success is defined only in terms of winning. It is also difficult to assess performance in cooperative activities without seeking comparison to some outside criteria. Clearly, the contrast between competitive and cooperative contexts is not simplistic.

Competitive contexts are not always compatible with personal development, especially if they over-emphasise winning (Hastie & Buchanan, 2000). Competitive activities are sometimes associated with the achievement of ego-oriented goals and cooperative activities with the achievement of task-oriented goals. However, Duda and Nichols (1992) found that ego-orientation and task-orientation are independent variables and that a given individual will display his/her own unique balance of both. For example, a person could be high in terms of both ego-orientation and task-orientation needs. It is possible then that competitive contexts offer more opportunities than cooperative contexts for meeting the personal needs of some people, while other people may find the reverse to be true. It is also possible that both contexts are similarly enriching for a group of individuals, and perhaps neither context is helpful for still another group of individuals.

Research comparing the two contexts is not plentiful. Vallerand, Gauvin and Halliwell (1986) looked at the effects of two different competitive contexts on the perceived competence of children in middle school. In one group children were told that they were competing against each other for success and in the other group the children were encouraged to try their best. Following the intervention programme, there was no difference between the two groups in terms of perceptions of competence, although it was noted that children in the competitive groups spent less time on task, an indication that internal motivation may be adversely affected by competitive situations.

Mitchell (1996) observed students in Grades 6, 7 and 8 physical education settings and concluded that students' intrinsic motivation is likely to be high when they perceive the learning environment to be non-threatening and when they consider it to be physically challenging. This is could be characteristic of a cooperative activity when threat of losing in a competitive environment is removed, however, the activity must fall into what Harter (1978)

described as mastery attempts at meeting optimal challenges. Greenwood-Parr and Oslin (1998) reported that students are more likely to want to continue their involvement in an activity if their physical education lessons allow them to experience self-determination and feel competent in their own abilities.

In a study comparing two instructional approaches in a high school basketball unit, Wallhead and Ntoumanis (2004) found that a focus on presenting tasks that will increase perceived competence were more effective in creating a positive motivational response in children. They concluded that an instructional approach that emphasised self-evaluation promoted a task-oriented motivational climate and personal development was identified as an outcome. They also found that an instructional approach that emphasised competition promoted an ego-oriented motivational climate and social comparison was identified as an outcome. It is important to note in the context of this study, that they found neither approach was successful in increasing perceptions of competence.

The cooperative activities approach holds promise in relation to its potential to contribute to children's perceptions of competence and consequently, their self-esteem (at least in movement situations). When thought about in terms of Harter's (1979) Competence Motivation Theory, the cooperative approach gives children the opportunity to participate in a "non-threatening" achievement environment. By providing activities that are sufficiently challenging to affect perceptions of physical /movement competence, there is also the potential that cooperative learning situations will contribute to perceptions of social competence. If the activities included in the programme are not sufficiently challenging, however, the children can become bored which will substantially reduce the impact of their participation.

Can a competitive activities approach be implemented in a physical education programme in a manner consistent with Harter's (1978) theory? Competitive activities, if managed carefully, should be useful in helping to improve skills and therefore, children's perceptions of competence could be increased. It has been shown that low self-esteem can be an outcome of negative social comparison experienced in achievement domains, so the way in

which social comparison is managed is critical in terms of its impact on children (Causgrove Dunn & Watkinson, 1994). However, the definition of success cannot be rooted in winning, but rather in effort. If the teacher does not reward effort, failure at mastery attempts may produce a perceived lack of competence and consequently, a desire to withdraw from physical activity.

## **Conclusion**

Physical education can provide children with an environment in which they can acquire competence in a variety of domains (Ebbeck & Gibbons, 2003). Wright (2004) stated that the nature and value of physical education has witnessed many changes occur over the years with an increase in focus on competitive sport. Many writers, such as Capel (2000), have argued competitive games are only one part of the content of physical education, not the whole. She felt that to concentrate on competitive games to the exclusion of other forms of movement could eliminate opportunities for many children to realize the benefits of skills development and an active lifestyle. Deci and Ryan (1985) supported the position that if physical education was focused on activities that were challenging and students were helped to meet those challenges, then the effects of participation could include enhanced intrinsic motivation to continue activity, a characteristic associated with an active lifestyle. Cooperative activities seem to be compatible with this description.

The success of any programme, however, will be in its impact on perceptions of competence. Perceptions of competence have been identified as one of the major factors affecting achievement and motivational orientation among children and youth (Klint & Weiss, 1987). Maleté (2004) found that higher perceived competence encourages children to develop an internal sense of whether or not they have succeeded, as opposed to relying on external sources of evaluation such as parent or teacher feedback. It has yet to be determined whether or not the nature of the social context (competitive or cooperative) will have an impact on the development of children's perceptions of competence, and whether or not perceptions of competence impact children's self-esteem. The remainder of this study is organised to explore these relationships.



## Chapter Three

# Methodology

A quasi-experimental design was followed. There were two groups who received intervention programmes: a cooperative activities group and a competitive activities group. There was one group who received no intervention, and this group was the comparison group.

### Assessment Instruments

For the purpose of this research, two different kinds of assessment instruments were needed: an instrument to measure movement competence, specifically in games, and an instrument to measure self-esteem.

#### Assessment of Movement Competence

Four different tests were selected to gather data about movement competence. The selection of these tests was done in consultation with an expert in motor learning and children's motor development. Each test measures an important variable that supports performance in a variety of games and sports.

1. Response time.

Response time is the amount of time taken from the presentation of a stimulus to the completion of an appropriate motor response. It includes reaction time and movement time. Each subject's movement response time was measured with a commercial training unit called the "Reaction Coach timer". The Reaction Coach signal panel was placed 2 m on a chair in front of the learner. White masking tape was used to mark the floor in a T-pattern, with the centre of the T as the home position and a right and left hitting zone on the ends of the T. These zones were marked 1.5m to the left and right of the home position.

To take the test, the subject was asked to assume a ready position on the home base, with one foot on one side of the long leg of the T and

the other foot on the other side, and with a 30 cm plastic baton in each hand. The subject was asked to look directly at the signal panel of the Reaction Coach. When the Reaction Coach test was turned on, an audio warning signal is emitted and then a light is flashed that indicated the subject must move to either the left or the right. The timing device begins when the light is flashed. The only way the subject can stop the timer is by moving as quickly as possible in the direction signaled, and then hitting a plastic plate positioned in the hitting zone with one of the batons. Because the timer is audio activated, timing will stop when the plate is struck by the baton. The subject must return as quickly as possible to the home position, since the next signal is emitted 3 seconds after timing is stopped for the previous trial. The Reaction Coach stores the amount of time taken for each trial in its memory.

Each subject was given four practical trials. Then, the official test began in which they were given 10 trials (the direction of the arrow is chosen at random by the Reaction Coach). Each subject's score was calculated as the total response time for all 10 trials.

## 2. Coincident timing.

The Basin Timer is a 2.5 m long piece of apparatus that resembles a runway of lights, which measures a subject's ability to anticipate the arrival of an object at a certain point. The Basin Timer was placed on two large tables and connected to a power supply in the indoor hall. Subjects stood at the end of the Timer and waited for the sequence of lights to travel from the far end of the Timer to the endpoint immediately in front of them. They were told to push the white button at the end of the runway when they anticipated that the last light in the sequence would flash. The timing device electronically records how early or late the subject is in his/her estimate of when the last light will flash.

After three practice opportunities, subjects were given 10 trials in which they pressed the white button according to their estimate of the arrival of the light sequence. The score was the total amount of "error time" whether early or late, in the subject's performance for all 10 trials.

3. Eye-hand coordination (throwing & catching).

Subjects were required to throw a tennis ball overhand while standing behind a line marked three meters away from a target placed on the wall in front of them. The target consisted of an inner circle (28 cm diameter), a middle circle (48 cm diameter) and an outer circle (58 cm diameter). The outer rim of the outer circle on the target was 1.5m from the ground. Subjects were instructed to stay behind the line as they attempted to throw the ball to hit the inner circle of the target. They were also asked to try to catch the ball after it rebounded off the wall. After three practice attempts, each subject was given 10 attempts. Extra balls were available for throwing if the subject could not stop or catch the ball as it rebounded off the wall. Each throw was scored on accuracy according to the following scale:

3 points – inner circle.

2 points – middle circle.

1 point – outer circle.

0 points – outside the target.

0 points – stepped over the line when throwing (could step over the line to catch the ball).

1 point was awarded for a catch.

Each subject's score was the total number of point earned on 10 throws.

4. Eye-hand coordination (striking).

A striking accuracy test was designed by the investigator. Because hockey skills were included in the content of the physical education classes for both groups receiving instruction, the test utilised a hockey stick and hockey ball as the equipment needed for striking with accuracy. Subjects were told to hit a stationary hockey ball from 3.5 m away from a goal that consisted of two small orange beacons placed 45

cm apart. An additional beacon was placed on either side of these two goal cones (25 cm to the left of the left cone and to the right of the right cone). The test administrator placed the ball on the spot for hitting, then stepped back so the subject could strike the ball with the stick, so that it traveled between the two goal cones. A volunteer gathered the balls after they were hit and returned them to the test administrator.

After three practice trials, each subject was given 10 trials to attempt to hit the ball through the goal beacons. Scoring was determined according to accuracy of the hit, using the following scale. Points were awarded according to the accuracy of the shot, according to the following scale:

2 points – between middle beacons.

1 point – through either two side beacons.

0 points – outside of the beacons.

Each subject's score was the total number of point earned on 10 throws.

## **Assessment of Self-esteem**

Harter's (1982) Perceived Competence Scale for Children was used to measure children's judgments about their own competence in three specific domains as well as their global perception of self-worth or self-esteem. Those domains were cognitive/academic competence, social competence and physical (athletic) competence. This scale was expanded in 1985 to include five specific domains plus global self-worth. The reason for selecting the earlier version of this instrument was that Harter (1985) reported that five specific domains did not consistently emerge when analyzing data for children in grades three and four. She noted that there could be differences in the number of domains distinguished by children in this age group (9 – 10 years). She also noted that the five distinct domains might not be identifiable in different cultural settings and when different educational philosophies are in operation. For the purpose of this study, it was decided that the shorter 1982 version of the scale would

serve as the most practical approach to measuring global self-worth or self-esteem.

This study followed Klint's (1985) recommendations for the presentation and administration of the profile. Each subscale consisted of six items, comprising of a total of 24 items. Each item asks subjects to first decide what is generally true of all people, and then state if this is "sort of true" or "really true" about them. Each item is scored on a scale from 1 to 4, where 1 indicates low perceived competence and a score of 4 reflects high perceived competence. A score of 24 is the most positive total in any single domain and in terms of perceived self-worth/self-esteem.

## **Procedures**

The following procedures guided the implementation of this study.

### **Selection of Subjects**

The subjects in the study were Grade Six students from two different classes in the same primary school. In order to generate interest in participation in this study, the following sequence was followed:

- A meeting was held with the headmaster to discuss the investigator's interest in conducting research into different methods of presenting physical education. The headmaster is a committed educationalist with an interest in helping expand the body of knowledge about teaching. He identified two classes in the same grade that he agreed would form a suitable pool of subjects for this research. The vast majority of the subjects were white and from wealthy and affluent backgrounds. The one class was significantly academically stronger than the other class, which also contained four children with "special needs".
- A meeting was then held with the teachers of the two classes. At this meeting, general information was provided by the investigator about what the research would entail and the nature of the intervention programme.

Both teachers were enthusiastic about the participation of their classes in the project.

- A second school, considered to be of the same socio-economic status as the experimental groups was approached to be the control group for the study. This was done to incorporate students from a similar background into the study and therefore add to the reliability of the study. One of the Grade Six teachers was approached regarding the availability of her students for the study. They were very enthusiastic about the participation of their class in the study and the class were administered the pre- and posttests without any intervention.
- The investigator was assigned to be the physical education teacher for both intervention classes, and the headmaster gave permission for the research project to be conducted as part of the normal school programme
- A meeting was held with the students to describe the general purpose of the research project. The students were quite excited about participating and all asked to be included. Letters of consent were distributed and taken home to parents for signature (see Appendix A). All of the students received signed permission to participate from their parents.
- A total of 53 students volunteered to participate in the study. The two different classes were randomly assigned one of the two movement programmes.
- A schedule for pre-testing of the two experimental groups was organized. Times for this were organized to avoid interference with any of the students' other academic classes. It was not necessary to explain to the students the necessity for them to be present at all of the contact sessions since the programme was part of their normal class. It was however stressed that it be important to be present at both the pre- and posttests.

## Pretest

Once the subjects were identified, a date was set and the pre-testing began. A suitable indoor hall was set-up for all four tests of movement competence. Pre-testing of movement competence followed this sequence:

- All of the subjects met in the indoor hall where the investigator greeted them. They were introduced to the four assistants who were identified as University graduate students who had been pre-trained to administer the tests. The subjects were reminded that their participation was voluntary, but much appreciated. They were encouraged to ask questions of the investigator about the research project.
- When the subjects indicated that they had no more questions, the investigator divided them in to four equal groups. Each subject was given his/her own individual score card. They were told that when they arrived at a testing station, the administrator at the station would explain and demonstrate the specific test. A group was asked to wait until all subjects in the group completed the test at the station. Only when the investigator signaled, could the group rotate to the next station.
- The groups were sent to their first station. Pretests commenced. Groups rotated as directed by the investigator.
- After all subjects completed their fourth and final test, they gathered together as a large group. The investigator collected all of the scoresheets and thanked the subjects for their participation. Again, subjects were asked if they had any questions. After a brief reminder about the special programmes to be starting the next week, the investigator dismissed the subjects, who went back to their respective classrooms.

For the administration of Harter's (1982) Perceived Competence Scale for Children, a classroom was reserved at the intervention groups' primary school on a different day. All of the subjects from the two intervention groups came together and sat at an individual desk. Pencils were distributed. The

investigator explained the profile to the children and gave them time to ask questions. The first two sample questions were then completed together by the group. Again, the group was asked for questions. When all of the subjects indicated they were ready to begin, they were allowed to do so. There was no time limit on completion, and children left the room as they finished. After the last subject had left the room, the investigator collected all the completed profiles and pencils from the desks.

This same protocol was followed at the control group's primary school.

## **Intervention Programme**

This study used a sample of convenience for the identification of the two intervention groups. The subjects were already assigned to one of the two classes, so there was no opportunity to re-assign them for the purposes of their sport education period. The subjects in the control group were all of the Grade Six students at a school with a similar socio-economic environment and educational ethos.

The subjects in each of the experimental groups attended a one hour sport education lesson each week for a period of 10 weeks. The first lesson started one week after the pretests. The lessons were scheduled separately during the normal period allotted on the school timetable. The investigator was the instructor for the two different intervention programmes (the competitive activities programme and the cooperative activities programme). See Appendix B for a general outline of the two different intervention programmes.

### **The Competitive Activities Programme**

In the competitive activities programme, each lesson began with a brief five minutes explanation of the nature of the following game activity and the rules involved. After this, teams were created spontaneously by the subjects themselves, and the remainder of the lesson was spent participating in the game. Halfway through the game a short water break was often given to allow the learners to recover. General feedback about game play was delivered to the group at various points during the lesson. The emphasis was placed on



demonstrating skill in the game and winning. Subjects were continually reminded that the aim of the activity was to win and that a skillful effort could help win the activity for their team. The score or number of goals scored was constantly referred to throughout the activity by the instructor so the subjects knew what they had to achieve and this would have added to the emphasis placed upon the outcome. Many of the activities placed the subjects in one-on-one contests where it became evident that they needed to have the best skill to win over their opponent.

The subjects left class immediately after the final whistle was blown. There was no time spent on warm-down or debriefing.

### **The Cooperative Activities Programme**

The cooperative activities programme differed significantly from the competitive games programme in that it incorporated many of Hellison's key points from his TPSR model. The major difference was that the lessons were structured around levels or goals which were identified for the subjects. Each lesson of the cooperative activities was structured in the following manner.

- The first 10 minutes of the lesson opened with what Hellison (1995) referred to as an awareness talk. The instructor made sure that the students understood the Level identified for the day and recapped the focus from the previous lesson. The instructor also discussed with the subjects what key points they thought they had already learned that could be applied to the upcoming lesson.
- Preceding the activity, the researcher carefully selected the teams, ensuring they were heterogeneous and of equal abilities.
- During the following 25-30 minutes, cooperative games that incorporated the Levels in action and individual decision-making were built into the physical activity instruction. Individual decision-making and group meeting strategies were also used when necessary to respond to incidents which arose and what Hellison (1995) referred to as "teachable moments". Learners were continuously given positive corrective

feedback and also constructive criticism regarding their skill performance. They were continually encouraged to better themselves with regards to being more personally and socially responsible.

- The last 10-15 minutes of each lesson closed with a group meeting which was spent debriefing the group and asking them to identify what important lessons they had learned during the activity session. Subjects were invited to verbally share their experiences with the researcher and the other subjects. They were also provided with small soft cover journals in which they were given the opportunity to write down their personal reflections about the lesson. They were asked to make a note of what level in Hellison's (1995) hierarchy they thought best described their behavior during the lesson and why they would categorize their behaviour at that level. The journals were then collected so the instructor could peruse them before the next lesson. The learners were encouraged to apply what they had just learned to their behaviour outside of physical education class.

## **Posttest**

All posttests were completed one week after the last lesson in the intervention programmes. The posttest sessions for movement competence followed the same protocol as the pretests. The same test administrators who administered the pre-tests were responsible for the posttests. The same test protocols were followed in the same facility, in the same random order, with the same equipment. This was done to increase the reliability of the test results. The posttest sessions for assessing self-esteem also followed the same protocol that guided the pretest.

## **Debriefing of Subjects**

After all tests were completed and results analysed, the investigator met with the subjects and shared group results (no individual results were revealed).

## Treatment of the Data

The programme SPSS was used to process all the data. An independent t-test was used to determine whether there were any significant differences between the experimental and control group for any of the variables at the start of the study. A repeated measures ANOVA (Analysis of Variance) was applied for each dependent variable to see whether there was any significant improvement following the intervention programme. The level of significance for all analyses was set at  $p < 0.05$ .

## Chapter Four

# Results and Discussion

The following were the results of this study based on an analysis of the data collected. The full results of the statistical processing of the data are presented in Appendix C.

### Descriptive Data

The sample consisted of a total of 53 subjects: 14 in the cooperative activities group, 14 in the competitive activities group and 25 in the control group. Table 1 is a summary of the descriptive data. The subjects were all of similar age and although there were more boys than girls in the two experimental groups, the boy/girl ratio in those two groups was approximately the same. The control group was almost equal in terms of representation of boys and girls.

Table 1

*Descriptive data for the subjects participating in the study*

Group	Mean Age	Males	Age	Females	Age
Group 1 Competitive	12 yrs	8	12yrs 3 mo	6	11yrs 8mo
Group 2 Cooperative	12 yrs 3mo	10	12yrs 2mo	4	12yrs 4 mo
Group 3 Control	12 yrs	12	12yrs 1mo	13	11yrs 11mo

An independent samples *t* test was applied to the pretest scores of the participants in the two intervention groups in order to determine whether or not there were significant differences between the two groups with regards to any of the variables of movement competence. Table 2 displays the results. No significant differences were found between the two groups for any of the variables of movement competence. This means that at the beginning of this study, the two intervention groups were similar in terms of their motor competence, as measured by the four variables selected in this study.

Table 2

*Comparison of pretest scores of movement competence for the competitive and cooperative activities groups*

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	Std. Error Diff	t	Sig. 2-tailed
Response time pretest	Group 1	14	1.01	0.09	0.02	0.04	-0.35	0.73
	Group 2	14	1.02	0.12	0.03	0.04	-0.35	0.73
Coincident timing pretest	Group 1	14	0.06	0.03	0.01	0.02	-0.92	0.37
	Group 2	14	0.08	0.06	0.02	0.02	-0.92	0.37
Eye-hand (striking) pretest	Group 1	14	14.57	3.25	0.87	1.13	-0.82	0.42
	Group 2	14	15.5	2.68	0.72	1.13	-0.82	0.42
Eye-hand (t & c) pretest	Group 1	14	27.07	6.47	1.73	2.12	0.81	0.43
	Group 2	14	25.36	4.57	1.22	2.12	0.81	0.43

\*p < .05

It was noted in Chapter Three that the participants in the control group were from a different school, while the participants in the two intervention groups were from the same school. It was not possible to administer pretest and posttests for both movement competence and self-esteem to the control group, so the decision was made to use the control group to help determinant levels of significance for changes in self-esteem only.

The following three sections are organised to answer each of the research questions. Tables are used to present the data in the format recommended by Morrow, Jackson, Disch and Mood (2000).

### **Hypothesis One**

1. There will be no significant improvements in the selected movement competence variables of response time, coincident timing, eye-hand coordination (striking) eye–hand coordination (throwing and

catching) following participation in a 10-week competitive activities intervention programme.

A summary of the descriptive data of the pretest and posttest performances of participants in the competitive activities group is presented in Table 3.

Table 3

*Results for the Competitive Activities Group (Group 1) on movement competence*

Variable	Pretest		Posttest	
	Mean	SD	Mean	SD
Response time	0.01	0.93	0.86	0.11
Coincident timing	0.61	0.25	0.67	0.20
Eye-hand (striking)	14.57	3.25	17.29	2.49
Eye-hand (throwing & catching)	27.07	6.47	28.64	6.27

A paired samples *t* test was applied to the results for each of the movement competence variables (see Table 4).

A significant improvement was found in the response time of participants in the competitive activities group (0.01). Response time includes reaction time plus movement time. While it is unlikely that reaction time would be affected by the intervention programme, it is possible that the participants did improve in their ability to respond quickly to outside stimuli (the key to successful performance on the “Reaction Coach” test).

A significant improvement was also found on the test for eye-hand coordination – striking (0.01). Hockey was one of the sports included in the content for this group, so at least some improvement on this test (which also uses a hockey stick) can be explained.

There were no significant improvements achieved for either coincident timing (0.51) or eye-hand coordination– throwing and catching (0.19).

Table 4

*Results of participation in a 10-week competitive activities programme (Group 1) on movement competence*

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	t	Sig. 2-tailed
Pair 1	Response Time pretest Response Time posttest	14	0.15	0.79	0.21	7.01	0.01*
Pair 2	Coincident Timing pretest Coincident Timing posttest	14	-0.01	0.34	0.01	-0.68	0.51
Pair 3	Eye-hand (striking) pretest Eye-hand (striking) posttest	14	-2.71	3.43	0.92	-2.96	0.01*
Pair 4	Eye-hand (t &c) pretest Eye-hand (t &c) posttest	14	-1.57	4.27	1.14	-1.38	0.19

\*p < .05

It can be concluded that significant improvements in two of four selected variables of movement competence was possible during participation in a 10-week competitive activities programme. These mixed results in relation to Hypothesis One means that the null hypothesis cannot be rejected. Although a competitive activities programme may be able to claim improvement in movement competence as an outcome, that improvement will be specific to some variables and probably highly related to the amount and quality of practice provided in the programme itself. It cannot be assumed that participation in a competitive activities programme will result in improvements in general motor competence.

## Hypothesis Two

2. There will be no significant improvements in the selected movement competence variables of response time, coincident timing, eye–hand coordination (throwing) and eye-hand coordination (striking)

following participation in a 10-week cooperative activities intervention programme.

A summary of the descriptive data of the pretest and posttest performances of participants in the competitive activities group is presented in Table 5.

Table 5

*Pretest to Posttest results for the Cooperative Activities Group (Group 2) on the tests of movement competence*

Variable	Pretest		Posttest	
	Mean	SD	Mean	SD
Response time	1.02	0.18	0.92	0.16
Coincident timing	0.76	0.58	0.77	0.38
Eye-hand (striking)	15.50	2.68	17.00	1.71
Eye-hand (throwing & catching)	25.36	4.57	25.5	6.86

A paired samples *t* test was applied to the results for each of the movement competence variables (see Table 6). A significant improvement was found in the response time of participants in the cooperative activities group (0.01). Response time includes reaction time plus movement time. While it is unlikely that reaction time would be affected by the intervention programme, it is possible that the participants did improve in their ability to respond quickly to outside stimuli (the key to successful performance on the “Reaction Coach” test).

There were no significant improvements achieved for coincident timing (0.99), eye-hand coordination – striking (0.15) and eye-hand coordination – throwing and catching (0.94). In fact, for both coincident timing and eye-hand coordination – throwing and catching, there was almost no change at all in group performance from pretest to posttest.

It can be concluded that significant improvements in only one of four selected variables of movement competence was possible during participation in a



10-week cooperative activities programme. This result in relation to Hypothesis One means that the null hypothesis cannot be rejected. It does appear that while some improvements in motor competence may be possible while participating in a cooperative activities programme, it would be advisable to think carefully about such claims without hard evidence that motor competence outcomes are actually achieved.

Table 6

*Results of participation in a 10-week cooperative activities programme (Group 2) on movement competence*

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	t	Sig. 2-tailed
Pair 1	Response Time pretest Response Time posttest	14	0.10	0.09	0.03	3.99	0.01*
Pair 2	Coincident Timing pretest Coincident Timing posttest	14	-0.00	0.07	0.02	-0.01	0.99
Pair 3	Eye-hand (striking) pretest Eye-hand (striking) posttest	14	-1.50	3.67	0.98	-1.53	0.15
Pair 4	Eye-hand (t &c) pretest Eye-hand (t &c) posttest	14	-0.14	6.80	1.82	-0.08	0.94

\*p < .05

## Hypothesis Three

3. There will be no significant changes in the self-esteem (perceived competence) of children following participation in a 10-week games education programme focused on either competitive activities or cooperative activities.

Table 7 presents a summary of the descriptive data of the pretest and posttest performances of participants from all three groups on the sub-scales in Harter's (1982) Perceived Competence Scale for Children.

Table 7

*Pretest to Posttest sub-scale scores on Harter's (1982) Perceived Competence Scale for Children*

Variable	Pretest		Posttest	
	Mean	SD	Mean	SD
<b>Group 1 Competitive Activities (n = 14)</b>				
Cognitive	20.07	5.77	20.14	5.28
Social	20.29	5.76	20.29	5.25
Physical	19.43	5.60	18.93	4.76
General	22.29	5.81	21.71	5.36
<b>Group 2 Cooperative Activities (n = 14)</b>				
Cognitive	20.29	4.51	18.36	3.52
Social	21.21	3.81	19.43	3.74
Physical	18.36	5.67	18.29	4.25
General	20.57	4.38	20.71	4.34
<b>Control Group (n=25)</b>				
Cognitive	18.44	4.24	18.16	3.84
Social	19.96	4.88	20.48	4.07
Physical	20.48	4.45	19.88	3.66
General	20.64	3.59	19.60	3.82

A paired samples *t* test was applied to the results for each of the perceived competence sub-scales for the three groups. (see Tables 8 , 9 and 10).

- No significant differences were found for participants in the Competitive Activities Group (Table 8).
- Significant differences were found for participants in the Cooperative Activities Group (Table 9). A significant deterioration was recorded on the perceived cognitive competence subscale (.03) and the perceived social competence subscale for participants in the Cooperative Activities Group.
- No significant differences were found for participants in the Control Group (Table 10).

Table 8

*Results of competitive activities (Group 1) on subscales of perceived competence*

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	t	Sig. 2-tailed
Pair 1	Cognitive pretest Cognitive posttest	14	-0.07	1.64	0.44	-0.16	0.87
Pair 2	Social pretest Social Posttest	14	0	2.22	0.59	0	1.00
Pair 3	Physical pretest Physical posttest	14	0.5	2.85	0.76	0.66	0.52
Pair 4	General pretest General Posttest	14	0.57	3.39	0.91	0.63	0.54

\*p < .05

Table 9

*Results of Cooperative Activities (Group 2) on subscales of perceived competence*

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	t	Sig. 2-tailed
Pair 1	Cognitive pretest Cognitive posttest	14	1.93	3.03	0.81	2.39	0.03*
Pair 2	Social pretest Social Posttest	14	1.79	3.12	0.83	2.14	0.05*
Pair 3	Physical pretest Physical posttest	14	0.07	3.22	0.86	0.08	0.94
Pair 4	General pretest General Posttest	14	-0.14	4.07	1.09	-0.13	0.90

\*p &lt; .05

Table 10

*Results for the Control Group (Group 3) on subscales of perceived competence*

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean	t	Sig. 2-tailed
Pair 1	Cognitive pretest Cognitive posttest	14	0.28	2.87	0.57	0.49	0.63
Pair 2	Social pretest Social Posttest	14	-0.52	3.58	0.72	-0.73	0.48
Pair 3	Physical pretest Physical posttest	14	0.6	2.63	0.53	1.14	0.27
Pair 4	General pretest General Posttest	14	1.04	3.92	0.78	1.33	0.20

\*p &lt; .05

With three groups to include in considerations about self-esteem, it was necessary to apply a repeated measures Analysis of Variance (ANOVA) to the data to get an accurate picture of the results. The results of the ANOVA are presented in Table 11.

The results of this analysis revealed that none of the groups showed significant changes with regard to any of the dimensions of self esteem following the 10 week intervention period during which time two groups received active intervention programmes and the third group received no special programme.

The null hypothesis is accepted. Neither of the programmes in this study were effective in making significant differences on any of the dimensions of self – esteem.

The simple pretest to posttest comparison made using the paired samples t test did find a significant deterioration on the social subscale (.05) for participants in the Cooperative Activities Group. This was a discouraging sign since social development outcomes are central to the cooperative approach. A significant deterioration (.03) on the academic sub-scale was also found in the Cooperative Activities Group. These unanticipated results led the investigator to conduct an interview with the headmaster of the school to find out if there were any circumstances that might explain these findings. It was hoped that participation in the Cooperative Activities programme was not entirely responsible. The following information about Group 2 was shared with the investigator and identified some external factors of which the investigator had no control.

Table 11

*Results of a comparison among the three groups on the results of their pretest and posttest scores on the four subscales of self-esteem*

		Sum of Squares	df	Mean Square	F	Sig.
Cognitive pre	Between Groups	40.24	2	20.12	0.89	0.42
	Within groups	1127.95	50	22.56		
	Total	1168.19	52			
Cognitive post	Between Groups	38.01	2	19.01	1.08	0.35
	Within groups	876.29	50	17.53		
	Total	914.30	52			
Social pre	Between Groups	14.28	2	7.14	0.3	0.74
	Within groups	1190.17	50	23.8		
	Total	1204.45	52			
Social post	Between Groups	10.27	2	5.13	0.27	0.76
	Within groups	938.53	50	18.77		
	Total	948.79	52			
Physical pre	Between Groups	41.31	2	20.65	0.8	0.46
	Within groups	1298.88	50	25.98		
	Total	1340.19	52			
Physical post	Between Groups	24.29	2	12.15	0.71	0.50
	Within groups	850.43	50	17.01		
	Total	874.72	52			
General pre	Between Groups	28.78	2	14.39	0.72	0.49
	Within groups	998.05	50	19.96		
	Total	1026.83	52			
General post	Between Groups	41.42	2	20.71	1.07	0.35
	Within groups	967.71	50	19.35		
	Total	1009.13	52			

- Four of the children in Group 2 have been classified as “special needs” learners. These learners also often required an outside facilitator to be present at some of the classroom lessons. No such facilitator was available during the Cooperative Activities programme. It is possible that they did not have a successful experience with some of the activities that emphasised social interaction, and this may have affected their scores on the posttest.
- Group 2 is academically weaker than Group 1 (both are in the same school, while the Control Group is from a similar but different school). They may have had academic experiences outside of the intervention programme that affected their posttest scores. There is no reason why the cooperative activities programme should have affected perception of academic competence.
- Social conflict within the classroom setting is more often reported to the headmaster for children in Group 2 than for children in Group 1. It is possible that the children have difficulty getting along with each other and that social tensions occurred that may have had a negative impact on the social self-perception of some of the children. The programme itself provided more opportunities for social interaction, which may have been a source of tension for some of the children. This also could have had a negative impact on their posttest scores, although the overt social behaviour of the children in the group was carefully monitored during physical activity classes.

## **Conclusion**

The significant improvements achieved by subjects in the experimental groups 1 and 2 in response time indicate that the motor competence of children may benefit from a physical activity intervention programme, regardless of its focus on either competitive or cooperative activities. It must be acknowledged that the Competitive Activities Group also had a significant improvement in their eye-hand coordination – striking, which may indicate that this approach might be more

conducive to the development of motor competence than a cooperative activities approach.

If the content approach of the two programmes was not entirely effective, then the time frame for the intervention programme must also be considered. Perhaps for these children at this point in their lives, the time devoted to the programme was too short in duration. Aspects of movement competence may be achievable in a 10-week period, but self-esteem may require a longer period to exhibit any change.



## Chapter Five

# Conclusions and Recommendations

This study was focused on exploring the potential of children's participation in competitive and cooperative activities to contribute to the development of their movement competence and to determine its impact on their self-esteem. A comparison was made between the two different approaches to presenting sport content (competitive vs. cooperative). This comparison was considered to be important because of the growing body of literature that suggests the cooperative approach may be more effective than the competitive approach in achieving developmental objectives, such as positive self-esteem (Grineski, 1996).

The value of identifying the potential benefits associated with different approaches to content is not only relevant for understanding how holistic developmental outcomes can be achieved through participation. It is also important to define the potential of different approaches for facilitating actual improvements in movement competence, one of the core outcomes of physical education. The development of movement competence remains a central concern since some theorists tie possible social and psychological benefits from participation to actual improvements in movement competence (Weiss & Duncan, 1992). In other words, an increase in movement competence may be the key to unlocking the holistic developmental potential of participation in physical activity.

One example of the tie between movement competence and the holistic developmental outcomes of participation is that of children who are clumsy. According to Dunn and Watkinson (1994), the motor difficulties experienced by these children may lead them to withdraw from participation in physical activity, especially in group situations. Withdrawal contributes to lack of practice of the very motor skills these children need for participation. Lack of practice, in turn, inhibits further motor skill development and increases existing performance differences between children with movement difficulties and their peers.

Negative psychological consequences in the form of low levels of self-esteem may also develop. Ultimately, inadequate motor skill performance can trigger a cycle of minimal enjoyment of physical activity and related social difficulties interacting with peers, which may then combine to create a disinterest in physical activity that results in increasingly lower levels of physical fitness.

## **Conclusions**

By participating in the lessons specifically designed to include either competitive or cooperative activities, it was hoped that:

- The children would all show an improvement in their movement competence, as measured by response time, coincident timing, eye-hand coordination (striking) and eye-hand (throwing and catching).
- That improvements in movement competence would be accompanied by improvements in perceived physical competence, as measured by Harter's (1982) Perceived Competence Profile for Children.
- That improvements in movement competence would be accompanied by improvements in one or more of the other dimensions measured by the Profile (perceived cognitive competence, perceived social competence, and global self-worth).

It was not known whether one approach to content would be more effective than the other, although the investigator was impressed by recent literature that supports the cooperative approach, especially in terms of its potential for the development of social competence.

## **Movement Competence**

The following outcomes were achieved in terms of the four measurements of movement competence:

1. Children in both groups achieved a significant improvement in their response time.

The children in both groups did seem to enjoy participating in these physical education classes. They were very active and spent a large amount of time moving about, running and changing directions frequently, regardless of whether the activity was competitive or cooperative. The Reaction Coach test involves reading a direction indicator and moving to stop the timer. This ability was drawn upon in many of the activities in both programmes and may have given all children sufficient opportunities to practice and improve.

As stated by Alderman, Beighle and Pangrazi (2006), in order to develop actual movement competence, children must be given enough time to practice skills with an emphasis on quality of movement. They further stated that sports practitioners should be vigilant during contact sessions to focus on proper technique while allowing for individual differences. The instructor in this study was focused on quality of movement in both the competitive and cooperative approaches, and was accepting of individual differences in both approaches as well.

2. Significant improvements were also found with regard to eye-hand coordination (striking) for the children in Group 1 (competitive activities). There may be several possible reasons why the competitive activities programme was successful and the cooperative activities programme was not successful in helping children achieve significant improvements in their response time and their eye-hand coordination (striking).

Children in the competitive activities programme were almost always practicing their skills under time pressure. Although the instructor did not let the competitive climate become too aggressive, success in the activities was often linked to doing it faster than other children. This may have helped the children to decide and move more quickly, which could have had a positive impact on their performance on the test of response time.

Striking a hockey ball was included in both programmes, but once again, it was practiced under time pressure in the competitive activities

programme. Success in the activity also depended on hitting the ball when a defender was present putting still extra pressure on the child. It is possible that the sense of urgency in performance that is often present in competitive activities, is an advantage in motor skill improvement. In some cases, it may involve the raising of the level of arousal to an optimal level for skill learning.

3. No significant improvements in either coincident timing or eye-hand coordination (throwing and catching) were achieved by children from either of the experimental groups, There are several possible reasons why the intervention programme may not have been successful in helping children achieve significant improvements in either their coincident timing or their eye-hand coordination (throwing and catching).

There may not have been enough practice provided with skills that draw on these two underlying abilities of movement competence. Coincident timing requires anticipation and decision-making, and it is possible that there was not sufficient volume of practice to allow children to improve. The same problem of volume of practice applies to eye-hand coordination as measured by the throwing and catching test. It may be remembered that both accuracy (throwing) and force control (to catch the rebound coming off the way) were required for successful performance. These are underlying abilities that will only develop to their potential if there is a sufficient amount of practice performing skills that demand them.

The throwing and catching test is highly dependent on skill performance (skill specific), unlike the test of coincident timing (the Bassin Timer). If the intervention programmes had emphasised the development of throwing and catching skills, it is possible that the outcome of the posttests would have been different.

The time period between lessons was one week, which might have been too long a period for these relative beginners. The distribution of

practice may not have promoted retention of learning from one lesson to the next.

## **Self-esteem**

Based on the results of the comparisons among the Competitive Activities Group, the Cooperative Activities Group, and the Control Group, it can be concluded that there were no significant changes achieved by the children in any of the groups during the 10-week intervention period.

However, recognising that the Control Group was actually a comparison group (from a different though similar school), a *t*-test was run to compare pretest to posttest changes within the two experimental groups to try and identify some possible trends for future research.

1. Group 1 (competitive activities) achieved no significant changes in either global self-worth/self-esteem, or any of the other sub-domains of perceived competence.

The lack of impact on perceived competence noted for the children engaged in the competitive activities programme (Group 1) is difficult to explain, since they achieved a significant improvement in both their response time and their eye-hand coordination - striking. It may be that perceptions of competence are more closely related to coaching behaviour than to the structure of the content. Horn in (Ewing, 2005) discovered that certain coaching behaviors influenced perceptions of self-esteem during practice sessions. She found that players who received more frequent or positive feedback scored lower in perceived physical competence, while players who received more criticism in response to performance errors had higher perceptions of competence. The instructor in this study tried to be quite positive when delivering feedback on skill performance to all the participants in both groups. Group 1 may have received more frequent feedback than Group 2 regarding their performance during the lesson, but most of it was positive, usually regarding a good technique or goal scored. Perhaps not enough corrective feedback was provided. This may actually have

had a negative or neutral effect on the children's development of perceived physical competence. Another interesting point to consider is that subjects may not view performance on a "written" test as meaningful as they would performing well on typical games and game skills that they regularly play.

Participants in the Competitive Activities Group were never given any debriefing time after a game regarding their performance, and they did not discuss as a group how they could improve their skills. This type of sharing activity was provided only to the children in the Cooperative Activities Group. The debriefing time could be regarded as a kind of consultation with the children, which they might have experienced as empowerment. No effort was made to consult the children in the Competitive Activities Group, so the experience of empowerment may have been denied them by the structure of the lesson.

The content of the competitive activities programme may have been oriented too much toward winning. Although the instructor was not aware of an over-emphasis on winning, it is possible that the children experienced it that way. If this was the case, no changes in perceived competence could have been anticipated.

2. Group 2 (cooperative activities) achieved a significant improvement in their perceived physical competence. Because the children in this group improved significantly in terms of their response time, it is possible that they felt generally more active and able to handle their body well during participation in physical activities.

The debriefing time at the end of each lesson also could have sent the signal to the children that their contributions were valued and their ability to evaluate performance was respected. They might have experienced this as an assessment by the instructor that they were "good at physical education." Children were also given the time to write in a journal and reflect on the lesson and evaluate their abilities in the various activities

in the lesson. This could have led to an increase in perceptions of competence.

3. Group 2 (cooperative activities) achieved a significant decrease in perceived cognitive competence and perceived social competence. Following consultation with the school headmaster, this rather unsettling result led to some speculations. It may be that perceptions of competence were more closely related to learners' socialisation or behavior in or outside the lesson time than to the structure of the content. Possible reasons include the following:

- It came to light that four of the children in the class could be classified as "special needs" learners. These children required an outside facilitator to be present at some of the classroom lessons. Their academic history showed their marks to be lower than the others in their group, which might mean that any academic setback experienced during the period of this research, could have had a negative impact on the perceived academic competence.
- The children in Group 2 were also identified by the headmaster as the children more often involved in social conflict within the classroom setting. Participation in a cooperative activities programme could be regarded as an ideal approach for helping these children, however, the instructor may have not had sufficient expertise or the time of intervention may have not been long enough to derive benefits from cooperative learning. In fact, it may be that the cooperative programme in this study only brought some problems to the surface and as a result, contributed to a loss in perceived social competence.

Of course, there were external factors that came into play during or outside of the lesson times over which the investigator had no control. Also the other dimensions of self-esteem may require a longer period of intervention to exhibit changes than changes in the physical domain (motor competence). If an effect on self-esteem is identified, then perhaps the contact sessions should

have occurred more regularly during the week. It also might be possible that a 15 or 20-week programme would have been more successful.

## **Recommendations**

In terms of the two intervention programmes presented in this study, the following considerations should be reviewed prior to pursuing further research:

1. During many of the lessons, there were times when a particular child was struggling with a particular skill. It would have been helpful to have provided some form of one-on-one instruction to these children. Specific correction of individual technique is very difficult when working with large groups, and certainly has a negative impact on the development of movement competence.
2. In the present study, the cooperative activities group followed a kind of progression according to Hellison's (1985) levels, in which a level was introduced every week. If other subjects in the curriculum would also implement the levels, it could be that changes in perceived competence would be achieved. In other words, a more integrated approach may be much more successful than just following the approach in physical education/sport education lessons alone.

In view of the conclusions drawn as a result of this investigation, the following recommendations are made for future research designs:

1. The number of subjects in the study was a limitation, which makes it difficult to generalise from the results. In addition to pursuing research with more subjects, it would be interesting to make the study longitudinal and follow the same group of children for a period of years. Both movement competence and the sources of perceived competence are known to be developmental, and it would be interesting to see how the two interact over a period of years with the same children. Another consideration could be to extend the study out over the entire school year versus multiple years.



2. The subjects were all from an upper socioeconomic background. Social background, including relationships with family and peers, has a powerful impact on perceived competence. Studying subjects from less advantaged backgrounds could yield different results and would help us understand better the complex nature of perceived competence.
3. A similar study using single sex groups is recommended to see how children would respond in the group activity context. The groups in this study were co-educational, which may have introduced confounding variables into the study.
4. Finally, the theoretical basis for this research was that movement competence and self-esteem (as measured by perceived competence) are linked. There are other theories and other definitions and measurements of self-esteem that might prove more viable. For example, it could be that a physical activity programme aimed exclusively at the enhancement of self-esteem would be more effective in some cases, than a programme that tried to develop self-esteem through the development of movement competence.

## **Final Remarks**

It must be acknowledged that neither the competitive activities programme nor the cooperative activities programme were entirely successful in improving either children's movement competence or their self-esteem. However, the competitive activities programme did not have a negative impact on the children's self-esteem and did lead to improvement in two of the four motor competence variables. This is encouraging for those coaches and physical education teachers who feel competitive activities can indeed be educational and have positive impact on children if presented properly. In other words, there is nothing inherently destructive about participation in competitive activities. It is all in how they are presented.

The negative outcomes for the group who participated in cooperative activities could be discouraging. However, this was only when examining the t-

tests or intra-group results. When the ANOVA was looked at for comparing the results for all three groups there was no significant difference.

Tinning (2004) stated the need to re-emphasise the educational purposes of physical education. He stated that sport should certainly be a part of a physical education curriculum but we must remember that sport may not be the most reinforcing movement form for everyone. Cooperative activities as well as competitive activities should be considered as potential partners in helping children learners develop their movement competence thereby contributing to the positive perceptions of competence that lead to positive self-esteem.

## References

- Alderman, B.L., Beighle, A. & Pangrazi, R.P. (2006). Enhancing motivation in physical education. *Journal of Physical Education, Recreation & Dance*, 77(2), 41-45.
- Ballard, W.A. & Chase, M.R. (2004). Nontraditional recreation activities: A catalyst for quality physical education. *Journal of Physical Education, Recreation & Dance*, 75(3), 40-46.
- Bressan, E.S. (1995). *Motor learning: A sport science perspective*. Die Boord, South Africa: Winning Spirit Sport Education.
- Burkhalter, N.A. & Wendt, J.C. (2001). Prediction of selected fitness indicators by gender, age, alienation, and perceived competence. *Journal of Teaching in Physical Education*, 21, 3-15.
- Capel, S. (2000). Physical education and sport. In S. Capel & S. Piotrowski (Eds.), *Issues in physical education* ( pp 131-143). London: Routledge Falmer).
- Causegrove Dunn, J.L. & Watkinson, E.J. (1994). A study of the relationship between physical awkwardness and children's perceptions of physical competence. *Adapted Physical Activity Quarterly*, 11, 275-283.
- Chairopoulou, C. (2003). Developing social traits through sport participation – statement from a Greek perspective, the country hosting the Olympic Games 2004. *International Journal of Physical Education*, 40(2), 69-72.
- Cheffers, J. (1996). Sport versus education: The jury is still out. *The International Journal of Physical Education*, 33(3), 106-109.
- Coie, J.D., Dodge, K.A., & Kupersmidt, J. (1991). Peer group behaviour and social status. In S.R. Asher & J.D. Coie (Eds.), *Peer rejection in childhood* (pp 17-59). Cambridge: Cambridge University Press.

- Connell, M.W., Sheridan, K. & Gardner, H. (2003). On abilities and domains. In R.J Sternberg & E.L. Grigorenko (Eds.), *The Psychology of Abilities, Competencies and Expertise* (pp 126-155). Cambridge: Cambridge University Press.
- Corbin, C.B. (2002). Physical activity for everyone: What every physical educator should know about promoting lifelong physical activity, *Journal of Teaching in Physical Education*, 21(2),128-144.
- Deci, E.L. & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Duda, J.L. & Nicholls, J.G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology*, 84, 234 – 241).
- Dweck, C.S. (2002). The development of ability conceptions. In A. Wigfield & J.S. Eccles (Eds.), *Development of achievement motivation* (pp 57-88). New York: Academic Press.
- Dyson, B. (2001). Cooperative learning in an elementary physical education program. *Journal of Teaching in Physical Education*, 20, 264-281.
- Dyson, B. & Rubin, A. (2003) Implementing cooperative learning in elementary physical education. *Journal of Physical Education, Recreation & Dance*, 74(1), 48-55.
- Ebbeck, V. & Gibbons, S.L. (2003). Explaining the self-conception of perceived conduct using indicators of moral functioning in physical education. *Research Quarterly for Exercise and Sport*, 74, 284-291.
- Ebbeck, V. & Stuart, M.E. (1996). Predictors of self-esteem with youth basketball players. *Pediatric Exercise Science*, 8, 368-378.

- Erpic, S.C., Skof, B., Boben, D. & Zabukovec, V. (2006). Pupils' attitudes and motivation for physical education – Some psychological aspects of physical education: Pupils' attitudes and motivation. *The International Journal of Physical Education*, 42(2), 58-67.
- Evans, J., & Roberts, G.C. (1987). Physical competence and the development of children's peer relations. *Quest*, 39, 23-35.
- Ewing, M. (2005). *Promoting social and moral development through sport*. Available from <http://mayouthsoccer.org> [Accessed 20 May 2005]
- Fairclough, S. (2003). Physical activity, perceived competence and enjoyment during high school physical education. *European Journal of Physical Education*, 8, 5-18.
- Fox, K.R. (2000). Self-esteem, self-perceptions and exercise. *International Journal of Sport Psychology*, 31, 228-240.
- Fox, K.R. (2002). Self-perceptions and sport behavior. In T. Horn (Ed.). *Advances in sport psychology* (2<sup>nd</sup> edition) ( pp 83-100). Champaign, IL: Human Kinetics.
- Fredenburg, K.B., Lee, A.M. & Solmon, M. (2001). The effects of augmented feedback on students' perceptions and performance. *Research Quarterly for Exercise and Sport*, 72, 232-242.
- Greenwood-Parr, M. & Oslin, J. (1998). Promoting lifelong involvement through physical activity. *Journal of Physical Education*, 69, 72-76.
- Grineski, S. (1996). *Cooperative learning in physical education*. Champaign, IL: Human Kinetics.
- Halls, M. (2006). The challenge of engaging young children in sport. *Sports Coach*, 28, 6-7.
- Harter, S. (1985). *Manual for the self-perception profile for children*. Denver, CO: University of Denver.

- Harter, S. (1982). The perceived competence scale for children. *Child Development, 53*, 97-97.
- Harter, S. (1978). Effectance motivation reconsidered. *Human Development, 21*, 34 – 64.
- Harter, S. & Connell (1984). A model of children's achievement and related self-perceptions of competence, control, and motivational orientation. In J Nicholls (Ed.), *The development of achievement motivation* (Vol. 3) (pp 219-250). Greenwich, CT: JAI Press.
- Harter, S. & Pike, R. (1984). The perceived pictorial scale of perceived competence and social acceptance for young children. *Child Development, 55*, 1969-1982.
- Hastie, P.A. & Buchanan, A.M. (2000). Teaching responsibility through sport education: Prospects of a coalition. *Research Quarterly for Exercise and Sport, 71*, 25-35.
- Hein, V. & Koka, A. (2005). The effect of perceived teacher feedback on intrinsic motivation in physical education. *International Journal of Sport Psychology, 36*, 91-106.
- Hellison, D.R. (1985). *Goals and strategies for teaching physical education*. Champaign, IL : Human Kinetics.
- Hellison, D.R. (1995). *Teaching responsibility through physical activity*. Champaign, IL: Human Kinetics.
- Horn, T. (2004). Developmental perspectives on self-perceptions in children and adolescents. In M. Weiss (Ed.), *Developmental Sport and Exercise Psychology: A Lifespan Perspective* (pp 101-143). Morgantown, WV: Fitness Information Technology, Inc.
- Keogh, J. & Sugden, D. (1985). *Movement skill development*. New York: Macmillan.

- Klint, K. (1985). *Participation motives and self-perceptions of current and former athletes in youth gymnastics*. Unpublished M. thesis, University of Oregon.
- Klint, K.A., & Weiss, M.R. (1987). Perceived competence and motives for participating in youth sports: A test of Harter's competence motivation theory. *Journal of Sport Psychology*, 9, 55-65.
- Laios, A., Theodorakis, N. & Gargalianos, D. (2003). The importance of internal and external motivation factors in physical education and sport. *International Journal of Physical Education and Sport*, 40(1), 21-26.
- Lee, A.M. (2003). Promoting lifelong physical activity through quality physical education. *Journal of Physical Education, Recreation & Dance*, 75(5), 50-54.
- Lee, A., Carter, J. & Xiang, P. (1995). Children's conceptions of ability in physical education. *Journal of Teaching in Physical Education*, 14, 384-393.
- Lewko, J.H. & Greendorfer, S.L. (1988). Family influences in the sports socialization of children and adolescents. In F.L. Smoll, R.A. Magill & M. J. Ash (Eds.), *Children in sport* (3<sup>rd</sup> edition) (pp 265-286). Champaign, IL: Human Kinetics.
- Lieberman, L.J., James, A.R. & Ludwa, N. (2004). The impact of inclusion in general physical education for all students. *Journal of Physical Education, Recreation & Dance*, 75(5), 37-42.
- Macphail, A., Kirk, D. & Eley, D. (2003). *Listening to young people's voices: youth sports leaders' advice on facilitating participation in sport'*. London: North West Counties Physical Education Association and SAGE Publications..
- Magill, R.A. (2003). *Motor learning and control: Concepts and applications* (7<sup>th</sup> edition). Minneapolis, MN: McGraw Hill.

- Malete, L. (2004). Perceived competence and physical activity involvement among youths: An examination of Harter's competence motivation theory in Botswana. *South African Journal for Research in Sport, Physical Education and Recreation*, 26, 91-104.
- Mitchell, S.A. (1996). Relationships between perceived learning climate and intrinsic motivation in middle school physical education. *Journal of Teaching in Physical Education*, 15, 369-383.
- Mitchell, S.A., Oslin, J.L. & Griffin, L.L. (2006). *Teaching sport concepts and skills: A tactical games approach*. Champaign, IL: Human Kinetics.
- Morrow, Jr, J.R., Jackson, A.W., Disch, J.G. & Mood, D.P. (2000). *Measurement and evaluation in human performance* (2<sup>nd</sup> edition). Champaign, IL: Human Kinetics.
- Nel, J.A.P. (1999). *Die Tygerbergmodel vir motoriese assessering*. Tygerberg: Tygerberg College.
- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology*, 71, 225-242.
- Serafica, F.C., & Blyth, D.A. (1985). Continuities and changes in the study of friendship and peer groups during early adolescence. *Journal of Early Adolescence*, 5, 267-283.
- Shapiro, D., Yun, J. & Ulrich, D.A. (2002). Measuring perceived gross motor skill competence in children. *International Journal of Sport Psychology*, 33, 391-409.
- Solmon, M.A. (2006). Creating a motivational climate to foster engagement in physical education. *Journal of Physical Education, Recreation & Dance*, 77, 15-16.



- Suomi, J., Collier, D. & Brown, L. (2003). Factors affecting the social experiences of students in elementary physical education classes. *Journal of Teaching in Physical Education*, 22, 186-202.
- Tinning, R. (1995). The sport education movement: a phoenix, bandwagon or hearse for physical education? *ACHPER Healthy Lifestyles Journal*, 42(4), 19-20.
- Vallerand, R.J. (1983). The effects of differential amounts of positive and verbal feedback on the intrinsic motivation of male hockey players. *Journal of Sport Psychology*, 5, 100-107.
- Vallerand, R.J. & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology*, 6, 94-102.
- Vallerand, R.J., Gauvin, L. I. & Halliwell, W.R. (1986). Effect of zero-sum competition on children's intrinsic motivation and perceived competence. *Journal of Social Psychology*, 126, 465 – 472.
- Wallhead, T.L. & Ntoumanis, N. (2004). Effects of a sport education intervention on students' motivational responses in physical education. *Journal of Teaching in Physical Education*, 23, 4-18.
- Warburton, P. (2001). Initial teacher training the preparation of primary teachers in physical education, *British Journal of Teaching in Physical Education*, 31(4), 6-8.
- Weigand, D.A. & Broadhurst, C.J. (1998). The relationship among perceived competence, intrinsic motivation, and control perceptions in youth soccer. *International Journal of Sport Psychology*, 29, 324-338.
- Weiss, M.R. (2004). *Developmental sport and exercise psychology: A Lifespan Perspective*. Morgantown, WV: Fitness Information Technology, Inc.

- Weiss, M. & Duncan, S.C. (1992). The relationship between physical competence and peer acceptance in the context of children's sport participation. *Journal of Sport and Exercise Psychology*, 14, 177-191.
- Weiss, M.R., & Ebbeck, V. (1996). Self-esteem and perceptions of competence in youth sports: Theory, research and enhancement strategies. In O. Bar-Or (Ed.), *The encyclopedia of sports medicine. Vol VI: The child and adolescent athlete* (pp 364-382). Oxford: Blackwell Scientific Publications.
- Weiss, M. & Ferrer-Caja, E. (2002) Motivational orientations and sport behavior. In T. Horn (Ed.) *Advances in sport psychology* (2<sup>nd</sup> edition) (101 – 184). Champaign, IL: Human Kinetics.
- Weiss, M.R., Smith, A.L. & Theeboom, M. (1996). "That's what friends are for": Children's and teenagers' perceptions of peer relationships in the sport domain. *Journal of Sport and Exercise Psychology*, 18, 347-379.
- Weiss, M.R., Ebbeck, V. & Horn, T.S. (1997). Children's self- perceptions and sources of physical competence information: A cluster analysis. *Journal of Sport and Exercise Psychology*, 19, 52-70.
- Wright, L.J.M. (2004). Preserving the value of happiness in primary school physical education. *Physical Education and Sport Pedagogy*, 9, 149-164.
- Xiang, P., Lee, A. & Williamson, L. (2001). Conceptions of ability in physical education: Children and adolescents. *Journal of Teaching in Physical Education*, 20, 282-294.
- Xiang, P., Solmon, M.A. & McBride, R.E. (2006). Teachers' and students' conceptions of ability in elementary physical education. *Research Quarterly for Exercise and Sport*, 77(2), 185-194.
- Xiang, P., McBride, R., Guan, J. & Solmon, M. (2003). Children's motivation in elementary physical education: An expectancy-value model of achievement choice. *Research Quarterly for Exercise and Sport*, 74, 25-35.

## Appendix A

### Letter of Consent

Dear Parent or Guardian,

My name is Justin Wakelin and I am a Masters student at Stellenbosch University. I will be conducting my research at Somerset College over the next few months. The focus of my study is to investigate the impact of two different ways of presenting sport programmes on the self-esteem as well as the sport skills, of grade 6 learners.

I request permission to include your child in this study. Your child will be invited to be a member of a group that will receive a sport skill development programme. His/her group will be taught using a particular coaching method. There will be a total of 12 contact sessions of activities such as hockey and softball. Both a pre-test and post-test of skills and questionnaire about self perception will be necessary in order for me to measure the relative effectiveness of the two methods.

The sessions will be scheduled during the regularly scheduled life orientation periods, and will not require additional time. The class teacher and I will be present at every session to facilitate and monitor the learners.

I hope you will consent to allowing your child to participate, by signing this letter and returning it to your child's classroom teacher.

Thank you,

Justin Wakelin  
Department of Sport Science  
0822947497

Prof ES Bressan  
Study leader  
Department of Sport Science  
808-4722

I hereby give consent for my child to participate in this study.

\_\_\_\_\_ (signature) \_\_\_\_\_ (date)

## Appendix B

### Competitive and Cooperative Lesson Plan Samples

#### Focus of the Competitive Games Programme

Lesson	
1	Ultimate frisbee
2	Benchball
3	Continuous cricket
4	Soccer
5	Hockey
6	Danish longball
7	Ultimate Frisbee
8	Softball
9	Benchball
10	Number hockey

#### Focus of Cooperative Games Programme

Lesson	
1	Ultimate Frisbee
2	Human chain
3	Acid river
4	Blue and red game
5	Electric fence
6	Spiderweb
7	Can pyramid
8	Flip the mat
9	Benchball
10	Number hockey

## **Samples of Competitive Activities**

### **Ultimate Frisbee**

The class is split into two groups of equal sizes. The field is divided in half with beacons placed in a line just short of the end of the field. The nature of the game is much the same as that of soccer, with the exception of a Frisbee being used. Learners are required to pass the Frisbee amongst teammates and keep possession of it until they are able to score a goal.

This is achieved by throwing the Frisbee to another teammate standing behind the demarcated goal line. The teammate standing behind the goal line is required to catch the Frisbee for it to be considered a goal. If it is dropped, no goal is awarded and the Frisbee is given back to the other team to start working their way to the other goal line.

### **Bench Ball**

The class is split into two equal groups of equal sizes. The field is set up identical to the game of Ultimate Frisbee with the exception that there is a chair placed on either end of the goal line. Each team also chooses one individual from the team to be the goal keeper and stand on the chair.

The team is required to pass the ball amongst one another and try to throw it to their goal keeper standing on the chair. If their goal keeper catches the ball and remains on the chair a goal is awarded that team. If the goal keeper drops the ball or if they catch it and then lose balance and fall off the chair, no goal is awarded.

### **Continuous Cricket**

The class is split into two groups of equal sizes. One is delegated to be the batting team and the other, the fielding team which immediately disperse themselves around the field. A chair is placed slightly behind the batsman as the wicket and another chair is placed 5m directly to their right. Once the batsman makes any contact with the ball they have to run around the chair and attempt to make it back in front of their wickets to protect the following delivery from hitting it and striking them out.

The bowler does not have to wait for either the batsman running to the stumps or the next incoming batsman to be ready. He/she continuously carry on bowling the ball. Once the entire batting side is out the two teams swap roles and the fielding side then becomes the batting one. A second innings is also sometimes given.

The winning team at the end of the game is the team with the most runs.

## **Soccer**

The class is split into two groups of equal sizes with a mixture of guys and girls on both sides. Goals are set up on two opposing goal lines and the teams work together to score a goal by shooting the ball through the opposing team's goal posts. On approaching halfway in the game, a slight twist or progression was introduced. A rugby ball was added. The girls were allowed to kick either the rugby ball or the soccer ball, but the boys had to remain kicking only the soccer ball. A short time later both guys and girls were allowed to kick both balls.

The winning team at the end of the game is the team with the highest cumulative total of goals scored with both the rugby and soccer ball.

## **Hockey**

The class is split into two groups of equal sizes. Prior to a normal hockey game commencing the learners were required to warm up by hitting the ball to a partner standing between two cones, directly opposite them. This enabled them to get their "eye in" and it also simulated the hockey shooting drill used in testing.

This warm up was followed by a game of normal hockey in which the team which scored the most goals was the winning team.

## **Danish Long Ball**

The class is split into two groups of equal sizes. One team is delegated to be the fielding team and the other becomes the batting team. The game is played on a hockey field with its standard regulation markings. The fielding team selects an individual from the group who will be the pitcher and throw to the batting team. The pitcher stands about 5m from the top point of the goal circle and delivers an underhand throw to the batsman.

The batsman's objective is to hit the ball as far away from the proximity of any individuals on the fielding team. Once the ball has been struck they proceed to run to the goal circle on the opposite end of the field. The fielding team's objective is to gather the ball and pass it amongst one another until they have a clear shot to throw and hit the batsman running to the other side.

The batsman does not run alone, but is allowed to be joined by other runners. The amount of runners that make it safely to the other side determines how the total runs which is scored. If more than three runners decide to make the crossing, if there is one hit, then the whole team is out and the teams swap roles.

The winning team is the team which scores the most total runs at the end of the game.

## **Softball**

The class is split into two groups of equal sizes. One team is delegated to be the batting team and the other team takes their places in the outfield. Fielders are equipped with mitts with which to catch and field the softball. The rules are very similar to that of normal softball or baseball, with the exception of the field of play being a lot smaller than usual.

If the batsman makes contact with the ball, landing it within the field of play, they have to run. The fielding team has to try and get the ball to the catcher on first base before the batsman arrives there, to strike them out.

The batsman can run as many bases as they wish depending on where their ball has been struck within the field of play. Once three players have been struck out the teams swap roles of batting and fielding.

The winning team is the team with the most cumulative home runs at the end of the game.

## **Number Hockey**

Number hockey is a game with a similar structure to normal field hockey, but with a variation in the game play. The teams are placed in two lines approximately 8m apart from one another. Each player is given a number from 1 until the number of players on the team. The referee stands in the middle and calls out a number. The player corresponding with the number called rushes to the middle and picks up the duster hockey stick and tries to score a goal for their team by striking the ball through their goal posts.

The winning team at the end is the team with the highest cumulative goal total.

## **Samples of Cooperative Activities**

### **Ultimate Frisbee**

The class is split into two groups of equal sizes. The field is divided in half with beacons placed in a line just short of the end of the field. The nature of the game is much the same as that of soccer, with the exception of a Frisbee being used. Learners are required to pass the Frisbee amongst teammates and keep possession of it until they are able to score a goal.

This is achieved by throwing the Frisbee to another teammate standing behind the demarcated goal line. The teammate standing behind the goal line is required to catch the Frisbee for it to be considered a goal. If it is dropped, no goal is awarded and the Frisbee is given back to the other team to start working their way to the other goal line.

### **Human Chain**

Learners were split into two groups and told to stand in a circle. They were then instructed to reach in and grab the hands of two different people in the circle and that could not include the hands of the two people standing on either side of them.

What can be likened to a human chain is then formed with all of the learners in the circle. Their hands are tangled up and the objective then is to untangle them to form the circle they had in the beginning, without breaking any of the bonds in the chain. If a bond is broken they need to begin again.

On achieving this, the learners were required to increase the difficulty of the activity by merging the two groups together and building a human chain using all of the class members.

### **Acid River**

The group of learners are split into two teams and placed behind a designated starting point. They are given a certain number of chairs which is always two or three less than the number of individuals in the group. The learners are then given the instruction to have the entire team get themselves from the starting point to another demarcated line across the hall.

The ground below the learners is considered to be a "highly toxic" acid river and they are under no circumstances allowed to have any part of their body touch the floor at any time during the crossing. If any learner does touch the entire team has to return to the start and begin again. Certain extra items are given to the teams to carry across with them which make the trip across a little more difficult.



## Blue and Red Game

Objective: To win as many sweets as possible for your team.

To play: Two teams play against each other, and in each round each team must pick a colour – either blue or red. Scoring is as follows:

Blue – Blue	+3	+3
Red – Red	-3	-3
Blue-Red	-6	+6
Red-Blue	+6	-6

A game consists of 10 rounds, each lasting 2 minutes. At the end of each round the teams must send a messenger to the score keeper with the chosen colour (giving them cards to bring to the score keeper because they will often change their minds if they hear the other team's choice).

After the 4<sup>th</sup> and 7<sup>th</sup> round each team can send a representative (negotiator) to discuss tactics with the opposing team's representative. After their discussions, negotiators return to their teams and play continues.

Rounds 9 and 10 – points are double

The number of points each team has at the end of the game will equal the number of sweets given to them. If the score is zero or below, no sweets are given.

## Electric Fence

A 1m rope is attached horizontally between two uprights above the ground. This is the "electric fence" which the team must cross over without touching. They must assume the fence reaches down to the ground so they cannot climb underneath it. If anyone touches the fence at any point in the game, the whole group must go back to the beginning and start again.

The game can be made harder by saying the whole team must be physically connected to each other throughout the game, and if contact is broken the team must start over again. Bits of equipment can also be given, e.g. a pole and rope, as a diversion but all the equipment must be taken over with them.

## Spider web

A self-constructed web made of bungee cords is hooked up between two uprights, forming a web of many different size holes which learners have to pass through to the other side, without making contact with any part of the web. Learners may pass through the web in any order, but once they have passed through a hole twice, it is then pegged and no other learner may pass through that same hole again.

If any learner makes contact with the web as they are passing through, all of the learners which have already made it to the other side have to return to the original starting side and begin again. Every learner needs to pass through the web for the exercise to be completed.

### **Can Pyramid**

The class is divided into 2 separate groups. Each group is presented with six cylindrical cans, and an elastic band with one string attached to it per group member. Each string has a loop on the end and each person puts a finger through the loop. The cans are placed on their sides in the middle of a table and the group cannot touch them with anything except the string and the elastic band. Their objective is to build a 3-2-1 pyramid with the cans standing upright. They cannot touch any part of the string or elastic band except the loop at the end of the string. If a can rolls off the table it is placed in the centre of the table on its side.

### **Flip the Mat**

The learners were split into 3 groups of equal sizes and each given a mat of the same size. The entire team was required to stand upon the mat, with no learner making contact with any part of the floor surrounding them. They were instructed that they need to work together to flip the mat and have the team standing on the other side of the mat, without any touching the surrounding floor area. If any learner does lose balance, fall off the mat and make contact with the floor the team will be required to begin again.

When the learners had successfully completed this they were asked to perform the activity again, but this time without verbally communicating to one another.

Once all three teams had accomplished this, the class was given a much larger mat on which the entire class was required to perform the activity.

## **Lesson Plan Sample:**

### **Cooperative Activities (Lesson 6) - Spider Web**

Examples of use of Hellison's (1985) Strategies

#### **Awareness talk (10 minutes)**

Recap on the electric fence activity from lesson 5. Explain how similar this weeks activity is and how they can employ similar strategies to complete the task successfully.

*Topics of discussion:*

- What things that they got right as a group last week could they use this week to complete the task?
- Are they more aware of each others strengths and weaknesses in such an activity and how will they use this knowledge in the spider web?

Make sure students understand the rules and what is required of them to complete the spider web.

Make sure students understand the how behaviour in the lesson corresponds with the levels in action score.

#### **Spider web (25-30 minutes)**

Students work as a big group to get themselves from one side of the spider web to the other without touching the sides of the web. If an individual touches, the entire group returns to the original starting side.

Add guidelines and suggestions:

- Working together
- Completing the difficult holes first

Make sure the group are working together and look for "teachable moments".

*Prepare one or more chairs on the periphery for students who engage in fighting and need the "talking bench" strategy to resolve the issue.*

**Debriefing (10-15 minutes)**

Gather the group together for a group meeting and chat about the spider web allowing the students to give feedback about the activity.

*Ask questions specific to the spider web activity to allow the students to engage in self-discovery.*

- What did you learn about yourself from attempting the spider web?
- What did you do well in as a group?
- What could you as a group have done differently?
- Did you remember the lessons learnt from the previous week and did you find that you used them for the successful completion of the spider web?

*Students write down in the journal what level they thought they were for the day and why they thought they deserved that level.*

*Students journal any other thoughts and reflections that stood out from the activity.*

## Appendix C

### Results of Statistical Processing of Data

**Comparison of pretest scores of movement competence for the competitive and cooperative activities groups.**

Group statistics

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean
Response time pre	Group 1	14	1.01	0.09	0.02
	Group 2	14	1.02	0.12	0.03
Coincident timing pre	Group 1	14	0.06	0.03	0.01
	Group 2	14	0.08	0.06	0.02
Eye-hand (striking) pre	Group 1	14	14.57	3.25	0.87
	Group 2	14	15.5	2.68	0.72
Eye-hand (t & c) pre	Group 1	14	27.07	6.47	1.73
	Group 2	14	25.36	4.57	1.22

Independent samples test

		Levene's test for equality of variances	
		F	Sig.
Response time	Equal variances assumed		
	Equal variances not assumed	0.34	0.57
Coincident timing	Equal variances assumed		
	Equal variances not assumed	1.22	0.28
Eye-hand coordination (striking)	Equal variances assumed		
	Equal variances not assumed	0.36	0.55
Eye-hand coordination (t & c)	Equal variances assumed		
	Equal variances not assumed	0.22	0.64

Independent samples test

		t	df	Sig. (2-tailed)	Mean difference
Response time	Equal variances assumed	-0.35	26.00	0.73	-0.01
	Equal variances not assumed	-0.35	24.64	0.73	-0.01
Coincident timing	Equal variances assumed	-0.92	26.00	0.37	-0.02
	Equal variances not assumed	-0.92	17.84	0.37	-0.02
Eye-hand (striking)	Equal variances assumed	-0.82	26.00	0.42	-0.93
	Equal variances not assumed	-0.82	25.09	0.42	-0.93
Eye-hand (t & c)	Equal variances assumed	0.81	26.00	0.43	1.71
	Equal variances not assumed	0.81	23.37	0.43	1.71

## Independent samples test

		<i>t</i> test for equality of means		
		95% confidence interval of the difference		
		Std. error difference	Lower	Upper
Response time	Equal variances assumed	0.04	-0.10	0.68
	Equal variances not assumed	0.04	-0.10	0.69
Coincident timing	Equal variances assumed	0.02	-0.05	0.19
	Equal variances not assumed	0.02	-0.05	0.20
Eye-hand (striking)	Equal variances assumed	1.13	-3.24	1.39
	Equal variances not assumed	1.13	-3.25	1.39
Eye-hand (t & c)	Equal variances assumed	2.12	-2.64	6.07
	Equal variances not assumed	2.12	-2.66	6.09

### Results of participation in a 10-week competitive activities programme (Group 1) on movement competence.

Paired samples statistics

		Mean	N	Std. Deviation	Std. error mean
Pair 1	Response Time pre	1.01	14	0.93	0.02
	Response Time post	0.86	14	0.11	0.03
Pair 2	Coincident Timing pre	0.06	14	0.03	0
	Coincident Timing post	0.67	14	0.02	0
Pair 3	Eye-hand (striking) pre	14.57	14	3.25	0.87
	Eye-hand (striking) post	17.29	14	2.49	0.67
Pair 4	Eye-hand (t &c) pre	27.07	14	6.47	1.73
	Eye-hand (t &c) post	28.64	14	6.27	1.68

Paired samples correlations

		N	Correlation	Sig.
Pair 1	Response Time pre			
	Response Time post	14	0.69	0.01
Pair 2	Coincident Timing pre			
	Coincident Timing post	14	-0.13	0.67
Pair 3	Eye-hand (striking) pre			
	Eye-hand (striking) post	14	0.31	0.28
Pair 4	Eye-hand (t &c) pre			
	Eye-hand (t &c) post	14	0.78	0

Paired samples test

		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t
Pair 1	Response Time pre						
	Response Time post	0.15	0.79	0.21	0.1	0.19	7.01
Pair 2	Coincident Timing pre						
	Coincident Timing post	-0.01	0.34	0.01	-0.03	0.01	-0.68
Pair 3	Eye-hand (striking) pre						
	Eye-hand (striking) post	-2.71	3.43	0.92	-4.69	-0.73	-2.96
Pair 4	Eye-hand (t &c) pre						
	Eye-hand (t &c) post	-1.57	4.27	1.14	-4.04	0.90	-1.38

Paired samples test

		df	Sig. (2-tailed)
Pair 1	Response Time pre		
	Response Time post	13	0.01*
Pair 2	Coincident Timing pre		
	Coincident Timing post	13	0.51
Pair 3	Eye-hand (striking) pre		
	Eye-hand (striking) post	13	0.01*
Pair 4	Eye-hand (t &c) pre		
	Eye-hand (t &c) post	13	0.19

\*p &lt; .05

### Results of participation in a 10-week cooperative activities programme (Group 2) on movement competence.

Paired samples statistics

		Mean	N	Std. Deviation	Std. error mean
Pair 1	Response Time pre	1.02	14	0.12	0.03
	Response Time post	0.92	14	0.16	0.04
Pair 2	Coincident Timing pre	0.08	14	0.06	0.02
	Coincident Timing post	0.08	14	0.04	0.01
Pair 3	Eye-hand (striking) pre	15.5	14	2.68	0.72
	Eye-hand (striking) post	17	14	1.71	0.46
Pair 4	Eye-hand (t &c) pre	25.36	14	4.57	1.22
	Eye-hand (t &c) post	25.5	14	6.86	1.83

Paired samples correlations

		N	Correlation	Sig.
Pair 1	Response Time pre			
	Response Time post	14	0.82	0
Pair 2	Coincident Timing pre			
	Coincident Timing post	14	-0.16	0.59
Pair 3	Eye-hand (striking) pre			
	Eye-hand (striking) post	14	-0.37	0.19
Pair 4	Eye-hand (t &c) pre			
	Eye-hand (t &c) post	14	0.35	0.23

Paired samples test

		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t
Pair 1	Response Time pre						
	Response Time post	0.10	0.09	0.03	0.05	0.16	3.99
Pair 2	Coincident Timing pre						
	Coincident Timing post	-0.00	0.07	0.02	-0.04	0.04	-0.01
Pair 3	Eye-hand (striking) pre						
	Eye-hand (striking) post	-1.50	3.67	0.98	-3.62	0.62	-1.53
Pair 4	Eye-hand (t &c) pre						
	Eye-hand (t &c) post	-0.14	6.80	1.82	-4.07	-0.08	-0.08

Paired samples test

		df	Sig. (2-tailed)
Pair 1	Response Time pre		
	Response Time post	13	0.01*
Pair 2	Coincident Timing pre		
	Coincident Timing post	13	0.99
Pair 3	Eye-hand (striking) pre		
	Eye-hand (striking) post	13	0.15
Pair 4	Eye-hand (t &c) pre		
	Eye-hand (t &c) post	13	0.94

\* p &lt; .05



**Results of participation in a 10-week competitive activities programme  
(Group 1) on four subscales of perceived competence**

Paired samples statistics

		Mean	N	Std. Deviation	Std. error mean
Pair	Cognitive pre	20.07	14	5.77	1.54
1	Cognitive post	20.14	14	5.28	1.41
Pair	Social pre	20.29	14	5.76	1.54
2	Social post	20.29	14	5.25	1.40
Pair	Physical pre	19.43	14	5.60	1.50
3	Physical post	18.93	14	4.76	1.27
Pair	General pre	22.29	14	5.81	1.55
4	General post	21.71	14	5.36	1.43

Paired samples correlations

		N	Correlation	Sig.
Pair	Cognitive pre			
1	Cognitive post	14	0.96	0
Pair	Social pre			
2	Social post	14	0.92	0
Pair	Physical pre			
3	Physical post	14	0.86	0
Pair	General pre			
4	General post	14	0.82	0

Paired samples test

		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t
Pair	Cognitive pre						
1	Cognitive post	-0.07	1.64	0.44	-1.02	0.88	-0.16
Pair	Social pre						
2	Social post	0	2.22	0.59	-1.28	1.28	0
Pair	Physical pre						
3	Physical post	0.5	2.85	0.76	-1.15	2.15	0.66
Pair	General pre						
4	General post	0.57	3.39	0.91	-1.39	2.53	0.63

Paired samples test

		df	Sig. (2-tailed)
Pair	Cognitive pre		
1	Cognitive post	13	0.87
Pair	Social pre		
2	Social post	13	1.00
Pair	Physical pre		
3	Physical post	13	0.52
Pair	General pre		
4	General post	13	0.54

\*  $p < .05$

### Results of participation in a 10-week cooperative activities programme (Group 2) on four subscales of perceived competence

#### Paired samples statistics

		Mean	N	Std. Deviation	Std. error mean
Pair 1	Cognitive pre Cognitive post	20.29 18.36	14 14	4.51 3.52	1.21 0.94
Pair 2	Social pre Social post	21.21 19.43	14 14	3.81 3.74	1.02 1.00
Pair 3	Physical pre Physical post	18.36 18.29	14 14	5.67 4.25	1.51 1.14
Pair 4	General pre General post	20.57 20.71	14 14	4.38 4.34	1.17 1.16

#### Paired samples correlations

		N	Correlation	Sig.
Pair 1	Academic pre Academic post	14	0.74	0
Pair 2	Social pre Social post	14	0.66	0.01
Pair 3	Sport pre Sport post	14	0.83	0
Pair 4	General pre General post	14	0.56	0.04

#### Paired samples test

		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t
Pair 1	Academic pre Academic post	1.93	3.03	0.81	0.18	3.68	2.39
Pair 2	Social pre Social post	1.79	3.12	0.83	-0.01	3.59	2.14
Pair 3	Sport pre Sport post	0.07	3.22	0.86	-1.79	1.93	0.08
Pair 4	General pre General post	-0.14	4.07	1.09	-2.5	2.21	-0.13

#### Paired samples test

		df	Sig. (2-tailed)
Pair 1	Academic pre Academic post	13	0.03*
Pair 2	Social pre Social post	13	0.05*
Pair 3	Sport pre Sport post	13	0.94
Pair 4	General pre General post	13	0.90

\* p < .05

### Pretest and posttest results of the Control Group (Group 3) on four subscales of perceived competence

#### Paired samples statistics

		Mean	N	Std. Deviation	Std. error mean
Pair	Cognitive pre	18.44	25	4.23	0.85
1	Cognitive post	18.16	25	3.84	0.77
Pair	Social pre	19.96	25	4.88	0.98
2	Social post	20.48	25	4.07	0.82
Pair	Physical pre	20.48	25	4.45	0.89
3	Physical post	19.88	25	3.66	0.73
Pair	General pre	20.64	25	3.59	0.72
4	General post	19.60	25	3.82	0.76

#### Paired samples correlations

		N	Correlation	Sig.
Pair	Cognitive pre			
1	Cognitive post	25	0.75	0
Pair	Social pre			
2	Social post	25	0.69	0
Pair	Physical pre			
3	Physical post	25	0.81	0
Pair	General pre			
4	General post	25	0.44	0.03

#### Paired samples test

		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t
Pair	Cognitive pre						
1	Cognitive post	0.28	2.87	0.57	-0.9	1.46	0.49
Pair	Social pre						
2	Social post	-0.52	3.58	0.72	-2	0.96	-0.73
Pair	Physical pre						
3	Physical post	0.6	2.63	0.53	-0.49	1.69	1.14
Pair	General pre						
4	General post	1.04	3.92	0.78	-0.58	2.66	1.33

#### Paired samples test

		df	Sig. (2-tailed)
Pair	Cognitive pre		
1	Cognitive post	24	0.63
Pair	Social pre		
2	Social post	24	0.48
Pair	Physical pre		
3	Physical post	24	0.27
Pair	General pre		
4	General post	24	0.20

\*  $p < .05$

**Results of a comparison among the three groups on the results of their pretest and posttest scores on four dimensions of self-esteem**

		Sum of Squares	df	Mean Square	F	Sig.
Cognitive pre	Between Groups	40.24	2	20.12	0.89	0.42
	Within groups	1127.95	50	22.56		
	Total	1168.19	52			
Cognitive post	Between Groups	38.01	2	19.01	1.08	0.35
	Within groups	876.29	50	17.53		
	Total	914.30	52			
Social pre	Between Groups	14.28	2	7.14	0.3	0.74
	Within groups	1190.17	50	23.8		
	Total	1204.45	52			
Social post	Between Groups	10.27	2	5.13	0.27	0.76
	Within groups	938.53	50	18.77		
	Total	948.79	52			
Physical pre	Between Groups	41.31	2	20.65	0.8	0.46
	Within groups	1298.88	50	25.98		
	Total	1340.19	52			
Physical post	Between Groups	24.29	2	12.15	0.71	0.50
	Within groups	850.43	50	17.01		
	Total	874.72	52			
General pre	Between Groups	28.78	2	14.39	0.72	0.49
	Within groups	998.05	50	19.96		
	Total	1026.83	52			
General post	Between Groups	41.42	2	20.71	1.07	0.35
	Within groups	967.71	50	19.35		
	Total	1009.13	52			