A COMPARISON OF THE EFFECTIVENESS OF THE MODIFIED WITH THE TRADITIONAL APPROACH TO JUNIOR NETBALL

A Comparison of the Effectiveness of the Modified with the Traditional Approach to Junior Netball.

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ABSTRACT

The purpose of the present study was to contrast the effectiveness of modified and traditional netball for juniors. Despite the considerable controversy which has surrounded the appropriateness of modified and adult versions of youth sport, the area has received very little empirical attention. By examining a sport which is dominated by females, this investigation is also considered important in that it supplies information about the psychological effects of organized sport on girls. Comparisons between the two approaches to netball were made in terms of young athletes' skill level, self-esteem and self-competence, anxiety and attitudes as well as coaches' behaviours at matches and training sessions.

One hundred and forty-two netball players (7 to 11 years of age) were administered a skills test; an adaption of Coopersmith's (1967) Self-Esteem Inventory; a modified version of the Physical Self Test; and the children's form of the Competitive State Anxiety Inventory both before the season and again at the end of the season. A questionnaire designed to measure attitudes about netball, teammates, the coach and the self was also given to the athletes following the completion of the season. Further, the behaviour of the 21 coaches in the sample was randomly coded using a modification of the Coaching Behaviour Assessment System.

Analysis of covariance revealed that modified players achieved significantly higher skill levels in two of the four fundamental netball skills tested, shoulder passing and pivotting, compared to their traditional counterparts. However, no significant differences were found between the two groups in self-esteem, self-competence or anxiety. Similarly, the analyses of variance revealed that modified players did not have signficantly different attitudes from the traditional athletes. With regard to coaching behaviours, the hypothesis that modified coaches would exhibit more reinforcing, encouraging and technically instructive behaviours and fewer punitive and controlling behaviours compared to traditional coaches, did not generally receive support. Indeed, the discriminant analyses revealed no clear behavioural patterns for either modified or traditional coaches, although their match behaviours were found to be different from the behaviours exhibited in training sessions.

It was concluded that both modified and traditional netball programs have merit because each version serves different needs. By providing different types of sporting programs, children and parents can select a style which is consistent with the players' individual personalities and aspirations.

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CHAPTER 1

INTRODUCTION AND REVIEW OF LITERATURE

To say that sport permeates the lives of children in our society is probably understating the case somewhat. In Australia, for instance, it has been estimated that well over one million children between the ages of 9 and 14 are involved in organized sport (Robertson, 1986).

Not only is participation in these programs enormously popular, but the participants are intensely involved. For example, Longhurst (1985) found that, on average, young athletes participate in these programs for 9 hours a week, during a 26-week season. The finding that sport is one of the most valued activities in the adolescent subculture (Coleman, 1974; Eitzen, 1975; Feltz, 1978) is a further indication that one important early experience is that of involvement in sporting programs.

Indeed, the basis for many physical skills, as well as the groundwork leading to the love and pursuit of physical activities, is established during the childhood years (Orlick & Botterill, 1975). Also developing at this time are values about adults and peers; attitudes towards such social norms as co-operation, achievement and competition; and importantly, beliefs in one's own competence and worthiness (Clarke-Stewart, Friedman & Koch, 1985). However, despite the obvious magnitude and significance of organized sport for children, it is surprising that little is known about the effectiveness these sporting programs.

In fact, considerable controversy surrounds the appropriateness of the youth sport setting as a medium for enhancing childrens' skills. One area where this controversy rages is in the area of modification of rules. On the one hand, it has been proposed that the rules and procedures of "adult" sports should be modified so that they are better suited to children (e.g. Burke & Kleiber, 1976; Cooper, 1977; Dubois, 1980; Evans, 1980b; Gibson, 1982; Lamb, 1985; Orlick, 1986; Parkin, 1978, 1980; Thomas, 1978; Winter, 1983). It has been suggested that modification would lead to optimum development of skills; more equal opportunity for all participants; and, because of a process-orientation and an emphasis on enjoyment, a longer and more positive involvement in organized sport.

The contrasting view is that children who are exposed to the modified versions of the sport will not be as well prepared for sport at a senior level (Mandle & Pang, 1981). It is argued that children must learn to cope with the stresses of competition at an early age and that the participants themselves will criticize the modified version as not being "the real thing" (Department of Youth, Sport and Recreation, 1985). Modification would maintain a child's false hopes since the majority will never reach an elite level. Further, by equalizing opportunity, modified sport will hold back the more skilled performers (Department of Youth, Sport and Recreation, 1985 ; Nettleton & Sands, 1985; Spink, 1989).

Nevertheless, sports modification is currently receiving an increasing amount of promotion. For instance, the Australian Sports Commission has recently initiated a Children In Sport program, the major objective of which is to encourage children to develop a variety of sports and sports-related skills by focussing on public and coach education in the

school and club systems (D'Arcy, 1985). One of the specific targets of this program is to have 88 percent of children in the final three years of primary school involved in appropriate modified sport through the Aussie Sport scheme. Similarly, the academic journals, particularly Sports Coach, have featured articles on modified youth sport and a number of modified sport booklets have been complied. In Victoria 15 sporting associations currently offer modified versions of their games (Department of Youth , Sport & Recreation, 1985).

One sport that has demonstrated its faith in adopting a modified approach for its young participants is netball, the largest female participant sport in Australia. An estimated one in every seven females between the ages of 8 and 40 years play netball every year (All Australian Netball Association, 1987). In terms of junior players, a recent report by the All Australian Netball Association (1985) documented 60,300 registered players under the age of 12 years participating in club netball. A mean of 81 percent of these children play the modified "Netta" netball game in the under 10 age group while, in the under 12 age group the figures reverse with a mean of 28 percent playing in the modified version. However, it is worth noting that this percentage varies widely by State. Netball is also played extensively in the school system and while, in the past, the traditional game has dominated, modified netball is becoming increasingly more popular - indeed "Netta" netball is one of the four most popular sports offered in the Aussie Sport program (Russell & Traill, 1987). The participation of girls in many different youth sport programs - not only netball - is continually rising but, as Scanlan and Passer (1979) have pointed out, there is limited information available regarding

the psychological effects of competition on them. It is for these reasons - its popularity as well as its research neglect - that primary club netball became the focus of the present study.

However, it is not just netball that has received little empirical attention but also youth sport in general. Unfortunately the debates waged on the pros and cons of modified and traditional versions of children's sport are often based on little or no scientific data. Thus, this project represents an attempt to fill the gap in the research concerning the desirability of modifying sport for young children.

The purpose of the present study is to compare the effectiveness of modified with traditional organized sport for primary children in terms of skill development, coaching behaviours and various psychosocial attributes. Because very little Australian research has been conducted in the area of youth sport, the review of literature which follows relies primarily on that information from North America which has relevance to the Australia situation.

Because youth sport is so firmly entrenched in Australia society, there is an urgent need to ascertain the effectiveness of these programs. For it is the experiences we provide for our children today that will shape our future generations. As child historian de Mause (1974) writes:
"....a society's childrearing practices are...the very condition for the transmission and development of all other cultural elements, and place definite limits on what can be achieved in all other spheres of history" (p.3.).

Review Of Literature

By way of definition, Winter (1983) has defined modified sport as "a simplified version of the adult game which still retains its basic intent. The changes made should reflect the different stages of physical and psychological development of children" (p.10). Although this version of children's sport is already popular in Australia, its effectiveness has never been effectively evaluated. The present study aims to compare the effectiveness of a modified approach to netball with a traditional version of the game using a number of variables including : skill improvement, coaching behaviours, self -esteem and self-competence, anxiety and attitudes.

The review of literature which follows considers the efficacy of modified and traditional youth sport programs as they relate to each of these variables. An outline is also provided of the types of modifications that have been introduced into the "Netta" netball game as they relate to each of the five variables. Given the paucity of research investigating the desirability of youth sports modification, especially in the area of netball, the present study must be considered exploratory in nature. In some cases, therefore, support for the hypotheses relies on indirect empirical findings.

Skill Improvement

Perhaps the most fundamental reason suggested for modifying children's sport emanates from the argument that children are different from adults in a number of basic ways. As Rousseau conveyed in the eighteenth century, children have their own ways of seeing, thinking and feeling; nothing is more senseless than to try to replace them with ours (as cited in Ellis, 1949). Contemporary writings are more specific as to the way in which the child differs mentally and emotionally from the adult.

In the terms of the capacity to cope with adult games, Winter (1983) summarizes these as follows:

a) reduced capacity to cope with stress, so that during the pressure of the competitive game they forget rules and skills which can lead to anger, frustration and a sense of humiliation;

b) less ability to think ahead, anticipate developments in the game, with the that result they cannot apply known skills and game techniques effectively;

c) the level and span of concentration is lower, so that they cannot remember to apply techniques they have been taught and their attention drifts when they are not directly involved in the play;

d) a more limited ability to make decisions, so that they may not even act effectively to save themselves from injury;

e) they are self-centered and find it difficult to accept the restraints imposed by teamwork; and

f) less ability to grasp abstract concepts which are inherent in many rules.

For these reasons, it has been suggested that skill learning is less easily acquired when children play under adult game situations (Allsopp, 1982; Gibson, 1982; Pooley, 1979; Singer, 1977; Winter, 1983).

In the same vein, the physical attributes of the child limit optimal skill acquisition in adult sport. As Gibson (1982) explains:

> Children are often asked to play on full-size grounds which are not suited to their size or skill level. They may play with a hard ball which creates not only a risk of injury but also strikes fear into the child when it is propelled at them with great velocity. Further they are often required to throw, kick or hit over distances which are not commensurate with either their physical skill or their strength level. These unrealistic requirements are certainly not conducive to the learning and development of skills (p.5).

However, by taking into account the stages of cognitive and motor development of the child, a modified structure aims to provide a gradual transition so that participants are ultimately better prepared for sport at a senior level (Gibson, 1982).

Supporting the need for major modifications to both equipment and game structure, Seefeldt (1982) emphasizes the importance of readiness in learning a physical task. The most feasible procedure for ensuring that young performers are ready to learn a motor skill is by providing them with the ideal opportunity to acquire the requisite antecedent skills. Similarly, Lamb (1985) suggests that there is a critical period in the development of the child when a particular skill is most susceptible to modification - roughly between 7 and 11 years:

> Up to about 9 the child likes movement for movement's sake. After 9-10 years the child begins to take an interest in making his/her actions effective and efficient and to try and achieve particular levels of performance. At about 11 years, competition and team games become important, but not as important as their skill development, as they find team play concepts beyond their level of development in most cases (p.56).

Thus, it is only when the degree of skill and understanding required for playing a game is within a child's capacities, that the experience will present a meaningful challenge to him (Eifermann, 1971) - modification aims to provide for this.

Another benefit of modification that has been suggested is that of protecting the child from unrealistic adult expectations which may interfere with skill learning (Department of Youth, Sport and Recreation, 1985). Youth sport is commonly watched and judged by coaches and parents who represent a very evaluative audience to the performer. Since research

has shown that the greater the perceived evaluative potential possessed by an audience, the greater the inhibition in the learning of a task (Cottrell, Sekerak, Wack & Rittle, 1968), the presence of evaluative spectators in adult versions would appear to hinder skill acquisition. In modified sports, however, spectators (if made aware of the purpose of the changes) are likely to hold a different set of expectations about the performance of their young athletes - in short, the perceived evaluative potential of the on-lookers will be reduced. As Winter (1983) writes:

> As long as the game remains the same as the adult one it will be judged by competitive adult standards. If the game is [modified]...the spectators will view it differently. The "new" game can be respected in its own right as a legitimate form of sport with the emphasis on participation, skill learning and enjoyment for the child's benefit (p.46).

While modification in netball in Victoria has not focussed on the education of parents, coaches have been instructed in the philosophy underlining the changes to the game. Furthermore, a number of structural alterations have been made to the adult game in order to facilitate skill development. A smaller size 4 ball (20 to 24 inches) is used and the goal posts are lower (8 feet). Players are allowed more time to throw the ball (a maximum of 6 seconds) and the stepping rule is relaxed so that shuffling to regain balance is permissible (as long as the player does not gain ground by doing so). The distance from which an opponent may defend a player is lengthened to 4 feet and finally, the duration of the match is reduced to four quarters of 10 minutes each being played. Further, skill

improvement is the focus in that once a month half of the allocated playing time is devoted to ball handling, positioning and explaining the rules by experienced coaches and umpires (Geelong Netball Association, 1986).

The modified league that was examined in the present study adhered to these rules. However, it is worth noting that these rules do not conform exactly to those guidelines proposed by the All Australian Netball Association (1981) which specify two levels of modification; one for children 8 to 10 years and another for 10 to 12 years. A sample of the All Australian Netball Association recommended modified rules for juniors appears as Appendix A. Certainly both modified rule versions contrast with those specified for adults in which a size 5 ball (27 to 28 inches) is used and goal posts are 10 feet. Players are permitted 3 seconds before they must dispose of the ball and an opponent must be at least 3 feet from a player in order to defend. No stepping with the ball is allowed and matches comprise 15 minute quarters (All Australian Netball Association, 1985).

Traditional youth sports have also been criticized for allowing the domination by a minority, at the expense of the majority (Devereux, 1976; Martens, 1978; Orlick & Botterill, 1975; Pooley, 1980; Winter, 1983). Typically, the physically maturer and more highly skilled children are the ones who succeed in sports. The moderate performers are discriminated against, mostly because their performance is negatively reinforced, and skilled leadership is denied them. As Winter (1983) notes: "It is still common practice for the best coach to coach the best, or most senior

players while the least experienced and able takes the juniors" (p.38). Thus a selection process operates whereby the late maturing children are often eliminated and, even after they physically catch up, many will never re-enter sports. By then these youngsters have missed the advantage of early training and have lost interest because of early failure. Furthermore, as Martens (1978) points out, differences in physical maturation may also hurt the early maturers. Their initial advantage in sport is slowly lost as others mature and improve and the psychological adjustment required to drop from a star to just another athlete is a difficult one. For instance, the Medford growth study, a 12-year longitudinal investigation, shows that only one out of four star athletes in elementary school maintained such a rating 3 to 4 years later in junior high school (Clark, 1968). This problem in adjustment is often accentuated by the coach's mistaken belief that the early maturer is no longer putting forth the needed effort. Frustration, and perhaps even withdrawal from the sport, is the result.

Modification of junior sport, by contrast, attempts to take into account the fact that children mature at different rates and that physical maturity is a most important factor in determining their success. In his games analysis model, Morris (1986) supports the concept of inclusion for all in sport so that players are helped to feel more confident about themselves as human movers. "If one believes that part of childhood ought to be spent gaining a sense of self, gaining a sense of competence, and gaining skills that will allow us all to coexist, then our game and sport environments ought to help all children, not just those who motorically excel" (Morris, 1986, p.199).

Indeed, several studies have been conducted comparing modified and traditional approaches to junior sport in terms of this notion of inclusion. All of the comparisons have revealed that the modified version tended to equalize the participation of all athletes to a much greater extent than the traditional game. For example, Parkin (1980) compared the participatory rates of adult and modified approach versions of basketball and sotball and found that the modified approach, especially the softball, significantly equalized the opportunity to participate. Similarly, a comparison of the involvement of junior cricketers in a normal and a modified game by Evans and Davis (1980) revealed that the modified rules game created the opportunity for more players to be involved in all aspects of the game. Finally, a study by Martens and his colleagues revealed that children playing in a modified baseball game were involved in more offensive (i.e., at bat) and defensive (i.e., fielding and throwing) activity than children playing in a traditional league (Martens, Rivkin & Bump, 1984). If it can be assumed that more activity is a requisite to skill development, then the modified approach should provide a better environment for cultivating and nurturing the skills of many more children.

Modified netball attempts to promote this notion of inclusion by allowing interchange of up to 10 players at any interval. In fact, the Victorian competition extends this idea by ruling that all 10 players must be on the court for at least half a game (Geelong Netball Association, 1986). Certainly this practice seems to have assisted the average performer, as one umpire comments: "For those children who are not as brillant nor well co-ordinated the chance to play under these new conditions has been a

success" (Willis, 1983, p.5).

Not only is participation by all encouraged in modified rules competition but so, too, is participation in a variety of positions within the particular game. This is in response to a practice common in traditional sports-early specialization. Intensive training to acquire specialized sports skills at too early an age is usually achieved at the expense of developing a broader base of fundamental movement skills (Martens, 1978). When there is an emphasis on winning and a de-emphasis on fun, children are often placed in the same position each game so that they become expert in only a small repertoire of skills. For instance, the netballer who is taller than her peers is often confined to goal shooter or keeper positions where a minimum amount of running or dodging is required. Thus she is denied the opportunity to develop these more primary skills and her success is almost solely dependent on her height. In contrast, a modified approach to sport encourages the rotation of players into a variety of positions to expose them to all facets of the game (Gibson, 1982), as is evident in the "Netta" netball game.

Thus far, it has been suggested that modified sport may be more effective in promoting skill development than the traditional version because the former attempts to take into account differences in children's mental, emotional and physical maturity. Modified sport also attempts to protect youngsters from unrealistic adult expectations, equalize participation and avoid specialization in skill mastery. Therefore, given that modified sport is successful in achieving its aims, these participants should display higher performance/skill levels than children participating in the traditional program.

The first hypothesis under test in the present study posits that children playing in the modified netball program will show a significantly higher skill level at the end of the season (as measured by scores from four fundamental netball skills) than children involved in the traditional version when preseason skill level scores are taken into account.

Coaching Behaviours

It is generally recognized that coaches occupy a position of centrality in the youth sport setting. The manner in which coaches structure the athletic situation, the goal priorities they establish, and the ways in which they relate to athletes are primary determinants of the outcomes of sport participation (Martens, 1978; Smith, Smoll, Hunt, Curtis & Coppel, 1979; Smoll, Smith, Curtis & Hunt, 1978). Moreover, their influence can extend into other areas of the child's life as well. As Smith and Smoll (1978) note: "During a developmental period in which children are seeking varying degrees of independence from parental influence, the child's relationship with the youth coach can become a highly significant and influential one" (p.183).

Indications that coaches can have a substantial impact both on children's sport participation and their social and emotional development comes from several perspectives. Firstly, as Snyder and Spreitzer (1976) have demonstrated, coaches are viewed as "significant others" by their athletes. In a study of high school athletes, Snyder (1972) found that 47 percent said their coach had been a great influence on them, 42 percent said their coach had been of some influence and, importantly, only 11

percent indicated the coach had been of little or no influence. Data was also collected to determine the relative influence of others in the athlete's educational and occupational plans. Parents ranked first in importance with the coach immediately behind, but well ahead of peers, teachers, relatives and others. Similar to this, Ogilvie (1979) reports that world class and Olympic female swimmers rated their former coaches as still the most significant adult in their lives 6 to 12 years after the completion of competition.

Similarly, a number of recent studies have highlighted the importance of athletes' perceptions of their coaches on various aspects of their sport participation. For instance, Scanlan and Lewthwaite (1985; 1986) found that when wrestlers perceived greater coach satisfaction with their season's performance, they held higher generalized expectancies as well as higher specific expectancies for the first tournament round (Scanlan & Lewthwaite, 1985) and they also experienced greater enjoyment (Scanlan & Lewthwaite, 1986) than boys who perceived less coach satisfaction with their performance. Further, boys who perceived more positive adult sport involvement and interactions (coach and parent) experienced greater enjoyment of the sport than their counterparts (Scanlan & Lewthwaite, 1986).

A third indication is simply the time young athletes devote to their sport. Several investigators have noted that many youngsters spend an inordinate amount of their free time practising and competing under the tutelage of the adult leader (eg., Gould & Martens, 1979; Lombardo, 1982). For instance, a study of junior sports coaches in Western

Australia showed that 58 percent of these leaders train their athletes between two and seven times per week. This practice time is, of course, on top of the hours spent actually competing in match settings (Gray & Cornish, 1985). A study of Victorian youth sport coaches similarly found that a mean of 9 hours per week were devoted to coaching during an average season of 26 weeks (Longhurst, 1985).

Finally, many of the reasons children give to explain their withdrawal from sport are behaviours that are typically under the direct control of the coach. For instance, when Orlick (1974) interviewed dropouts at the primary school age, 40 percent withdrew because of what was roughly categorized as lack of exposure to playing time and 60 percent did so because of a lack of successful or rewarding experiences. An Australian study of Year 7 children conducted by Robertson (1982) found that about 60 percent of dropouts cited problems within organized sport situations as reasons for their discountinued sport involvement. Specifically, 45 percent were classified as problems with the program such as "no fun", "never played", "not good enough", "no interest", "training was too hard"; 7 percent as physical injury or illness; 6 percent as dissatisfaction with the coach (e.g., "pushed too hard", "didn't like him", "picked on me"); and 2 percent as peer and parental problems.

But perhaps the clearest illustration comes from an investigation of dropouts from soccer (Pooley, 1980). Of those who withdrew, 25 percent were never praised, 25 percent felt ignored by the coach, 20 percent were never given instructions about their faults and 20 percent were never made aware of their progress. As Nettleton and Sands (1985) note: "It is not

rules, nor the equipment, but how people relate to others within the structure" (p.38) which is the most important influence on the decision to drop out of youth sport.

In spite of their significance in the organized sport experiences of young children, coaches are typically non-professional volunteers with little, if any, explicit training in the psychology of coaching (Lombardo, 1982; Smith, Smoll, Hunt, Curtis & Coppel, 1979; Smoll & Smith, 1981). Moreover, as Evans (1980a) points out, there is a tendency to "coach the way we were coached". This cyclical pattern to coaching often fails to discriminate between the adult and the junior player. Even if coaching clinics are attended, the focus of these is typically on teaching specific sport skills, techniques and training methods whereas little information is provided on how best to relate to young athletes and how coaches affect their players. Further, through the mass media, "coaches are often exposed to role models who coach at the adult or professional level and they may come to emulate behaviours and a 'winning is everything' philosophy that are highly inappropriate in relating to youngsters in a recreational and skill development context" (Smith & Smoll, 1978, p.184).

Certainly children's attitudes toward these habits have been made clear in several research studies. For instance, Orlick and Botterill (1975) have indicated that over 90 percent of young athletes report that they would rather be on a losing team and play, than sit on the bench for a winning team. Similarly, when Robertson (1982) presented the following two statements to children: "It is more important for a team to win than for everyone to get a chance to play" and "winning is more important than

learning to play the game" - 65 percent of those surveyed disagreed with the first statement and 80 percent disagreed with the second.

Coaches, too, appear to be aware of this problem as Gray and Cornish (1985) discovered. These investigators asked over 280 volunteer youth sport coaches what their major concerns were about children competing in organized sport. The most frequent response (36 percent) was concerned with an overemphasis on winning in these programs. Similarly, Longhurst (1985) found that coaches rated "too much emphasis on winning" as the most pressing problem in Victorian youth sport. Even more poignant were the findings of Gould and Marten's (1979) research on the attitudes of volunteer youth sport coaches towards significant issues. When agreement ratings on the "too much emphasis on winning" item were summed over all 423 coaches, 73 percent found this problem true in general and 49 percent found this true of their own particular program. It has also been noted that there is sometimes a discrepancy between a coach's philosophy and his behaviour. Even if coaches are able to accept the general viewpoint that winning is not that important in children's games, their rational judgements may be forfeited in the "heat of the moment" during a game of their own team (Gray & Cornish, 1985; Martens, 1982). Thus, it is often difficult to prevent adults from bringing an orientation towards winning into children's sport, considering its pervasiveness in the society at large.

Further, a number of authors have noted that the more institutionalized the youth sport program, the more likely success through winning will be emphasized (Brower, 1979; Foster, 1979; Pooley, 1982; Vaz, 1974). Highly selective, competitive and professionalized programs are criticized for

being organized for the benefit of the coaches, parents and administrators involved, rather than for the children. Moreover, the win at-all costs attitude of these significant others appears to increase the chances of children learning negative behaviours within the sport environment. For example, Vaz (1974) found that hockey players learned to sanction any means in order to win - especially if the coach emphasized aggressiveness and roughness in his teaching. Similarly, Smith (1974) found that aggressiveness is learned through hockey participation and Jones and Pooley (1982) concluded that there was a strong relationship between cheating and the win at-all-costs attitude prevalent in sport today.

However, although aggression, violence and cheating may be learned within the sport environment, this is not inevitable. The negative behaviours learned in competitive sport appear to be a function of a particular, specific situation within sport, and not of competition per se. A classic illustration of the significance of the social environment comes from the work of Sherif and his colleagues (Sherif, Harvey, White, Hood & Sherif, 1961). At a summer camp, the social environment of two groups of boys was manipulated to create a win-loss structure. A sport competition was organized in which one team could win only at the expense of the other team's loss. The sport competition quickly turned into a ruthless contest in which the sole aim was to win, with any amount of cheating used to further this aim. Moreover, the behaviour exhibited in the sporting context generalized to all other camp activities. Cheating, acts of aggression, hostility and prejudice became normative behaviour.

Changes in goal structure were then attempted in order to alter this situation. The introduction of goals appealing to both groups, but whose attainment required the participation and co-operation of both groups, succeeded over a period of time in changing the hostile aggressive relationship to one of co-operation and tolerance. Thus, the researchers found that by manipulating the competitive environment or social context, the importance of competition and its consequences could be influenced.

In a similar way, modified sport aims at changing the sport environment towards a more co-operative mode so that so that participants can experience more fun, satisfaction and learning. Dubois (1980) posits a continuum model of competition - at one end exists a product orientation, such as in traditional competitive sports, and at the other, a process orientation. In the former, winning is an end in itself and participants are motivated primarily by the pursuit of prizes and by gaining the admiration and approval of onlookers while treating their opponents as an obstruction. In contrast, a process orientation is characterized by participation as an end in itself with the competitors satisfied not by winning, but by performing as well as they can. Their focus is on the the present, rather than the outcome, and they view their opponents as working towards the same goal as themselves, that of high quality athletic performance. It is this process orientation which is endorsed by proponents of modification.

"Netta" netball attempts to adopt this process orientation. Although games are scored, no points are awarded and no ladder is kept. There are no finals matches,but rather at the end of the season every child is

awarded a participation certificate. Umpires are given the authority "to act upon any situation which is not in the spirit of fairplay and the participation of all" (Geelong Netball Association, 1986, p.2). Specifically, the umpires are instructed to:

a) use simple language and to explain decisions;
b) adopt an encouraging and pleasant manner to ensure an open and free-flowing game.

A statement in the guidelines makes the philosophy clear: "Remember that competition only exists to give the game purpose - what counts is giving each child a chance to try hard, to improve, and to gain satisfaction from participation" (All Australian Netball Associated 1981, p.2).

The success of incorporating a process approach into junior sport obviously depends largely on the behaviour of the coach. However, numerous authors have noted that research pertaining to coaching behaviours and importantly, their influence on players has been virtually nonexistent (Lombardo, 1982; Smith, Smoll & Curtis, 1978; 1979; Smith, Zane, Smoll & Coppel, 1983; Smoll & Smith, 1981).

Undoubtedly, the most extensive studies conducted on coaching behaviours and their impact upon young athletes are those conducted by Smith and Smoll and their colleagues (Curtis, Smith & Smoll, 1979; Smith et.al. 1978; Smith, Smoll & Hunt, 1977a; Smith, Smoll, Hunt, Curtis & Coppel, 1979; Smith, et.al., 1983; Smoll, et.al., 1978). These reseachers carried out a series of research experiments over a period of seven years,

examining the impact of a coach's behaviour on young athletes. The results of the studies that are most relevant to the present proposal are presented here and in a later section.

First, these researchers developed an instrument that permitted the direct observation and coding of coaches' behaviour during practices and games. Titled the Coaching Behaviour Assessment System (CBAS), it was developed on the basis of extensive naturalistic observation of coaches in a variety of team sports. The CBAS is comprised of 12 behaviour categories divided into two major sub classes of reactive and spontaneous behaviours. Reactive behaviours are operationalized as responses to immediately preceding player or team behaviours (i.e., elicited), whereas spontaneous behaviours are those initiated by the coach and which do not have clear-cut antecedents (i.e., emitted).

Subsequent use of the system in observing and coding coaching behaviours in baseball, football and basketball has indicated that the CBAS is sufficiently comprehensive to incorporate the vast majority of behaviours, that individual differences in behavioural patterns can be discerned, and that the coding system can be used easily in field settings (Smith, et.al, 1978). Since the present proposal involves the naturalistic observation and coding of coaching behaviours during junior netball matches and practice sessions, it was felt that the CBAS inventory would be an appropriate measurement tool.

The first phase of the study examined the influence of coaching behaviours on players' self-esteem and attitudes. During the second phase, Smith, Smoll and Curtis (1979) attempted to modify the behaviour of baseball coaches by providing them with a preseason training program designed to assist them in relating more effectively to children. Basically, the coaching guidelines stressed the desirability of reinforcement, encouragement and technical instruction. The aim of this "positive approach" was to strengthen desired behaviours and motivate players to perform them (Smoll & Smith, 1981). During the season the trained coaches were compared to a group of coaches who had received no training. It was found that experimental coaches differed from the controls in their behaviours in a manner consistent with the guidelines. The amount of reinforcement given to players was an especially good discriminator between the two coaches.

Coaches of modified sport are typically encouraged to provide their athletes with high levels of reinforcement, encouragement and specific instruction. By emphasizing a process orientation and enjoyment, children are given the opportunity to experience success. Coaches are instructed to "use a positive, encouraging attitude" (Willis, 1983, p.5) and to be cognizant that children's sport participation "should be an extension of play, with emphasis on enjoyment and skill" (Western Australian Netball Association, 1980, p.7). Thus, given that modified sport coaches are effective in instigating this "positive approach", it might be surmised that they will exhibit desirable behaviours.

Thus the second hypothesis under test in the present study posits that coaches operating in the modified netball program will exhibit more reinforcing, encouraging and technical instructive behaviours and fewer punitive and controlling behaviours (as measured by the CBAS, Smith et.al, 1977b) than coaches operating within the traditional framework.

Self-Esteem and Self Competence

Self-esteem may be defined as one's personal judgement of worthiness, or one's good opinion oneself (Clarke-Stewart et.al, 1985). It is formed from individuals' private reactions to themselves and the reactions of others who play a significant role in their lives. One's mastery of tasks and competence in dealing with life situations also affect self-esteem. Self-esteem develops gradually, but the middle years of childhood are crucial (Clarke-Stewart et.al, 1985).

In his life-cycle conception of personality development, Erikson (1963) postulated eight progressive crises, with the period between 7 and 12 years being of fundamental importance. This is the time in which children must be provided with opportunities and experiences that will enable them to surmount feelings of inferiority. One of the major opportunities for mastering these fears is through interaction with significant others. Increasingly, social comparison appears to be an important aspect of children's self-esteem development with the judgement of personal competencies, abilities and self-worth being largely in reference to the peer group (Coopersmith, 1967).

A naturally intense social evaluative situation is provided by competition in sports and this process occurs at a time when being competent in sport skills is very important to children (Roberts, 1978; 1984; Scanlan, 1978a). In this achievement-oriented environment, favourable comparisons tend to lead to social approval, while unfavourable ones may lead to feelings of rejection. Roberts (1978), viewing the competitive experience from the point of view of the child writes:

> A child is being exposed to a very evaluative situation where he or she succeeds or fails in the presence of other individuals, who are important to him or her, in an activity of very great importance where the child interprets these outcomes as reflecting upon his or her competence, self-esteem and self-worth (p.4).

Clearly, the youth sport experience has a profound effect on the development of self-esteem. This is demonstrated in several studies which have yielded data supportive of higher self-esteem for youth who have interest in or participate in sports (e.g., Bowlsby & Iso-Ahola, 1980; Kay, Felkner & Varoz, 1972; Smith, 1986). However, this research does not necessarily imply that the youth sport experience is a positive one for all children. Indeed it is possible that children with lower self-esteem tend to avoid or leave competitive programs because threat of failure is high while those who have higher self-esteem seek the competitive participation of team sports (Smith, 1986). As Ogilive (1979) warns, if the involvement in junior sport is a negative one, feelings and attitudes are produced which are seriously self-limiting such that as adults, individuals become "trapped....to the degree that their true potential is never realized" (p.54).

While self-esteem is a global self-attitude reflecting perceived competence at a variety of achievement endeavours, self-competence (also referred to at times as perceived ability, self-efficacy, self-concept of ability) is the sense that one has the ability to master a particular task (Coppersmith, 1967; Harter, 1978). Self-competence is thought to develop out of past mastery attempts at a skill perceived to be primarily successful or unsuccessful. In her model of competence motivation, Harter (1978) predicts that children who perceive themselves to be highly competent at a skill will expect to perform well, will persist longer at the skill, and will maintain interest in mastering the skill.

A study by Roberts, Kleiber and Duda (1981) tested this model on male and female fourth and fifth graders (9-11 years old). They found that children participating in organized sport programs were higher in perceived competence and were more persistent in sport contexts, with higher expectations of future success, than were nonparticipants. Further, by examining years of sport participation Roberts and his associates (1981) found evidence to suggest that children high in perceived ability are attracted to sport, rather than involvement in sports affecting their perceptions of ability. Traditional youth sport, then, would appear to be lacking for those children lower in perceived ability as Roberts (1984) notes:

> If we believe that the sport experience is valuable for children and are committed to the fullest development of children, then we must strive to hold the interest of all children - not just those who presently excel...We should not weed out certain children (p.226).

Maehr and Nicholls (1980) suggest that one way to enhance the motivation of all children is to look at the achievement goals which affect their behaviour. These researchers propose that there are three forms of achievement goals - competitive ability, sport mastery and social approval. In competitive ability, individuals primary concern is with their own ability and how it relates to others. It is this goal which is typically encouraged in a traditional youth sport environment. In contrast, the focus in sport mastery goals is on performance so that individuals attempt to improve a skill in comparison to their own previous level. This goal is similar to the process orientation (Dubois, 1980) at which modified sport programs aim in achieving. Thirdly, in social approval goals, individuals seek to gain approval from significant others. A plausible hypothesis for dropping out of sport is that the activity does not enable children to meet their achievement goals. To encourage athletes to stay in sports, Roberts (1984) recommends the athlete's perception of ability be maintained by stressing sport mastery goals:..."this translates to de-emphasizing the outcome as a criterion of success and failure and emphasizing the athlete's performance within the activity" (p.227).

A recent study by Vallerand and his colleagues (Vallerand, Gauvin & Halliwell, 1986) also underscores the potential negative effects of a competitive ability emphasis as it relates to the traditional competitive setting. These researchers investigated the effect of rewards on perceived competence in a zero-sum competition where rewards are distributed unequally among participants based on their performance, such as in tournaments or when one player receives the Best and Fairest award

offered by the league. Male 10 to 12 year olds were randomly assigned to conditions of winning and losing a stabilometer competition and a Best Performance award was offered to tournament winners. The results revealed that subjects who lost displayed lower levels of perceived competence than subjects who won the competition. It is apparent that young athletes must be provided with, at least, some successful experiences if they are to see themselves as competent.

Just as competition per se has been shown to affect perceived competence, so too has feedback. One study most applicable to the sports domain is that by Vallerand (1983) who used athletes in a hockey-related task. Subjects who received positive verbal feedback, in differing amounts, experienced higher levels of feelings of competence and displayed higher levels of intrinsic motivation than subjects who received no verbal reinforcements. Although this study did not show that changes in intrinsic motivation are actually caused by changes in perceived competence (the two constructs were simply correlated), a later study by Vallerand and Reid (1984) confirmed this. Thus giving praise to young athletes is one important way of increasing their intrinsic motivation since it allows them to feel competent about themselves. There is also evidence that positive feedback enhances athletes' self-concept. Sander (1981) audio-taped the practice sessions of high school basketballers to ascertain the degree of positiveness of each of the 30 coaches observed. The findings revealed that players of the positive reinforcement coaches were significantly higher in self-concept than those of the negative coaches at the end of the season. Further, despite similar self-concepts prior to the season, it was found that athletes who played for the

negative reinforcing coaches decreased in self-concept when compared to athletes who were not competing in the season.

Smith and Smoll and their associates (Smith, et.al., 1978; Smith, Smoll, Hunt, Curtis & Coppel, 1979) also found relationships between these types of coaching behaviours and baseballers' self-esteem in the first phase of their studies that were mentioned previously. It was found that youngsters who played for coaches who gave high levels of support (reinforcement and mistake-contingent encouragement) had higher self-esteem scores at the end of the season than did children who played for less supportive coaches. Further, low self-esteem players appeared to be affected more by differences on these coaching behaviour dimensions than were players higher in self-esteem. However, because no preseason measures were gathered, such results are only suggestive of the possibility that certain coaching behaviours may affect levels of self-esteem.

Nevertheless, further support for this hypothesis is provided in the second phase of this research. Smith, Smoll & Curtis (1979) found that children who played for those coaches who had been trained in the "positive approach" exhibited a significant increase in self-esteem as compared with scores obtained a year earlier whereas control group children did not.

This group of researchers have also found evidence to suggest a link between coach's behaviour and athlete's perceived competence. Despite the absence of preseason measures, a significantly lower mean self-rating of

baseball ability was found for children who played for the technically instructive coaches (Smith, Smoll & Curtis, 1978; Smith, et.al., 1979). It was reasoned that an emphasis on technical instruction may make players more aware of their skill limitations than does a nontechnical orientation.

However, Horn (1985), who also investigated the relationship between coaching behaviours (as measured by the CBAS) and the self-competence of individual junior athletes, found results inconsistent with those of Smith and Smoll and colleagues (Smith, et.al., 1978; Smith, Smoll & Curtis, 1979). High frequencies of reinforcement and non-reinforcement behaviours did not facilitate players' development of perceived competence over the season whereas punishment in response to a mistake was positively associated with self-competence. It was suggested that reinforcement and non-reinforcement may have been negative coaching behaviours because they were given inappropriately or noncontingently to players' performance. In contrast, players who received relatively higher frequencies of criticism for skill errors may have perceived such evaluation to be an indication that their coach attributed their failure to lack of effort and that the coach expected them to perform at a higher level, thus facilitating higher perceptions of competence in these players.

Despite the dissimilar findings of the two studies, both suggest that particular coaching behaviours are related to children's feelings about their ability. Therefore, in terms of the present study, if the behaviour of modified coaches differs from that of traditional coaches, it is

possible that athletes' self-competence levels will also differ. It is interesting to note that although Horn (1985) found that certain coaching behaviours were influential in explaining changes in players perceptions of competence, this was so only for practice behaviours, thus suggesting that players perceive their coaches' game behaviours as less salient indicators of their ability. Moreover,research in the educational setting has demonstrated that the measurement of instructional effectiveness is highly dependent on the setting within which it is measured (Brophy & Evertson, 1976). In addition, it has been pointed out that coaches may adopt a modified orientation during competition but may be inconsistent in their approach when it comes to practice sessions thus the content of games and practice sessions should be considered independently (Nettleton & Sands, 1985). In the present study, therefore, match and training behaviours were assessed separately.

In summary, modified sport, by adapting game requirements to the capacity of the child, aims to provide successful experiences for its participants (Gibson, 1982; Lamb, 1985; Martens, 1978; Winter, 1983) and also aims to adopt a process orientation. Indeed it has been suggested that sporting programs which emphasise sport-mastery goals, or a process orientation, should maintain children's perceptions of their ability (Roberts, 1984; Spink, 1983; 1986a; 1986b). Thus given that modified programs are successful in achieving these aims, it is expected that these participants would possess high levels of self-competence. This should also be the case for self-esteem levels since perceived ability is related to positive feelings of self-worth (Coopersmith, 1967; Harter, 1982; Scanlan, 1982; Veroff, 1969).

In addition, a number of studies highlight the possibility of a relationship between coaching behaviours and athlete's self-esteem and self-competence (Horn, 1985; Sander, 1981; Smith et.al, 1978; 1979; Smith et. al, 1979; Vallerand 1983; Vallerand & Reid, 1984). Specifically, research indicates that positive coaching behaviours are related to high self-competence and self-esteem levels (Sander, 1981; Smith et. al, 1978; 1979; Smith, Smoll & Curtis, 1979; Vallerand, 1983; Vallerand & Reid, 1984). Given that modified coaches similarly adopt this positive approach, their athletes would be expected to have high self-esteem and self-competence levels.

Thus, the third hypothesis tested in the present study posits that children playing in the modified netball program will display higher levels of self-esteem and self-competence at the end of the season (as measured by a modification of Coopersmith's (1967), Self-Esteem Inventory and a modification of Ludwig and Maehr's (1967), Physical Self Test, respectively) than children involved in the traditional program when pre-season self-esteem and self-competence scores are taken into account.

Anxiety

Whether participation in highly organized sport engenders unhealthly or excessive levels of psychological stress in children has also been central to the youth sport debate for many years. However, it is only within the last decade that researchers have begun to systematically examine competitive stress in children's sport. In fact, a recent survey of youth sport researchers and practitioners indicates that competitive stress is

considered one of the most important psychological issues confronting that field (Gould, 1982).

As noted previously, social evaluation plays a significant role in organized sport. The theme underlying most research about competitive stress appears to be that increases in the social evaluation potential are associated with increases in the amount of competitive stress experienced by the participants (Scanlan, 1984). Thus competitive sport is a stressful endeavour to some children in some circumstances. For instance, studies by Johnson (1949) and Simon and Martens (1979) have shown that athletes of individual sports exhibit greater precompetition state anxiety than athletes of team sports, presumably because the former focus directly on individual performance.

Nevertheless, even within the team sport context there are particular events that accentuate individual performance, thus increasing the social evaluation potential to high levels. In some early work, Hanson (1967) demonstrated the impact that individual batting performance can have on the autonomic arousal levels of Little League baseball players. When at bat, players' heart rates escalated dramatically to an average of 166 beats per minute (bpm) compared to their mean resting rate of only 110 bpm. No other event during the game caused arousal increases close to the levels experienced when batting. While this study has a major shortcoming - the arousal measured could be caused by many things besides stress, such as excitement, elation and anger, it seems plausible that arousal increases reflected stress reactions by at least some players. Moreover, that stress is a problem for certain individuals in certain situations,

has been confirmed by other youth sport research (e.g., Gould, Horn & Spreeman, 1983a, 1983b; Scanlan & Passer, 1979).

Consequently, there has been a substantial amount of recent research directed towards understanding more about the sources of competitive stress in children. Psychological stress is manifested as state anxiety, that is, feelings of apprehension, tension and activation that occur as an immediate reaction to a situation that threatens one's self-esteem (Spielberger, 1966). In contrast to this transitory stress response, competitive trait anxiety (CTA) is a relatively stable personality disposition reflecting the tendency to perceive sport situations as threatening (Martens, 1977). Research has shown that both of these anxiety states are related.

Indeed, one of the factors found to be predictive of precompetition stress is this CTA. A good deal of research has found that high CTA children experience greater precompetition stress than low CTA children (Gould, Horn & Spreeman, 1983a; Martens & Gill, 1976; Scanlan, 1977; Scanlan & Lewthwaite, 1984; Scanlan & Passer, 1978; 1979). It has been suggested that high CTA youngster's stress reactions to competition stem directly from perceived athletic or motor skill deficits (Passer, 1984; Smoll, 1986). Indeed, some support for this contention comes from the study by Gould and his colleagues (1983a) who found that high CTA wrestlers, compared to low CTA wrestlers, rated themselves lower in ability. However, a review by Passer (1984) reveals that other investigators have not found support for this assumption, thus research appears to be equivocal as to whether high CTA children experience competitive stress because of a lack of perceived athletic skill (Smoll, 1986).

Nevertheless, there is evidence which indicates that individuals low in perceived ability tend to exhibit higher levels of stress than those high in their perceptions of ability. Yan Lan and Gill (1984), for example, examined the influence of self-efficacy on stress responses as measured by a state anxiety inventory comprised of three subscales, as well as heart rate. The findings most relevant to the present study were that when individuals were performing the low-efficacious task, they reported significantly higher cognitive worry and somatic anxiety as well as lower self-confidence than when they were performing the high-efficacious task. Thus, low perceived efficacy, or competence, was found to be accompanied by high stress levels. It seems, then, that ability appraisals play some role in the amount of stress experienced.

Further indirect support for this supposition comes from two field studies conducted by Scanlan and Passer (1978, 1979). These researchers identified factors relating to competitive stress among youth soccer participants. One of the sources of stress isolated was that of expectations of successful performance. Specifically, it was found that players with low expectations of successful performance (in its broad sense, meaning quality of performance as well as outcome) in the game experienced greater pregame stress than players with high expectations. Perceived ability is one component of how well one expects to perform at a task while other factors including intended effort, the perceived difficulty of a task, the degree to which one feels mentally and physically prepared and one's own definition of success, may also comprise one's expectancy (Passer, 1984). Certainly these studies show that children who perceive that the

performance demands of the game will exceed their own capabilities experience stress when anticipating the competitive event (Scanlan, 1982).

Modification of youth sport reduces performance demands on young athletes by making structural changes to the design of the game and by reducing the requirements of the competitive situation. Smoll (1986), for one, suggests that this may be one way to reduce potential sources of stress in young athletes. These alterations aim at enhancing participant's perceived ability. Therefore, given that there is a link between low perceptions of competence and high stress levels suffered by children, one would expect modified participants to exhibit lower levels of precompetition stress than athletes participating in traditional versions where there may be a mismatch between performance demands and children's response capabilities and where a more product orientation is adopted.

Indeed, in reference to this second characteristic, there is research evidence to suggest that a product approach to organized youth sport is associated with higher anxiety levels in athletes. Scanlan and Lewthwaite (1984) investigated stressors in young male wrestlers. One part of their study tested the relationship between athletes' prematch cognitions- namely, thoughts and worries about failure, about significant adults and their performance and actual prematch stress. It was found that prematch worries about failure and perceived parental pressure to participate (both of which are characteristic of a product orientation) predicted round 1 prematch stress. Thus the hypothesis that higher prematch stress is associated with a more product-oriented attentional focus was given some support.

Gould and his associates (Gould, Horn & Spreeman, 1983b) also tested the origins of stress in male junior wrestlers by asking them to rate the degree to which they typically experienced 33 source of stress items. When the results were factor analysed, three factors emerged - the first, which accounted for 75 percent of the variance, clearly reflected fears of failure (e.g., I worry about losing) and feelings of inadequacy (e.g., I worry about going stale.) Therefore, both this and the Scanlan and Lewthwaite (1984) study indicate a relationship between the fear of failure in young athletes and their experience of high levels of stress. Cognitions such as worrying about losing are typical of an outcome or product orientation in competitive sport.

Furthermore, Passer (1983) has found evidence to suggest that similar sources of stress are also experienced by team sport youths. Testing male soccer players, he found support for the general hypothesis that fear of failure and fear of evaluation are significant sources of threat in high CTA children. As Scanlan (1978b) notes, the demands and opportunities that are most basic to the traditional approach to youth sport are those calling for the demonstration and evaluation of motor ability. Yet, it is these pressures which seem to be associated with high anxiety levels in children. Thus one would expect modified sporting programs, with their process orientation whereby a sport mastery goal is emphasized, to be more conducive to reducing participants' stress levels than would traditional approaches to children's sports.

Thus, the fourth hypothesis tested in the present study postulated that children playing in the modified netball program will display lower levels of state anxiety at the end of the season (as measured by the children's Competitive State Anxiety Inventory of Martens, Burton, Rivkin & Simon, 1980) than children involved in the traditional program when preseason anxiety levels are taken into account.

Attitudes

The most comprehensive work that has been carried out on players' attitudes to date is that by Smith and Smoll and their colleagues. The first phase of their research studies revealed that the behaviour of baseball and basketball coaches was related to the players' attitudes.

Specifically, it was found that technically instructive behaviours were significantly associated with the players' attitude concerning the sport, the coach and their teammates. Coaches who provided more technical instruction tended to have players who had more positive attitudes toward their sport, their coach and their teammates (Curtis et.al, 1979; Smith et. al, 1978; Smith et. al, 1983; Smoll et. al, 1978). Moreover, players evaluated their sport, their coach and their teammates more positively if they played for coaches with a tendency to engage in reinforcement and mistake-contingent encouragement (Curtis, et. al, 1979; Smith et. al, 1978; Smoll et. al., 1978). Thus, these results suggest that coaches who communicate instruction and support should produce young athletes who have positive attitudes about their sport, their coach and their teammates.

A number of coaching behaviours were also negatively related to these attitudes. Keeping control behaviours were negatively correlated with attitudes concerning the sport, the coach and the teammates while punitive behaviours (punitive technical instruction and punishment) were negatively associated with two attitudinal areas - the coach and teammates (Curtis, et.al., 1979; Smith, et.al., 1983). Additionally,coaches scoring high on the general encouragement dimension had players who evaluated basketball negatively (Smith, et.al., 1983). Generally, though, it would seem coaches who engage in punitive and controlling behaviours may be assisting their athletes to develop negative attitudes about the sport, the coach and their teammates.

Further, the second phase of these researchers' studies generally confirmed these initial findings. Despite the fact that there was no significant difference between the won-lost records of the trained and control coaches, their behavioural differences were reflected in their players' attitudes. Specifically, players who played for those coaches trained in the "positive approach" evaluated both the coach and the team's interpersonal climate more positively (Smith, Smoll & Curtis, 1979).

In sum, then, these findings suggest that coaches who emphasized reinforcement, encouragement and technical instruction, that is those who adopted the "positive approach" to coaching, had athletes who felt positively about their sport, coach and teammates while coaches who exhibited high levels of punitive and controlling behaviours had athletes who felt negatively about these three areas. Given that modified programs

attempt to adopt a positive approach to coaching, it would be expected that these participants will display very positive attitudes toward their coach, their teammates and the sport. Although past research has not found any relationship between attitude towards the self and specific coaching behaviours, it is expected that coaches adopting a positive approach will have athletes who exhibit positive attitudes towards themselves, given the conceptual similarity between attitude towards self and high self-esteem and self-competence levels.

Thus the final hypothesis tested in the present study posited that children playing in the modified netball program will display more positive attitudes toward their coach, their teammates, netball and themselves (as measured by a modification of the Smith, Smoll and Curtis (1979) attitudinal questionnaire) than children participating in the traditional approach to netball.

CHAPTER 2

METHODOLOGY

Sample

The initial sample consisted of 170 junior netball players and 20 coaches involved in modified and traditional netball programs in Victoria, Australia.

Sixty-five of these players and eight coaches were involved in a modified competition and 105 players and 13 coaches were from a traditional netball competition. Owing to attrition (i.e., dropping out and absence on one of the testing days) the final sample consisted of 54 players and 8 coaches in the modified competition and 88 players and 13 coaches in the traditional competition. The teams involved in the modified version were drawn from the Geelong "Netta" netball competition. The teams in the traditional competitions were selected primarily from the Melbourne Metropolitan area, with a few teams from country areas also sampled. Teams participating in the traditional competitions were randomly selected from the five grades that encompass the traditional approach.

In terms of program comparisons, the modified program is open to both girls and boys of 7 to 10 years while the traditional competition is restricted to girls between the ages of 7 and 11 years. The mean age of

the modified sample in this study was 8.20 years (SD = 0.83), the majority being female, with only four males tested. In contrast, the players sampled in the traditional approach consisted entirely of females with a mean age of 9.84 years (SD = 1.08). The coaches in both programs were predominantly female and varied in age from 19 to 40 years.

Thus, the total sample comprised 142 predominantly female junior netball players and 21 coaches, only one of which was male.

Measurement Tools

In order to assess the effects of the two approaches on coaches and their players, comparisons in terms of skill improvement; observed coach behaviours during matches and training sessions; player self-esteem, self-competence, anxiety and attitude towards themselves, the coach, the teammates and the sport were made .

Skills Assessment. The skill level of all players was assessed both prior to and following the season. Five skills were selected from The All Australia Netball Association's Sequential netball lesson : Notes (Brown, 1984). These skills were considered to represent the major areas of the game namely- throwing, landing and pivotting, attack dodging and catching, defending and goal shooting. All skills were assessed using adult sized balls and goal post heights. The assessment of the five skills was pilot-tested and, as a result, the defending skill was

eliminated from the assessment since its performance necessarily involves the movement of two players making it difficult to standardize.

The four remaining skill tests were:

1) A one-handed shoulder pass at a target three metres away and attempted once with the dominant hand and once with the non-dominant hand;

2) Catch, land, pivot and disposal of the ball thrown from three metres away. Two attempts were made-: One landing on the left foot and pivotting anti-clockwise; the other landing on the right foot and pivotting in a clockwise direction;

3) Dodging around three obstacles and catching a ball thrown ahead of the player so that the landing is made at the fourth obstacle. A stop watch was used to time each subject; and

4) Three attempts at goal shooting from a marker 1.5 metres from the post.

Subjects were given a brief verbal description and one demonstration of the correct execution of each skill by a confederate before they were required to perform it themselves. A detailed description of the skills assessment appears in Appendix B.

Observation of Coaching Behaviours. An adaptation of the Coaching Behaviour Assessment System (CBAS) (Smith, et.al, 1977a) was used to code the behaviour of coaches during training sessions and matches. The CBAS is a behavioural assessment instrument that was developed to permit the direct observation and coding of coaches' behaviour. It is comprised of 12 behavioural categories classified into two major subclasses. Reactive behaviours are responses to either desirable performances, mistakes or misbehaviours on the part of the players, while the spontaneous class is subdivided into game-related and game-irrelevant behaviours initiated by the coach. The inter-rater reliability coefficients for the assessment procedure have typically been in the high 0.80's (e.g., Smith, et.al., 1978; Smith, Smoll & Curtis, 1979; Smith, et.al., 1977a; Smith, et.al., 1983).

While the original CBAS contains 12 categories, the version to be used in this study contains only 10 items. Previous research in basketball (Smith et.al., 1983) has shown that the two categories to be omitted in this study, nonreinforcement and ignoring mistakes, are difficult to score reliably because they require the assumption that the coach has observed the behaviour. Moreover, previous research has revealed no significant relationships between the behaviours that were disregarded and childrens' perceptions and attitudes (Smith, Smoll, Hunt, Curtis & Coppel, 1979). The CBAS categories used in the present study are illustrated in Table I. A more detailed description of each of the CBAS categories used in the present study is attached as Appendix C.

TABLE I

The Coaching Behaviour Assessement System Categories

Class I Reactive Behaviours

A) Desirable performances

1) Positive reinforcement

B) Mistakes/Errors

2) Mistake-contingent encouragement

3) Mistake-contingent technical instruction

4) Punishment

5) Punitive technical instruction

C) Misbehaviours

6) Keeping control

Class II Spontaneous Behaviours

A) Game-related

7) General technical instruction

8) General encouragement

9) Organization

B) Game-irrelevant

10) General communication

Self-esteem and Self-competence Measures. In order to test for any pre-post self-esteem changes, all players were administered an adaptation of Coopersmith's (1967) Self-Esteem Inventory. The scale was modified along the lines suggested by Smith, Smoll and Curtis (1979) to include only 14 items. Six of these descriptive items referred to positive attributes (e.g., "I'm proud of myself" ; "I always to do the right thing") whereas 8 were negative self-evaluative statements (e.g., "I'm a failure"; "I often wish I were someone else"). These researchers used a 5-point scale for each item, however pilot-testing of the inventory revealed that players found having five alternatives too confusing. Consequently, the scale was modified to include only three alternatives, ranging from "Not at all like me" to "Very much like me". Smith and his colleagues (Smith, Smoll & Curtis, 1979) report adequate interitem reliability (alpha coefficients of .63 at ages 10 to 12). The test-retest reliability coefficient over 12 months was .60 for ages of 10 to 12 years. A sample of the self-esteem inventory used in the present study is attached as Appendix D.

Pre- and postseason self-competence was measured using an inventory adapted from the Physical Self Test (Ludwig & Maehr, 1967). The 10 items in this inventory are designed to explore directly the individual's competence as a netball player. Seven of these refer to positive attributes (e.g., "I have good netball skills"; "I have the ability to make the Australian netball team") while three items are negative (e.g., "I would be embarrassed to have people watch me play netball"; "I worry that my netball skills aren't as good as they should be"). Again, pilot-testing suggested that the scale be modified to a 3-point form,

namely- "agree", "in between ", "disagree". The original scale has been shown to have acceptable reliability and validity (Ludwig & Maehr, 1967). A copy of the self-competence inventory used in the present study appears as in Appendix E.

Measurement of Anxiety. To obtain an adequate measure of sport-specific state anxiety, each player was administered the children's form of the Competitive State Anxiety Inventory (CSAI-C) (Martens, Burton, Rivkin & Simon, 1980). This inventory is based on the theoretical developments of Spielberger, Gorsuch and Lushene (1970) and is derived, in part, from the original Competitive State Anxiety Inventory constructed by Martens (1977). Structured with a four-choice format, the inventory comprises five activation items (e.g., "I feel nervous", "I am tense") and five deactivation items (e.g., "I feel at ease", "I feel comfortable "). The inventory was used to assess pre- and postseason stress levels and a copy of it appears in Appendix F.

Measurement of Attitudes. At the end of the season, all players were administered a questionnaire designed to measure their attitudes concerning the sport, their teammates, their coach and themselves. The questions, which were answered on a 7 point scale, were similar to those used by Smith, Smoll and Curtis (1979). Two of the 12 questions focus on attitudes toward netball (e.g., "How much did you like playing netball

this year?"); one concerned the teammates (i.e., "How well did the players on your team get along"); four questions centered on the coach (e.g., "How much does your coach know about netball?"); and five questions reflected an attitude towards self construct (e.g., "How good do your parents think you are in netball?"). Each of the response scales was anchored by an appropriate set of rating points. A sample of the questionnaire used in the present study is attached as Appendix G.

Procedure

The study was conducted over a seven-month period. Prior to the commencement of the netball season, the skills assessment and all four inventories were pilot-tested with a sample of junior players from local modified and traditional netball competitions. Several measurement techniques were subsequently modified, as described previously.

Training of Testers. Forty volunteer assistants, all of whom were familiar with the game of netball, were recruited as testers in the study. Those assisting in the skill and psychological testing attended a meeting in which the netball skills were described and demonstrated, the instructions to be given to the players were detailed and the scoring procedures were explained and practised. Approximately 10 confederates were assigned for each testing session.

Those involved in the observation of coaches' behaviour were required to meet on three occasions so they could be trained in the use of the CBAS. The program included-

a) study of a training manual (Smith, et.al., 1977b), containing an explanation of the CBAS and instructions for its use;

b) group instruction, conducted by the author, in the use of the scoring system;

c) written tests in which the trainees were required to define the CBAS categories and score behavioural netball examples;

d) the scoring of coaching behaviours from a videotape of a junior netball match; and

e) instructions to practise using the CBAS in actual field settings by attending at least three local netball matches or training sessions.

In order to ensure that all observers demonstrated a high degree of expertise in the use of the CBAS, the trainees were not permitted to collect data unless they had successfully completed all components of the training regimen. In all, 11 testers carried out the coding.

Sample Selection. One month prior to the beginning of the netball season, coaches and players from the modified and traditional netball competitions were invited to participate in the study. For the modified competition, telephone numbers of the coaches were obtained from the program co-ordinator. These coaches were contacted and the study briefly explained. All eight coaches agreed to participate. At this time arrangements were made for their players to attend the two testing sessions - the first, one week before the first match of the season and the second, in the week following the completion of their competition.

The coaches were informed that their behaviour at matches and at the skills sessions might be observed on occasion.

A different approach was used to make contact with the traditional netball coaches. Those coaching inner suburban teams were randomly approached on a grading day held a fortnight before the beginning of the season at Royal Park, the headquarters of the Victorian Netball Association. The country coaches were telephoned directly. Thirteen traditional coaches consented to participate. All agreed to organize their players to attend the two testing sessions and to provide details of their practice sessions. As with the modifified coaches, they were informed that their behaviour might be randomly observed at training and matches.

Because the traditional competition began later than that of the modified, the testings were held on different days. Moreover, for the outer suburban and country teams playing traditional netball, the testing was held locally so as to be convenient for all participants. Despite these differences in times and venues all players were tested at some time both during the week before the beginning of the first match of the season and during the week following the last match of the season.

Skill, Self-esteem Self-competence and Attitude Testing. On the day of preseason testing, letters were distributed to coaches and the parents of players informing them more fully of the purpose of the study. At each testing session, participants were randomly divided into small groups and rotated around six stations; four of which were activity

(skill) stations and at the remaining two, subjects completed the self-esteem and self-competence inventories.

Two or three testers were assigned to each skill station. They were instructed to record each subject's name, age and team membership and then to describe and model the particular skill once. One assistant recorded each subject's score while the other(s) assisted in the running of the skill. More detailed procedures for the scoring of skills are attached as Appendix H, while Appendix I provides a sample of the scoring sheet used for the skills assessment.

At the questionnaire stations, subjects were required to record their name, age and team membership. A tester then read the instructions for the inventory to the group ensuring that players understood what was required of them. Each statement item was read aloud by one tester while another checked that all players circled their choice and that none conferred with their teammates. In this way, all players at the station completed the questionnaires independently but simultaneously. Scoring procedures for these two inventories are further described in Appendix H.

At the end of the testing period, players were thanked and reminded of a similar session that would be held after the season had finished and at which their attendance was requested. The entire testing procedure averaged about one hour in duration.

A similar procedure was implemented for the postseason testing. Seven stations were used: the four skill stations, the two inventory stations, as well as an additional station where subjects completed the attitude questionnaire (Smith, Smoll & Curtis, 1979). For the latter, players recorded their name, age and team membership; were read the instructions; and responded to each item independently. Details of the scoring procedure for the attitude questionnaire appears as Appendix H.

When each player had visited all seven stations, a task which took approximately one hour, all children and coaches were thanked for their participation in the study.

Anxiety Assessment. On the day of the first match of the season, anxiety inventories were distributed to all players participating in the study. Fifteen minutes prior to the commencement of the match, subjects completed their name, age and team membership and were read the instructions to the questionnaire. They were instructed to respond to the 10 items independently by indicating their immediate feelings. The completed forms were then collected and served as the preseason anxiety measure. The same procedure was carried out fifteen minutes before the final match of the season and served as the postseason anxiety measure. The scoring procedure for this inventory is detailed in Appendix H.

CBAS Assessment. The coding of both modified and traditional coaching behaviours was conducted throughout the entire netball season and occurred at the Saturday matches and skills sessions, as well as at the various weekday training sessions throughout Victoria. Coaching behaviours from 47 matches and 27 training sessions were coded. Because the traditional program was of a larger magnitude, 49 sessions were of this form (27 matches and 22 training sessions), compared with 25 sessions of the modified type (20 matches and 5 training sessions). On five occasions, two coders observed the same coach at the same time and this data served to provide a measure of inter-rater reliability. Using Siedentop's (1976) intraobserver agreement method, the average reliability over the five testings was found to be an acceptable 82.8 percent across all categories of the CBAS inventory.

As noted previously consent for observation was obtained prior to the commencement of the season, however the coaches were not told on what particular occasions their behaviour would be coded. Thus, in utilizing the CBAS, observers stationed themselves at a point from which they could observe the coach in an unobtrusive manner. Observers did not introduce themselves to the coaches nor did they indicate in any way that they would be observing them. From the beginning of the observation to the end of the session, coders recorded every behaviour the coach directed towards the players into one of the ten CBAS categories. Coders also recorded details of their observation including the length of time they observed the coach in minutes. A sample of the CBAS scoring sheet used appears as Appendix J.

Analyses of the Data

In order to measure differences between modified and traditional players in terms of the various dependent variables used seven separate analyses of covariance of the posttreatment scores, while statistically controlling for the preseason measures, were conducted.

A second analysis focussed on the player attitude measures. To assess whether any of three attitudinal areas - sport, coach and self - had interitem consistency, Cronbach's (1951) alpha coefficients were computed. Where intercorrelations within the three areas were greater than 0.70, the items were summed to yield separate measures of player's attitude. Then, to evaluate whether the children's attitudes differ between the modified and traditional approaches, a series of oneway analyses of variance in each of the four attitude areas, was conducted.

Finally, in order to identify the best combination of overt coaching behaviours which discriminated between the modified and traditional approaches, stepwise discriminant analyses were conducted where behaviour categories were entered into the analyses on the basis of their discriminatory power. This was carried out for match and training coach behaviours. A third discriminant analysis was used to identify coaching behaviours which discriminated between match and training sessions.

All analyses in the study were conducted using a significance level of 0.05.

CHAPTER III

RESULTS

The results are presented in five sections corresponding to the individual hypotheses previously discussed.

Skill Level

The first hypothesis to be tested stated that children playing in the modified netball program would show a significantly higher skill level after the season than children in the traditional verions. Four basic skills were tested and Table II contains the relevant descriptive data.

TABLE II

Means and Standard Deviations of Skill Levels for Modified and Traditional Subjects Pre- and Postseason

SKILL		MODIFIED N = 54		TRADITIONAL N = 88	
		Preseason	Postseason	Preseason	Postseason
Shoulder Pass	M	4.444	5.685	4.659	5.205
	SD	1.423	1.343	1.294	1.136
Pivotting	M	6.093	7.130	5.511	6.318
	SD	1.651	1.214	1.906	1.520
Dodging	M	3.148	5.685	4.364	6.193
	SD	1.966	1.612	2.145	1.285
Shooting	M	4.648	6.056	5.671	6.386
	SD	1.519	1.497	1.552	1.442

Analyses of covariance (ANCOVAs) were conducted on each netball skill. These revealed that modified players had significantly higher shoulder pass and pivotting scores ($F(1,139) = 7.96$, $p < .05$ and $F(1,139) = 7.64$, $p < .05$, respectively) at the end of the season than traditional players, when preseason scores were taken into account. The ANCOVAs for the dodging and shooting skills, on the other hand, were not found to be significant at the 0.05 level. ANCOVA tables for the four netball skills appears as Appendix K1 to K4.

Coaching Behaviours

A total of 14,117 behaviours were coded during 74 netball match and training sessions. Since the time duration of the sessions varied, the frequency data within the CBAS categories were converted to rate scores per minute by dividing the behaviour frequencies by the number of minutes the match or training sessions were observed. The mean length of observation was 46.57 minutes.

Prior to testing the second hypothesis, match and training behaviours were compared by collapsing over the modified and traditional groups. This was done to determine whether match and training behaviours did, in fact, differ as has been suggested by other researchers (Horn, 1985).
The descriptive statistics for match and training behaviours are presented in Table III.

TABLE III

Means and Standard Deviations of Coaches' Match and Training Behaviours (per minute)

	MATCH N = 47			TRAINING n = 27		
CBAS CATEGORY	Rank	M	SD	Rank	M	SD
General technical instruction	1	1.017	.544	2	1.243	.388
Positive reinforcement	2	.776	.363	4	.490	.316
Mistake-contingent technical instruction	3	.591	.348	1	1.432	.618
General encouragement	4	.364	.206	10	.079	.102
Organization	5	.195	.173	3	.853	.429
Punitive technical instruction	6	.181	.190	5	.435	.332
Mistake-contingent encouragement	7	.175	.158	9	.123	.104
General communication	8	.115	.120	8	.132	.099
Punishment	9	.045	.075	6	.212	.231
Keeping control	10	.018	.029	7	.157	.135

In order to identify the combination of behaviours which discriminated optimally between match and training sessions, a stepwise discriminant analysis based on minimizing the overall Wilks' lambda was conducted. The complete discriminant equation appears as Appendix M-1.

The analysis revealed a signficant difference between coaches' match and training behaviours ($\chi^2 = 96.74$, df = 8, $p < .05$). This discriminant function had a total discriminatory power of about 75.31 percent (Tatsuoka, 1971). Mistake-contingent technical instruction was the most discriminating behaviour with the mean for training being higher than that for matches. Other important discriminators included positive reinforcement and general encouragement, with the mean number of behaviours for both of these variables higher for match than training situations; and punishment and organization, with these means higher for training than match sessions.

Given that match and training behaviours differed significantly, the behaviour of modified and traditional coaches were compared, firstly in the match situations and then for the training sessions. The second hypothesis to be tested stated that coaches working in the modified setting would exhibit more reinforcing, encouraging and technical instructive behaviours and fewer punitive and controlling behaviours than those coaches working within the traditional framework. Table IV illustrates the descriptive statistics for modified and traditional coach behaviours during the match sessions only.

TABLE VI

Means and Standard Deviations of Modified and Traditional Coaches' Behaviours (per minute) in Match Situations.

	MODIFIED N = 20			TRADITIONAL N = 27		
CBAS CATEGORY	Rank	M	SD	Rank	M	SD
General technical instruction	1	1.318	.641	2	.794	.319
Mistake contingent technical instruction	2	.873	.321	4	.383	.181
Positive reinforcement	3	.709	.281	1	.826	.412
General encouragement	4	.287	.190	3	.420	.203
Organization	5	.260	.230	6	.146	.094
Punitive technical instruction	6	.229	.228	7	.145	.150
Mistake-contingent encouragement	7	.128	.087	5	.210	.189
General communication	8	.093	.072	8	.130	.146
Punishment	9	.054	.089	9	.039	.064
Keeping control	10	.008	.014	10	.026	.034

In order to identify the combination of match behaviours which discriminated optimally between the modified and traditional coaches, a stepwise discriminant analysis was conducted. The complete discriminant equation appears as Appendix M-2.

A significant difference was found between modified and traditional coaches' behaviour during match situations ($\chi^2 = 55.25$, df = 6, $p < .05$). The discriminatory power showed that about 72.14 percent of the total variability of the discriminant function was attributable to group differences (Tatsuoka, 1971). The most discriminating variable was mistake-contingent technical instruction, with modified coaches exhibiting a higher mean for this behaviour than traditional coaches. Other good discriminators included general encouragement, in which traditional coaches displayed a higher mean, and organization, in which modified coaches showed a higher mean number of behaviours compared to traditional coaches.

The second hypothesis was also tested in terms of coaches' training behaviours. Table V presents the descriptive statistics for modified and traditional coach behaviours during the training sessions only.

TABLE V

Means and Standard Deviations of Modified and Traditional Coaches' Behaviours (per minute) in Training Situations

	MODIFIED N = 5			TRADITIONAL N = 22		
CBAS CATEGORY	Rank	M	SD	Rank	M	SD
General technical instruction	1	1.178	.457	2	1.258	.381
Mistake-contingent technical instruction	2	1.222	.521	1	1.480	.639
Organization	3	.826	.621	3	.859	.393
Positive reinforcement	4	.664	.412	5	.451	.287
Mistake-contingent encouragement	5	.214	.204	9	.103	.055
Punitive technical instruction	6	.198	.138	4	.487	.341
Keeping control	7	.194	.288	7	.149	.079
General communication	8	.126	.086	8	.134	.103
General encouragement	9	.084	.083	10	.078	.107
Punishment	10	.058	.042	6	.246	.242

In order to identify the combination of training behaviours which discriminated optimally between the modified and traditional coaches, a stepwise discriminant analysis was conducted. While it is acknowledged that the sample size ($N = 5$) for the modified coaches was small for this type of analysis, it is worth noting that the main condition for the use of discriminant analysis (ie., a total sample size at least two times the number of variables examined) as outlined by Tatsuoka (1970) was satisfied. Furthermore, this sample of five randomly represented the totality of practices conducted under the modified structure where skill sessions are held to a minimum. The complete discriminant equation appears as Appendix M-3.

A significant difference between modified and traditional coaches' behaviour during training sessions ($\chi^2 = 13.19$, $df = 6$, $p < .05$) was revealed. This discriminant function had a total discriminatory power of about 41.98 percent (Tatsuoka, 1971). Mistake-contingent encouragement and keeping control were good discriminators, with modified coaches exhibiting higher means for both behaviours than traditional coaches. Mistake-contingent technical instruction and punishment also achieved good discrimination, based on the standardized discriminant function coefficients, and the mean number of behaviours for these two categories were higher for traditional coaches than for their modified counterparts.

Self-Esteem and Self-Competence

The third hypothesis under test was that children playing in the modified program would display higher levels of self-esteem and self-competence at the end of the season than children involved in the traditional program. The descriptive statistics relevant to the pre- and postseason self-esteem and self-competence results for both groups are presented in Table VI.

TABLE VI

Means and Standard Deviations of Self-Esteem and Self-Competence for Modified and Traditional Subjects Pre- and Postseason

		MODIFIED N = 54		TRADITIONAL N = 88	
		Preseason	Postseason	Preseason	Postseason
Self-esteem	M	33.519	34.593	33.375	33.886
	SD	3.720	4.114	3.849	4.004
Self competence	M	24.000	24.093	23.977	24.489
	SD	3.262	3.042	2.857	2.994

The ANCOVAs for self-esteem and self-competence were not found to be significantly different for modified and traditional groups ($F(1,139) = 0.33$, $p > .05$ and $F(1,139) = 0.59$, $p > .05$, respectively. A summary of these ANCOAs appears as Appendix K5 and K6.

Further analyses sought to clarify these relationships. Using the pre- and postseason self-esteem and self-competence medians, the player sample was divided into low and high self-esteem and self-competence groups. This was to ascertain the change of subject numbers in each group from pre- to postseason. For self-esteem, 44 percent of modified subjects were intially classified into the high self-esteem group and this increased to 52 percent after the season. A smaller increase from pre- to postseason also occurred with the traditional players - namely, from 43 to 46 percent. Similarly, there were 48 percent of traditional subjects falling in the high self-competence group before the season and 52 percent following the season. However, the number of modified subjects dropped from 46 to 41 percent in the high self-competence group from pre- to postseason.

Anxiety

The fourth hypothesis to be tested stated that children playing in the modified program would display lower levels of anxiety at the end of the season than those playing in the tradition program. In terms of preseason measures, the mean anxiety score for modified subjects was 19.093 (SD = 5.133) and for traditional subjects, 19.261 (SD = 4.615). The mean anxiety score was reduced for both group after the season with modified subjects averaging 15.407 (SD = 4.640) and the traditional subjects averaging 16.568 (SD = 4.707). These descriptive data are presented in Table VII.

TABLE VII

Means and Standard Deviations of Anxiety for Modified and Traditional Subjects Pre- and Postseason

	MODIFIED N = 54		TRADITIONAL N = 88	
	Preseason	Postseason	Preseason	Postseason
M	19.093	15.407	19.261	16.568
SD	5.133	4.640	4.615	4.707

The ANCOVA for anxiety revealed a non-significant result ($F(1,139) = 2.05$, $p > .05$). The ANCOVA table appears as Appendix K7

A median split frequency analysis was conducted and this showed that subject numbers falling in the low anxiety category increased slightly from pre- to postseason: that is, from 57 to 61 percent for the modified sample and from 51 to 52 percent for the traditional subjects.

Attitude

The final hypothesis to be tested stated that children playing in the modified setting would display more positive attitudes toward their coach, teammates, the sport of netball and themselves than the children in the traditional approach. Before testing this, it was necessary to assess the interitem consistency of those attitudinal sub-areas which contained more than one question. Cronbach's (1951) alpha coefficients were computed to assess this. The intercorrelations for those questions relating to attitude towards the coach revealed an alpha of 0.7065, while those questions relating to attitude towards the self revealed an alpha of 0.7620. Consequently, these questions were summed to yield two measures - player's attitude towards the coach and player's attitude towards themselves. In contrast, the low alpha coefficient for attitude towards the sport (0.4345) suggested that the two sport questions were not measuring the same thing. Thus, question one - netball this year (referring to players' liking of netball this year) and question 12 - netball change (referring to whether players liked netball more or less than they did at the beginning of the season), were assessed separately.

The descriptive statistics for each of the five attitudinal measures appear in Table VIII.

TABLE VIII

Means and Standard Deviations of the Five Attitudinal Measures for Modified and Traditional Subjects

ATTITUDE	MODIFIED N = 54		TRADITIONAL N = 88			
						Significance
MEASURE	M	SD	M	SD	F	
Netball - this year	6.741	0.705	6.716	0.726	0.04	0.842
Netball - change	6.407	0.901	6.671	0.638	4.13	0.044
Teammates	6.296	1.268	6.466	0.772	0.98	0.323
Coach	25.870	3.053	25.705	3.071	0.98	0.755
Self	29.389	3.739	29.239	3.784	0.53	0.818

Oneway analyses of variance revealed that only netball - change was significant. However, because the homogeneity of variance assumption appeared to be violated on this measure and on the teammates item, Mann-Whitney tests were also conducted on these two measures. Neither netball-change (U = 2105.5, N = 142, p >.05) nor teammates (U = 2309.0, N = 142, p >.05) were found to be significant. Thus, none of the five attitudinal measures showed significant differences, between modified and traditional samples. A summary of ANOVA and Mann-Whitney tables for the attitudinal measures appears as Appendix L1 to L4.

CHAPTER IV

DISCUSSION

This study was designed to compare the effectiveness of a modified approach to netball for children with a traditional version of the game in terms of skill improvement, self-esteem and self-competence, anxiety, attitudes and coaching behaviours. The results generally did not support the research hypotheses. The results revealed that neither approach was clearly superior, but rather both the modified and traditional versions of sport have merit. In order to discover more about where the value of each approach lies, this discussion will consider the five variables in turn. Certain limitations which restrict the findings of the study are then described, as are the implications emanating from this research. Finally, particularly salient avenues of investigation in the future are suggested.

The results relating to skill development showed that, in all of the four fundamental skills tested, both modified and traditional participants improved their skill levels by the end of the season. Analyses of covariance revealed significant differences in two of the skills assessed. It was found that participants in the modified program exhibited significantly higher levels of skill acquisition in the shoulder pass and pivotting tasks when their initial skill level was taken into account. For the remaining two skills, dodging and shooting, traditional athletes achieved a slightly higher level at the end of the season compared to their modified counterparts, but this difference was not found to be significant.

These results suggest that in at least two basic netball skill areas, players from a modified approach are likely to improve more in a season than are traditional participants. This might be explained by the fact that modified approaches aim to allow more equal, less specialized participation (Evans & Davis, 1980; Gibson, 1982; Martens et.al, 1984; Morris, 1986; Parkin, 1980).

However, these arguments fail to explain why concomitant increases for modified players were not observed in the dodging and shooting skills. Perhaps this is because these skills depend to a large extent on natural ability- speed and agility, in the case of dodging; and eye, brain and muscle co-ordination, in the case of goal shooting. In contrast, shoulder passing and pivotting skills can be more easily taught given sound instruction - which leg to step forward with when throwing; and which direction to most efficiently pivot, for instance. The modified approach emphasizes such teaching as indicated in this study by high rates of general technical instruction exhibited by modified coaches in match and training sessions. Indeed in both situations this behaviour, which provides instruction relevant to techniques and strategies, was the most common out of all the CBAS categories for modified coaches. Thus modified players may have enhanced their passing and pivotting skills because these skills are more amenable to instruction than dodging and shooting.

Another plausible explanation concerns the frequency with which certain skills are required in order to play netball. Both dodging and shooting skills are essential in order to clear a defender so a pass can be received and to score a goal. In contrast, the execution of shoulder pass and pivotting skills, at least at a junior level, are not necessary in order to achieve the aim of netball - scoring goals. Most young players

find a two-handed chest pass easier to master and would naturally rely on this style of passing when learning the game rather than the shoulder pass which requires more attention to technique and more strength. Similarly, other means can be used to face the player the thrower wishes to direct her pass towards- such as pivotting inwards rather than outwards. Moreover, both these skills were tested using the non-dominant, as well as the dominant sides, therefore they are more complex and less essential skills than dodging and shooting. It is plausible that modification has a positive effect on the development of these more risky skills because the approach attempts to emphasize a process or performance orientation (All Australian Netball Association 1981; Western Australian Netball Association, 1980). This should encourage modified participants to practise a variety of skills regardless of whether success is the result. On the other hand, there has been a tendency in the traditional approach to focus on the product or outcome and so these players might sacrifice attempts at performing skills which are not necessary and might well end in failure, in order to achieve a desirable outcome. Thus, their skill improvement in the more complex tasks of shoulder pass and pivotting might be less than that of modified players because these skills are not practised in matches or emphasized in training.

Indeed, a recent study by Fry and his associates (Fry, McClements & McEwen, 1987) has found that a modified approach ultimately facilitates the development of more complex skills in young players. During the first two years of ice hockey participation, an instructional program, which emphasized skill learning and fun but not competition, had little effect on the development of the more complex skills of agility skating and puck handling. However, there was a dramatic improvement in the performance of these skills in the third year of participation for the instructional

participants and a decline for the team (traditional) participants. Since, in the present study, improvements in the more complex skills by modified players were evidenced only after one season; it is possible that the difference would be exacerbated at the end of a three year period.

It is also worth noting that despite the superiority over traditional participants in these two skill areas, modified players were disadvantaged in the performance of the skill tests. The assessments were conducted using ball sizes, goal post heights and stepping rules of the adult or traditional game, therefore modified participants would have had less experience playing under these dimensions and rule alterations. One of the major oppositions to adopting a modified approach to junior sport is that, if it is used as a training ground for adult approaches, players must adapt to altered playing conditions (Evans, 1980) and to differences in rules (All Australian Netball Association 1985). Thus skills learned under a modified regimen may not be directly transferable to a traditional version. However, given that modified players in the present study improved over the course of the season in all four skill areas, and especially in the shoulder pass and pivotting while being tested using adult requirements, this criticism appears to have little credence, at least for the sport of netball.

One of the major limitations of the skills assessment appeared to be the tendency of children in a group to watch the early performers of a particular skill and learn from their mistakes or successful attempts. Although this observational learning effect was minimized by organizing

small groups and by occupying all groups at different tasks, future research should consider the testing of players in isolation. This would eliminate the advantage the latter performers of a group have of seeing the skill executed a number of times before their own attempts. Further, in the present study, each skill was attempted by a player either once, twice or three times. Perhaps a fuller examination of skill level could be made if players were allowed more attempts at each skill task.

This study was also interested in examining coaching behaviours. The first analysis relevant to this area revealed that, regardless of the program structure, there was a significant difference between coaches' match and training behaviours. This is consistent with research which has demonstrated that the measurement of instructional efficacy depends on the setting within which it is assessed (Brophy & Evertson, 1976; Horn, 1985). Generally, coaches exhibited more mistake-contingent technical instruction, organization and punishment behaviours during training sessions, while positive reinforcement and general encouragement were common behaviours for coaches in match situations. Thus, because coaches generally seemed to behave in different ways in matches and training sessions, the comparisons between modified and traditional coaches were considered in both settings separately.

The second research hypothesis posited that modified coaches would exhibit more reinforcing encouraging and technically instructive behaviours and fewer punitive and controlling behaviours compared to traditional coaches. However, the results did not generally provide support for this prediction either in matches or trainings. Indeed, there did not appear to be any clear trends to the behaviour of modified or traditional coaches.

Firstly, positive reinforcement did not discriminate between modified and traditional coaches in either setting, although this was the most common type of behaviour for traditional coaches to exhibit in matches. This does not support research by Smith, Smoll and Curtis (1979) who found that trained coaches - those one would expect to be similar to modified coaches in the present study-displayed significantly more reinforcement behaviours which distinguished them from the control-traditional-coaches.

A further indication that modified coaches did not successfully adopt a positive approach comes from an examination of the encouraging behaviours. Mistake-contingent and general encouragement discriminated between the two coach groups in matches, but with traditional coaches exhibiting significantly more of these behaviours than the modified leaders. A recent study by Spink (1988b) similarly found that premiership (traditional) junior football players received more encouragement from their coaches than did the children in the clinic (modified) approach during games and practices combined. However, in the present study, the strong tendency for traditional coaches to favour encouraging behaviours in their communications to players in matches was not borne out in trainings. In this setting, encouragement following a player's mistake discriminated between the two groups with modified coaches providing significantly more of this type of behaviour than traditional coaches. Thus, in practices, some support of the hypothesis was found, however the reverse trend emerged when match behaviours were considered.

A similar picture of equivocation exists with the technically instructive behaviours. As expected, general instruction and instruction following a

player's mistake discriminated between the two groups of coaches, with the modified leaders displaying higher amounts of these behaviours than their traditional counterparts during matches. Certainly this supports the view that modified programs are "teaching" environments where skill development is emphasized. Spink (1988b) also found that clinic coaches provided significantly more general (but not mistake-contingent) technical instruction than premiership coaches. However, in the training sessions of this study, mistake-contingent technical instruction was found to be a good discriminator in favour of the traditional coaches' behaviours. Given that in both settings and under both programs, technically instructive behaviours were very common (ranging between the most popular to the fourth most popular behavioural category) there does not appear to be distinct coaching differences between the approaches overall.

Modified coaches, then, did not clearly favour reinforcing, encouraging and technically instructive behaviours compared to traditional coaches. Despite the modified program's aim of establishing a positive, encouraging environment with emphasis on enjoyment and skill (All Australian Netball Association 1981; Geelong Netball Association, 1986; Western Australian Netball Association, 1980), it appears that this positive approach to coaching is not fully realized. Perhaps this is due to the fact that the modified coaches did not receive any specific training as to how best to relate to their young athletes. Awareness of the theory behind a positive approach to coaching is not equivalent to actually putting these principles into practice. It seems that if modified coaches are to achieve their aim, then they need to be trained in the psychology of coaching children. A program similar to the one implemented by Smith,

Smoll and Curtis (1979) in their "positive approach" could be used as a guideline. As noted previously, these researchers were able to demonstrate that coaches trained to employ sound psychological techniques in their coaching actually exhibited significantly more reinforcement behaviours than coaches who did not receive such training. Of course, the education of coaches should not exclude the traditional leaders either. Indeed, Longhurst (1985) has noted that the proportion of netball coaches who have been involved in the National Coaching Accreditation Scheme is low compared to coaches from other junior sports.

Modified coaches did not generally display fewer punitive behaviours than traditional coaches either, although in training situations, punishment distinguished the two groups with traditional coaches exhibiting a higher mean number of these behaviours. In totality, however, the punitive behaviours of both modified and traditional coaches did not occur frequently, nor were there any other clear discriminations between the two types of coaches in this respect. This parallels the research by Spink (1988b) who found that neither punishment nor punitive technical instruction distinguished between the behaviour of premiership or clinic coaches in football.

Another coaching behaviour worth mentioning concerns keeping control. Results revealed that modified coaches exhibited more keeping control behaviours in training sessions than did traditional coaches and this occurred in the Spink (1988b) study for games and practices as well. Since player misbehaviour and its subsequent correction by the coach

detracts from the time available to teach and learn new skills, this is further evidence that modified programs may not be fulfilling their aim of stressing skill development.

Modified coaches also showed significantly more organization behaviour in match situations than their traditional counterparts. This behaviour refers to administrative organization such as reminding players of their position on court. The more frequent use of this by modified coaches could possibly be explained by the significantly younger age of the modified participants, who might need more assistance in this regard. However, the observation of these coaches suggested that the participants were frequently overloaded with information and denied the opportunity to make organizational decisions without adult intervention. A number of researchers have noted that the loss of control over decision-making powers, the loss of a sense of "ownership" in a sporting event, has the potential to diminish children's intrinsic motivation (Thomas, 1978; Weinberg, 1981) and to restrict their learning experience (Coakley, 1980; Devereux, 1976). By yelling directions from the sidelines, coaches are likely to distract young players, disrupting their attention to the action and thus their potential to enjoy the game (Kleiber, 1981). Therefore, in their desire to be helpful and supportive of players, modified coaches may be reducing children to pawns in an adult game.

In general, it seems there is little evidence to support the hypothesis that modified coaches display high levels of reinforcement, encouragement and instruction and low levels of punitive and controlling behaviours.

The training of coaches would ensure some sort of uniformity in the nature of their coaching and facilitate their effectiveness in relating to young players. Certainly, the need to provide educational programs for coaches has been noted by numerous researchers (e.g. Lombardo, 1982; Nettleton & Sands, 1985; Orlick, 1986; Robertson, 1982; Smith & Smoll, 1978; Smith, Smoll & Curtis, 1979; Smoll & Smith, 1981).

In terms of the third hypothesis, analyses of covariance failed to reveal any significant differences in the self-esteem and self-competence levels of modified and traditional participants, although both groups improved slightly over the course of the season. There are a number of possible explanations as to why the hypothesized superiority of modified players in terms of self-esteem and perceived competence was not supported in this study.

Firstly, modified netball may not have achieved its aim of adopting a process or performance orientation. Despite the structural changes made to the modified program, its effect may not be achieved unless the adults involved reinforce such things as personal improvement rather than winning or losing. As Nettleton and Sands (1985) write: "....people within the established structure of children's sport whether it be adult-orientated or modified rules influence the motives and behaviour of participants as much, if not more, than the changing of the structural features" (p.38). Other researchers have similarly noted the quality of adult leadership is a critical determinant of whether organized athletic competition has beneficial or detrimental effects on children (Gould, 1981; Martens, 1978; Parkin, 1978; Robertson, 1982; Spink, 1988a; 1988b). Again, that modified

coaches were not given any specific training in the psychology of coaching, may have retarded the effectiveness of a performance emphasis - especially during the pressure of a match involving one's own team (Gray & Cornish, 1985; Martens, 1982).

Certainly, in terms of observable behaviours, modified coaches did not use more reinforcement nor did they adopt a more "positive approach" generally than traditional coaches. Since these behaviours have been linked to the development of self-esteem (Sander, 1981; Smith, et.al., 1978; Smith, Smoll & Curtis, 1979; Smith, Smoll, Hunt, Curtis & Coppel, 1979; Spink, 1988a) and no clear patterns emerged in the coaches' behaviour from either approach, it is not surprising that the present study found no differences in the self-esteem of modified and traditional participants. Similarly, the lack of differences between modified and traditional coaches' reinforcement and punitive technical instruction behaviours supports the finding that self-competence levels of the two groups of players were similar, given the association between these behaviours and perceived ability (Horn, 1985; Vallerand, 1983; Vallerand & Reid, 1984).

Yet the possible failure of implementing a performance orientation to modified sport is not likely to be the sole fault of the coaches. The importance of winning and the value of achievement is communicated to children by parents and society at large. "Try telling a 6-year-old who watches his or her father go crazy in front of a TV game, and who is told to go out and win and is reward for that win, that winning is not important" (Orlick, 1986, p.171). Thus, even if coaches emphasize enjoyment and development in sport, young children are likely to encounter

a conflicting set of values from parents, teachers and the media which could reduce the effectiveness of a process orientation to junior sport. Certainly, parents have been found to be instrumental in determining children's self-esteem and attitudes toward sport (Coopersmith, 1967; Lewko & Ewing, 1980; McElroy & Kirkendall, 1981). Therefore, one important area of modification seems to be that of parent behaviour (Lombardo, 1982; Longhurst, 1985; Martens, 1978; Parkin, 1978; 1984; Spink, 1988a) with the basic principles contained in the positive approach to coaches applying equally to parents (Smoll, 1986). Further, Barham (1983) has pointed out that unless all sports project the same general attitude to children's participation in sport, it will be difficult to convince children that fun and personal improvement are more important than winning.

Nevertheless, the self-esteem and self-competence levels of all participants in this study were relatively high. A second plausible explanation, therefore, centres around the notion that female coaches generally behave in a manner which promotes the development of self-esteem and self-competence in players. In his examination of Victorian youth sport coaches, Longhurst (1985) found that females were more affiliation-oriented and less self-oriented than males. More specifically, of the seven sports examined by Longhurst, netball coaches emerged as those with the most desirable attitudes toward coaching-being low in self-orientation, high in affiliation- orientation, and emphasizing fun and de-emphasizing winning outcomes. Similarly, Martens and Gould (1979) found female coaches to place greater emphasis on socialization

than males. These findings are in keeping with studies of female athletes and sex-role socialization in general which suggest that females are more expressive and socially-oriented (Reis & Jelsma, 1980; Sherif, 1974), and more co-operative, nurturant, warm, understanding and oriented toward close interpersonal relationships (Clarke-Stewart, et.al, 1985; Deaux, 1977; Lewko & Greendorfer, 1978; Mischel, 1970; Oglesby, 1984; Reis & Jelsma, 1980) compared to males. These qualities intuitively seem to be more conducive to the promotion of high self-esteem and self-competence levels than the male acheivement, competitive, win orientations.

It is also possible that modified and traditional players did not differ in their self-esteem and perceived competence levels because both group's preseason scores on these measures were already quite high (self-esteem averaged 34 from a maximum possible score of 42 and self-competence averaged 24 from a maximum possible score of 30). This may suggest a ceiling effect in which further increases in self-esteem and self-competence levels by the end of the season would be highly unlikely. Alternatively, it is feasible that one netball season may not have been long enough for any significant changes in self-esteem, and possibly self-competence, to be observed. Certainly it would be interesting to retest the same sample following two or three years of participation in the sport.

Finally, it is worth commenting upon the frequency analysis results. The number of modified participants categorized as high in perceived competence dropped from 46 to 41 percent from pre- to postseason. Although this was not found to be a significant difference, it is the only

analysis which revealed a reduction in desirable traits at the end of the season. A study by Scarisbrick and Allison (1986), using junior soccer players, similarly found that children in the competitive program rated themselves as much more highly competent in terms of skills than did the children in the recreational program at the end of the season. These findings seem to cast same doubt on modified programs claim of enhancing athletes' self-competence, however since the results of the present study are only directional and not significant, further research is needed to validate this proposition.

The fourth hypothesis, that modified participants would display lower levels of anxiety at the end of the season than traditional participants when preseason anxiety levels were taken into account, was also not supported by the present findings. No significant differences in anxiety levels were found between modified and traditional players, and in both groups anxiety decreased from pre- to postseason. This is not surprising since modified and traditional participants did not differ significantly in their level of self-competence and a lack of perceived competence has been linked to the experience of high anxiety levels (Gould, et.al, 1983a; Passer, 1984; Scanlan, 1982; Scanlan & Passer, 1978; 1979; Smoll, 1986; Yan Lan & Gill, 1984). As has been mentioned, mean self-competence levels of both modified and traditional participants were qutie high. Similarly, the mean anxiety levels of participants were relatively low, with the highest mean being 19.261 (traditional player's preseason measure) and the minimum possible score being 10.

Also relevant here is the possibility that the modified netball program was not effective in adopting a process or performance oriented approach, perhaps due to a coach or adult education deficit. Thus, its influence on

children's self-esteem, self-competence and anxiety levels was not very different from the traditional program. Since a product approach to sport has been associated with high anxiety levels in athletes (Gould, et.al, 1983b; Scanlan & Lewthwaite, 1984; Passer, 1983), the results of this study suggest that neither the modified nor the traditional program stresses the importance of winning enough to categorize them as typically highly outcome oriented. As suggested, this may be related to the predominance of females occupying coaching and playing roles and their empirically well-established gender identity traits.

The final hypothesis, which predicted more positive attitudes would be evidenced by modified, rather than traditional participants, also received no support in this study. Modified players did not differ significantly from traditional players in their attitudes toward netball this year, netball change, their teammates, the coach and themselves. A recent study testing junior cricket players on a liking of cricket questionnaire similarly found no differences in attitudes between modified and traditional athletes (Spink & Longhurst, 1989). Moreover, although the measurement of attitude was not the same as in the present study, Scarisbrick and Allison (1986) similiarly found that both recreational and competitive participants found their experience enjoyable and satisfying.

Further, studies by Smith and Smoll and their associates indicated that positive attitudes are related to implementing a positive approach to coaching and that negative attitudes are correlated with high levels of keeping control, punitive technical instruction, punishment and general

encouragement (Curtis, et.al., 1979; Smith, et.al., 1978; Smith, Smoll & Curtis, 1979; Smith, et.al., 1983; Smoll, et.al., 1978). Given that neither modified nor traditional netball coaches could be identified as clearly adopting either a positive or negative approach, it follows that the two groups of participants would not have dramatically different attitudes towards their sport, their teammates and their coaches. Additionally, it was suggested that attitude towards self was conceptually similar to self-esteem and self-competence. Since the two groups of players did not differ significantly in their self-esteem or in their perceived competence, it is logical that their attitudes toward the self also did not differ.

Finally, the mean attitudinal scores of both modified and traditional athletes were quite high indicating that most players had positive attitudes towards netball, their peers, the coach and themselves. Again, this suggests that both approaches make for positive experiences for their participants and that the modified approach does not, in essence, differ from the traditional program as much as would be suggested by the structural differences in the programs.

In summary, results from the present study revealed that the modified program helped improve some aspects of participants' skill acquisition over and above the improvement gained by traditional participants. The significant increase in skill level by modified players occurred in the two more complex and risk taking skills which may be more amenable to instruction and less essential to the game.

However, in terms of the psychological measures, the modified program was not found to be clearly superior to the traditional approach. Both modified and traditional athletes improved their self-esteem and self-competence levels, and decreased their anxiety levels, at the end of the season compared to their preseason levels, but there were no significant differences between athletes' scores from the two approaches. Nor were differences found between modified and traditional participants' attitudes toward their sport, their coach, their teammates and themselves. Yet the modified netball program was structured quite differently from the traditional approach. As other research has noted, it seems that it is not the sport, per se, that creates a positive or negative environment for children, but rather the way it is supervised (Gould, 1981; Martens, 1978; Nettleton & Sands, 1985; Parkin, 1978; Robertson, 1982; Spink, 1988a; 1988b).

Findings from the analyses of coach behaviours revealed that modified coaches did not clearly adopt a more positive approach to coaching than their traditional counterparts. Perhaps due to the lack of coach education and training or the pervasiveness of achievement in society at large, it was suggested that modified coaches may not have been successful in achieving a process or performance orientation.

The results also suggested that neither modified or traditional coaches exhibited distinct preferences for particular kinds of behaviours in matches or training sessions. Apart from modified coaches tendency towards keeping control and organizational behaviours, no clear patterns to coaching emerged. Although not directly tested in the study, this coach behaviour finding is interesting when seen in terms of the psychological measures. Both modified and traditional players'

self-esteem, self-competence, anxiety and attitude scores appeared to be quite desirable and yet this would not be expected if the traditional program were highly product or outcome oriented. Perhaps the traditional program was not found to be psychologically unhealthy for its participants because of the predominance of females in the sport of netball. Female coaches have been shown to possess orientations towards affiliation and fun and females in general tend to be co-operative, nurturant, expressive, warm, understanding and socially-oriented-qualities which do not seem to match a win-at-all-costs orientation. Thus, it is possible that the traditional coaches in this study are not typical of a product orientation to coaching.

In addition, Scarisbrick and Allison (1986) have pointed out that children are active in the processing and evaluation of their sporting experiences. These researchers found evidence to suggest that young players tend to internalize the information from their coach that they feel they need to have to improve their skill, but that they ignore a lot of coaching advice - particularly comments yelled from the sideline during play. This could help explain why, in the present study, players' self-esteem, self-competence, anxiety and attitude scores were relatively high despite the fact that modified and traditional coach behaviours were often far from positive.

Overall, it seems that both modified and traditional programs are valuable in their own right, because each serves different needs. The modified approach may improve its participants' skills to a greater extent than the traditional program, but the latter does not appear to inhibit the development of self-esteem, self-competence, anxiety and attitudes in players. The results suggest that modified coaches need to be trained in

the psychology of coaching if their style is to differ from traditional coaches in practice. Given that this is achieved, a modified program would suit those children who want to play regularly, improve their skills and participate in a nonthreatening, low-pressure, fun oriented environment. In contrast, children who are interested in competing and achieving in a supportive and nurturant environment are likely to be better served in a traditional program. Further, those with greater ability may find this approach more satisfying (Nettleton & Sands, 1985). By providing a range of sports programs and varying the skill level and intensity of competition, children will have greater opportunity to select a program style appropriate for them (Martens, 1978; Spink, 1989). As one researcher has noted, the best solution seems to be different strokes for different folks! (Spink, 1988a).

Limitations

Certain limitations restrict the generalizations which may be made from this study. Firstly, the subject sample was composed solely of female junior netball players and further research is needed to determine the degree to which these findings can be replicated across different sporting populations. Further, owing to the specifications of the two programs examined, there was a signficant difference in the ages of modified and traditional participants and this may have influenced the skill, self-esteem, self-competence, anxiety and attitude results, although preseason scores for both groups of children were virtually the same.

As mentioned previously, children's skill levels were assessed in groups and therefore the latter performers may have been advantaged by being able to watch the performance of the skills more than once before their own attempts. Further, because only one, two or three attempts were allowed for each skill aspect, a thorough assessment of player's skill may not have been achieved.

The use of the CBAS has some limitations. In the relatively small area of a netball court, it is difficult for testers to be unobtrusive - especially because they must be close enough to hear the coach around the mayhem of whistles, shouts and cheers from other courts. There is a possiblity that coaches changed their behaviour because they were aware that they were being observed (Smith, et.al., 1977b). However, as the tension of a particular session increases and as the coach becomes familiar with the presence of testers over a number of sessions, this reactive behaviour effect would have probably become negligent. In addition, it is possible that testers' expectations may have reduced the objectivity of their observations. But given that all testers were extensively trained, that the interrater reliability for this study was high and that testers were made aware of this potential bias, it does not seem likely that subjectivity influenced the coding of coaches' behaviour to any appreciable extent.

Another restriction in terms of the coach behaviour data was the small size of the modified coach sample for the training sessions. This certainly limits the validity of the results of the discriminant analysis conducted in the training setting, but was unavoidable due to the small number of skills sessions held in the modified netball program.

In terms of the self-esteem and self-competence measures, the reduction of the scales from five to three alternatives as a result of pilot-testing, may have caused a lack of sensitivity in the inventories. Demand characteristics, such as the tendency of subjects to provide socially desirable responses, may have influenced scores from not only these two inventories, but the anxiety and attitude questionnaires as well.

It is also important to note that the relationships alluded to between coaching behaviours and other measures were not directly tested and certainly no causality can be implied. Further, a number of extraneous variables may have operated in the study such as the criticality of the game in influencing anxiety results, and the impact of parents in affecting subject's self-esteem levels and attitudes.

Implications

The results from the present study imply that children participating in modified sport programs may not be better off than children involved in traditional approaches. There is a need for those sports wanting to promote a modified version to make changes that go beyond the typical structural adjustments. Specifically, attention should be given to the training and education of coaches to assist them in incorporating positive and performance orientations into their actual coaching. Traditional coaches also need to be given instruction on how to best relate to their young athletes. The findings suggest that there should be less concern with discovering "the best" youth sport approach and more concern with offering a wide range of program types so that children can select the version which is consistent with their own personalities and aspirations.

Further, coach education should highlight the need for consistency in game and practice behaviours. A focus on personal improvement and enjoyment in training sessions will not be beneficial to children unless it is similarly emphasized in match situations. In the same vein, parents should be taught to reinforce the particular values of the coach, whether they be of the modified or traditional school, so that children are not confused by conflicting sets of attitudes and beliefs.

Finally, junior sports that are organized and supervised predominantly by females, such as netball, may have a distinct influence on children. Female adults naturally seem to create environments which are more co-operative, supportive, nurturant and affiliation oriented than those constructed by males. Thus, the generally healthy levels of self-esteem, self-competence and anxiety, and the positive attitudes found in netball players, from both modified and traditional versions may be due to the gender traits of the female coaches and administrators.

Recommendations for Future Study

On the basis of the results obtained, it is apparent that future research in this area is required. One particularly useful avenue of investigation would be the testing of young players and coaches from other Australian sports. The applicability of the present findings, which were conducted in a female sport, to sports predominated by males needs to be ascertained. Longitudinal analyses, which assess the effects of modified and traditional programs on players after two or three years of participation, are also needed.

A number of authors have noted that modifications have been introduced to many sports based entirely on the inuitive assumption that "smaller will be better" without any objective verification (Evans, 1980a; 1980b; Gibson, 1982; Nettleton & Sands, 1985; Robertson, 1986; Winter, 1983). The modifications need to be evaluated to see whether changes are effective and whether other problems about the game emerge.

Future research of this type should incorporate a more detailed assessment of players skill level, including testing athletes alone so that they cannot learn from the performances of their teammates. Further, it would be interesting to establish whether the skills learned under a modified structure can be directly transferred to a traditional version of sport.

In terms of assessing the effectiveness of coaches, their match and training behaviours should be considered separately. It would also be enlightening to directly test the relationships between coaches' behaviour and changes in the psychological attributes of players such as self-esteem, self-competence and anxiety over a season. This could be done by recording coaches' behaviours to players as a team, but using the individual player as the observational unit, as in the Horn (1985) study, also seems valuable. In addition, the efficacy of specific education and training of both modified and traditional coaches, and perhaps even parents, requires further research.

More generally, Gould (1982) identified those past studies conducted in the area of youth sports which have had significant practical and theoretical impact. These investigations were characterized by several features including: asking questions of practical importance; integrating previous research or theory into the designs; and employing adequate

methodological procedures such as examining more than a few isolated teams, being multivariate in nature and involving more than one assessment. These characteristics have been incorporated into the present study and certainly they would appear to have relevance to future research.

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APPENDIX A

THE ALL AUSTRALIAN NETBALL ASSOCIATION

RECOMMENDED MODIFIED RULES FOR JUNIORS.

Modified Procedures

When Netball is played as part of inter-school competition at Primary School or District Association Junior levels. In the interest of Junior players consideration should be given to the following suggestions by the All Australian Netball Association.

1. Four quarters each of 10 minutes to played, with 3 minutes rest at 1/4 and 3/4 time and up to 5 minutes at 1/2 time.

2. No "FINALS" matches to be played - i.e. the team at the top of the end of the competition be the winner.

3. Each player in the competition to receive a certificate of participation.

4. No trophies to be awarded. Cloth badges may be given to each member of the winning team.

Fair Play Codes for Children in Sport

The codes are designed:

. To return the elements of enjoyment and satisfaction to the child participant.

. To make adults aware that children play to satisfy themselves and not necessarily to satisfy adults or members of their own peer group.

- To improve the physical fitness of youth by encouraging participation in some form of sports or physical recreation by making it attractive, safe and enjoyable for all children.

*** NETBALL IS FUN ***

Modified Rules For Juniors as Recommended by All Australian Netball Association.

A Netball game is a contest between two teams which means that the teacher/coach must handle the variety of the competitiveness and skill development of the children in the group. The emphasis should be on trying out learned skills, discovery of new ones, and sharing the play with other team mates.

Remember that competition only exists to give the game purpose - what counts is giving each child a chance to try hard, to improve, and to gain satisfaction from participation.

It is desriable that children under the age of 12 years should not be pressured into organised competitions. However, when the children feel ready to accept the challenge of the game situation, then Modified Rules and mini-games for Netball are recommended by the All Australia Netball Association as the acceptable way for this to be done at Primary School level.

Rule Modifications for Children 8-10 Years

These children would most likely be playing Mini-games, and be under 10 years at the beginning of the calendar year.

1. It is permissable to adjust goalposts to 8 ft. height (when new posts are installed consider adjustable posts in the interests of Juniors).

2. 18"-20" size ball of composite leather or all leather.

3. After catching the ball throw within 6 seconds.

4. Allow shuffling on the spot to gain balance before throwing, without moving down the court.

6. A player may defend an opponent with the ball from a distance of 4 feet.

7. A team of up to 10 players may interchange at 1/4, 1/2 and 3/4 time intervals. Each player to play at least two quarters.

8. UMPIRES

   (i) To use simple language and to explain decisions.

   (ii) To adopt an encouraging and pleasant manner to ensure an open and free-flowing game - particularly in the setting up of penalties and throw-ins.

Rule Modifications for Children 10-12 Years

These children would most likely be playing the full-court game, and must be U/12 years at the beginning of the calendar year.

1. Goalposts where possible to be adjusted to 8 feet. (When new posts are installed they should be adjustable to this height to cater for this modification).

2. 20"-24" soccer ball, volley ball or netball of all leather or composite leather.

3. After catching the ball throw within 6 seconds.

4. Allow minimal shuffling on the spot to gain balance before throwing, without moving down the court.

5. Strict "man to man" defence to all play.

6. A player may defend an opponent with the ball from a distance of 4 feet.

7. A team of up to 10 players may interchange players at 1/4, 1/2 and 3/4 time intervals. Each player to play at least two quarters.

8. Four quarters of 10 minutes to be played.

*** NETBALL IS FUN ***

APPENDIX B

DESCRIPTION OF THE SKILLS ASSESSMENT AND SCORING PROCEDURES

INSTRUCTIONS FOR NETBALL SKILLS ASSESSMENT

SKILL 1 - ONE HANDED SHOULDER PASS

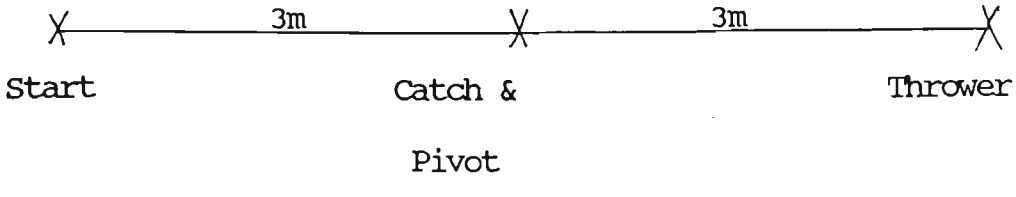
- one attempt with dominant hand
- one attempt with non-dominant hand
- aim at centre of target 3 metres away
- ensure correct footwork, i.e. when throwing with right hand step forward with left foot and vice versa.

Scoring Place a tick on one level only.

1. incorrect.
2. correct technique but missed target.
3. correct technique and hit outer circle.
4. correct technique and hit centre circle.

SKILL 2 - PIVOTTING

- sprint forward from 6 metres away
- catch ball at 3 metre marker
- one attempt of catch, land on right foot, pivot in full circle in a clockwise direction (i.e. outwards)
- one attempt of catch, land on left foot, pivot in full circle in anti-clockwise direction (i.e. outwards)
- return ball to thrower.

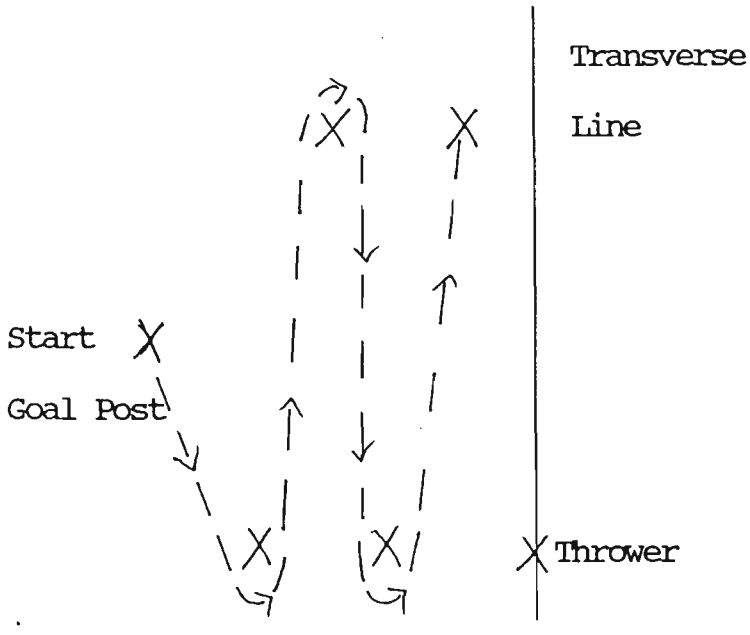


Scoring Place a tick on one level only.

1. incorrect
2. correct catch only.
3. correct catch and pivot only.
4. correct catch, pivot and disposal of ball.

SKILL 3 - DODGING (i.e. ATTACKING)

- dodge around three obstacles by pushing off from outside foot each time
- at fourth obstacle, subject must catch a ball that has been thrown ahead (throw is to be a one-handed, firm pass)
- at this point subject must stop, i.e. allow no stepping with the ball.



Scoring — Place a tick on one level only. If the skill is correctly executed also record the time taken from the start (say GO) to time subject has stopped and caught the ball.

1. incorrect
2. correct dodging only
3. correct dodging, catch and ground landed foot so record time taken in seconds.

SKILL 4 - SHOOTING

- three attempts to gaol, 1.5 metres from post
- shot must be released from head height or above
- if goal is scored but shot is not a high release, count this as no goal.

Scoring — Place a tick (√) for a goal scored with correct technique. Place a cross (x) for incorrect technique.

If the goal is missed place:

.NR --> for not touched rim

or .RIM --> for touched rim.

APPENDIX C

DESCRIPTION OF THE COACHING BEHAVIOUR ASSESSMENT SYSTEM CATEGORIES

CBAS CATEGORY DESCRIPTIONS

The CBAS includes two major categories of behaviours. Reactive behaviours are responses to immediately preceding player or team behaviours, while spontaneous behaviours are initiated by the coach and are not responses to immediately preceding events.

I. Reactive Behavours.

A. Responses to desirable performance.

1. Positive reinforcement (PR). A positive reaction by the coach to a desirable performance by one or more players. PR may be verbal or nonverbal. Examples include congratulating a player or patting a player on the back after a good move.

B. Reactions to mistakes.

2. Mistake-contingent encouragement (MCE). Encouragement of a player by a coach following a player's mistake.

3. Mistake-contingent technical instruction (MCTI). Telling or showing a player who has made a mistake how to make the play correctly. MCTI behaviour requires that the coach instruct the player in some specific way. An example is showing a player how to shoot a goal after an error has been made.

4. Punishment (P). A negative response by the coach following an undesirable behaviour. Like PR, P may be verbal or nonverbal. Examples include making a sarcastic remark to a player who has just fumbled the ball or the coach waving in disgust after a player has made an error.

5. Punitive technical instruction (PTI). Sometimes MCTI and PTI occur in the same communication, as when a coach says, "How many times do I have to tell you to catch the ball with two hands!" Whenever a coach gives MCTI in a hostile or punitive way use PTI.

C Response to misbehaviour

6. Keeping control (KC). Responses designed to maintain order. Such behaviours are ordinarily elicited by unruly conduct or inattentiveness by players.

II Spontaneous Behaviours

A. Game-related spontaneous behaviours.

7. General technical instruction (GTI). A communication that provides instruction relevant to techniques and strategies of the sport. The purpose is to foster the learning of skills and strategies. GTI is not elicited by a previous mistake, but is coach-initiated. Examples include telling a player how to hold her lead and then move towards the thrower.

8. General encouragement (EG). EG is not a response to specific actions by the players but relates to future hopes. It is not technical instruction but more general (e.g., "Come on team, let's get some goals").

9. Organization (O). Administrative organization. Reminding players of their position on the court etc.

B. Game-irrelevant spontaneous behaviour.

10. General communication (GC). Interactions with players unrelated to the game, such as joking, conversations about family, etc.

APPENDIX D

THE SELF-ESTEEM INVENTORY

NETBALL QUESTIONNAIRE NO. 1

Name _____ Age _____ Years

Team _____

This is a questionnaire that will show a little about how you think about things. This is not a test. There are no right or wrong answers. No one but me will see your answers. Please answer the way you feel about these things.

To answer, circle the number which corresponds best with the extent to which each statement describes you.

	Not at all like me	A little like me	Very much like me
1. I'm prettry confident in myself	1	2	3
2. I'm a failure	1	2	3
3. I'm proud of myself	1	2	3
4. I don' think I'm much good	1	2	3
5. I'm pretty happy	1	2	3
6. Things often make me sad	1	2	3
7. I often feel ashamed of myself	1	2	3
8. I always do the right thing	1	2	3
9. I'm a lot of fun to be with	1	2	3
10. I'm easy to like	1	2	3
11. I often wish I were someone else	1	2	3
12. I can never do anything right	1	2	3
13. Most people are better liked than me	1	2	3
14. It is pretty hard to be me	1	2	3

APPENDIX E

THE SELF-COMPETENCE INVENTORY

NETBALL QUESTIONNAIRE NO. 2

Name _____ Age _____ Years

Team _____

This is an inventory designed to assess your netball abilities. You are the judge, and you are to decide how developed you are as a netball player. Read each item and circle the number which best corresponds your feelings about the statement.

	Disagree	In Between	Agree
1. I have good netball skills.	1	2	3
2. I am a good attacker	1	2	3
3. I am a good defender.	1	2	3
4. I have the ability to become a better netball player.	1	2	3
5. I would be embarrassed to have people watch me play netball.	1	2	3
6. I have the ability to make the Australian netball team.	1	2	3
7. Most people think I'm an excellent netball player.	1	2	3
8. I would be embarrassed to show someone else a netball skill.	1	2	3
9. I have a good ball handling skills.	1	2	3
10. I worry that my netball skills aren't as good as they should be.	1	2	3

APPENDIX F

THE ANXIETY INVENTORY

NETBALL QUESTIONNAIRE NO. 3

Name _____ Age _____ Years

Team _____

A number of statements which people have used to describe themselves are given below. Read each statement and circle the appropriate number to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not At All	Somewhat	Moderately So	Very Much So
1. I feel at ease	1	2	3	4
2. I feel nervous	1	2	3	4
3. I feel comfortable	1	2	3	4
4. I am tense	1	2	3	4
5. I feel secure	1	2	3	4
6. I feel anxious	1	2	3	4
7. I am relaxed	1	2	3	4
8. I am jittery/have butterflies	1	2	3	4
9. I feel calm	1	2	3	4
10. I feel over-excited and rattled	1	2	3	4

APPENDIX G

THE ATTITUDE QUESTIONNIARE

NETBALL QUESTIONNAIRE NO. 4

Name _____ Age _____

Team _____

Now that you have just finished a season of netball, we would appreciate knowing a little about your thoughts on it. Please anser the way you feel about these things. No one else will see your answers.

Circle the numbers which best represent your feelings.

1. How much did you like playing netball this year?

Dislike a lot Like a lot

1 2 3 4 5 6 7

2. How much did you like playing for your coach (coaches)?

Dislike a lot Like a lot

1 2 3 4 5 6 7

3. How much would you like to have the same coach (or coaches) again next year?

Dislike a lot Like a lot

1 2 3 4 5 6 7

4. How much does your coach (or coaches) know about netball?

Almost nothing Almost everything

1 2 3 4 5 6 7

5. How good a netball teacher is your coach (or coaches).

Very Poor Excellent

1 2 3 4 5 6 7

6. How well did the players on your team get along?

Very poorly Very well

1 2 3 4 5 6 7

7. How good are you in sports?

Very poor Excellent

1 2 3 4 5 6 7

8. How good are you in netball?

Very poor Excellent

1 2 3 4 5 6 7

9. How good does your coach (or coaches) think you are in netball?

Very poor Excellent

1 2 3 4 5 6 7

10. How good do your teammates think you are in netball?

Very good Excellent

1 2 3 4 5 6 7

11. How good do your parents think you are in netball?

Very good Excellent

1 2 3 4 5 6 7

12. Do you like netball more or less than you did at the beginning of the season?

A lot less About the Same A lot more

1 2 3 4 5 6 7

APPENDIX H

SCORING PROCEDURES FOR THE SKILLS ASSESSMENT AND INVENTORIES

SCORING

Skills Assessment

a. Shoulder Pass

For the shoulder pass skill:

1 - point was awarded for an attempt, but with incorrect footwork;

2 - points for correct technique but failure to hit the target;

3 - points for hitting the outer circle of the target; and

4 - points for hitting the bullseye.

Since subjects had two attempts, total scores could range between 2 and 8 points.

b. Pivotting

For the pivotting skill:

1 - point was awarded for an attempt, but failure to catch and land;

2 - points for a correct catch and land only;

3 - points for a correct catch, land and pivot only; and

4 - points for a correct catch, land, pivot and disposal.

Again, two attempts were made by each subject so that total scores could range between 2 and 8 points.

c. Dodging:

For the dodging skill:

1 - point was awarded for a failure to dodge correctly;

2 - points for a correct dodge, but failure to catch and land correctly.

If these requirements were fulfilled, the time (in seconds) subjects took to complete the entire task was recorded. Later, these times were divided into five equal intervals (each of one second) to include the slowest and fastest times recorded by subjects. Thus

3 - points was awarded for times between 9.54 - 8.54 seconds;

4 - points for times between 8.53 and 7.53 seconds;

5 - points for times between 7.52 and 6.52 seconds;

6 - points for times between 6.51 and 5.51 seconds; and

7 - points for times betwen 5.50 and 4.50 seconds.

Therefore, total scores for this skill ranged between 1 and 7 points.

d. Shooting:

For the shooting skill:

1 - point was awarded for a missed goal or the use of incorrect technique;

2 - points for a shot which touched the rim, but failed to sink; and

3 - points for a goal scored.

Three attempts were made by each subject so that total scores ranged between 3 and 9 points.

Self-esteem and Self-comptence

For the modified Self-Esteem Inventory (Coopersmith, 1967), items 2,4,6,7,11,12,13 and 14 were reversed scored. The minimum score possible was 14 and the maximum possible score was 42. For the adapted Physical Self Test (Ludwig & Maehr, 1967), items 5,8 and 10 were reverse scored. The minimum possible score for this inventory was 10 and the maximum socre possible was 30.

Attitude

The adapted attitude questionnaire (Smith et.al., 1979) comprised four different areas -: item 6 measured subject's attitude towards teammates; items 1 and 12 focussed on attitude towards netball; items 2,3,4 and 5 considered attitude towards the coach; and items 7,8,9,10 and 11 assessed attitude toward the self. Scores could range between 1 and 7 for the teammates area; 2 and 14 for the sport area; 4 and 28 for the coach area; and 5 and 35 for the self area.

Anxiety

Items 1,3,5,7 and 9 of the children's form of the CASI (Martens e.t.al, 1980) were reverse scored. The minimum score that could be obtained was 10 and the maximum possible score was 40.

APPENDIX I

THE SKILLS ASSESSMENT SCORE SHEET

Date: ____________

Team: ____________

NETBALL SKILLS TEST SCORE SHEET

NAME	AGE	SHOULDER PASS	PIVOTTING	DODGING	SHOOTING
		D. 1. N.D. 1. 2. 2. 3. 3. 4. 4.	R.F. 1. L.F. 1 2. 2. 3. 3. 4. 4.	1 2. 3. ____ secs.	1 2. 3.
		D. 1. N.D. 1. 2. 2. 3. 3. 4. 4.	R.F. 1 L.F 1. 2. 2. 3. 3. 4. 4.	1. 2. 3. ____ secs.	1. 2. 3.
		D. 1. N.D. 1 2. 2. 3. 3. 4. 4.	R.F. 1. L.F 1 2. 2. 3. 3. 4. 4.	1. 2. 3. ____ secs.	1. 2. 3.
		D. 1. N.D. 1. 2. 2. 3. 3. 4. 4.	R.F. 1. L.F 1. 2. 2. 3. 3. 4. 4.	1. 2. 3. ____ secs.	1. 2. 3.
		D. 1. N.D. 1. 2. 2. 3. 3. 4. 4.	R.F. 1. L.F 1. 2. 2. 3. 3. 4. 4.	1. 2. 3. ____ secs.	1. 2. 3.
		D. 1. N.D. 1. 2. 2. 3. 3. 4. 4.	R.F. 1. L.F 1. 2. 2. 3. 3. 4. 4.	1. 2. 3. ____ secs,	1. 2. 3.

APPENDIX J

THE COACHING BEHAVIOUR ASSESSMENT SYSTEM SCORE SHEET

Behaviour Categories	Frequency Tallies		Total			Partner
	During Game	Outside of Game	During Game	Outside of Game	Grand Total	Grand Total
I. REACTIVE BEHAVIOURS						
A. Desirable Performances						
1. Positive Reinforcement (R)						
B. Mistakes/Errors						
2. Mistake-contingent encouragement (EM)						
3. Mistake-contingent technical instruction (TIM)						
4. Punishment (P)						
C. Misbehaviours						
6. Keeping control (KC)						
II. SPONTANEOUS BEHAVIOURS						
A. Game-related						
7. General technical instruction (TIG)						
8. General encouragement (FG)						
9. Organisation						
B. Game - Irrelevant						
10. General communication (GC)						

CBAS OBSERVATION RECORD

Recorder's Name: _____

Date: _____

Type of netball: Modified "Netta" netball _____
Standard "adult" netball _____

Type of session: Match _____
Training/Practice _____

Length of time of observation (mins): During game _____
Outside of game _____

APPENDIX K

ANALYSES OF COVARIANCE TABLES

Analyses of Covariance Tables

Table K-I Analysis of covariance on modified and traditional subjects for shoulder pass.

Source of Variance	df	SS	MS	F
Netball approach	1	10.22	10.22	7.96*
Residual	139	178.27	1.28	
Total	141	215.70	1.53	

* p <.05

Table K-2 Analysis of covariance on modified and traditional subjects for pivotting.

Source of Variance	df	SS	MS	F
Netball approach	1	12.96	12.96	7.64*
Residual	139	230.95	1.66	
Total	141	301.22	2.14	

*p <.05

Table K-3 Analysis of covariance on modified and traditional subjects for dodging.

Source of Variance	df	SS	MS	F
Netball approach	1	5.86	5.86	2.92*
Residual	139	279.18	2.01	
Total	141	290.00	2.06	

*p >.05

Table K-4 Analysis of covariance on modified and traditiona subjects for shooting.

Source of Variance	df	SS	MS	F
Netball approach	1	0.00	0.00	0.00*
Residual	139	265.66	1.91	
Total	141	303.36	2.15	

*p >.05

Table K-5 Analysis of covariance on modified and traditional subjects for self-esteem

Source of Variance	df	SS	MS	F
Netball approach	1	14.43	14.43	0.98*
Residual	139	2052.23	14.76	
Total	141	2308.59	16.37	

* p >.05

Table K-6 Analysis of covariance on modified and traditional subjects for self-competence

Source of Variance	df	SS	MS	F
Netball approach	1	5.33	5.53	0.59*
Residual	139	1247.58	8.98	
Total	141	1275.78	9.05	

*p >.05

Table K-7 Analysis of covariance on modified and traditional subjects for anxiety

Source of Variance	df	SS	MS	F
Netball approach	1	41.53	41.53	2.05*
Residual	139	2821.08	20.30	
Total	141	3113.72	22.08	

*p >.05

APPENDIX L

ANALYSES OF VARIANCE AND MANN-WHITNEY TABLES

Analyses of Variance and Mann-Whitney Tables

Table L-1 Analysis of variance on modified and traditional subjects for attitude towards netball - this year.

Source of Variance	df	SS	MS	F
Netball approach	1	0.02	0.02	0.04*
Within groups	140	72.27	0.52	
Total	141	72.29		

*p >0.5

Table L-2 Analysis of variance on modified and traditional subjects for attitude towards the coach.

Source of Variance	df	SS	MS	F
Netball approach	1	0.92	0.92	0.10
Within groups	140	1314.41	9.39	
Total	141	1315.33		

p >.05

Table L-3 Analysis of variance on modified and traditional subjects for attitude towards the self.

Source of Variance	df	SS	MS	F
Netball approach	1	0.76	0.76	0.05*
Within groups	140	1986.82	14.19	
Total	141	1987.58		

*p >.05

Table L-4 Mann-Whitneys tests on modified and traditional subjects for attitude-change and attitude towards teammates.

Attitudinal measure	U	N	F
Attitude-change	2309.0	142	0.74*
Teammates	2105.5	142	0.14*

*p >.05

APPENDIX M

SUMMARY OF DISCRIMINANT ANALYSES FOR COACHING BEHAVIOURS

Summary of discriminant analyses for coaching behaviours

Table M-1 Discriminant equation of coach behaviours for matches and training sessions

V= .52825 (mistake-contingent technical instruction) - .46056 (positive reinforcement)

\+ .41460 (punishment) + .40139 (organization) - .37293 (general encouragement)

\+ .25064 (mistake-contingent encouragement) + .23691 (keeping control)

\+ .21720 (general communication)

.eigenvalue = 3.14800 .canonical correlation = .8711602

.Wilks' lambda = .2410799

Table M-2 Discriminant equation of modified and traditional coach behaviour for matches

V = .99391 (mistake-contingent technical instruction) - .63709 (general encouragement)

\+ .63432 (organization) - .43558 (mistake-contingent encouragement)

\+ .31318 (general technical instruction) - .26775 (punitive technical instruction).

.eigenvalue = 2.72662 .canonical correlation = .85537

.Wilks' lambda = .26834

Table M-3 Discriminant equation of modified and traditional coach behaviour for training sessions.

V =	1.04768 (mistake-contingent encouragement) - .97234 (mistake-contingent technical instruction) + .69234 (keeping control) - .61774 (punishment)
-	.56338 (general encouragement) + .48036 (general technical instruction)
	.eigenvalue = .82144 .canonical correlation = .67155 .Wilks' lambda = .54902