The Effects of Highlight Videotapes on the Self-Efficacy and State Sport-Confidence of Female Tennis Players

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Abstract

All athletes dream of competing to their full potential. Experimenters have shown that mental preparation can enhance performance. Self-efficacy and self-confidence have also been shown to have a direct relationship with performance. The purpose of this study was to investigate the potential of team highlight videotapes as mental preparation tools designed to enhance feelings of self-efficacy and sport-confidence, which in turn might lead to enhanced performance. Three-minute video montages of successful shot-making were set to music, with key words (words chosen to encourage or to emphasize a good shot) added throughout. Forty-seven competitive female tennis players were randomly assigned to one of two groups. The highlight videotape group was shown the team highlight videotape, while the control group was shown a neutral videotape. All participants completed Vealey's (1986) State Sport-Confidence Inventory (SSCI) and the Tennis Self-Efficacy Scale for Doubles (TSESD), watched their assigned videotape and then retook the SSCI and TSESD. Participants then completed a set of open-ended questions about the procedure.

The data was analyzed with a Group (2) x Level of skill (4) repeated measures design. The analysis of variance of the TSESD and SSCI scores did not reveal any significant differences between the scores of the treatment and control groups. But comments to the open-ended questions seemed to reveal increased feelings of sport-confidence, motivation and arousal associated with the videotapes, suggesting that the team highlight videotapes may have potential as mental preparation tools. Additional research is warranted to further explore the potential uses of this new mental preparation tool.

Résumé

Tout athlète rêve d'atteindre son top niveau. Des expériences ont déjà démontrées qu'une préparation mentale ainsi qu'une confiance en soi et en ses abilités peuvent améliorer une performance. L'objet de cette étude fut donc d'examiner la possibilité d'utiliser des vidéos d'échanges bien réussis comme outil de préparation mentale pour stimuler les sentiments de confiance en soi et d'abilités qui, à leur tour, amèneraient le joueur à une meilleure performance.

Les montages vidéo d'une durée de trois minutes comprenant une série de coups bien réussis, étaient accompagnés de musique et de mots-clé tels des mots d'encouragement.

Quarante-sept joueuses de tennis de niveau compétitif ont participés au projet et ont été réparties selon deux groupes. L'un d'eux visionna le vidéo d'échanges tandis que l'autre, appelé groupe contrôle, regarda un vidéo neutre.

Pour entamer l'expérience, les participantes devaient d'abord compléter les tests suivants: le State Sport-Confidence Inventory (SSCI) de Vealey (1986) et le Tennis Self-Efficacy Scale for Doubles (TSESD). Ensuite, elles ont visionné leur vidéo respectif puis repris le SSCI et le TSESD. Pour terminer, elles ont complété un questionnaire à développement portant sur le procédé.

Les données ont été analysées selon un plan Groupe (2) X Niveau d'Habilité (4) à mesures répétées. On en conclut que les résultats des tests SSCI et TSESD n'ont révélé aucune différence significative entre le groupe en traitement et celui de contrôle. Cependant, les commentaires aux questions à développement semblent démontrer que l'utilisation du vidéo à échanges stimulerait la confiance et la motivation. Ce qui nous porte à croire, que le vidéo pourrait avoir une incidence positive comme outil de préparation mentale. Certes, des études plus approfondies seraient souhaitables afin de maximiser le potentiel de ce nouvel outil de préparation mentale.

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TABLE OF CONTENTS

List of Tables

PART 1: REVIEW OF LITERATURE

The purpose of this study was to investigate the potential use of team highlight videotapes in enhancing the state sport-confidence and self-efficacy levels of recreational level women tennis players. The theoretical and practical background that led to this study's conception is outlined in the following chapter.

"Mind and body cannot be separated when it comes to success in sports competition" (Finn, 1985, p. 61). Peak performance, the ultimate goal of all athletes, is linked with a variety of psychological states and characteristics. Top athletes tend to credit their mental state when performing at their best (Fobes, 1989). As Yogi Berra once stated, "90% of sports is mental; the other half is in your head" (Taylor, 1987, p. 139). If the athletes believe in their ability, the body will follow. Attempting to increase the likelihood of achieving peak performance, athletes mentally prepare for the upcoming competition by trying to achieve the necessary psychological states linked to optimal performances. Self-confidence is a crucial prerequisite to optimal performance (Brewer, Linder, Van Raalte & Van Raalte, 1991; Martin & Gill, 1991; Taylor, 1987). Various methods, such as goal-setting and positive self-talk, have been developed to enhance athletes' self-confidence levels. Highlight videotapes are potential intervention tools designed to enhance feelings of self-confidence, leading to overall improvements in performance. The following sections discuss these points in more detail.

Peak Performance

Peak performance is the goal of all athletes. Jim Loehr (1986) has worked with athletes in many sports and has labelled peak performance as the Ideal Performance State.

Other authors have given different names to this phenomenon: the zone (Weinberg, 1988), optimal sport performance (Ravizza, 1984), flow (Csikszentmihalyi, 1975), peak experience (Orlick, 1990). No matter which term is used, it refers to the ultimate athletic experience where athletes compete at the top of their game.

Loehr (1986) has associated twelve different characteristics with an athlete experiencing the Ideal Performance State: the athlete is physically relaxed, mentally calm, experiencing a low anxiety level, energized, optimistic, experiencing enjoyment, competing effortlessly, automatically performing skills, alert, mentally focused, self-confident and in control. When these elements occur simultaneously, peak performance is possible and likely (Loehr, 1986).

Other authors have similarly profiled peak performance. Weinberg (1988) lists these characteristics of the successful tennis player: the player is highly confident, experiencing focused concentration, physically relaxed, fearless, performing automatically, in control and experiencing enjoyment-motivation. Csikszentmihalyi (1975) uses the term "flow" to describe the ultimate experience, regardless of the nature of the activity. The flow experience is "the experience of acting outside the parameters of worry and boredom" (p. 38). The characteristics of flow include: the merging of action and awareness, the centering of attention on a limited stimulus field, the loss of self-consciousness, the complete control over actions and environment, and the experience of unambiguous and immediate feedback. The activity becomes autotelic in nature.

The likelihood of achieving peak performance or playing in the zone has been linked to several psychological variables (Weinberg, Jackson & Seaboune, 1985). Motivation, concentration and confidence are the three most common factors cited as

essential to success (DeFrancesco, Simmons & Burke, 1993; Brewer et al., 1991; Martin & Gill, 1991; Gould, Weiss & Weinberg, 1981). Both confidence and concentration are essential for high performance in any sport (Loehr, 1986). Confident athletes remain calm during competition and calmness is necessary for focused concentration. Concentration allows you to focus on what is critical and ignore what is not critical to your performance (Orlick, 1990). Motivation is a source of energy that directs the behaviour chosen and the amount of effort put into it (Silva & Weinberg, 1984). Athletes can facilitate achieving peak performance by readying themselves psychologically. This psychological preparation performed prior to competition is termed mental preparation.

Mental Preparation

Athletes and coaches across a range of sports extol the benefits of mental preparation. Mental preparation is the use of psychological techniques as preparation just prior to a competition with the goal of enhancing the performance (Lee, 1982). Weinberg (1984) lists the following examples of mental preparation techniques: attentional focus, self-talk, relaxation, imagery and preparatory arousal. The literature also mentions the use of religious beliefs (Caudill, Weinberg & Jackson, 1983) and music (Dorney, Kwan Ming Goh & Lee, 1992; Gluch, 1993) as commonly used preparatory strategies. Although not experimentally proven, music seems to (a) lead to increases in physical activity and (b) narrow attention, thus blocking out distractions (Dorney et. al., 1992)

"Psyching up" is a general global term that refers to mental preparation, although it is also used to refer to preparatory arousal (Weinberg, 1984). "The implicit assumption made by coaches has been that psyching-up will lead to maximum performance" (Weinberg et al., 1985, p. 176).

Attentional focus. Attentional focus involves the use of strategies to narrow focus in order to concentrate on important cues (Weinberg, 1984). Attentional focus has two dimensions: width and direction (Nideffer, 1976). The width can be broad or narrow and the direction can be internal or external. The attentional focus used depends on the individual's style and the nature of the sport. Golf requires a narrow external focus compared to weightlifting which requires a narrow internal focus. Athletes such as a quarterback need a broad external focus (Nideffer, 1976).

Self-talk. Self-talk is the use of positive self-efficacy statements to build confidence (Weinberg, 1984). The athletes talk to themselves, repeating positive statements, attempting to convince themselves that they can and will succeed.

Relaxation. Competition is stressful and can lead to an increase in stress and anxiety in athletes. Anxiety may result in muscle tension, nausea, and inappropriate attentional focus. Relaxation reduces the athletes' anxiety levels and enables them to compete without the detrimental by-products of stress. Relaxation techniques include: progressive relaxation, biofeedback and transcendental meditation (Weinberg, 1984).

Imagery. Imagery is the technique of rehearsing the activity in the mind, incorporating as many senses as possible (Weinberg, 1984). World class high jumpers Dwight Stones and Dick Fosbury mentally rehearsed their jumps before making any actual attempts. They would only make their try after they had imaged a successful jump in their mind (Weinberg, 1984).

Preparatory arousal. Preparatory arousal is the attempt to increase arousal to a more suitable level for competition (Weinberg, 1984). The relationship between arousal

and performance has been explained by Yerkes and Dodson (1908) with the inverted-U hypothesis. At heightened levels of arousal, performance is enhanced, up to a certain point, then it is diminished. The optimal level of arousal depends on the nature of the task and the individual. Simple tasks involving strength, speed and endurance, like weightlifting and sprinting, require higher levels of arousal for optimal performance (Oxendine, 1970). Complex tasks, like archery and golf, require lower levels of arousal (Gould & Krane, 1992).

Oxendine (1970) also states that individual differences affect optimal arousal. When considering the same task, some individuals would perform better at lower arousal levels as compared to other individuals who would perform better at higher arousal levels (Oxendine, 1970). Variables affecting the individual's optimal arousal level include: trait anxiety, level of extraversion, level of experience and variables arising from day-to-day situations (Oxendine, 1970).

Music as a mental preparation tool. The use of music in preparation for competition is widespread. A top-ranked college football team uses loud music in the locker room in an attempt to get 'up' for the game (T. Bjorn, personal communication, October 13, 1994). Sylvie Bernier, an Olympic diving champion, would always listen to her walkman, portable tapeplayer, between dives. She used the music to block out distractors and help her focus on her next dive (Orlick, 1990). Despite the abundance of anecdotal evidence, there has only been one formally published research project studying the use of music for performance enhancement (Gluch, 1993). Through interviews with six Division 1 athletes, Gluch (1993) was able to examine the athletes' motivation for listening to music. The athletes in the study used music as a mental preparation tool by using it to evoke feelings of well-being, to evoke positive memories, to build confidence

and to regulate arousal levels.

Studies on the effects of mental preparation. Shelton and Mahoney (1978), while working with Olympic weightlifters, found that psyching-up just 30 seconds prior to a hand dynamometer strength task led to significantly better performances over the non-psych-up group. The psych-up strategies used included self-efficacy statements, attentional focus, preparatory arousal and imagery. Heishman and Bunker (1989) found that 81% of female lacrosse players at the 1986 World Cup felt that mental preparation prior to competition was either very important or extremely important in preparing for competition. Caudill, Weinberg and Jackson (1983) did a study using hurdlers and sprinters from a university track team. Half the athletes were instructed to psych up (do whatever they felt necessary in order to enhance their performance) one minute prior to running their race; the other half were given no instructions. Those athletes instructed to use psych up strategies outperformed those that did not.

Weinberg, Jackson and Seaboune (1985) studied the effects of mental preparation strategies on the performance of male weightlifters in a college class. The subjects were put into one of four groups: Imagery group (told to mentally rehearse the performance), Preparatory arousal group (told to get energized), Psych-up group (told to prepare however they wanted in order to perform their best) and the Control group (told to count backwards). Thirty seconds prior to performance, the groups were given their preparation instructions. The experimenters found that any strategy was better than none, but specifically, psyching up, imagery and preparatory arousal all led to increases in performance in physical performance tasks (one minute sit-ups, push-ups, pull-ups, standing long jump).

Gould, Weinberg and Jackson (1980) studied the effects of mental preparation on a leg-strength task. They studied male and female university students. Again the subjects were put into one of four groups: attentional focus group, imagery group, preparatory arousal group and control group. Preparatory arousal and imagery produced the greatest increases in performance within-subjects. Only preparatory arousal produced increases when results were analyzed between-subjects.

In another study, Weinberg, Gould and Jackson (1980) found that mental preparation strategies led to improved performance on a strength task but had no effect on balance or arm-speed tasks. The three strategies in the Weinberg et al. study were attentional focus, imagery and preparatory arousal, as in the Gould et. al (1980) study. On the strength task, greatest performance increases were associated with imagery and preparatory arousal. The conclusion was made that mental preparation is task specific.

Self-Confidence

There are many definitions for self-confidence. One definition widely used by sport psychologists is "simply the belief that you can successfully perform a desired behaviour" (Weinberg, 1988, p. 128). Self-confidence is a common element found in all the comprehensive lists of ideal performance state characteristics. Self-confidence is the basis of successful performances and is a prerequisite to achieving peak performances (Rotella & Newburg, 1989). Weinberg (1988) sees confidence as the most consistent factor separating the top players from the lesser players. Self-confidence is a significant predictor of performance (Taylor, 1987).

Many studies have supported the relationship between self-confidence and

performance. Brewer et al. (1991) studied college populations of both psychology students and intercollegiate cross country runners and tennis players. Subjects from both groups rated the psychological characteristics they associated with their best, average and worst athletic performances. The experimenters found that confidence and task focus were the two most important variables associated with peak performance. Martin and Gill (1991), using the State Sport-Confidence Inventory (Vealey, 1986) 25 to 35 minutes prior to the race, found that highly confident high school long distance runners recorded faster times and better results than their less confident peers. Self-confidence has been found to be higher in elite level athletes as compared to lesser skilled athletes in such sports as male gymnastics (Mahoney & Avener, 1977), wrestling (Highlen & Bennett, 1979) and diving (Highlen & Bennett, 1983). Mahoney and Avener (1977) measured confidence by administering a standardized questionnaire which included 11-point Likert-style questions. Highlen and Bennett (1979) used modifications of the Mahoney and Avener (1977) questionnaire to assess the confidence levels of wrestlers. Wrestlers were asked to rate their confidence level relative to other college and Canadian wrestlers in their weight class. In another study, Highlen and Bennett (1983) modified the questionnaire further to assess the confidence levels of elite divers and wrestlers. Gould, Weiss and Weinberg (1981) analyzed the confidence levels of wrestlers at the 1980 Big Ten Championships, using the self-confidence sub-scale of the Psychological Preparation in Wrestling Questionnaire. The findings indicated that successful wrestlers were more self-confident than unsuccessful wrestlers.

Vealey (1986) coined the term "sport-confidence" and identified it as "a belief or degree of certainty individuals possess about their ability to be successful in sport" (p. 222). Vealey further divided sport-confidence into two components, state sport-confidence and trait sport-confidence. Trait sport-confidence is a consistent level of confidence that an

individual experiences. State sport-confidence is a specific level of confidence that fluctuates about the individual's trait level, being more reactive to environmental, situational and individual variables. In order to measure trait and state sport-confidence, Vealey (1986) developed the Trait Sport-Confidence Inventory (TSCI) and the State Sport-Confidence Inventory (SSCI) (see Appendix A).

Self-confidence seems to be sport-specific and situational-specific (McAuley & Gill, 1983). Bandura (1977) refers to this specific self-confidence as self-efficacy, a level of certainty that one can successfully execute the behaviour required to produce the desired outcomes. Another definition of self-efficacy is the "judgment of one's capability to organize and execute courses of action to attain a specific outcome" (Lirgg, 1992, p. 159). Bandura has developed a theory to explain how self-efficacy affects performance and how it can be manipulated.

Bandura's Self-Efficacy Theory

Bandura's Self-Efficacy Theory (1977, 1986), which takes the social cognitive approach, states that an individual's self-efficacy can influence behaviour, but only if he/she possesses the necessary skills for the task and is properly motivated to perform it. Bandura theorized that when the proper skills and motivation are present, self-efficacy will determine the amount of effort put into the task, the persistence with the task, and the final performance or result. In support of this belief Weinberg (1985) found that high self-efficacy groups exerted more effort and performed better on a leg extension endurance task than did low self-efficacy groups. Lee (1982) found that the gymnasts' self-efficacy beliefs were a more accurate estimate of performance than were previous performances. Bandura (1986) suggests that four factors affect self-efficacy: verbal persuasion,

physiological states, performance accomplishments and vicarious experiences.

Verbal persuasion. Verbal persuasion involves directing suggestions or statements toward the athletes with the intention of convincing them they will succeed. Although not the most effective self-efficacy enhancing method, verbal persuasion is widely used because it is easy to implement and always available (Bandura, 1977). Pep-talks are forms of verbal persuasion frequently used by coaches to enhance self-efficacy (Feltz, 1988). Some team members of the Canadian Olympic Hockey Team gave credit to Myriam Bedard's pep-talks for spurring them on to a silver medal in Norway (Maki, 1994). Positive self-talk is a tool often used by athletes to convince themselves of the potential or surety of success (Weinberg, 1984).

Physiological states. The individual's physiological state, a second factor affecting self-efficacy, can have differing effects on feelings of self-efficacy. People utilize their interpretations of their physiological state in assessing their capabilities (Bandura, 1986). Physiological indications of stress or high levels of arousal (increased heartrate, increased breathing rate, increased muscle tension, feelings of nausea and reduced flexibility (Weinberg, 1988)) can be seen as signs of fear, vulnerability or weakness. At very high levels of arousal the adrenaline flows and muscles and mind become tense (Amoroso, 1991). Anxiety and fear have been associated with diminished self-efficacy (Matheson & Mathes, 1991). On the other hand, feelings of self-efficacy can be increased if the athlete can either reduce arousal levels or learn to reinterpret the physiological state (Feltz & Doyle, 1981). The athlete will benefit from attributing high arousal to readiness instead of fear (Feltz & Doyle, 1981).

Performance accomplishments. Bandura (1977, 1986) cited performance

accomplishments, also known as mastery experiences, as a third and the most powerful source of self-efficacy information. Successes raise efficacy expectations whereas failures lower them (Bandura, 1977, 1986). When athletes can experience success, they are more confident that they can repeat the success. "Self-confidence is built upon the knowledge of past success giving shape to the visualization of future success" (Iaquinta, 1987, p. 107).

Vicarious experiences. The final factor that Bandura (1977, 1986) lists as affecting self-efficacy is vicarious experiences, often labelled as modeling. The theory behind modeling is that the observers will reason that if the model can do it, then so can they (Bandura, 1986). Both live and filmed models have been successful in enhancing self-efficacy (Feltz, Landers & Raeder, 1979; Gould & Weiss, 1981; McAuley, 1985; Corbin, Laurie, Gruger & Smiley, 1984). The use of game films to improve performance has long been a part of professional and college athletic programs (Hazen, Johnstone, Martin & Srikameswaran, 1990). Videotape replays have been shown to be effective teaching tools when accompanied by appropriate explanations and viewed over a sufficient period of time (Rothstein & Arnold, 1976). Modeling is an important tool for self-efficacy enhancement and can be studied further in depth.

Modeling

According to Lirgg and Feltz (1991) modeling "is a general process in which observers attempt to reproduce the responses exhibited by another person" (p. 217). Models have been shown to be effective in increasing self-efficacy and are widely used by both physical educators and coaches (Lirgg & Feltz, 1991). One variable that can alter the effectiveness of the modeling process is model characteristics.

Model skill. Martens, Burwitz and Zucherman (1976) concluded that performance is enhanced through the viewing of a correct model. Information about the correct ways to achieve a successful performance is communicated from model to observer. Lirgg and Feltz (1991) showed that groups viewing skilled models reported higher levels of self-efficacy and achieved better performances on the Bachman ladder task than did groups viewing unskilled models. Other research (Brown & Inouye, 1978; Landers & Landers, 1973) has shown that viewing an unskilled, learning model will not necessarily diminish self-efficacy as long as the observer perceives the model to be of lesser competence or status.

Participant-models. Participant-modeling occurs when the model takes part in the learning process, aiding the observers. In learning simple back dives, the participant-modeling group had better performances and higher self-efficacies than either the group viewing the live model who did not assist learning, or the videotape model group (Feltz, Landers, & Raeder, 1979). The results also supported that videotaped models were as effective as live models in enhancing self-efficacy. McAuley (1985) also found the participant-model group to be superior to the control group (no model) while working with gymnasts. Both the participant and non-participant model groups exhibited higher self-efficacy and lower anxiety compared to the control group.

Model status. McCullagh (1986) found that high status models, individuals held in esteem by the observers, led to improved performance by the observer. Landers and Landers (1973) studied the effectiveness of various model types on fifth and six graders. The high status, skilled teacher model elicited better performances from the children on a Bachman ladder test than did the low status, skilled peer model. Brody and Stoneman (1985), while working with second graders, found an interaction effect in terms of status

based on chronological age and competence. Generally the children tended to imitate their peers and not younger models. But they chose to imitate younger models who were characterized as competent over peers who were characterized as incompetent.

Viewing an unsuccessful model can negatively affect the observer, but not necessarily. Brown and Inouye (1978) concluded that those who perceive the failed model to be of equal or greater competence than themselves will reduce their persistence level. Subjects that perceive themselves to be of greater competence will be unaffected. Landers and Landers (1973) found that adolescents responded better to unskilled peer models over unskilled teacher models. The higher status of the teacher interacted with the skill level. Students experienced diminished self-efficacy when a skill appeared to be difficult for the teacher to perform, whereas the lack of success of a peer was not as discouraging.

Model similarity. The participant's perception of similarities to the model can influence motivation (Brown & Inouye, 1978). Schunk and Hanson (1985) found that peer models were more effective than teacher models in increasing a child's self-efficacy on a math skill. George, Feltz and Chase (1992) studied the effect of modeling on muscular endurance tasks. They found that self-efficacy was improved when the models were seen as similar in athletic ability. They further discovered that similarities in the form of athleticism were important, whereas similarities in the form of gender were not. For nonathlete participants, watching a very athletic model may actually lead to a performance decrease. Gould and Weiss (1981) also demonstrated that self-efficacy was increased if the observer watched a model whom they perceived as similar to themselves perform the task successfully. In their research the subjects performed a muscular endurance task and were put into groups with different models where the variables of gender and athletic ability were manipulated. In summary it appears that, when using a model to enhance self-

efficacies it is important that the model is skilled, of high status, participates in the learning process or is perceived as similar to the observer.

The Psychology of Tennis

Tennis is a sport with a huge psychological component. Jim Loehr (1991b), sport psychologist and bestselling author, says that, "tennis is the toughest sport of all from an emotional perspective" (p. 49). He lists the following factors in support of his statement. Tennis is an individual sport. It has neither substitutions nor timeouts. It usually doesn't involve coaches, referees or umpires. It is comparable to physical combat. It has a unique scoring system that leaves the player vulnerable at all times. It can be exhausting due to the length of matches and the environmental conditions. It is played in a highly visible arena and it puts self-esteem squarely on the line.

In tennis, opponents are pitted against each other, trying to outduel both physically and mentally. Jimmy Connors once said that tennis at the professional level is 95% mental (Weinberg, 1988). Day to day the physical equipment remains constant. However, the mental capacity vacillates, sometimes to extremes (Weinberg, 1988). This is what makes tennis both potentially challenging and frustrating.

This frustration has led professional players to seek the help of sport psychologists. Before 1982, Tom Gullikson estimated that less than 1% of the professional tennis players consulted a sport psychologist (Hahn, 1989). By 1989, Jim Loehr estimated that number had increased to 20 to 30% (Hahn, 1989). In 1993, DeFrancesco, Simmons & Burke found that of the 99.1% of the professional tennis players who use psychological strategies, 71.5% learned how to use them from a sport psychologist. The favourite

strategies of these players were: imagery/visualization (91.3%), mental preparation (91.3%), relaxation (82.6%) and goal-setting (80.9%). As Loehr (1991b) sees it, match preparation (mental and physical) is about the only thing that tennis players have full control over; they should take advantage of the opportunity.

Tennis combines precise motor control with muscular power and bursts of speed. In 1970, Oxendine theorized that tennis requires a low to medium level of arousal for optimum performance, as compared to archery which requires slight arousal and weightlifting which requires extreme arousal. However, the sport of tennis has changed since 1970, and muscular power and endurance have become more predominant factors (Asel, 1994). "Today's game is a power game which encourages stinging serves, lightning-fast returns and super smashes" (Asel, 1994, p. 34). Amoroso (1991) feels that players will play their best tennis when they are fired up enough to maintain an increased energy level yet are still able to remain relaxed and confident. In doubles, players mainly perform quick and aggressive moves. These skills require power, speed and strength. These characteristics parallel high arousal skills according to Oxendine's (1970) theory.

Confidence is critical to tennis performance. Weinberg (1988) lists confidence as the most consistent separator of the top players from the lesser players. The psychological profile of a tennis player in the zone always lists 'highly confident' as a factor (Loehr, 1986, 1991b; Weinberg, 1988). Players, hoping to improve their game, will want to find ways of building their confidence.

Tennis players looking to improve their self-confidence and self-efficacy levels could benefit from mental preparation. A tennis player might do this through the use of highlight videotapes, a mental preparation tool created to enhance self-efficacy through the

principle of modeling.

Highlight Videotapes

If model similarity is important to vicarious learning, then one would expect that nothing could be better than watching yourself succeed. Recent literature has reported on the benefits of highlight videotapes, in which athletes watch videos of themselves performing their desired behaviour. Jim Leohr has used videotapes of performance highlights when attempting to enhance the confidence and play of many amateur and professional tennis players (Halliwell, 1990). His most famous clients were Martina Navritalova and Gabriela Sabatini. Navritalova turned to Loehr in 1988 when she needed a boost in her self-confidence level (Hahn, 1989). Loehr created music videotapes including highlights from some of Navritalova's most successful and memorable performances. These videotapes were used to stimulate and recreate feelings of confidence.

Loehr (1991a) again used music videotapes with Sabatini to help change her strategy from a defensive one to an aggressive one. Sabatini's favourite music was combined with videotape footage of her playing an aggressive style of tennis.

Halliwell (1990) has used peak performance music videotapes combined with visualization techniques to better the confidence and playing consistency of professional hockey players. In dealing with hockey players, he has found the videotapes particularly beneficial to players coming back after an injury or trying to get out of a slump. Halliwell let the players identify their best plays and performances and choose their favourite music. He then prepared a highlight videotape for each player that he felt would be effective in both building and maintaining confidence as well as enhancing performance. Halliwell

contends that the area of highlight videotapes is an important new field of sport psychology deserving more attention and research.

Templin and Vernacchia (1993) conducted case studies of five basketball players using highlight videotapes and mental practice. Subjects had their own personal videotapes which included game highlights (times they felt they were performing at a high level or in an ideal performance state) set to their choice of music. Three of the five players showed positive performance results by increasing their offensive field goal percentage. All were enthusiastic about the treatment. Subjects stated that the videotapes boosted their confidence: "It (the tape) made me think I could do it again" (Templin & Vernacchia, 1993, p. 14). In their conclusion, Templin and Vernacchia recommend further research be done in this area (a) using psychological variables as the dependent measures and (b) adding self-talk statements to the videotapes.

Leavitt, Young and Connelly (1989) used videotape highlights in their work with an eight-man club volleyball team. A team highlight videotape was made using footage of drills, workouts, game highlights and pre-game activities. The tape was set to a 2 1/2 minute motivational song. Data was collected 15 minutes before a match. Subjects completed Vealey's (1986) State Sport-Confidence Inventory 5 minutes before watching the video and immediately after. Posttest scores were significantly higher than pretest scores. Leavitt et al. concluded that the highlight videotapes led to increases in state self-confidence. The findings are encouraging, but limitations of the study included a small sample size and no control group.

Summary

All athletes dream of performing at their best. Self-efficacy and self-confidence are two important prerequisites to attaining this peak performance. Self-efficacy is specific self-confidence. Through mental preparation, athletes are frequently able to enhance their feelings of self-efficacy. In doing so, they increase the likelihood of performing at their best. Bandura (1977, 1986) has theorized that there are four sources of self-efficacy enhancement: physiological states, verbal persuasion, vicarious experiences and personal accomplishments. Modeling is a form of vicarious experience and is a powerful source of self-efficacy information. Highlight videotapes incorporate elements from all four of Bandura's sources, creating a complete self-efficacy enhancement tool to be used as a mental preparation strategy. These videotapes, seen just before competition, might potentially lead to increases in an athlete's self-efficacy or self-confidence resulting in improved performances. As self-confidence is crucial to a tennis player's success (Weinberg, 1988), highlight videotapes could play an important role in the future of tennis. Further research in the use of highlight videotapes is needed to establish their efficacy and potential.

PART II: EXPERIMENTAL STUDY

Introduction

Athletes want to perform at their best. In attempting to reach their potential, they log thousands of practice hours perfecting their skill. But athletes that have executed exceptional performances largely credit the experience to psychological factors (Fobes, 1989).

Peak performance refers to the times when athletes are performing at the pinnacle of their game. This concept has been referred to by a variety of names: ideal performance state, optimal sport experience, the zone and peak experience. Researchers have attempted to identify the factors contributing to peak performance. Self-confidence is a common element found in all the comprehensive lists of peak performance characteristics (Csikszentmihalyi, 1975; Loehr, 1986; Weinberg, 1988). The positive relationship between self-confidence and performance has been widely supported in studies of a variety of sports such as cross country running and tennis (Brewer et al., 1991), long distance running (Martin & Gill, 1991), male gymnastics (Mahoney & Avener, 1977), wrestling (Highlen & Bennett, 1979) and diving (Highlen & Bennett, 1983). Self-confidence seems to be both sport-specific and situational-specific (McAuley & Gill, 1983).

Vealey (1986) conceptualized sport-specific self-confidence as sport-confidence, which has two components: trait sport-confidence and state sport-confidence. Trait sport-confidence is a consistent level of confidence that an individual experiences. State sport-confidence is "the belief or degree of certainty individuals possess at one particular moment about their ability to be successful in sport" (Vealey, 1986, p. 223). Specific sport-confidence, the level of certainty that one can successfully execute a desired

behaviour required to produce a desired outcome, has been labelled as self-efficacy (Bandura, 1977). Both self-efficacy and self-confidence have been found to have a positive relationship with performance (Lee, 1982; Weinberg, 1985).

Bandura's (1977, 1986) self-efficacy theory, a social cognitive approach, states that an individual's self-efficacy can influence task performance as long as the individual possesses the necessary skills for the task and is sufficiently motivated to perform the task. Bandura lists four sources of self-efficacy information: verbal persuasion, physiological states (also termed emotional arousal), vicarious experiences and performance accomplishments. The first source, verbal persuasion, involves directing suggestions or statements toward individuals with the intention of convincing them they will succeed. Pep-talks and positive self-talk are common forms of verbal persuasion. Different physiological states, a second source of self-efficacy information, have differing effects on feelings of self-efficacy (Bandura, 1986). When positively interpreted, emotional arousal can lead to self-efficacy enhancement. When negatively interpreted, emotional arousal can lead to diminished self-efficacy. Vicarious experiences, Bandura's third source of self-efficacy information, are usually referred to as modeling. Models have been shown to be effective in increasing self-efficacy (Feltz, Landers & Raeder, 1979; Gould & Weiss, 1981; McAuley, 1985; Corbin, Laurie, Gruger & Smiley, 1984). Effective models may have a high status compared to the observer (Landers & Landers, 1973; McCullagh, 1986), are seen as similar to the observer (Brown & Inouye, 1978; George et. al., 1992) and are usually skilled in the task (Lirgg & Feltz, 1991; Martens et. al., 1976). The final source of self-efficacy information, performance accomplishments, is the most effective source of self-efficacy enhancement. According to Bandura, levels of self-efficacy may alter due to the successes or failures of the individual.

Assessment of Self-Efficacy

Bandura (1977) measured self-efficacy by asking individuals to give a percent certainty of their ability to execute a specific behaviour successfully. A response of 10 indicated absolute uncertainty while 100 suggested complete certainty. Self-efficacy questionnaires have also been formulated for specific sports: diving (Feltz, Landers & Raeder, 1979), gymnastics (McAuley, 1985) and tennis (Barling & Abel, 1983). Self-efficacy has also been measured by using predicted scores or results in gymnastics (Lee, 1982) and weightlifting (Fitzsimmons, Landers, Thomas & Van der Mars, 1991). The athletes predict their score from one to ten, or their finishing position, and this is said to be an indication of their level of self-efficacy. Ryckman, Robbins, Thornton and Cantrell (1982) developed the Physical Self-Efficacy Scale after concluding that global measures of self-efficacy were not specific enough to accurately predict behaviour. The authors suggested a need to "construct measures that assess each aspect of self-efficacy independently" since global measures have only led to modest correlations with performance (Ryckman, et al., 1982, p. 891). Specific self-efficacy measures assess each component of self-efficacy individually. The present study required a specific measure to assess the self-efficacy of tennis players in a doubles situation. No specific measure existed, so one was developed: the Tennis Self-Efficacy Scale for Doubles (TSESD) (see Appendix B).

Assessment of Sport-Confidence

Vealey (1986) designed both the State Sport-Confidence Inventory (SSCI) and the Trait Sport-Confidence Inventory (TSCI). The SSCI is a questionnaire that determines an individual's level of sport-confidence at a specific time. The TSCI is a similar

questionnaire that determines an individual's consistent level of sport-confidence, regardless of fluctuations. Vealey's inventories distinguish between athletes' regular level of sport-confidence and their particular level at a specific time. The athlete's state sport-confidence level may fluctuate above and below his/her trait level. Vealey found that state sport-confidence scores were correlated with trait sport-confidence scores, and trait sport-confidence scores were correlated with performance in gymnasts. Gayton and Nickless (1987) used the SSCI in their research and found that the SSCI was significantly correlated with predicted and actual finishing times for marathon runners. Leavitt, Young and Connelly (1989) also used the SSCI in their study of the effects of videotape highlights on state self-confidence.

Highlight Videotapes to Enhance Self-Confidence

Various techniques such as goal-setting and positive self-talk have been used to build athletes' self-confidence. The use of highlight videotapes is a relatively new technique designed to enhance self-confidence levels. As model similarity is important to vicarious learning, one would expect that nothing could be better than watching yourself succeed. Halliwell (1990), a sport psychologist who has used the videotapes and witnessed their effectiveness in raising self-confidence, sees this area as an important new frontier in sport psychology.

Halliwell (1990) used peak performance music videotapes combined with visualization techniques in his work with professional hockey players. Players identified their best performances which were then edited together onto a single videotape and synchronized to the player's choice of music. Although not empirically tested, Halliwell observed that the tapes were effective in building and maintaining confidence as well as

enhancing performance.

Jim Loehr has used similar videotapes for both amateur and professional tennis players, finding them to be effective mental preparation tools (Halliwell, 1990). Martina Navratilova, arguably the greatest female tennis player of all time, turned to Loehr and his videotapes when she needed to build her confidence (Hahn, 1989). Both Loehr and Halliwell, experienced sport psychologists, have observed the effectiveness of the videotapes. However, a more specific measure is needed to substantiate these claims.

Leavitt et al. (1989) completed a study on the effects of highlight videotapes on the state self-confidence of a male volleyball team. After watching the videotape, the eight subjects recorded significantly higher scores on the State Sport-Confidence Inventory as compared to their initial scores before the videotape. The study, while encouraging, was lacking a control group and had a very small sample size. The authors recommended that the study be duplicated, testing a different sport and using a much larger sample size.

A recent work on highlight videotapes has been Templin and Vernacchia's (1993) study of the effects of highlight videotapes on basketball performance. The videotapes were used in conjunction with relaxation and visualization techniques. The game performance of three out of the five subjects improved, and all found the study to be a positive experience. In future studies, the authors recommend using psychological measures as dependent variables, as well as adding self-talk statements, either graphically or audibly to the videotape.

Highlight videotapes seem to have a great potential as a mental preparation tool to enhance self-efficacy and performance, both of which have been experimentally shown to

have positive relationships with performance. A highlight videotape is an easily used tool that could be used right up to the last few minutes before competition. An athlete, needing a motivational push or a calming effect, could watch the videotape and receive the benefits immediately, taking them onto the playing field directly. The use of videotapes is not restricted by sport; any and all sports can benefit from last-minute confidence boosts.

The Psychology of Tennis

According to Jim Loehr (1991b), "tennis is the toughest sport of all from an emotional perspective" (p. 49). Mental toughness and preparation are crucial to a tennis player's success (Weinberg, 1988). Jimmy Connors has even been quoted as saying that tennis is 95% mental at the professional level (Weinberg, 1988). The players themselves have begun to realize the importance of the psychological component in tennis. The number of players consulting sport psychologists rose from less than 1% before 1982 to between 20 and 30% by 1989 (Hahn, 1989). In 1993, DeFrancesco et al. discovered that 99.1% of professional tennis players use psychological strategies to enhance their tennis performance.

Of all the psychological components affecting tennis performance, confidence is the most critical (Weinberg, 1988). Players, hoping to improve their level of play, will want to find ways of building their confidence. Mental preparation is one method through which a tennis player could improve levels of both self-confidence and self-efficacy. Highlight videotapes designed to enhance self-efficacy through the principles of modeling and performance accomplishment might be effective mental preparation tools for tennis players.

The Significance of the Study

This study took the previous work in the area of highlight videotapes and attempted to improve upon their research designs. Psychological measures (self-efficacy and self-confidence) were used as the dependent variables (Templin & Vernacchia, 1993). Written motivating comments, i.e. key words, were superimposed onto the videotape (Templin & Vernacchia, 1993). Finally, this study had a significantly larger sample size than previous work and included a control group (Leavitt et al., 1989).

The team highlight videotapes used in this study incorporated all four of Bandura's (1986) sources of self-efficacy information. Verbal persuasion was present through the lyrics of the background music and the key words. The music was chosen because the lyrics were inspirational, the theme being that there are no limits to what you can achieve ("no mountain too high", "no valley too deep"). The key words were also there to emphasize that these players "could do it" (great shot, winner). Positive physiological states were also encouraged through the musical lyrics, key words and the beat of the music. Vicarious experiences and performance accomplishments were present as all the videotape footage was of successful skill execution by the participants themselves or their peers.

Finally, there have been numerous references to the need for situational-specific self-efficacy measures (Bandura, 1977; McAuley & Gill, 1983; Ryckman et al., 1982). Since no tennis specific self-efficacy tool for doubles has been found, such an instrument was designed for this study. The Tennis Self-Efficacy Scale for Doubles (TSESD) (see Appendix B) was used and evaluated in relation to the SSCI.

Purpose of the Study

The purposes of this study were (a) to examine the potential of team highlight videos in enhancing state sport-confidence and self-efficacy of female tennis players and (b) to compare the Tennis Self-Efficacy Scale for Doubles (TSESD) with the State Sport Confidence Inventory (SSCI) (Vealey, 1986).

Hypotheses

It was hypothesized that:

(1) the team highlight videos would have a significantly positive effect on state sport-confidence, as measured by the SSCI (Vealey, 1986).

(2) the team highlight videos would have a significantly positive effect on self-efficacy, as measured by the TSESD developed for the study.

(3) the Tennis Self-Efficacy Scale for doubles would be significantly correlated with the State Sport-Confidence Scale (Vealey, 1986).

Definitions

Sport-confidence. This is "the belief or degree of certainty individuals possess about their ability to be successful in sport" (Vealey, 1986, p. 222).

State sport-confidence. This is "the belief or degree of certainty individuals possess about their ability to be successful in sport at one particular moment" (Vealey, 1986, p. 223).

Self-efficacy. Self-efficacy "refers to one's belief that one can perform a particular activity in a particular setting" (Lee, 1982, p. 405).

Team highlight videotape. For the purposes of this study a team highlight videotape was a three-minute video montage of successful skill performance by participating tennis players, set to music, with key words intermittently flashed on the screen.

Key words. Key words are words or phrases, such as 'pump it up', 'winner' or 'good shot', that were intermittently superimposed on the highlight videotape. The purpose of the key words was to increase the arousal of the participants and focus their attention on positive performance accomplishments. The words chosen were terms commonly used in tennis.

Limitations

1. **Time in year**: The testing was done during April, which is at the end of the season, near the beginning of playoffs.

2. **Videotapes**: The videotape viewing session itself could have been motivating for some or a source of unpleasant stress for others.

3. **Music**: The videos were set to a popular dance tune, "No Limit" by 2 Unlimited, taken from the cassette Hi-Impact 14, produced by Muscle Mixes Music, Inc. in Orlando. Depending on musical tastes, some could have been inspired by it, while others could potentially have been negatively affected by it.

4. **Honesty**: The self-confidence and self-efficacy measures would be inaccurate if subjects were not totally honest.

Delimitations

1. Only female tennis players were used because gender differences associated with self-efficacy and self-confidence have been shown. Females tend to have lower self-confidence levels than males (Jones & Cale, 1989).

2. The sample was taken from the registered players of a suburban tennis club competing in the Montreal Interclub League. The intention was to use only players who compete regularly so that they have an incentive to play well and improve.

Methods

The following experiment was performed to measure the effectiveness of highlight videotapes in enhancing self-efficacy and sport-confidence. Subjects were put into two groups: control and treatment. Self-efficacy and sport-confidence were assessed prior to and after the viewing of a team highlight videotape.

Subjects

The subjects of the study were 47 members of the seven women's interclub teams at a tennis club in a suburban area. Ages ranged from 29 to 65. The subjects had a wide range of tennis experience from 1.5 years to 50 years with a mean of 12 years. Involvement at the club in the interclub league ranged from first year players to 17 year veterans; the mean was 5 years. Players played 5 hours a week on average with a range of 2 to 10 hours. The subjects spent an average of 2 hours of their total playing time per week in lessons, ranging from one hour to 5 hours.

There were 24 subjects in the treatment group and 23 subjects in the control group. The levels were divided as follows: 10 subjects from Level 1 (5 in treatment and 5 in control), 11 subjects from Level 2 (5 in treatment and 6 in control), 16 subjects from Level 3 (8 in treatment and 8 in control) and 10 subjects from Level 4 (6 in treatment and 4 in control).

The interclub league comprises teams of four skill levels; level 1 is the strongest and 4 the weakest. The competitive season runs from September to April. Matches are played weekly against other clubs within the urban/suburban area. Each week a team fields

three doubles pairings to compete against the opposition. Teams with the most points at the end of the season are season champions. Single elimination playoffs take place during April. Each division also has a playoff champion. This is a highly successful and serious league. All teams have coaches and regular practice sessions.

Tennis is commonly played as an individual sport. Professionals and amateurs compete in tournaments for themselves. The interclub concept sees tennis as a team sport. There are no individual standings or honours. Teams win or lose together. The interclub teams have all the characteristics of established team sports: there are team practices, team meetings, team uniforms, team goals and team cohesion and unity. Players support their teammates and the ultimate goal is not personal but for the team's success.

Team captains were approached about their interest in the study, and volunteers from each team were solicited (see Appendix C). Before the actual videotaping of practices, all volunteers were asked to sign a consent form which detailed the study (see Appendix D).

Team Highlight Videotapes

Team highlight videotapes are intervention tools designed to raise the self-efficacy level of the treatment group. Four team highlight videotapes were made, one per level of skill. The team highlight videotape for each level was a three-minute video montage inclusive of all team members of that level correctly performing different skills. The shots selected were chosen by the researcher along with a tennis coach. The footage was shot with a Samsung camera during team practice sessions. Editing was done using the Panasonic videotape editing system at the researcher's university.

The same popular dance tune was dubbed over each videotape. The music 'No Limit' by 2 Unlimited was selected because the lyrics were inspirational, the theme being that there are no limits to what you can achieve ("no mountain too high", "no valley too deep").

Key words were superimposed throughout the videotapes. The key words used were specific tennis terms chosen to motivate and to underline crucial points of skill execution ('Good Shot', 'Get psyched', 'Move In').

The team highlight video satisfied each of the four elements that Bandura (1977, 1986) cites as sources for enhancing self-efficacy: verbal persuasion, physiological states, vicarious experiences and performance accomplishments. Both the elements of verbal persuasion and physiological states (emotional arousal) were satisfied through the key words and the musical lyrics. The song was chosen for its strong, steady beat and motivational lyrics that could emotionally arouse the listeners and verbally persuade them in preparation for the activity. Appropriate key words like 'pump it up', 'get psyched', 'power shot' and 'step in' were seen on the videotape to arouse the players and to help them focus on the positive aspects of the skills that were being executed. The models providing the vicarious experiences were the players themselves. Finally, the tape contained footage of each player and similar others' performance accomplishments.

One control videotape was also made for the four control groups. This tape was a montage of team members engaged in the "dead time" between points. There were no action shots or skill execution, no music and no key words. The players were seen talking, walking or preparing for the play to start. This videotape did not contain any of

the above-mentioned sources of self-efficacy enhancement: verbal persuasion, physiological states, vicarious experiences or performance accomplishments. The purpose of the control tape was to ensure that any differences that might arise were not just due to the videotape experience in general.

Testing Tools

Background questionnaire. Each subject completed a questionnaire that asked specific questions about the subject's background and her level of commitment to tennis competition. (see Appendix E.)

State Sport-Confidence Inventory (SSCI). Vealey (1986) developed the State Sport-Confidence Inventory (SSCI), a 13 item questionnaire based on a 9-point Likert scale, to measure state sport-confidence (see Appendix A). Item scores are totalled and divided by thirteen for a final value. In Vealey's first use of the SSCI, the scale's internal consistency estimate, as measured by Cronbach's alpha coefficient, was .95. Gayton and Nickless (1987) used the scale to predict marathon performances. Their results supported the construct validity of the scale. Leavitt, Young and Connelly (1989) also used Vealey's scale when studying the effects of highlight videotapes on state sport-confidence. For the present study, mean scores on the SSCI were used for analysis.

Tennis Self-Efficacy Scale for Doubles (TSESD). This tool was modeled after the self-efficacy scale constructed by Martin and Gill (1991) for long distance runners. Five different tennis teachers, as well as the researcher, listed skills they thought important to ladies' doubles in tennis. All of the teachers were familiar with the ladies interclub league and the level of play involved. Items that were common to all lists were

identified and those applicable to ladies' doubles at all levels were chosen to form the scale. The questionnaire contains fourteen items (see Appendix B). Questions relate to skill execution, not psychological strength or strategy. Responses are based on a level of confidence of successfully completing different skills according to a 9-point Likert scale, ranging from 1 (low confidence) to 9 (high confidence). Self-efficacy scales generally range from a 5-point scale to a 100-point scale. A 9-point scale best suited the purposes of this study; it allowed for ample range while not being too broad and complicated. Item scores were totalled and divided by fourteen for a mean value. Test-retest reliability was analyzed using 20 subjects not involved in the study. Scores were analyzed using a simple one-way ANOVA which yielded a reliability coefficient of R=.95.

Feedback questionnaires. Two open-ended questionnaires allowed subjects to give their perspectives of the experience and report the potential they saw for the team highlight videotapes (see Appendices F and G). The questionnaires were completed after the other testing was done. The second questionnaire contained one extra question allowing the control group to compare the two videos (control and highlight) as they had viewed both the highlight videotape and the control videotape.

Procedure

Teams were tested, one at a time, following a regular practice session. All testing was completed within two days. It would have been preferable to do the testing before practice, but due to the schedules of the participants, this was not possible. Each team was randomly divided into two groups: the control group and the treatment group. Each group contained between three and six subjects. The procedure for both groups was the same. The testing session began with the completion of the background questionnaire, then the

SSCI and the TSESD. The subjects were asked to be completely honest while filling out the questionnaires. Once the questionnaires were collected, the subjects watched their respective videotapes. Immediately following, the SSCI and the TSESD were again completed. Lastly, the feedback questionnaire (Appendix F) was completed. The control group then watched the team highlight videotape and completed a second feedback questionnaire (Appendix G). The purpose of the study was then explained to all the subjects. They were also asked not to discuss the study with other participants until all testing had been completed.

Treatment of the Data

To determine whether the team highlight videotapes had a positive effect on sport-confidence, the SSCI scores were analyzed by a 2x4 factorial ANCOVA. The independent variables were Group (2) and Level of Skill (4). The posttest score on the SSCI was the dependent variable and the pretest score was the covariate. To determine whether the team highlight videotapes had a positive effect on self-efficacy, the TSESD scores were analyzed by a 2x4 factorial ANCOVA. The independent variables were Group (2) and Level of Skill (4). The posttest score on the TSESD was the dependent variable and the pretest score was the covariate. Pearson correlations were used to compare the TSESD and the SSCI.

Comments from the feedback questionnaires were categorized according to commonly recurring themes. Sixteen categories were formed based on the different responses given and frequencies were calculated. Categories were made based on their relation to mental preparation, potential uses for the highlight videotapes or recommendations. A single subject could potentially have responses that were recorded in many different categories at once.

Results

The purpose of this study was to determine the potential of team highlight videotapes as mental preparation tools. It was hypothesized that the videotapes would enhance state sport-confidence and self-efficacy levels. State sport-confidence and self-efficacy levels were obtained through questionnaires. The following chapter analyzes the data obtained in the study as it pertains to the value of the team highlight videotapes.

Descriptive Statistics

Tables 1 and 2 show the mean pre and posttest scores for the SSCI and TSESD tests for pre and posttest of the control and treatment groups. Data shown reflect mean scores on each test. The maximum possible mean score was 9.0 in both cases. A wider range of scores appeared on the SSCI (1.2 to 9.0) than on the TSESD (5.1 to 9.0). Mean scores for all cells were very similar for both the SSCI (5.6 to 7.5) and the TSESD (6.2 to 7.8).

The pretest mean scores were very high for both tests, thus allowing only about two to three points for improvement on the posttest. The control group had a mean posttest SSCI score that was higher than both groups' pretest means and the treatment group's posttest mean. Control and treatment groups had identical posttest means for the TSESD scores.

Table 1

Mean Scores (Standard Deviation) for the SSCI Pre and Posttests for the Treatment and Control Groups

Skill	Pretest		Posttest	
Level	Control	Treatment	Control	Treatment
1	6.6(.5)	6.4(1.6)	7.1(.9)	6.5.(1.9)
2	6.3(.2)	5.4(2.2)	7.2(.7)	6.1(2.8)
3	7.0(1.7)	7.1(1.5)	7.4(1.4)	7.5(1.3)
4	5.6(2.2)	5.6(.7)	6.1(2.6)	6.6(.6)
Total	6.5(1.4)	6.2(1.6)	7.1(1.4)	6.8(1.7)
Min.	2.6	2.2	2.3	1.2
Max.	8.5	8.7	8.8	9.0

Table 2

Mean Scores (Standard Deviation) for the TSESD Pre and Posttests for the Treatment and Control Groups

Skill	Pretest		Posttest	
Level	Control	Treatment	Control	Treatment
1	7.0(.3)	7.5(.7)	7.4(.6)	7.0(.3)
2	7.4(.7)	7.0(.9)	7.8(.5)	7.4(.5)
3	7.7(1.1)	7.8(.8)	6.4(1.0)	7.0(.7)
4	6.2(.8)	6.3(1.0)	6.4(1.0)	7.0(.7)
Total	7.2(.9)	7.2(1.0)	7.5(.9)	7.5(.8)
Min.	5.2	5.1	5.1	6.4
Max.	8.8	9.0	8.8	9.0

Preliminary Analyses

To test for pre-existing differences between the treatment and control groups in sport-confidence and self-efficacy, t tests were performed on the SSCI and TSESD pretest scores. No significant differences were found (TSESD: t=0.06, p=.95 and SSCI: t=0.54, p=.59). Treatment and control groups were apparently equal in sport-confidence and self-efficacy, as measured in this study, at the onset.

T tests were also done for both groups to determine any differences between pretest and posttest scores. The control group's scores were significantly different between the pre and posttests for both the SSCI, t=4.63, p=.000 and the TSESD, t=3.07, p=.006. The treatment group's scores were also significantly different between pre and posttests for the SSCI, t=3.00, p=.006 and the TSESD, t=3.73, p=.001. Self-efficacy and sport-confidence apparently increased for both groups.

Effect of Team Highlight Videotapes on Sport-Confidence

Results of the Group (2) by Level (4) ANCOVA for the SSCI, with pretest scores as the covariate, showed no significant effects (p>.05) for any of the variables (see Table 3). There was no treatment effect, skill level effect or interaction effect. A second ANCOVA was done removing the level variable, as it did not have a significant effect. Results of this ANCOVA (see Table 4) also showed no significant differences between the treatment and control groups' scores. Both the treatment and control groups significantly increased their SSCI scores. However, the increase in the treatment group's scores was not significantly greater than that of the control group's. Hypothesis 1, that the team highlight videotapes would have a positive effect on sport-confidence scores was not supported by the results.

Table 3

ANCOVA of SSCI Scores for Four Levels of Treatment and Control Groups

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Group	12.30	1	12.30	0.13	.72
Level	350.86	3	116.95	1.24	.31
Group*Level	194.19	3	64.73	0.69	.57
SSCI (pretest)	13551.73	1	13551.73	143.73	.00
Error	3582.78	38	94.28		

Table 4

ANCOVA of SSCI Scores for Treatment and Control Groups

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Group	16.70	1	16.70	0.18	.68
SSCI (pretest)	14999.83	1	1499.83	157.55	.00
Error	4189.23	44	95.21		

Effect of Team Highlight Videotapes on Self-Efficacy

Results of the Group (2) by Level (4) ANCOVA for the TSESD, with pretest scores as the covariate, showed no significant effects for any of the variables (see Table 5). Again, there was no treatment effect, skill level effect or interaction effect. A second ANCOVA was done removing the level variable as it did not have a significant effect. Results of this ANCOVA (see Table 6) also showed no significant differences between the treatment and control groups' scores. Both the treatment and control groups significantly increased their TSESD scores. However, the increase in the treatment group's scores was not significantly greater than that of the control group's. Hypothesis 2, that the team highlight videotapes would have a positive effect on self-efficacy scores, was not supported by the results.

Table 5

ANCOVA of TSESD Scores for Four Levels of Treatment and Control Groups

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Group	17.75	1	17.75	0.66	.42
Level	54.13	3	18.04	0.67	.57
Group*Level	156.70	3	52.23	1.95	.14
TSESD (pretest)	2820.67	1	2820.67	105.35	.00
Error	990.64	37	26.78		

Table 6

ANCOVA of TSESD Scores of Treatment and Control Groups

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Group	13.51	1	13.51	0.49	.49
TSESD (pretest)	4591.41	1	4591.41	165.16	.00
Error	1195.42	43	27.80		

Relationship Between SSCI and TSESD

Pearson correlations were used to compare the TSESD to the SSCI. The two tests were significantly correlated, $r = .65$ ($p < .001$), thereby supporting hypothesis 3.

Summary of the Analysis of the Feedback Questionnaires

Responses to the questionnaires about the videotapes were analyzed and categorized. Categories defined are listed in Table 7 in descending order of frequencies of occurence. In general, responses were positive.

Table 7

Categorized Responses to the Open-Ended Questions on the Feedback Questionnaires

Subjects' Quotes	# of Subjects	% of Subjects
Would watch it prior to a match	*30	63.8
Mentioned potential as teaching tool	24	51.2
Found the videotape fun and upbeat	20	42.6
Liked the music	17	36.2
Felt the videotape increased arousal	16	34.0
Would not watch it prior to a match	*15	31.9
Liked the videotape	15	31.9
Felt the videotape increased motivation	14	29.8
Felt the videotape increased confidence	12	25.5
Would prefer an individualized videotape	9	19.1
Would prefer to see full point played out	4	8.5
Had a bad reaction to videotape	2	4.3
Mentioned enhanced visualization	2	4.3
Mentioned enhanced relaxation	2	4.3
Would prefer a videotape of professionals	1	2.1
Mentioned enhanced focus	1	2.1

*2 subjects did not respond positively or negatively to watching the highlight videotape prior to a match.

Of the 47 subjects, 30 (64%) expressed positive feelings about watching the videotape prior to a match. Subjects giving this positive feedback were evenly divided between the control (15) and treatment groups (15).

"It would be a good idea...It would put you in a good mood prior to your match." (C)[1]

"It would help me to stay pumped up till the match." (T)

"I think it could take away some of the tension that I tend to feel before a game." (T)

"It would help to psyche me up." (T)

"Fantastic-I think it pumps you up and gives you a positive jump into your match." (T)

"Very good, a positive image is portrayed." (C)

"Inspiring!" (T)

Other written responses to the open-ended questions provided insight into the effect the videotapes had on the subjects. The use of the videotape as a potential teaching tool was cited by 51% of the subjects. Many also found the videotape effective in increasing arousal (34%), motivation (30%) and confidence (26%). The nature of the videotape was perceived as fun and upbeat by 43%, and 36% made positive comments about the music.

Many subjects found the highlight videotapes to be motivating.

"I realize how much I really enjoy playing tennis..." (T)

"It makes you want to go out and play tennis." (C)

"Want to get out and try the forehand again-having seen how I hit it." (T)

Many subjects responded with increased confidence levels and saw the potential of

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1 Following each quote, its origin is given by (T) indicating Treatment Group or (C) indicating Control Group.

the tool for increasing confidence.

"It has a positive effect which could enhance your frame of mind." (T)

"Made me feel more confident about playing a match right now." (T)

"Interesting to see how my confidence was changing as the video was running." (T)

"...I'm not that bad of a tennis player, 'I can really play good.'" (T)

The videotape also enhanced arousal levels.

"The ... video is very stimulating and energy producing." (C)

"It make me feel 'upbeat' and excited about tennis. I wanted to go and play again." (T)

"I would like to see and hear the video before a match. It would help me to stay pumped up till the match." (T)

"If they can do it - so can I!" (T)

"I can really play good!" (T)

Not all comments were positive. Nine subjects would have preferred a more individualized highlight videotape, four would have preferred to see the whole point played out, and one would have preferred a highlight videotape of professionals. However, only two subjects seemed to have had a bad reaction to the tape, making only negative comments.

Although hypotheses 1 and 2 were not supported by the quantitative data, the feedback questionnaires and comments provide insight as to why and how to improve upon the procedure for future experiments and the potential use of team highlight videotapes. Many focused on the video's teaching value; 51.2% mentioned that the highlight videotapes

had potential as teaching tools.

"...would be useful to show our good execution of shots as well as point out our errors." (T)

Others focused on themselves and their appearance.

"I looked like the goodyear blimp in my orange t-shirt." (T)

"Made me realize I have to go to Weight Watchers and work out!" (C)

A few subjects expressed a need to see the whole point played out on the videotape.

"I would still liked to have seen points played out, showing the reaction of all 4 players to a set situation." (C)

Discussion

The purpose of this study was to examine the potential of team highlight videotapes in enhancing self-efficacy and state sport-confidence. It was hypothesized that the team highlight videotapes would have a significantly positive effect on state sport-confidence as measured by the SSCI and on self-efficacy as measured by the TSESD.

Effect of Team Highlight Videotapes on State Sport-Confidence and Self-Efficacy

The results did not provide statistically significant support for the effectiveness of the team highlight videotapes in increasing either state sport-confidence or self-efficacy. Scores for the control and treatment group both increased on the SSCI and the TSESD and there were no significant differences between these two groups.

Despite the fact that the statistical data did not provide support for the experimental hypotheses, the qualitative data did, as well as giving insight as to why the highlight videotapes may and may not have worked. Through the feedback questionnaires, the subjects were able to express their feelings about the videotape and how they felt it could be used or improved upon. Potential factors as to why the study did not provide statistical support were grouped into three categories: factors related to the subjects, factors related to the tools and factors related to the highlight videotapes.

Factors Related to the Subjects

Both the treatment and control groups recorded higher posttest scores on both the SSCI and TSESD. This could be explained by the Hawthorne effect, where the participants are stimulated to produce a desired outcome by the mere fact that they are taking part in an experiment. This could be avoided by showing repeated viewings of the video, whereby the excitement of being in a study might decrease over time.

The feedback questionnaires provided a lot of valuable insight as to how the subjects reacted to the team highlight videotape and what they were thinking and feeling during the study. Many subjects seemed to fail to focus on the critical issues. Here, again, is an example of the Hawthorne effect. Many subjects, knowing they were involved in an experimental study, while not knowing the purpose, attempted to guess at the purpose. In so doing, these subjects did not just let themselves watch and react. They appeared to want to give the "right" answers. Many focused on the video's teaching value; 51% mentioned that the highlight videotapes had potential as teaching tools. In concentrating on finding the teaching value, they may have failed to react as expected. In the future, it might help to give an introduction explaining the video's purpose. Meanwhile, other subjects focused on mistakes. They attempted to find mistakes in order to learn from them. Again the purpose of the videotape was defeated as only good shots were used. A few other subjects focused on their own appearance and commented on how fat they looked or how bad their outfit was. Both of these types of focus would lead to diminished self-confidence, thus negating the intended effects of the highlight videotape.

Highlight videotapes have been successful with professional athletes (Hahn, 1989; Halliwell, 1990) as well as with collegiate varsity athletes (Templin & Vernacchia, 1993).

Perhaps recreational players are not at the same performance level and do not benefit as much from this type of mental preparation. Although the comments do support the fact that the highlight videotapes were successful for some subjects, there was not a significant difference between the control and treatment groups. This is the first study in this area that has used recreational athletes.

Many subjects remarked on needing to see the whole picture. Some were incapable of seeing the shot and realizing that it was good without seeing the whole point played out. This finding has been experimentally supported. When viewing videotapes of badminton players, it was found that experts were able to pick up more relevant information at earlier points in the skill than novices (Abernethy & Russell, 1987). It has also been shown that experts are capable of anticipating landing positions of a badminton bird after a stroke whereas novices cannot (Abernethy, 1988). Task-specific experience is necessary to enhance the ability of extracting information from advanced cues (Abernethy, 1988). The subjects used in the current study were all recreational players. The subjects may not have possessed the necessary experience or knowledge to be able to extract essential information from the cues given. Therefore, videotapes with more detailed shot-making and points played to completion might be more effective. This genre of videotape may be most effective with higher level athletes.

Factors Related to the Tools

The pretest scores for all groups were quite high. SSCI pretest mean item scores were 6.5 for the control group and 6.2 for the treatment group. TSESD pretest mean item scores was 7.2 for both the control and treatment groups. The Likert-scale used had a maximum of 9, thus leaving only 2 to 3 points for improvement. Perhaps if a more

sensitive scale was used, which allowed for a wider variety of responses, differences between the control and treatment groups' scores may have materialized.

The subjects sometimes had difficulties with the SSCI questionnaire. They found it difficult to select the most confident player they knew. They were unsure as to whether or not they were supposed to choose a professional player, the best player they knew or a player of equal ability. It would seem beneficial to clarify this point for future use of the questionnaire.

Factors Related to the Team Highlight Videotapes

To avoid the complication of subjects being overly critical of their shot-making, subjects could choose their own footage of what they felt was a good or spectacular shot. This would allow the subjects to see themselves on videotape prior to the screening of the highlight videotape and would ensure that their focus would be on the positive aspects of their shot. In preparing their individualized highlight videotapes, both Halliwell (1990) and Templin and Vernacchia (1993) allowed the subjects to select their own footage and music. Leavitt, Young and Connelly (1989) selected the footage and music when making a team highlight videotape of volleyball players. All of the above experienced positive findings. Although the players used in this study were team members, perhaps the very nature of tennis indicates the need for individualized highlight videotapes.

Qualitative Support for Hypotheses 1 and 2

The statistical analysis may not have provided conclusive evidence regarding the effectiveness and potential of team highlight videotapes. However, the qualitative data did

provide support to the effectiveness of team highlight videotapes in enhancing self-efficacy and sport-confidence. There were a lot of positive comments about the team highlight videotape. Subjects experienced feelings of increased arousal, motivation and confidence. The majority said that they would like to watch the videotape prior to a match. For these subjects, the highlight videotape provided its desired effect. Subjects gave positive comments about the music, the key words and seeing themselves and their friends on tape.

Summary

The purpose of this study was to investigate the potential use and effectiveness of team highlight videotapes in enhancing the self-efficacy and state sport-confidence levels of female tennis players. Research has shown that mental preparation is effective in enhancing performance (Weinberg, 1994; Weinberg et. al., 1985). Further, self-efficacy has also been shown to affect performance (Lee, 1982; Weinberg, 1985). These findings suggest that through the use of team highlight videotapes as mental preparation tools, levels of self-efficacy and state sport-confidence might be increased, leading to enhanced performance.

According to Bandura (1977, 1986), there are four factors affecting self-efficacy: verbal persuasion, psychological states, performance accomplishments and vicarious experiences. The team highlight videotapes were developed to make use of all four elements at once. Verbal persuasion was attempted through the optimisitic lyrics of the background music and through the key words. Key words were words or phrases chosen to emphasize a successful shot or to encourage (Good shot! Get pumped!). A positive psychological state was developed through the positive beat of the music, as well as the lyrics and the key words. Performance accomplishments were present through the successful shot-making of the subjects on the videotape. Vicarious experiences were present through the subjects viewing both themselves and their peers performing at their best.

Forty-seven subjects were randomly separated into either the treatment or control group. The subjects were all female tennis players participating in a competitive league composed of four different skill levels. The treatment group completed the SSCI and

TSESD, watched the team highlight videotape, retook the SSCI and TSESD and completed an open-ended questionnaire about the videotapes. The control group underwent the same procedure but instead watched the control videotape. After completing all the questionnaires, the control group watched the team highlight videotape and answered one last open-ended questionnaire.

Scores were analysed by using a Group (2) X Level (4) ANCOVA. No significant group or level effects were found. Pearson correlations were used to help assess the validity of the TSESD, which was highly correlated with the SSCI.

Through analysis of the open-ended questionnaires, it was found that 64% of the subjects responded positively about watching the videotape prior to a match. Subjects also felt that the highlight videotape had increased arousal (34%), increased motivation (30%) and increased confidence (26%). These results were encouraging. Despite the lack of significant differences in the questionnaire scores, the feedback demonstrated that the desired results were achieved for at least some of the subjects.

Future Recommendations

In order to investigate the full potential of highlight videotapes future research needs to be done. Based on the results of this study, several recommendations for improvement on the procedure can be made. The subjects did have difficulty in interpreting the SSCI. A modified version, which is simpler to read and comprehend should be created. The Likert scale used for both questionnaires also needs rethinking as it did not leave sufficient room for improvement. Subjects tended to record scores near the maximum only leaving two to three points for an increase. Perhaps a wider scale could help with this problem.

A couple of subjects expressed a desire for more personal highlight videotapes. They felt that the team highlight videotape did not include enough individual footage. This could depend on the individual's personal preference as some subjects did comment that they enjoyed the team aspect. Both the team and individual highlight videotapes have been used effectively. Halliwell (1990), Loehr (1991) and Templin and Vernacchia (1993) all achieved successful results with their individualized highlight videotapes with hockey players, tennis players and basketball players. Leavitt, Young and Connelly (1989) also achieved the desired results with their team highlight videotapes of volleyball players.

The videotape was only seen once. Future research could study the effects of the highlight videotapes over a longer period of time thus eliminating a possible Hawthorne effect. This could also remove the novelty of the subjects seeing themselves for the first time as well as desensitize those subjects who only saw their faults, both physically and technically. Halliwell (1990) used the videotapes in conjunction with a visualization program as did Templin and Vernacchia (1993). In these cases the videotapes were viewed many times over an extended period of time. In contrast, in the Leavitt, Young and Connelly (1989), the videotape was only viewed once.

It was the initial purpose to screen the videotape just prior to a match, as would be its foreseen time of use. Due to the time constraints of this study (the subjects were housewives with children who were not available in the early morning before a match) the highlight videotape was shown after a practice. The practices may have gone well, giving everyone a good feeling, resulting in the high SSCI and TSESD pretest scores. In order to fully investigate the potential of the highlight videotapes as mental preparation tools, their effects would need to be studied when viewed just prior to a match.

As the subjects attempted to guess at or create a purpose for the study and respond to the highlight videotape accordingly, it may have been beneficial to give an introduction to the study, outlining its purpose. The subjects may then have been able to view the highlight videotape with a clear mind and gain from its intended purpose. In the literature so far, the general purpose of the highlight videotapes was not kept confidential.

Several recommendations have been presented here for future research. The use of highlight videotapes is still a relatively new area of sport psychology. Although their use may be accepted, further studies need to be done to explore their potential and to create an increasingly more effective mental preparation tool.

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APPENDIX A
STATE SPORT-CONFIDENCE INVENTORY (SSCI)

Think about how confident you feel right now about performing successfully in the upcoming competition.

Answer the questions below based on how confident you feel right now about competing in the upcoming contest. Compare your self-confidence to the most self-confident athlete you know.

Please answer as you really feel, not how you would like to feel. Your answers will be kept completely confidential.

How confident are you right now about competing in the upcoming contest? (circle number)

1. Compare the confidence you feel right now in your ability to execute the skills necessary to be successful to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
2. Compare the confidence you feel right now in your ability to make critical desicions during competition to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
3. Compare the confidence you feel right now in your ability to perform under pressure to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
4. Compare the confidence you feel right now in your ability to execute successful strategy to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
5. Compare the confidence you feel right now in your ability to concentrate well enough to be successful to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
6. Compare the confidence you feel right now in your ability to adapt to different competitive situations and still be successful to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
7. Compare the confidence you feel right now in your ability to achieve your competitive goals to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9
8. Compare the confidence you feel right now in your ability to be successful to the most confident athlete you know.	Low 1	2	3	4	Medium 5	6	7	8	High 9

9. Compare the confidence you feel right now in your ability to think and respond successfully during competition to the most confident athlete you know.	Low			Medium					High
	1	2	3	4	5	6	7	8	9
10. Compare the confidence you feel right now in your ability to meet the challenge of competition to the most confident athlete you know.	Low			Medium					High
	1	2	3	4	5	6	7	8	9
11. Compare the confidence you feel right now in your ability to be successful based on your preparation for this event to the most confident athlete you know.	Low			Medium					High
	1	2	3	4	5	6	7	8	9
12. Compare the confidence you feel right now in your ability to perform consistently enough to be successful to the most confident athlete you know.	Low			Medium					High
	1	2	3	4	5	6	7	8	9
13. Compare the confidence you feel right now in your ability to bounce back from performing poorly and be successful to the most confident athlete you know.	Low			Medium					High
	1	2	3	4	5	6	7	8	9

Vealey (1986, p. 245-246)

APPENDIX B
TENNIS SELF-EFFICACY SCALE FOR DOUBLES (TSESD)

Please answer the following questions as honestly as possible. Imagine that you are about to play a match against opponents in your own level. Circle the numbers.

How confident are you....

1. ...that you will win your match?	Low	Medium High
	1 2 3	4 5 6 7 8 9
2. ...in placing your serve to your opponent's weakness?	Low	Medium High
	1 2 3	4 5 6 7 8 9
3. ...in getting your second serve into play?	Low	Medium High
	1 2 3	4 5 6 7 8 9
4. ...in hitting a solid first volley?	Low	Medium High
	1 2 3	4 5 6 7 8 9
5. ...in placing your volleys?	Low	Medium High
	1 2 3	4 5 6 7 8 9
6. ...in finishing the point when you have an easy volley?	Low	Medium High
	1 2 3	4 5 6 7 8 9
7. ...in poaching when your partner hits a good serve?	Low	Medium High
	1 2 3	4 5 6 7 8 9
8. ...in putting away your smash?	Low	Medium High
	1 2 3	4 5 6 7 8 9
9. ...in keeping your return crosscourt?	Low	Medium High
	1 2 3	4 5 6 7 8 9
10. ...in keeping your return low, at the opponent's feet?	Low	Medium High
	1 2 3	4 5 6 7 8 9
11. ...in returning down-the-line?	Low	Medium High
	1 2 3	4 5 6 7 8 9
12. ...in hitting a good lob over the opponents?	Low	Medium High
	1 2 3	4 5 6 7 8 9
13. ...in following a short ball into the net?	Low	Medium High
	1 2 3	4 5 6 7 8 9
14. ...in being aggressive and going for it on big points?	Low	Medium High
	1 2 3	4 5 6 7 8 9

APPENDIX C
SIGN-UP SHEET

WANT TO IMPROVE YOUR GAME?!!

You can have the chance to be involved in a research study investigating a potential teaching strategy. Participants will be videotaped during practice, watch an edited version of the tape, and complete a few questionnaires. The purpose of the study is to see if the videos have a positive affect on your performance and mental strengths. The project would start around the month of January.

The size of the study will be based upon interest. Please sign your name if you would like to take part.

Thanks,
Kiersten Bjorn

Name	Phone number

APPENDIX D

CONSENT FORM

Dear Participant,

You have signed up to participate in a research study investigating potential intervention strategies designed to help improve tennis performance. You will be videotaped during a practice session and attend one testing session. The testing session will be approximately one hour in length; participants will fill out several questionnaires and watch a short videotape of themselves. All questionnaire responses and videotape footage will be kept confidential. At any time during the project you have the right to withdraw.

The findings of this study may lead to a better understanding of how to improve the performance of doubles teams. The results will be made known to you upon completion of the study.

If you still wish to take part in this study, then please sign below.

Your cooperation is greatly appreciated.

Kiersten Bjorn
Dept. of Physical Education
McGill University

I agree to participate in the research project investigating intervention strategies for tennis competition.

---------- ----------
Date Signature

Team

APPENDIX E
BACKGROUND INFORMATION

Name:_____

Team:_____

Age:_____

1. How many years have you played tennis?_____

2. Including this year, how many years have you been competing in the Montreal interclub?_____

3. During the interclub season, how many hours a week do you play tennis (excluding matches)?_____

4. How many hours do you spend in lessons or clinics each week?_____

5. Briefly, what is your goal for this season?_____

6. What is your long-term goal for your tennis career?_____

_____

7. Do you do any fitness training to improve your tennis? Yes----No

8. Do you do any mental training to improve your tennis? Yes----No

9. If you answered yes to #8, which techniques do you use (circle all that apply):

a) prepare game plans
b) follow a prematch routine
c) relaxation
d) imagery
e) psych up before match
f) superstitions
g) set goals
h)others:_____

10. How important is winning to you? 5 (high) 4 3 (medium) 2 1 (low)

11.How important is playing well to you? 5 (high) 4 3 (medium) 2 1 (low)

12. How important is tennis in your life? 5 4 3 2 1
high medium low

13. How often do you compete on a Friday/Thursday for your team? _____

14. Are you competing for your team this week? Yes----No

Appendix F
FEEDBACK QUESTIONNAIRE (#1)

Please answer the following questions honestly and in as much detail as you wish.

1. How did the video affect you?

2. What potentials, if any, do you see for the video?

3. List any feelings or thoughts you had during the video?

4. What are your feelings about watching the video just prior to a match?

Appendix G
FEEDBACK QUESTIONNAIRE (#2)

Please answer the following questions honestly and in as much detail as you wish.

1. Do you have any comments about the two different videos you saw?

2. How did the (second) video affect you?

3. What potentials, if any, do you see for the (second) video?

4. List any feelings or thoughts you had during the (second) video?

5. What are your feelings about watching the (second) video just prior to a match?