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THE EFFECT OF MULTIPLE-GOAL STRATEGIES ON SPORT PERFORMANCE.

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ABSTRACT

Sport psychologists traditionally fought against the pervasive "winning is everything" mentality and encouraged athletes to set self-referenced performance and process goals. However, studies that have explored the practices of successful performers have found that they do in fact make effective use of outcome goals (Burton & Naylor, 2002). The aim of this project was to examine empirically Hardy, Jones, and Gould's (1996) suggestion, that consultants should promote the use of a multiple goal-setting style. In the first study, forty participants were split into five groups and matched for ability on a soccer task. Four of the groups used different combinations of outcome, performance, and process goals while the other acted as a control group. The superior performance of the groups using multiple goal-setting styles, in both training and in competition, provided evidence to support the efficacy of maintaining a balance between outcome, performance, and process goal-setting styles. The second study sought to explore further the effects of varied multiple goal experiences upon psychological processes thought to support performance. Sixty participants were split into six groups and matched for performance on a bench-pressing task. This time the four groups using an outcome goal within their protocol received bogus feedback that allowed experimental control of goal attainment expectancy. Significant differences were found between the groups for bench-press performance, state anxiety, self-efficacy, goal commitment and effort allocation. The effect of outcome goals on performance was demonstrated to be affected by goal attainment expectancies, and the potential for such goals to have negative effects was confirmed. However, the superior performance of groups using multiple goal strategies provided further evidence to support the efficacy of combining the benefits of using outcome and performance goals.

PUBLICATIONS RESULTING FROM THESIS

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CHAPTER I

Goal-setting has long been accepted as a practical technique to increase and direct motivation in achievement-oriented fields, such as business, education and sport (Burton, 1992). Enthusiasm for the use of goal-setting has grown as a result of overwhelming evidence for the motivational and performance enhancing effects of goals, particularly from the management and organisational research literature (Locke & Latham, 1990). Locke and Latham (1985) first asserted that the findings from goal-setting research could be applied effectively in the sports environment, and goal-setting has subsequently emerged as a popular intervention strategy offered by sport psychology consultants. Indeed, Gould, Hodge, Peterson, and Giannini (1989) found that goal-setting was the most often used psychological intervention during athlete and coach consultations.

However, the introduction of goal-setting to sport also resulted in the emergence of equivocal findings in the research literature. Although many studies showed that participants in goal-setting conditions perform better than participants given "do your best" instructions, several other investigations failed to find the expected performance differences (Hall, Weinberg, & Jackson, 1987; Weinberg, Bruya, & Jackson, 1985; Weinberg, Bruya, Jackson, & Garland, 1987). The lack of goal-setting effects in such studies might be the result of differences between the sport and industrial settings. High levels of achievement orientation, competitiveness, and self-management skills are commonly found in sports performers, but are not typical in the industrial setting (Beggs, 1990). The absence of goal-setting effects on performance in some studies has also partly been attributed to the tendency of researchers to isolate single aspects of performance goals, such as specificity, difficulty, and proximity. The suggestion being that the absence of complete and longitudinal training programmes is responsible for eroding potential goal-setting effects in these studies (Kingston & Hardy, 1997).

The goal-setting literature developed further when research began to stress the importance of distinguishing between three types of goal (outcome, performance, and

process) and to investigate the possible benefits of emphasizing the relative salience of each goal type in different situations (Jones & Hanton, 1996; Kingston & Hardy, 1994, 1997). Outcome goals usually measure success by making a comparison with other competitors; for example, finishing first in a race or league table. Performance goals are set by identifying an end product of performance that can be achieved independently of others; for example, running a certain time over the race distance. Process goals are less easily defined, but are usually specific about the behaviors necessary for successful performance. Examples of process goals might include "staying relaxed" during a race, or "watching the ball" in a striking game (Hardy, Jones, & Gould, 1996).

Before the advent of studies comparing different types of goal, most research into goal-setting in sport had been based on the use of performance goals. This limitation applied equally to investigations conducted in experimenter-controlled settings, and to the more ecologically valid field-based studies (e.g., Burton, 1989; Swain & Jones, 1995). The predominance of performance goals in research studies was also reflected in the practice of sport psychology consultants encouraging the use of such goals instead of outcome goals (Burton, 1992). This promotion of the use of performance goals being underpinned by a belief that beneficially increased levels of perceived control would result. Support for this view was provided by Jones and Hanton, (1996) in a study which assessed swimmers using three types of goal. They found that the predictions of Jones' (1995) control model of debilitative and facilitative anxiety were best supported in the case of performance goals. However, the enthusiasm for the use of exclusively performance goals proved relatively short-lived after Beggs (1990), and then Burton (1992), pointed out how even self-referenced performance standards may actually be dysfunctional in certain circumstances. For instance, a marathon runner that sets themselves a certain time to achieve may lose motivation in the later part of their race if it becomes clear that the intended goal is no longer achievable.

Zimmerman and Kitsantas (1996) examined the use of process goals during self-regulated learning of dart throwing and found that process goals improved skill

acquisition more than did product goals. The process goals in this study required the participants to concentrate on successfully achieving the final three steps in each throw which, having been described in detail, were labeled as "sighting", "throwing", and "follow through". The finding that such goals were beneficial to performance would appear to support the recommendation that process goals should be "holistic" in order to encourage chunking and automaticity (Kingston & Hardy, 1994).

The findings of Zimmerman and Kitsantas (1996) were supported and extended by Kingston and Hardy's (1997) study, which compared the relative efficacy of two types of goal-setting training programme on the performance of club golfers over a whole season. A group using process goals showed an improvement in skill level, as measured by handicap, at an earlier stage in the season than did a group using performance goals. This study also measured processes that support performance and found that, relative to the group using performance goals, the process goals group demonstrated significant improvements in self-efficacy, cognitive anxiety control, and concentration. The authors concluded that there is no rationale for assuming that the effects of process goals on performance are mediated only by anxiety changes. The content of process goals may lead to improved performance through enhanced attentional focus, regardless of whether performers are consciously aware of using the information.

Hardy, Jones, and Gould (1996) reviewed the state of goal-setting research and drew several conclusions that have yet to be fully investigated. Their suggestions included the hypotheses that: outcome goals, made explicit several weeks before a competition, will motivate effort and strategy development; performance goals aid self-confidence; process goals should be used during both practice and performance, to aid the allocation of attentional resources and to increase self-efficacy; outcome and performance goals should not be emphasized immediately before performance; and process goals should focus on holistic aspects of technique during skill execution.

The aim of the first study in this thesis was to examine the suggestion made by Kingston and Hardy (1997) that sportsmen and women should be encouraged to use multiple-goal strategies to maximize their level of performance in training and competition.

Researchers have investigated various mediational mechanisms of the goal-setting and performance relationship but none so far have done so within a multiple-goals paradigm that considers differential and combined effects for different types of goals. The examination of processes underlying goal-setting effects is necessary to extend the study of motivation and the second study in this thesis applied three existing theoretical frameworks to the multiple-goal strategy scenario. First, the central postulate of Locke and Latham's goal-setting theory (1990), that goals affect performance through effort allocation and persistence, was re-examined within the multiple-goal paradigm. Measurement of the combined and separate effects on effort allocation of different goals, and different goal-setting experiences regarding goal attainment, provided useful information regarding how this aspect of basic goal-setting theory applies to different types of goals. Second, Bandura's (1997) model of self-efficacy was used as a basis for investigating the interrelationships between self-efficacy, goals, and performance. In accordance with the recommendations of Locke and Latham (1990), both magnitude and strength of self-efficacy were examined since both have been shown to contribute to performance prediction (e.g. Locke, Frederick, Lee, & Bobko, 1984).

The third theoretical proposition under consideration was one arising from Jones's (1995) control based model of debilitative and facilitative interpretations of anxiety symptoms. Competitive state anxiety has been identified as a key psychological variable influencing performance (Hall & Kerr, 1997; Martens, Burton, Vealey, Bump, & Smith, 1990). Until comparatively recently it had generally been assumed that symptoms such as worry, nervousness, and tension were wholly detrimental to performance (Hardy, 1997). However, this established position has now been challenged by researchers who have demonstrated that such anxiety symptoms do in fact co-exist with peak performance, and that it is the interpretation of the symptoms

that has the greatest significance (Jones, 1995; Jones & Hanton, 1996). Jones and Hanton (1996) first suggested that different types of goal might influence individuals' interpretations of their anxiety symptoms as a result of different levels of perceived control that the performer is able to exert over goal achievement. For example, the use of a process goal would result in more positive interpretations of anxiety than would a comparatively less controllable outcome goal.

CHAPTER II

2.1 Introduction and Structure

The formal study of goal-setting in sport began in 1897 with the first sport psychology experiment conducted by Norman Triplett in which he studied the effects of competition on cyclists' performance. However, it should be recognised that the quest to understand and predict human behaviour in the sporting arena can be traced much further back to the ancient Greek and Roman civilisations. This chapter will provide a comprehensive review of theoretical frameworks and research literature relevant to the questions being posed in the two experimental studies that form the core of this thesis. The review comprises four main sections that reflect a developmental "theory, research, and practice" structure and are linked by their relevance to the experimental research.

The first section is concerned with outlining the available theoretical explanations for goal-setting effects. Three areas of theory will be examined: Locke and Latham's (1990) mechanistic goal-setting theory, emphasising the motivational aspect of performance goals and supporting an effort allocation based explanation for beneficial effects; goal-setting and competitive state anxiety with particular focus on Jones's (1995) model which regards perceived control as being related to expectancy of goal attainment and interpretation of anxiety symptoms; and, Bandura's (1977) self-efficacy theory which states that performance accomplishments are the main source of situation-specific self-confidence. The review will then continue with a section providing a review of research findings that have investigated the effectiveness of goals. The story of the goal-setting literature will be summarised, from the early days of research into goal attributes within industrial and organisational settings (i.e. goal specificity; goal difficulty; and goal proximity) through to the transfer of these findings to the sporting context and associated methodological difficulties. Finally, the focus of the review will narrow to more recent research that has concentrated on the separate and combined effects of different types of goals (i.e. outcome goals, performance goals, and process goals), on both performance and underlying psychological processes.

The Concept Of Goal-Setting

By definition, a goal is what an individual is trying to accomplish. It is the aim or object of an action and usually refers to attaining a specific standard of proficiency on a task (Morris & Summers, 2004). Goal-setting itself is not a new idea and psychologists have been trying to develop and refine both the theory and practice of goal-setting for a long time (Shaw, Gorley, & Corbin, 2005). The basic assumption of all goal-setting research has been that goals play an immediate and crucial role in the self-regulation of human behaviour. Much of the early research on goal-setting came from two major sources, the academic and the industrial or organizational literature. In the industrial setting, this initial research led to the application of goal-setting in the form of management by objectives (e.g. Odiorne, 1978), whilst in academia the focus tended to be more on individual self-regulation (Gill, 2000).

Every goal includes two basic components. Locke and Latham (1990) described these as representing the direction and product quantity or quality, while Hall and Kerr (2001) referred to the "content of the goal and the intensity with which it should be pursued" (p.184). One significant observation to note is the reality that goals almost certainly do not operate at a conscious level all the time (Burton, Naylor, & Holliday, 2001) It is much more likely that they enter and recede from consciousness depending on skill levels and the type of goal being simultaneously employed. For instance, the goal of winning a game may be initially highlighted but then reduced in emphasis to ensure sufficient resources are allocated to the required actions without interference (Burton & Naylor, 2002).

2.2 How Goals Work: Theoretical Frameworks for Studying Goal Effects.

The first research into goal mechanisms was motivated by the need to develop new management techniques to facilitate the growth of American industry at the start of the 20th Century (e.g. Taylor, 1911). Taylor pioneered the study of "time and motion" in industrial processes and sought to establish scientifically based approaches to organising production. Following Taylorian principles, individual workers were given specific targets for their own productivity and contribution to the

overall outcome. The popular 'management by objectives' philosophy is the modern day conclusion of these early developments. Beggs (1990) observed that in some respects the successful practical application of goal-setting predated theoretical explanations for the efficacy of the techniques by over half a century.

Given the widespread application of the technique in those fields it is not surprising that the vast majority of the early literature on goal-setting was based on research in an industrial/organizational setting. This extensive research activity produced some unequivocal findings that caught the interest of those working within a sporting context (e.g. Danish, 1983). In the early days of goal-setting literature within sport psychology, recommendations were made about how goal-setting should be applied, but mainly by drawing on work from the industrial and organizational contexts (Gould, 1986). In their seminal work on the application of goal-setting to sport, Locke and Latham (1985) highlighted that much of this early literature was therefore developed without a strong empirical base. However, the application of goal-setting in other contexts started to gain momentum throughout the 1980s with studies being published in education (e.g. Bandura & Schunk, 1981), clinical practice (e.g. Ahrens, 1987), and sport (e.g. Miller & Macauley, 1987). The burgeoning literature inevitably started to ask more demanding question of theorists in terms of developing models of goal mechanisms and explanations for contradictory results.

Goal-Setting Theory

Locke and Latham's mechanistic theory. Several extensive reviews of early goal-setting research were undertaken with the most respected being that published in the Psychological Bulletin by Edwin Locke and his research group (Locke, Shaw, Saari, & Latham, 1981). Locke et al. presented a comprehensive review of over 100 studies of goal setting conducted between 1969 and 1980 and concluded that the benefits of goal-setting had been consistently demonstrated. They identified four mechanisms by which goals seem to affect performance: goals direct attention and action (Locke & Bryan, 1969); goals mobilize and regulate the amount of effort that a person is prepared to put into a given task (Locke, 1966); they also result in this effort being prolonged until the goal is reached; this may be called persistence (Latham & Locke,

1975); finally, goal-setting motivates people to develop alternative strategies in their attempts to reach the goal (Latham & Baldes, 1975).

Having played such a lead role in the development of principles for goal-setting in industry it was a logical next step for Locke and Latham to propose a theoretical framework for understanding the observed effects. As early as 1968 Locke had emphasized the importance of conceptualising a goal as a mental representation of an action, and not simply as a stimulus which somehow controls behaviour. In this respect, Locke and Latham's goal setting theory differed from earlier views of goals that had usually seen goals as being external to the person. Locke and Henne (1986) went on to assert that conscious goals are the most immediate and direct regulators of human action. They explained that goals differ from other cognitions, such as values or attitudes, as these should be thought of as merely providing the backdrop to action. In evaluating this framework, several authors (e.g. Burton, Naylor, & Holliday, 2002) have observed that while the mechanistic theory offers clear guidelines about the principles of goal-setting, it fails to address fully the psychological processes by which the technique works.

Goal setting and competitive state anxiety. Investigators have placed a wide range of emotional responses to evaluation under the term anxiety. Sarason (1978) explained how anxiety has been used to describe a broad continuum of emotional states ranging from "virtual immobilisation in the face of potential criticism to exhilaration at the prospect of receiving accolades" (p.193). The ability to understand this continuum and to define and identify different emotional states accurately is clearly of crucial importance for research in this area (Green, 1980). More recent research has reflected the existence of a diverse range of emotional responses to stress by supporting the proposal that positive (activation) and negative (anxiety) components need to be differentiated (Jones, 1995).

Eysenck and Calvo's (1992) Processing Efficiency Theory suggested that cognitive anxiety influences performance by two processes. First, cognitive anxiety causes a reduction in the information processing resources available for the task at hand

because worrying uses up these vital resources. Second, cognitive anxiety has a positive motivational effect upon performance by signalling the importance of an upcoming event. With regard to anxiety intensity levels and goal-setting, Kingston, Hardy and Markland (1992) investigated performance versus process goals and found that cognitive anxiety was lower for those in the process group. They also found that the process goal group outperformed the performance goal group when placed under stress. The relative controllability of process goals and consequent reduced environmental uncertainty were proposed as the most feasible explanation for the observed decrease in anxiety levels amongst the process goal group.

Jones (1991) introduced the notion of "direction" of anxiety into the sport psychology literature. Direction of anxiety refers to a debilitative-facilitative continuum that reflects how a performer labels the cognitive and somatic anxiety symptoms they are experiencing. It fits with the commonsense position that two performers reporting very similar levels of physiological arousal prior to competition, may not necessarily actually feel the same levels of debilitating anxiety. Jones and Swain (1992) studied low and high competitive groups and found that the highly competitive group reported cognitive anxiety as more facilitating and less debilitating than the low competitive group, despite finding no differences in cognitive and somatic anxiety or on the direction of somatic anxiety between groups. Other studies have reported similar results (Jones, Hanton & Swain, 1994; Jones, Swain & Hardy, 1993).

In 1988, Carver and Scheier postulated that anxiety would be debilitating if the individual's expectancy (i.e. to cope or of goal attainment) was unfavourable. They hypothesised that it is those performers who have least confidence in their ability to control both themselves and the environment to achieve their goals who will experience debilitative anxiety symptoms. These proposals were examined by Jones and Hanton (1996) who concluded that the Carver and Scheier position is based upon an assumption that human behaviour is regulated in a system of feedback control in which individuals continually establish goals for themselves that they then use as reference points. Individuals who expect to be able to cope and who are confident of

being able to complete the action will respond to the anxiety with a self-focus on task engagement, resulting in sustained effort, and enhanced performance. On the other hand, individuals who have negative expectancies and are not confident of being able to cope are more likely to experience debilitative anxiety in the form of a self-deprecatory focus.

Support for the distinction between "intensity" (i.e. level) and "direction" (i.e. debilitative/facilitative) of competitive anxiety symptoms has been provided by a substantial amount of empirical investigations now published in the sport psychology literature. Jones, Swain, and Hardy (1993) examined relationships between performance and intensity and direction dimensions of competitive state anxiety. Their study of female gymnasts competing in a beam competition showed no difference between "good" and "poor" performance groups on cognitive and somatic anxiety intensity scores, or on somatic anxiety direction scores. However, the good performance group reported their cognitive anxiety as being more facilitative and less debilitating to performance than did the poor performance group. Swain and Jones (1996) extended this work by comparing the relative contributions of the intensity and direction dimensions of cognitive and somatic anxiety to predicting basketball performance. They found that both cognitive and somatic anxiety direction was a better predictor of performance than intensity.

Jones and Hanton (1996) assessed swimmers on the intensity and direction of their cognitive and somatic anxiety one hour before an important race. They proposed a link between different goal types (i.e. outcome, performance, and process goals) and interpretation of anxiety symptoms, with the mediating mechanism being the degree of perceived control the performer is able to exert over goal achievement. They hypothesised that outcome goals, relying on success through interpersonal comparison (Burton 1988), would be associated with more debilitating anxiety than either performance or process goals, even under conditions of positive expectancy. The results of the study were that both cognitive and somatic anxiety were perceived as more facilitating by swimmers who had positive expectancies of goal attainment than by swimmers who had negative or uncertain expectancies. Thus, the same

intensities of cognitive and somatic anxiety responses were interpreted as having different consequences as a function of goal attainment expectancies. This relationship between goal attainment expectancy and interpretation of anxiety symptoms provides an important theoretical rationale for the prioritization of realistic goals over which the performer feels they have control.

Competition, goal-setting and anxiety. In a laboratory style experiment, competition has often been seen as a confounding factor, with a propensity to contaminate results (e.g. Komacki, Barwick & Scott, 1978). In the work context, research (e.g. Mueller, 1983) sought to reach an understanding of how goal-setting and competition (or more accurately, competitiveness) interact to affect performance.

Locke (1968) first suggested that competitiveness might result in the spontaneous setting of higher goals than would otherwise be set, and lead to greater goal commitment. Other authors went on to provide empirical evidence demonstrating that higher goals are set in competitive situations (Forward & Zander, 1971; White, Mitchell & Bell, 1977). Mueller (1983) also measured goal commitment in his study and confirmed that more difficult goals are set under competitive conditions, but that greater goal commitment was not necessarily evident when competition was encouraged. It is important to note, however, the questionable generalization of these results to the formalized competition of the sports setting. Given that the sporting motivation for achieving competitive goals is so palpably removed from that found in the workplace it became obvious that goals must also operate quite differently. Developments in the goal-setting literature began to reflect this new focus on how goals could be used not just as a blunt instrument for improving productivity, but as a relatively subtle intervention strategy to help athletes deal more effectively with the stress of competition.

Goal-setting has, however, long been regarded as something of a "double-edged sword" (Beggs, 1990, p.146). This potentially anxiety inducing property of goals arises from the reality that formal competition and goal-setting actually have a lot in common, in that they both involve criterion-referenced performance (Locke &

Latham, 1985). To compound the problem in the sports setting the criterion is a personalized, external event, the winning competitor's performance, rather than the impersonal performance standard more commonly found in work settings. Furthermore it has to be noted that the criteria in competitive sport are in many cases continuously moving as performance standards improve, not to mention what happens during an event. The similarity between goals and competition is therefore quite clear and it is not surprising that some authors have labeled goals as stressors (e.g. Huber, 1985). In their rawest form goals are capable of satisfying all the criteria for creating anxiety. They are important, require action and there is uncertainty about whether they will be achieved. Difficult, challenging goals must inevitably generate some anxiety; on the other hand, goals which are specific avoid the danger of ambiguity, which is itself a source of anxiety (Locke & Latham, 1984). In a similar way, a succession of short-term goals can reduce the anxiety which might be generated by a longer-term, extremely difficult goal, simply because it is perceived as more likely that the short-term goals will be reached.

Cale and Jones (1989) measured cognitive and somatic anxiety, goal acceptance, and performance when challenging, and very difficult, goals were set. In keeping with the results of Erez and Zidon (1984), they found that acceptance of the challenging goals was variable, and the very difficult goals were usually rejected. More interestingly, however, they also found that cognitive anxiety rose and self-confidence fell just before the attempted performance of the challenging and very difficult goals; but somatic anxiety was not affected by goal difficulty. This finding confirmed that difficult goals themselves can be sources of cognitive anxiety and underlined the importance of evaluating the extent to which anxiety can be generated by goals of varying difficulty.

An earlier study by Hardy, Maiden and Sherry (1986) was also concerned with the way in which setting certain types of goal could generate additional anxiety. They used the Competitive State Anxiety Inventory-2 (CSAI-2) (Martens, Vealey, Bump, & Smith, 1990) with a soccer team, and showed that cognitive and somatic anxiety were very high just before an important match, but much lower on the days before

and after. Each team member was asked to perform a ball control task, with various levels of goal difficulty, at these times. The highest goal difficulty level was that which had been attained earlier in training. Significantly, both goal acceptance and goal attainment scores reduced as anxiety levels rose and the competition approached. Goals which may have been initially accepted and attained in training may therefore be rejected in competition. This work was of some practical value for coaches and athletes trying to set appropriate performance goals for competition. However, what represents an appropriate reduction in goal difficulty has never been completely established through empirical research.

This early research into the effects of goal-setting on anxiety also spawned literature on the type of goals being set, achievement goal orientations, and motivational climates. Roberts (1986) suggested that where a performer's personal goal is the attainment of a successful outcome in competition, he or she is most likely to suffer from competition-related stress; Burton and Martens (1986) found that wrestlers who gave up the sport were more likely to focus on winning or losing as a measure of their competence, a result confirmed by Whitehead (1986) for children in sporting situations. Roberts (1986) was one of those authors who stated that goals which help the athlete to avoid this stress trap are those which focus on performance rather than outcome. This was a common theme in research in the area, particularly when a developmental perspective was assumed. Maehr and Nicholls (1980), for example, discussed how goals in sport change with age. They found that children begin by having mastery goals, where they are concerned only to improve their skills and performance; develop competence goals, where the outcome (winning or losing) becomes important; and may come to embrace social approval goals, where the social rewards from significant others for winning or avoiding losing are most important.

A similar point was made by Elliot and Dweck (1988) in the context of children's academic performance. They differentiated between what they called learning goals, which they regarded as promoting mastery and challenge-seeking behaviour, and what they called 'performance' goals, where the real goal is to appear to others as competent. It is perhaps unfortunate that they chose this name for the latter type of

goal, which appears to confound Maehr and Nicholl's outcome and social approval goals. Perhaps this was because of the very different contexts in which the ideas were developed. They found that different sorts of goal had quite profound consequences, which in turn depended on the self-concept of the participants. In a problem-solving experiment, both high and low perceived ability children were given the different types of goal. Elliot and Dweck found that low perceived ability children who were given "performance" goals evidenced negative affect, avoidance and learned helplessness; although high perceived ability children persisted better, and appeared to be less upset by performance goals, they claimed not to like failing in public. In contrast, learning goals resulted in both high and low perceived ability children being unconcerned about failure, and both groups were more persistent and came up with more problem-solving strategies. The conclusion of researchers at this time was that mastery or learning goals help children to avoid negative feelings such as anxiety and therefore their usage should be promoted.

Self-efficacy, social learning theory and goal-setting. Self-efficacy is the central concept within Bandura's (1977) social learning theory. Self-efficacy is professed to be a common cognitive mechanism for mediating people's motivation, thought patterns and behaviour (Hagger & Chatzisarantis, 2005). Essentially self-efficacy refers to a situationally specific type of self confidence, where a person's self-efficacy belief stems from the judgment of their capability to perform a given task. The performer will know whether they can act effectively from experience in previous similar situations, although as Bandura (1977) stated, this judgment will not simply reflect past performance. Other factors, such as situational differences, and personal variables, such as the ability to function under stress, ingenuity and adaptability will be taken into account in a complex appraisal of the new situation and an individual's current level of competence. Bandura (1989) felt that a person's self-efficacy was reliant upon the cognitive processing of a number of diverse sources of efficacy information. Bandura stipulated that four antecedents influenced self-efficacy, and ranked them in order of importance. Research has subsequently shown these antecedents; performance accomplishments (McAuley, 1985), vicarious

experiences (Rakestraw & Weiss, 1981), verbal persuasion (Garland, 1985), and physiological state (Feltz & Riessinger, 1990), to affect perceived self-efficacy levels.

The usefulness of social learning theory is partly conceptual because it breaks down into more specific and useful parts at least two commonly used terms, confidence and motivation. Confidence is something which all coaches and athletes strive for, and research has shown how, even at an elite level, a sense of confidence in one's self characterizes successful competitors (e.g. Gould, Hodge, Peterson, & Giannini, 1989). Confidence and self-efficacy, however, are not the same thing. Self-efficacy is largely situationally specific, whereas confidence is a much more global term; it is perfectly possible, for example, to be a supremely confident middle-distance runner whose perceived self-efficacy to run 100 metres in less than 12 seconds is extremely low. Bandura (1982) asserted that self-efficacy is significantly and positively related to future performance and also measures an individual's belief in their ability to perform at a certain level. Locke and Latham (1990) pointed out that self-efficacy could also be used as a measure of goal or outcome expectancy, and stressed that the joint effect of self-efficacy and goals on performance indicates that performance is affected not only by what an individual is trying to do but by how confident they are of being able to do it.

Weinberg (1987) has also written about the way in which self-efficacy beliefs influence personal goal-setting and mediate the relationship between goal intentions and cognitive motivation. Research conducted outside the sporting arena has demonstrated how individuals with higher self-efficacy set higher goals and give more commitment to those goals (Locke, Frederick, Lee, & Bobko, 1984). Bandura (1989) believed that individuals with high self-efficacy will increase the level of effort and persistence to a task when faced with a reduction in the attainment of personal goals, whereas those with lower self-efficacy would have self doubts and give up.

Feltz (1982), using female students attempting difficult reverse dives for the first time, confirmed that self-efficacy did seem to determine their performance. Later in

the series of dives, however, the relationship was reversed and performance seemed to affect perceived self-efficacy. This reciprocal relationship between self-efficacy and performance was repeated in an important study by Locke et al. (1984), who examined a number of variables associated with performance of a simple, open-ended cognitive task. Using path analysis, they demonstrated that perceived self-efficacy directly affected current performance. Self-efficacy itself, however, was more strongly influenced by past performances.

Locke et al. (1984) also found that perceived self-efficacy had an indirect effect on performance, but only for those who set their own goals, as opposed to having them assigned. These participants had increased levels of perceived self-efficacy associated with an increase in goal commitment; no such effect was found for those who had goals assigned to them. The effect of sports performers learning to set their own goals, rather than having them imposed, are as yet relatively unclear. Beggs (1990) suggested that the Locke et al. (1984) result should generalize to a sport context, especially if a self-learning package (e.g. Hardy & Fazey, 1990) were used. However, Locke and Latham (1990) at the same time were arguing that assigned, as opposed to participative, goal-setting would not result in reduced goal commitment as long as the person using the goals perceives them to be reasonable and they are presented in a supportive manner. Fairall and Rodgers (1997) conducted a field experiment using track and field athletes which examined the effect of three methods of goal setting (participative, assigned, and self-set) on various goal attributes. They found no difference between the three conditions in terms of goal commitment as measured immediately after a single goal-setting session. However, they did suggest that variations in goal attributes, due to goal-setting method, might emerge over time.

Bandura and Schunk (1981) argued that a large proportion of the benefit from using short-term goals may operate via improvements in self-efficacy. In their view, proximal goals provide markers of increasing competence as longer-term goals are approached, and it is this increase in perceived competence which leads to an increase in self-efficacy. Bandura and Cervone (1983) expanded the debate to include both self-efficacy and self-evaluation. They proposed that goals could have

an effect on both; self-evaluation, the comparison of actual performance with an internal, idealised standard, has much in common with explanations of self-esteem (e.g., Coopersmith, 1967). Bandura and Cervone, however, regarded the self-dissatisfaction experienced when performances are sub-standard as a motivational factor, and suggested that people will want to reduce the self-dissatisfaction by performing better. In this way, goal-setting has the potential both to build self-efficacy and to increase self-dissatisfaction, or motivate performance.

Motivational researchers Atkinson (1958), Kukla (1978) and Nicholls (1984), found athletes with high perceived ability preferred moderately difficult goals that would offer a realistic challenge and consequently motivate high levels of effort, intensity persistence, and ultimately success, necessary to maintain high perceived ability. However, outcome goals only optimally challenge athletes when competing against those with similar ability. Burton (1988) has stated two ways that the use of outcome goals can act to inhibit motivation when opponents are not of similar ability. Firstly, he claimed that highly skilled athletes are rarely challenged by outcome goals reducing motivation to direct optimal effort to the task (Martens, 1987; Nicholls, 1984; Roberts, 1984). Easy success for skilled athletes may lead to over-confidence, thus insidiously eroding motivation and performance by creating a false sense of security (Martens, 1987). Martens also states that over-confidence seldom motivates athletes to continue working hard on improving skills or to prepare mentally and physically for competition. Secondly a less skilled athlete may view an outcome goal as an excessive challenge because although they may perform well with maximum effort they may still lose (Martens, 1987). In this case, Martens hypothesized, the athlete would view chances of success pessimistically and become indifferent to the task. According to Roberts (1984), failure will then reinforce perceptions of low ability and competition will then be viewed as a threat.

Burton (1988, p.1) stated that "sports pervasive preoccupation with winning was actually responsible for the majority of athletes' anxiety, motivation and self confidence problems." He also protested that using outcome goals to 'win' prevented the flexibility and control necessary to ensure athletes achieve consistent

success or take credit for their successes. Burton concluded that only performance goals based upon task mastery and attaining challenging personal performance standards afforded the athlete sufficient control and flexibility of goals needed to develop high perceived ability, positive competitive cognition's and consistent performance. However, Hemery (1991) supported the use of outcome goals, postulating that outcome goals may help performers sustain motivation during setbacks and throughout hard training periods. This may suggest that the use of single broad goals, for example 'to win', can be beneficial when it does not constitute the main focus of participation in the activity.

Cognitive mediation theory. In an attempt to explore further the processes behind goal-setting effects, Garland (1985) introduced a different approach through his conception of cognitive mediation theory. In this theory, Garland proposes that an individual's task goal, defined as "an image of a future level of performance that the individual wishes to achieve" (1985, p.347), influences performance through two cognitive constructs: performance expectancy and performance valence. Performance expectancy is defined as a composite of an individual's subjective probabilities for reaching each of several levels of performance possible during a period of time. It is assumed that as well as their feelings about achieving a specific task goal, individuals also make judgments about the probability of achieving a number of different levels around that goal level. For example, two cricketers with successful run-out percentages of 50% and 60% might be asked to state their subjective probabilities for hitting at least 40%, 50%, 60%, and 70%. For each of the players, an index of performance expectancy could then be calculated by finding the average of the perceived likelihoods. It should be noted that Garland's concept of performance expectancy is all but identical to Bandura's (1977) concept of self-efficacy. Garland himself operationalised and used the terms interchangeably in his later work (e.g. Garland, Weinberg, Bruya, & Jackson, 1988) and the sources and consequences of the two constructs do not differ materially.

2.3 Goal-Setting Effectiveness Research

Overview. Research into the use of goal-setting in the industrial and educational settings has provided persuasive evidence that specific, challenging goals improve performance. A literature review by Locke et al. (1981) collated studies, with 90% of findings in agreement that goals should be specific and difficult enough to provide an obstacle in order to be most effective. In light of this evidence that goal setting could improve performance in industry and education, Locke and Latham (1985) speculated that "goal setting will work as well in sports as in business and laboratory tasks" (p.206). They provided guidelines so that the goal-setting technique could be successfully transferred from one condition to another. Goal-setting has since become one of the most widely researched and used techniques. Even coaches who do not acknowledge the value of other psychological techniques acknowledge that athletes need structured goals to progress (Lane & Streeter, 2003).

The step from one achievement oriented setting to another seems straightforward in principle but Beggs (1990) highlighted potential pitfalls and noted that "goals are not set in isolation" (p.138). The contextual differences in question can be summarised as being a result of both the nature of the task itself, which may be either simple or complex, and the context in which it occurs. There are a number of fundamental differences between sport and the workplace which mean that some of the findings of goal-setting research undertaken in the latter context may not easily transfer to a sporting context. For example, in sport, unlike most industrial/organisational tasks, the process of skill learning will often involve performers in a very lengthy period of training to reach their personal best. For them, the 'dream goal' may seem far away. And most importantly, sports are usually undertaken in an atmosphere of intense competition, which adds to the stress inherent in performing a possibly dangerous or complex activity. Nevertheless, goal-setting research in sport has flourished over the past twenty years and there is now an ever-growing body of research evidence and literature attesting to the effectiveness of goal-setting in sport (Murphy, 2005).

It is interesting that despite the later challenges, early work in sports-related goal-setting seemed to be encouraging. Locke and Bryan (1966) found that when people

were given specific, challenging goals in a psychomotor task, they performed better than when they were simply asked to 'do their best'. Botterill (1977) found similar effects in an endurance task, while Bartlett and Stanicek (1979) showed that specific, numerical goals led to higher scores in archery than a goal-free control condition. Training individuals to use goal-setting skills for themselves seemed to result both in better swimming performances and the development of better, more positive thoughts about their abilities, compared with an untrained group (Burton, 1983).

In what remains the only comprehensive meta-analysis of goal research in sport, Kyllo and Landers (1995) examined 49 goal-setting studies in sport and physical activity, using 36 of them in their analysis. When compared to no-goals or do-your-best goals, goal-setting resulted in an effect size of .34, which they reported as being slightly smaller than the effect sizes (i.e. .42 to .80) found in the general goal literature. Burton and Naylor (2002) conducted a review summarising results from more recently published research. They found 67 goal-setting manuscripts published with sport samples, 56 of which met their inclusion criteria. Of those 56 goal-setting studies in sport and physical activity, 44 demonstrated moderate to strong goal-setting effects, a 79% effectiveness rate. It is worth noting that an earlier review by Burton (1992) had found only 14 studies, two-thirds of which revealed significant goal-setting effects.

Goal specificity. Research surrounding goal-setting has primarily focused on three aspects which influence the technique's effectiveness. These are goal specificity, goal difficulty, and goal proximity. There has been an abundance of research in the industrial setting which has shown that specific, difficult, and varied proximity goals tend to be the most productive (Beggs, 1990).

Locke et al. (1981) reviewed 53 studies about the effects on performance of specific (and challenging) goals, "do your best" goals, and "no goals" experimental conditions. The environmental contexts for these studies varied greatly and included areas as far apart as dieting, freight transport, card-sorting, and arithmetic. Only two of these 53 studies failed to show that specific and challenging goals produced the

best performances. Even accounting for likely publication bias these are compelling results and it has been observed that the consistency of findings is perhaps unparalleled in the organisational sciences (Tubbs, 1986).

Apparently satisfied with the robustness of the available evidence, Locke and Latham (1985) drew up a ten point plan in which they described how goal-setting could be applied to sport. Their first point was that "specific goals will regulate action more precisely than general goals" (p.209). To make this clear, they believed that specific, detailed goals would provide better performance improvements than either "do your best", or no goals. The reasons behind this are that specific goals will focus the athlete's attention on the area which requires it. Vague goals can leave the athlete unclear as to what is required of him/her. In support of Locke and Latham's theory, Bar-Eli, Tenenbaum, Pie, Btesh and Almog (1997), Tenenbaum, Pinchas, Elbaz, Bar-Eli and Weinberg (1991), and Weinberg, Bruya, Longino, and Jackson (1988), all tested participants using a sit-up task. They found that those groups given specific goals consistently outperformed those who were set "do your best", or no goals. Tenenbaum et al. (1991) also reported that the latter groups showed no significant improvements at all. Similar results were shown by Hall, Weinberg and Jackson (1987) using a hand dynamometer endurance task, Burton (1989) with a basketball dribbling skill, and Barnett and Stanicek (1979) in archery.

At the same time as this apparent support for Locke and Latham's premise regarding goal specificity, however, there were also published several studies that presented empirical evidence to the contrary. An early investigation by Hollingsworth (1975) looked at learning a novel motor task (juggling). She used two groups, one were set no goals, and the other were set performance goals related to their previous performance. No significant differences were found between the two groups. Weinberg, Bruya and Jackson (1985), Weinberg, Fowler, Jackson, Bagnall and Bruya (1991), and Weinberg, Bruya, Jackson and Garland (1987) all used sit-up tasks, and found that the "do your best" groups performed just as well as the groups set specific goals. Miller and McAuley (1987) reported that undergraduate basketballers showed no significant differences whether trained with a specific goal-setting programme or

told to "do your best". Gianni, Weinberg and Jackson (1988) also studied a basketball task and found that neither those set specific goals, nor those set "do your best" goals outperformed one another. Findings such as these led Weinberg (1994) to conclude that the effects of goal specificity on performance have been equivocal with only some studies supporting Locke and Latham's claims.

Goal difficulty. Locke et al. (1981) considered a total of 57 studies which had varied the difficulty of goals and measured the performance of participants who had attempted to reach these goals. The studies were conducted either in the laboratory using familiar tasks such as reaction time, card-sorting and anagram-solving amongst others, or in real-life settings, using, for example, typists, lumberjacks or soft drinks salesmen. Of the 57, a total of 48 studies showed that hard goals led to better performance than medium or easy goals; only nine studies failed to confirm this. In other words the harder the goal, the better the performance and this relationship between goal difficulty and performance was presented as a linear one (e.g. Locke, 1968).

However, commonsense dictates that the setting of a goal which is so far beyond someone's capability as to appear to be completely unattainable is unlikely to produce a truly great performance. Subsequent researchers have been largely unsuccessful in resolving the goal difficulty paradox. However, it is worth noting that Garland (1983) did suggest that some laboratory-based studies of goal-setting had produced the positive linear goal difficulty-performance relationship even for very difficult goals. In work that came some time after Garland's initial proposal, Weinberg and his colleagues (Weinberg, Bruya, Garland, & Jackson, 1990; Weinberg et al., 1987; Weinberg et al., 1990) found that in a number of different studies the setting of improbable goals failed to undermine performance. In fact, participants performing under improbable goal conditions often showed performance improvements similar to those performing under other goal-setting conditions.

Weinberg et al. (1987) presented groups of people who were enrolled in a fitness training class with easy, moderately difficult, very difficult, and highly improbable

goals in a sit-up task. They found, using a questionnaire method, that virtually all those in every group accepted these goals, and that goal difficulty level did not affect acceptance. Nor did groups differ in respect of their intention to try to attain these goals, or their ultimate performance, even though each group apparently accurately perceived the level of difficulty of their assigned goal. Around the same time Hardy, Maiden and Sherry (1986) did, however, show how goal acceptance can decrease with the stress of competition.

Given that it is often difficult to operationalise the concept of a "difficult goal" researchers have sometimes struggled to predict why goals may be redefined or why goal commitment has been observed to change. Evidence of a dynamic process of goal acceptance was provided by Hall, et al. (1987) who used a handgrip dynamometer task with various levels of goal difficulty. The authors of this study predicted that those with a difficult goal, holding a contraction for 70 seconds, would perform better than those given a less difficult goal of holding the contraction for 40 seconds. Although both groups did perform better than a control group, the 70 second group did not actually show better performance. Qualitative data revealed that those with the 70 second goal continually questioned during their performance whether the goal was achievable; and although they continued to exert effort, only 46% achieved the goal. In contrast, as many as 67% of those in the 40 second goal group redefined their goal once they had achieved it, and they went on to a final performance that did not differ significantly from the group assigned the harder goal.

Bar-Eli et al. (1997) showed similar results to those of Hall et al. (1987), this time using the popular sit-up task. Participants in this study were assigned to either easy (improve by 10%), difficult (improve by 20%), or improbable (improve by 40%) goals during the course of an eight week training programme. After six weeks, the easy and difficult goal groups had produced the best performances; but by the end of the eight weeks, all groups had demonstrated significant improvement when compared to "do your best" participants. Jones and Cale (1997) investigated the mechanisms by which goal difficulty effects operate and found that while performance was only reduced by "very hard" goals, increased cognitive anxiety and

reduced self-confidence accompanied incremental increases in goal difficulty. Lane and Streeter (2003) developed this line of research further by measuring intended effort on a basketball shooting task under conditions of varying goal difficulty. They found the expected relationship between increasing goal difficulty and performance but did not find any significant differences in effort between the goal-setting conditions. The authors suggested that because participants were already motivated toward playing basketball it is possible that they set personal improvement goals that were more important to them than the experimenter assigned goals. In conclusion, although there is already some interesting information available regarding the nature of athletes' "free-set" goals (Kane & Baltes, 2001), Lane and Streeter reiterated the need for goal-setting researchers to investigate the goals that individuals set themselves.

In spite of these somewhat complex research outcomes several authors felt confident enough to make recommendations to coaches and physical educators about presenting performers with difficult but attainable goals (e.g. Botterill, 1978, 1980; Gould, 1986; McClements & Botterill, 1979). The key word chosen by most was "realistic", and the assumption is still made that goals which are too difficult result in reduced effort, a drop-off in motivation, deterioration in performance, or even an abandonment of the goal.

Goal proximity. One way in which goal-setting theory and practice attempted to deal with difficult goals was by introducing the concept of proximal (short-) and distal (long-term) goals. In 1981 Locke et al. stated that this aspect of goal setting had not yet received much attention, but since then it has been frequently investigated. The limited extent of early goal proximity research could have been due to the nature of the industrial/organisational environment where individual goals were traditionally confined to the short-term (e.g. 200 boxes per hour) rather than more distant ambitions. This scenario is of course very different from contexts in which individuals are trying to master a difficult and complex task, perhaps over a time-scale of months or years. Such a situation occurs in education, and in clinical psychology, and it will come as no surprise that the explanations for the success of

goal-setting in these contexts have been very different from those offered by workers in the industrial/organisational field. Most sports are probably better viewed from this "bigger picture" perspective. In a clinical context Bandura did demonstrate that goal proximity affects both motivation and performance (e.g. Bandura, 1977; Bandura & Schunk, 1981; Bandura & Simon, 1977). Bandura concluded that people respond better when their goals are apparently closer to hand than when they are distant, future goals, or when they have no goals, and this approach was successfully applied to classrooms (e.g. Schunk, 1983).

In 1985, Locke and Latham first suggested that setting subgoals may be an important technique for athletes and sports coaches to use. They quote the apocryphal tale of John Naber, the 1976 Olympic 400-metre backstroke gold medallist, who, quite spontaneously, adopted a goal-setting programme based on this approach. In 1972, he became aware that he had four years to improve his best time by four seconds if he was to stand a chance of winning his medal, and calculated that he could achieve this if he could improve his times by about four milliseconds for every hour of training. This represents only a fifth of the time it takes to blink, and he felt that this was an achievable short-term goal. McClements and Laverty (1979) presented a mathematical model of performance improvement that is of interest to goal-setting researchers. Using the law of diminishing returns they highlighted the fact that since there must be an absolute limit to an individual's performance, it follows that more and more effort is needed to make smaller and smaller advances. Such a learning curve could be used to generate subgoals which are not separated by equal intervals, as in John Naber's account, but still represent realistic increments in performance given steady commitment to training over an extended time. In a related piece of work, McClements and Botterill (1979) described goal-setting as being an exercise in predicting the future and that determining the shape of this learning curve for an individual, so that distal and proximal goals may be identified, would be easier said than done.

Subsequent research was carried out in sport to test Locke and Latham's theory that short- and long-term goals are best combined for optimum performance. The

thinking behind this is that short-term goals allow the athlete to see immediate improvements, while using long-term goals only can make the overall objective seem too far removed (Hall & Byrne, 1988). This proposal seems logical, and there has been some useful research into this issue. Weinberg et al. (1985) conducted one of the first experiments in the area using a sit-up task where groups were set either long-term goals, short-term goals, or both goals. At the end of the experimental period it was found that although all the groups improved, there were no significant differences between performance levels. Again, involving a sit-up task, Hall and Byrne (1988) divided the participants into four groups -a) long-term goals, b) long-term and experimenter-set short-term goals, c) long-term and participant-set short-term goals, d) "do your best" goals. They found that those who were set short-term goals, long-term goals, or both, all showed significant improvement, but there were no significant differences between the groups. Similarly, Frierman, Weinberg and Jackson (1990) using a bowling task, split participants into four groups a) short-term goals, b) long-term goals, c) both, d) "do your best". The only significant difference they found was that the group who were set long-term goals improved compared to the "do your best" group. More positive results regarding the efficacy of combining short- and long-term goals were demonstrated by Tenenbaum et al. (1991.). Again employing the ubiquitous sit-up task they split participants into five groups a) short-term goals, b) long-term goals, c) both, d) "do your best", e) no goals. On this occasion the hypothesised benefits of combined goals were in evidence as the both goals group significantly outperformed each of the other goal conditions.

Performance goals that consider task mastery and attaining personal challenges, have been widely advocated as an effective component of goal-setting programmes (Burton, 1992; Locke & Latham, 1990). It is important at this stage to emphasise that although the structure of this review, may suggest a progression from the use of outcome goals to performance goals, this is not the case. As early as 1975, Csikszentmihalyi confirmed that optimal performance generally occurred in a mastery or learning situation, when performance was viewed as an end in itself rather than a means to an end. Nicholls (1984) believed individuals assess ability in two different ways; firstly through social comparison and processes (or outcome

orientation), and secondly through comparison with personal standards of excellence (or performance orientation).

A study by Burton and Martens (1986) on drop-out rates in junior wrestling, looked towards low perceived ability as a key mediating factor in reasons why drop-outs ceased the sport. It was concluded therefore that the use of performance goals in wrestling could be advantageous, allowing individuals who based success on personal accomplishments to view frequent success and therefore reducing perceptions of low ability and increasing motivation. Other studies, by Martens and Burton (1982) and Burton (1989), praised the flexibility that performance goals afforded the athlete and stated that athletes of all abilities could raise or lower goals to keep them both challenging and realistic. Consequently encouraging both high motivation and consistent success. Burton (1989) studied the effects of goal setting programmes (GST) upon swimmers and found both positive and negative effects of performance goals. Two case studies of swimmers highlighted consistent links between accurate performance goals and positive attributions:

> When athletes' goals closely matched performance, they felt successful and satisfied and took credit for successes as indicative of high ability. Yet when they performed poorly, they accepted the blame for failure, using it to motivate them to increase future effort without eroding feeling of competence. (Burton, 1989, p128).

Despite these positive findings in the use of performance goals, Burton (1989) also found significant negative effects of performance goals. One particular case study found that when confronted with a temporary reduction in performance, the swimmer failed to lower the performance goal to keep it realistic. It was found to lead on to expectations of poor performance, and crediting blame for poor performance to low ability. It seems therefore that negative cognitions thought to be applicable to outcome goals can also be brought to the surface by the improper use of performance goals. It was duly noted by Burton (1989) that swimmers must first learn the long-

term importance of keeping goals realistic and practice appropriate goal adjustment until the skill become automated (p.128).

The emergence of evidence for the most effective ways of setting goals has encouraged several authors to summarise the findings into a practical format for coaches and athletes. Fuoss and Troppmann (1981) are credited with the acronym "SCRAM", standing for specific, challenging, realistic, acceptable, and measurable. While more recently the National Coaching Foundation (Cabral & Crisfield, 1996) suggested "SMARTER" as an improved aide memoire guiding athletes towards using goals that are specific, measurable, accepted, realistic, time-phased, exciting, and recorded. Beggs (1990) pointed out that the key to successful goal setting in sport probably lies in the identification of appropriate values for these parameters, and being aware that they are likely to change under the stress of competition.

2.4 Problems With Goal-Setting In Sport: Research And Practice

The issue of why goals have generally been less effective in the sport setting when compared to the industrial/organisational has been the subject of much debate (Burton, 1992, 1993; Locke, 1991, 1994; Weinberg & Weigand, 1993, 1996). The basis for most of the argument has been to focus on methodological issues first raised by Locke in 1991: (1) participation motivation; (2) goal-setting in do-your-best conditions; (3) feedback in do-your-best conditions; (4) personal goals; (5) goal difficulty. Weinberg and Weigand (1993, 1996) focused on the inherent differences between sport and business that they feel significantly affect motivation. Their main point is that in the world of sport people have generally chosen to take part in an activity rather than being obliged to complete tasks in the work setting. Weinberg and Weigand felt very strongly about the likelihood of sports participants in control groups still being relatively highly motivated when compared to those in goal-setting groups and therefore displaying similar levels of effort and performance. Locke (1991, 1994) made a different point about motivation amongst control group participants when he pointed out the tendency for goal-setting research to be conducted with college students who may well be receiving class credits and thus retain motivation in control conditions.

Locke (1991, 1994) also highlighted the fact that differences in results between achievement oriented domains may be caused by sports participants spontaneously setting their own goals in do-your-best conditions. Clearly, once such participants have set their own goals then they might not actually be experiencing anything different to participants in experimental goal-setting groups. Locke (1991) suggested that the best way to overcome this problem is either to withhold feedback from participants in control conditions or to provide feedback in such a varied manner that participants are unable to keep track of their performance level. In a study by Lerner and Locke (1995), participants performing sit-ups in a control condition were asked to do their best while audibly counting back from 100 in increments of three. It should be noted that although one aspect of experimental control is enhanced through such a strategy it does also lead to potential flaws in other areas. The more demands that are placed on a control group then the more danger there is of introducing a confounding variable, in this case additional information processing demands, which could mask true goal-setting effects by unfairly disadvantaging the do-your-best control group. However, Weinberg and Weigand (1993, 1996) argued that this limitation was something that goal-setting researchers actually needed to embrace rather than to artificially manipulate as might be possible under certain laboratory conditions. They suggest that if goal-setting is to be regarded as a reliably successful intervention technique then individuals who set goals systematically within a study should still outperform participants who set goals spontaneously and covertly.

A second methodological criticism that Locke (1991) aimed at sport research on goal-setting was that sport researchers failed to assess the personal goals of people participating in different goal-setting conditions. This weakness led to compromising of the experimental manipulation of goals because participants in goal-setting condition groups would reject the assigned goal and often be aiming at something quite different. Locke (1991) suggested that if researchers were to obtain information on personal goals, then they could classify participants into goal-setting conditions that were congruent with their personal goals. Locke believed that such a tightening of experimental control would lead to future research confirming his predictions

regarding goal difficulty and specificity. In contrast with Locke's optimism, however, Hall and Kerr (2001) pointed out a further methodological problem with the assessment of personal goals. They claimed that if the information were obtained before the participants performed (which most would agree to be the best time) there would be a danger of compromising the integrity of the design by focusing the individual on something other than the specific manipulation intended. But if the information about personal goals was asked for after the performance had taken place, participants could well be expected to provide responses confounded by attributional cognitions.

The problem with assessing personal goals is exacerbated by the fact that goal-setting is clearly a dynamic process and needs to be considered as conceptually similar to other more general perspectives on motivation. Achievement goal theorists (e.g. Duda & Hall, 2000; Dweck & Leggett, 1988) highlight the importance of understanding about multiple goals and individual differences in the subjective meaning of success and failure. These cognitive appraisals have been demonstrated as liable to change with environmental circumstances, and so it must be acknowledged that interpretations of information regarding assigned or participant-set goals are also likely to vary during the performance process. Taking this into account, any attempt to assess personal goals needs to allow for the complexity of the cognitive motivational process involved in goal-setting. It is not acceptable to assume that assessing these goals at a single point in time will reflect accurately what an individual is aiming to achieve over the whole performance.

The importance of goal commitment as a moderating factor in the relationship between goals and performance. Goals will only have an impact on performance if the performer is committed to the particular goal (Erez & Zidon, 1984; Locke, Shaw, Saari, & Latham, 1981). Indeed, Theodorakis (1996) used pathway analysis to reveal a direct effect from goal commitment to performance, and recommended that all goal-setting research studies should include a goal commitment measure. Hollenbeck and Klein (1987) suggested that goal commitment is determined by the

attractiveness of attaining the goal and the belief that one can successfully achieve the goal.

Locke (1968) regarded goal acceptance or commitment as a crucial variable in goal-setting. If a person decides that a goal is impossible to reach, they may well abandon their efforts to reach it. Clearly, one of the most important things to achieve is acceptance of, and commitment to, goals by those performing or working. These two are not necessarily the same, as Locke et al. (1981) and Hollenbeck and Klein (1987) have pointed out. Goal commitment is an inclusive concept which refers to one's attachment to, or determination to reach, a goal, whether self-set, participatively set, or assigned. Acceptance, on the other hand, refers only to assigned goals. Logically, an assigned goal may be accepted initially but the person may not remain committed to it for very long: for example, as goals get harder, there is some evidence that acceptance falls off (Erez & Zidon, 1984), although this may not result in complete rejection.

Although logically separate, usage of these terms and the methods employed to measure them seem to have been confounded in the literature (Earley & Kanfer, 1985). It seems intuitively more correct to use the term "commitment", which has an intrapersonal meaning as well as being applicable to any type of goal. As Salancik (1977) has argued, commitment can be thought of as a binding of the individual to behavioural acts; in a sports context, individual commitment to self-set or participatively-set goals may be a more useful concept than the acceptance to goals assigned by the coach, partly because of the generally less autocratic nature of sports coaching and partly because athletes seem more likely to use covert goal-setting strategies.

It seems logical to assume that, given two people with similar levels of ability, the person with the higher level of commitment to a difficult goal will perform better, have higher levels of persistence, and so on. However, the predicted commitment-performance relationships were often difficult to demonstrate in industrial/organizational studies (e.g. Locke et al., 1984; Yukl & Latham, 1978). The

CHAPTER III

STUDY 1: THE EFFECT OF MULTIPLE-GOAL STRATEGIES ON PERFORMANCE OUTCOMES IN TRAINING AND COMPETITION.

3.1 Introduction

Sport psychology consultants have increasingly valued the perceived advantage of process-oriented goal setting, when compared to the more traditionally used performance or outcome goals (Murphy, 2005). Mental skills training handbooks have tended to reflect this favouring of a process-orientation and some have gone so far as to recommend that outcome goals, such as "Finish in the top three" (Butler, 1996, p23), should be rejected as inappropriate. Empirical studies testing the effects of different types of goal have also provided evidence for the positive impact of process goals in competitive situations (e.g. Kingston & Hardy, 1997).

However, in spite of these developments, Hardy, Jones, and Gould (1996) pointed to the relative lack of information available about setting goals for performance on complex tasks such as sports skills, and could only provide "educated guesses" (p109) regarding best practice. The suggestions they made are still to be fully investigated and included the hypotheses that: Outcome goals, made explicit several weeks before a competition, will motivate effort and strategy development; performance goals aid self-confidence; process goals should be used during both practice and performance, to aid the allocation of attentional resources and to increase self-efficacy; outcome and performance goals should not be emphasized immediately before performance; and process goals should focus on holistic aspects of technique during skill execution.

Zimmerman and Kitsantas (1996) examined the use of process goals during self-regulated learning of dart throwing and found that process goals improved skill acquisition more than did product goals. These findings were then supported and extended by Kingston and Hardy's (1997) study, which compared the relative efficacy of two types of goal-setting training programme on the performance of club golfers over a whole season. A group using process goals showed an improvement in

skill level, as measured by handicap, at an earlier stage in the season than did a group using performance goals. A further study by Kingston and Hardy (1997) compared the goal orientations of golfers across a season and found that professional players appear to use competitions as an extra source of motivation, but not at the expense of focus on the controllable aspects of their performance.

The aim of the current study was to examine the proposal put forward by Kingston and Hardy (1997) that sportsmen and women should in fact be actively encouraged to use multiple-goal strategies to maximize their level of performance in training and competition. This study compared the effect of four different goal-setting strategies, and a no goals control condition, on performance of a soccer task during training sessions and in competition. I hypothesized that performance in both situations would be affected most beneficially by a multiple-goal strategy that made use of an outcome goal, a performance goal, and a process goal. I also predicted that using a process goal in conjunction with an outcome goal would be of more benefit than singly using either type of goal.

3.2 Method

Participants

The sample consisted of 40 (23 male and 17 female) students who were reading for sport related degrees at Chichester Institute (mean age = 21.7 years, S.D. = 2.4 years). All participants volunteered to be involved in the study by responding to a poster advertisement. Participants were advised that both confidentiality of data collected and their individual anonymity would be preserved at all times. Ethical approval for the study was sought and obtained from the appropriate university authority.

Experimental Task

The sport-related task used in this study was a variation of McDonald's (1951) Wall Volley Test, used by McMorris, Gibbs, Palmer, Payne and Torpey (1994), in which participants had continuously to kick a soccer ball at a target 7.6 meters away.

The target was 30 cms wide and a hit scored 10 points. Either side of the 10 point zone were two 8 point zones, also 30 cms wide. Outside of these zones there were 6, 4 and 2 point zones, also 30 cms wide. Any kick hitting outside of the 2 point zone scored zero points. For a score to be recorded the ball had, not only, to hit the target but also to rebound over the 7.6 meter line. The participant had 1 min 30 secs to score as many points as possible. McMorris et al. (1994) measured reliability using a test re-test method and demonstrated an Intra-Class Correlation Coefficient of 0.79 for total points scored. McMorris et al. also suggested that the test should be accepted as a valid and objective measure of passing accuracy in soccer. It should be noted that, in contrast with the present study, McMorris et al. used experienced male soccer players as participants. In the present study it was recognised that there could be a learning effect on the task, and that this would be observable through the extent of the improvement in the control group.

Procedure

Initially all participants performed the Wall Volley Test and were ranked by their score. All testing was conducted at the same outdoor location and participants attended individually to eliminate any audience effects. The Wall Volley Test performance ranking was then used as the basis for the selection of five matched ability groups (n=8).

All participants completed the learning stage of the study and then attended two training sessions in each of the next five weeks. Each training session consisted of the participant rehearsing their pre-performance routine and then using the routine before performing the Wall Volley Test. Goal Commitment Questionnaires were used to investigate changes in commitment to the different types of goal during the training phase. Participants in the four goal setting groups also completed the Goal Commitment Questionnaire before training sessions one, five and ten. Separate Goal Commitment Questionnaires were completed for each type of goal being used by the participant.

The post-training phase competition comprised one trial of the Wall Volley Test for which participants were instructed to use the pre-performance routine that they had been using in the training phase of the study. All participants were in attendance throughout the competition and trophies, including cash prizes, were awarded to the winners of each group in the competition. After the competition, two participants were randomly selected from each experimental group to take part in a semi-structured interview. Qualitative data reported in this study were generated by the participants' responses to a series of open-ended questions.

Quantitative Data Collection

Wall Volley Test performance measures. Performance on the Wall Volley Test was measured by recording the total score achieved by the participant in each trial.

Goal Commitment Questionnaire. Goal commitment was assessed using a four-item scale derived from a scale used by Weingart and Weldon (1991). The participants were required to respond, using a six-point scale (1 = 'strongly disagree' to 6 = 'strongly agree'), to the following statements: 'I was strongly committed to pursuing this goal', 'I didn't care if I achieved this goal or not' (reverse scored), 'I was highly motivated to meet my goal', and 'It was very important to me that I achieved my goal'. The scale produced a total goal commitment score ranging from 4 (very low commitment to that goal) to 24 (very high commitment). Cronbach's alpha coefficients for the scale ranged from $\alpha = 0.83$ to $\alpha = 0.93$.

Qualitative Data Collection

Semi-structured interviews. Two members of each of the intervention groups, ten participants in total, were randomly selected to participate in a semi-structured interview after the final competition. The purpose of the interviews was to provide an alternative form of evaluation of the effectiveness of the intervention strategies, and also to gain insights into the participant's experiences during a "goal-setting study". An issue of particular importance was the examination of the extent to which participants had ignored externally assigned goals and set their own covert goals, as

this has been identified as a significant methodological flaw within the sport psychology literature (Locke & Latham, 1990).

Interviews lasted for about twenty minutes each, and were all based on the same series of open-ended questions. The schedule of questions ensured a similar structure to all interviews and that all participants were treated in a standard way. The potential for interviewer bias was further addressed by asking each participant, at the conclusion of the interview, "How did you think the interview went?", "Did you feel you could fully outline your experiences?", and "Did I lead you or influence your responses in any way?" (Orlick & Partington, 1988, p.108). All participants reported that they were not unduly influenced in their responses by the interviewer. Interviews were recorded using a tape recorder and transcribed. Analysis of transcripts took the form of visual inspection and highlighting of any comments that appeared to be significant in relation to the individual participant's experience of their goal-setting condition.

Goal Conditions

Outcome goal only. Participants were told that they had been entered into a competition, based on a simple soccer skill and involving nine other participants of similar ability to them. They were informed of the date of the competition, the schedule of training sessions and that there was a cash prize for the winner of the competition. Participants in this group were also informed that the experiment was concerned with the effectiveness of different approaches to goal setting. Approximately one week before the first of the ten training sessions, the experimenter worked with participants to develop an individually tailored, four-step pre-performance routine: Step One, Goal Statement; Step Two, Centering; Step Three, Positive Thought; and Step Four, Goal Statement. The development of the routine consisted of firstly, instruction on how to use the centering technique as described by Hardy and Fazey (1990). This technique is a relaxation strategy that requires the participant to change their center of consciousness from their head to their center of gravity (a point just below the navel). Centering provides a mechanism for quickly relaxing and then focusing attention on what needs to be done and how it

is going to be achieved (Hardy & Fazey, 1990). Secondly, the participant was required to generate a task relevant positive thought for inclusion at step three of their routine. Participants were guided towards the use of a positive statement that was materially similar to "I'm feeling good" or "I'm ready". Finally, the participant was told that their goal statement, at both Step One and Step Four, should be to affirm "my aim is to win first prize in the competition".

The learning stage began with a one hour group session on centering, positive thinking, goal-setting and pre-performance routines. This group session was followed by an individual meeting with each participant of about half an hour, during which their routines were developed and recorded. Participants were then told to practice using their routine, initially being encouraged to verbalize their thoughts at each step. Before the start of the training phase, all participants reported that they were able to use their pre-performance routine accurately without assistance. The purpose of the centering and positive thought steps was to add substance to the pre-performance routine without confounding goal effects. Since the second and third steps in the routine were standard across experimental groups, the internal validity of the study was maintained.

Outcome goal and process goal. This protocol was identical to that for the outcome goal only group except for the goal statements in the pre-performance routine. Participants were given information regarding the use of process goals, and then they were helped to generate a process goal statement that could be used in their routine. Examples of the process goals arising included "low and straight", "pace", "concentrate for the whole 90 seconds", "focus on the ten" and "first time every time". Following this, participants were instructed that the goal statement at Step One should be "my long-term aim is to win first prize in the competition, and my short-term aim is to achieve my process goal" and that the goal statement at Step Four should be their individual process goal statement.

Process goal only. Participants in this group were informed only that the experiment was concerned with the effectiveness of different approaches to goal

setting, i.e. they were not told about the competition. The protocol was then the same as that for the outcome goal and process goal group, except for the goal statement at Step One being "my aim is to achieve my process goal".

Outcome goal, performance goal and process goal. The protocol for this group was similar to that for the outcome goal and process goal group except for the goal statements in the pre-performance routine. In addition to information about process goals, participants were told that part of their routine should include setting a performance goal of achieving a personal best score. Finally, participants were instructed that the goal statement at Step One should be "my long-term aim is to win first prize in the competition, and my short-term aims are to achieve my process goal and a personal best score", and that the goal statement at Step Four should be their individual process goal statement.

No goals condition. Participants in this group were informed only that the experiment was concerned with the efficacy of pre-performance routines, i.e. they were not told about the competition, and they completed the experimental tasks without the use of explicit goal statements. They used a two-step pre-performance routine: Step One, Centering; and Step Two, Positive Thought.

3.3 Results

Quantitative Data

Wall Volley Test performance scores. The score for the training stage of the study represents the participant's mean Wall Volley Test performance score for the ten trials performed. Levene's test confirmed suitable homogeneity of variance prior to further statistical analyses ('p' values ranged from 0.128 to 0.997). Scores for Wall Volley Test performance scores were compared among the five intervention groups at the three stages of the experiment using a two-way analysis of variance (ANOVA) (group and test), with repeated measures on the second factor. Mauchly sphericity tests were conducted on the data used in all of the ANOVAs to ensure that the assumption of sphericity was not violated in any of the analyses. In accord with

Schutz and Gessaroli (1993) a critical e value of 0.70 was set, and where applicable the Huynh-Feldt epsilon correction factor was used. Following Huck, Cormier and Bounds (1974), where significant interactions were evident interpretations of main effects were considered inappropriate. Post-hoc Fisher Least Significant Difference tests were employed to determine between which means the significant differences were evident.

The intervention group by test interaction for Wall Volley Test performance score was significant, $F_{(8,70)} = 3.14$, $p<0.05$, $\eta^2=0.29$ (see Figure 3.1). The results from the follow-up tests indicated that, for all groups, both mean training performance and competition performance were higher than was pre-test performance. As expected, due to the matching procedure employed, there were no differences between any of the groups for pre-test performance. The two groups using multiple-goal strategies performed better during the training phase of the study when compared to each of the other three groups. The only group to improve from average training performance to competition performance was the no goals control group.

Comparison between the groups for performance in competition also revealed that the two groups using multiple-goal strategies performed better than each of the other three groups. Additionally at this stage, both the process goal only group, and the no goals control group, scored better than did the outcome goal only group.

Goal commitment. The means and standard deviations for the Goal Commitment Questionnaires are presented in Table 3.1.

Scores for commitment to outcome and process goals were compared between the three relevant intervention groups at the three stages of the training phase of the

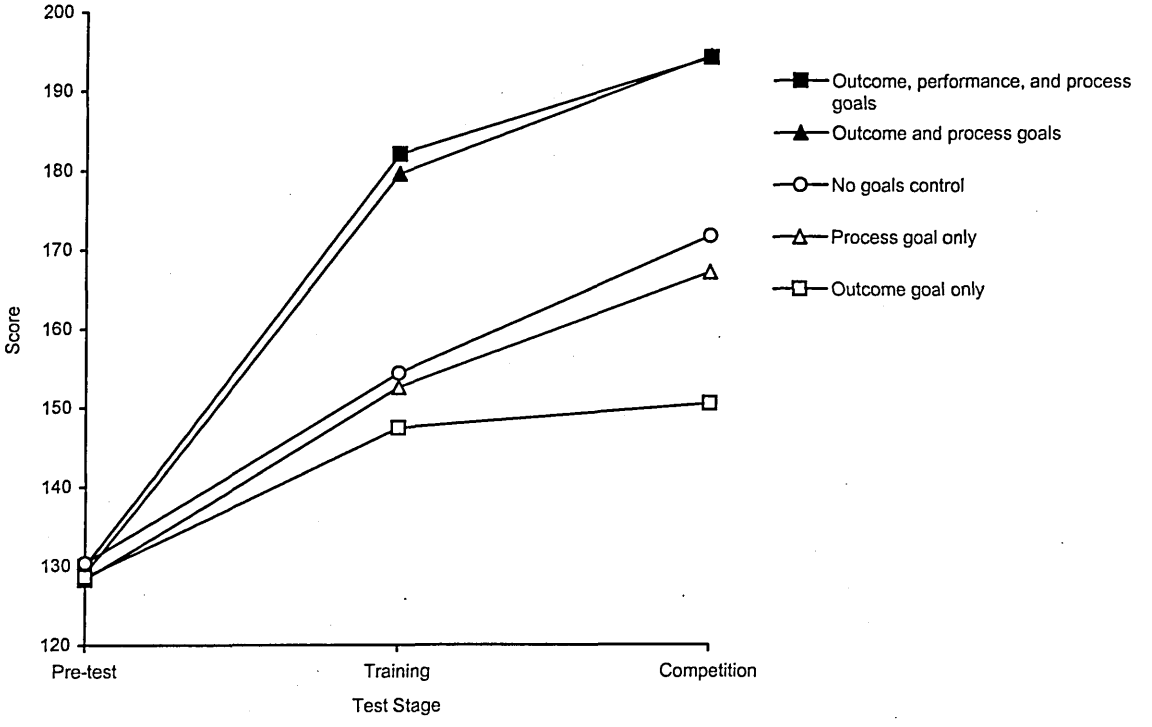

Figure 3.1. The Intervention Group by Test Interaction for Wall Volley Test Performance.

experiment using separate two-way analyses of variance (ANOVA) (group and stage), with repeated measures on the second factor. Scores for commitment to a performance goal were compared between three stages of the training phase of the experiment using a one-way ANOVA with one repeated measure and no main effect was found for trials. Main effects were found, however, for trials for both commitment to an outcome goal, $F_{(2,42)} = 13.24$, $p<.05$, $\eta^2=0.69$, and commitment to a process goal, $F_{(2,42)} = 11.50$, $p<.05$, $\eta^2=0.64$. Post-hoc Fisher LSD tests indicated that commitment to an outcome goal was higher at training sessions five and ten than it had been at training session one. Similarly, commitment to a process goal was found to be higher at training sessions five and ten than it had been at training session one. No interaction effects were found for either outcome or process goals.

Qualitative Data

Questions addressed to participants in the interview situation specifically referred to issues related to the content, format, adherence, and effect on performance in both training and competition of the various goal-setting interventions. Due to the length of each interview, it was impossible to report all of the information obtained. Consequently, only representative interview quotes are presented to illustrate the basis upon which statements are formulated

All the participants interviewed reported that they had accepted and adhered to the pre-performance routine developed for them to use in this study. They said that they had understood the steps in the routine and felt they had generally been successful in carrying out the correct sequence. Additionally, they all thought that the "positive thought" and "centering" steps were probably beneficial in terms of preparing to perform. In line with the guidance given to them, the positive thought statements used were mainly of a general nature; e.g., "I'm feeling good", "I can do well at this". Several of those interviewed reported that they had occasionally used slightly different forms of wording, but that the statements had remained conceptually very similar. Centering was regarded by all of the participants as a useful step in the

Table 3.1

Goal Commitment Questionnaire Scores for Each Type of Goal, Measured After Training Sessions One, Five and Ten. Values are Mean and Standard Deviation.

		Session One		Session Five		Session Ten	
Type of goal	n =	M	SD	M	SD	M	SD
Process goal	8	16.2	3.19	18.8	3.48	19.9	3.50
Outcome goal	8	16.8	3.62	19.0	2.47	19.3	2.81
Performance goal	8	19.0	3.93	21.6	2.42	21.0	3.17

routine. Typical observations being, "the centering bit was good because it settled you down" and "it made it easier to focus on what you're meant to be doing".

With respect to the goal statements, the general view of those interviewed was that the use of a routine had proved a successful strategy for controlling which goals were being prioritized. Possibly due to this, the reported incidence of covert goal setting was relatively low. There were, however, still times when participants thought that they had not conformed exactly to the expected procedure. The most frequent breach reported was the occasional spontaneous use of a personal best performance goal. This is perhaps not surprising given the nature of the task and the fact that all participants received knowledge of results feedback. Importantly, all of the four participants, who had not been assigned an outcome goal, reported that they had been unaware that there was going to be competition at the end of the training phase of the study. Furthermore, none of the selected participants reported using explicit process goal statements which were not part of their routine.

A valuable aspect of each interview proved to be the point where participants were invited to comment on how they felt their goal setting might have influenced performance. Interestingly, both participants who had used only an outcome goal clearly expressed the feeling that the prioritization of such a goal had been an ineffective strategy. One of them reported that during the training phase he had been "worried about whether I was scoring high enough against the opposition" and that "if a ball went wide....it was like a downward spiral....what I needed to do was refocus". The other participant echoed this feeling and also felt that she had performed worse in the competition due to "extra pressure" that meant "I didn't take my time....when it went wrong I just started whacking it".

The two participants from the process goal only group reported that they felt their routine had had a positive effect on performance in training. When asked about their experience of the competition, however, there was a difference of opinion. One of them said that their process goal had "helped with confidence" and "helped with focus....every time the ball came back, I aimed at the ten". By contrast, the other

participant felt that in the competition "other peoples' scores created pressure" and that "I think that the process goal got forgotten really".

All four participants who had used a multiple-goal strategy reported that they felt the pre-performance routine had been effective in creating a strong tendency to prioritize their process goal immediately before training performance. Their comments on process goals reflected those made by members of the other groups and included observations such as, "it helped you focus on what you were trying to do", and "I liked the challenge of trying to stick to my process goal for the whole minute and a half". In addition, they all considered their outcome goal to have been beneficial, in terms of providing an incentive to improve. A typical comment being, "I think that knowing that there was going to be a competition made me try harder". Finally, the two participants who had set performance goals both seemed to feel that this had also influenced their performance in training. One of this pair suggested that "trying to beat my best score was a good idea....I really wanted to do it each time", whilst the other reported that "any mistakes meant I started to think negatively....that I'm not going to make my P.B. [personal best]".

3.4 Discussion

The results of this study clearly support the hypothesis that multiple-goal strategies are significantly advantageous when compared to methods that do not combine different types of goal. Statistically significant group by test interactions were found which indicated that groups using multiple-goal strategies performed better, both in training and in competition, than did groups using only one type of goal or no goals. Evidence was also provided to reinforce the opinion that using outcome goals immediately prior to competition may be detrimental to performance. Commitment both to process and outcome goals was found to increase with time spent using the goals as part of a pre-performance routine in practice sessions.

As expected, due to a learning effect on the performance task, the no goals control group did improve across the three periods tested. It is important, therefore, to consider comparisons with the control group when assessing the performance of the other groups. This line of analysis reveals that the process goal only, and outcome goal only groups both failed to outperform the control group, during any period of testing. Indeed, at the competition stage, the performance of the outcome goal only group was significantly supressed compared with the control group. The poor performance of the process goal only group and the outcome goal only group, when compared with the control group, suggest the potential for a negative effect on performance if such goals are used in the absence of complementary strategies. The use of a process goal only strategy might result in under-performance if the strategy causes the diminution of other components of performance such as a competitive sense of urgency, or commitment to expending high levels of effort during training periods. In contrast, the negative effect of an outcome goal only strategy might be derived from increased levels of competitive state anxiety and degraded attentional focus during performance.

The qualitative data produced within this study also revealed some considerations that may be important for practitioners when advising performers on how best to implement an effective goal-setting training programme. Support has been demonstrated for Hardy's (1997) suggestion that outcome goals may have a significant role to play through motivating effort during periods of training. However, it appears that the benefits of adopting an outcome goal are realized only when the outcome goal is combined with the prioritization of a "process orientation" immediately before, and during performance. The potential for a performance goal to be a "double-edged sword" (Beggs, 1990) was confirmed, and the difficulty of maintaining a focus on process goals when under pressure (Hardy, 1997) was also highlighted.

The goal-setting effects found in this study provide important empirical data for sport psychologists seeking to employ evidence based performance enhancement interventions. However, the psychological processes underlying these goal-setting

effects merit further investigation and the second study in this thesis will therefore analyse variables such as self-efficacy , state anxiety and effort under different goal-setting and goal attainment conditions.

CHAPTER IV

STUDY 2: THE EFFECT OF DIFFERENT GOAL-SETTING EXPERIENCES ON BENCH-PRESSING PROCESS AND PERFORMANCE.

4.1 Introduction

Studies that have explored the practices of successful athletes have found that they seem to make effective use of outcome goals, often within a hierarchical structure of multiple-goals (Jones & Hanton, 1996; Weinberg, Burton, Yukelson, & Weigand, 1993). The first study in this programme of research provided empirical evidence to support the suggestion that different types of goals should indeed be used in combination. The aim of the current study was to examine further the combined and separate effects of outcome goals and performance goals, within an experimental setting that enabled controlled manipulation of participants' level of attainment on an outcome goal. The main focus of this second study was to explore the effects of these varied goal experiences upon the psychological processes thought to support performance.

Failure to achieve outcome goals has been shown to decrease performance and increase anxiety (Burton, 1992), reduce motivation (Martens, 1987) and reinforce perceptions of low ability (Roberts, 1984). Burton (1992) suggested that outcome goals optimally challenge athletes only when the athletes compete against those with similar ability. Furthermore, Burton also highlighted two ways in which the use of outcome goals acts to inhibit motivation when opponents are not of similar ability. First, highly skilled athletes are insufficiently challenged by solely outcome goals and thus experience reduced motivation to direct optimal effort to the task (Martens, 1987; Nicholls, 1984; Roberts, 1984). Easy success for skilled athletes may also lead to overconfidence, thus insidiously eroding motivation and performance by creating a false sense of security (Martens, 1987). Second, a less skilled athlete may view an outcome goal as an excessive challenge because although they may perform well with maximum effort, he/she may still lose. According to Roberts (1984), failure will then reinforce perceptions of low ability and competition would then be viewed as a threat.

Jones and Hanton (1996) investigated the link between the use of different types of goals (i.e. outcome, performance and process) and swimmers' interpretation of their anxiety symptoms one hour before an important race. They found that both cognitive and somatic anxiety symptoms were perceived as more facilitating by swimmers who had positive expectancies of goal attainment than they were by swimmers who had negative or uncertain expectancies. Using Jones's (1995) control based model as a theoretical framework they found that expectancy of goal attainment influenced interpretation of anxiety symptoms in all cases but that predictions were best supported for performance goals.

I hypothesized that in the present study participants who perceived a high level of attainment on an outcome goal would interpret anxiety symptoms as more facilitative than would participants who experienced a low level of goal attainment. I also expected that where a performance goal was used in combination with an outcome goal, the negative effects of low outcome goal attainment would be reduced, and the positive effects of high outcome goal attainment would be enhanced. I further hypothesized that the positive attainment of an outcome goal combined with the use of a performance goal would prove more beneficial than the singular use of a performance goal.

4.2 Method

Participants

Participants were 60 sports students (42 male and 18 female, mean age =20.34 years, S.D =2.58) who were reading for sports-related degrees. All participants volunteered to be involved in the study by responding to a poster advertisement and were active in various sports. None of the participants were involved in regular training with weights. Participants were advised that both confidentiality of data collected and their individual anonymity would be preserved at all times. Ethical approval for the study was sought and obtained from the appropriate university authority.

Bench-press task

A free weights bench-press task was used throughout the study. The bench-press primarily exercises the pectoral muscles of the chest and the triceps muscles of the upper arm and is commonly used by weight trainers and bodybuilders as a strength building exercise. Before each weekly training session, participants warmed-up using both a stretching routine and practice barbell lifts with low weights. Participants then trained on a Power Fabrications weights bench, with the bar positioned above the bench and held by two, free standing Body-Bild weight stands. Before each set, participants lay back on the bench with their back pressed firmly against the padding and feet placed flat on the floor. The bar was held using an overhand grip with hands placed 3-5 inches wider than shoulderwidth on the bar. The same technique was followed for each repetition: lowering the bar to the sternum; allowing the bar to touch the chest lightly; pushing the bar up and slightly back ending the press with arms extended and the bar above the shoulders. A spotter was present at all times to ensure safety and to provide support if the participant was unable to control the lift.

Procedure

Initially all participants performed the bench-press task and were ranked by their maximal weight pressed. The dependent variable for bench press performance was defined as the heaviest weight the participant successfully lifted for six repetitions. This would normally be from the final six lift set of the session, but if the participant failed at that weight then their score was taken from a previous set in which they did achieve at least six successful lifts.

All testing was conducted at the same location and participants attended individually to eliminate any audience effects or interactions that might have confounded the bogus goal attainment information manipulation. The bench-press performance ranking was then used as the basis for the selection of six matched ability groups (n=10). Participants underwent the learning period of the study before completing one bench-press session in each of the next six weeks. Goals were established using a

method that encompassed the assertion that assigning goals should not have a detrimental effect upon motivation as long as the goal is perceived to be reasonable and is given supportively (Fairall & Rodgers, 1997; Latham & Yukl, 1975; Locke & Latham, 1990).

Each of the goal-setting groups was advised of their current goal attainment status at the beginning of every training session. Participants in the no goals control group were reminded about the content of their pre-performance stretching routine. In each of the goal-setting groups, the ARS-M and self-efficacy questionnaire were administered before bench-pressing commenced, and the goal commitment and effort measures were taken immediately after each session. Participants in the no goals control group did not complete either the self-efficacy or the goal commitment measures as the questionnaire items were not applicable. The session started with a warm-up (at an intensity chosen by the participant), and then five sets of 12, 10, 8, 8, and 6 repetitions respectively. Although goals were assigned, the participant independently chose specific increases in weight from session to session with no input from the spotter. Before each set participants used the pre-performance routine which had the objective of achieving enhanced focus on the assigned goals. The goal commitment measure also provided a check on the effectiveness of the manipulation within the goal-setting groups.

Limitations of the Bench-Press Test

It should be noted that the bench-press test used in this study does have some limitations with regard to its accuracy as a measure of performance. The most significant drawback of the selected procedure was the limit imposed on participants to complete only five sets of lifts. It is possible that participants might at times have lifted heavier weights if they were allowed to continue with an additional set. Furthermore, the protocol did not consider the cadence of repetitions and thus did not provide a precise measurement of overall performance. However, it should be noted that an important strength of the chosen procedure lay in the repeated affirmation of goal statements required by the five set protocol.

Instrumentation

Anxiety Rating Scale-Modified (ARS-M). Competitive state anxiety and self-confidence were measured using a modified version of the Anxiety Rating Scale (ARS) (Cox, Russell & Rob, 1996). The ARS is a shortened version of the Competitive State Anxiety Inventory-2 (Martens, Burton, Vealey, Bump, & Smith, 1990) comprising of three items, to which individuals respond on a 7-point ordinal scale ranging from 1 = 'not at all' to 7 = 'intensely so'. The short form was constructed by taking items from the inventory of Martens et al. (1990). Responses were stepped into a multiple regression analysis to determine the best 3-item prediction model for somatic anxiety, cognitive anxiety, and self-confidence (Cox, Russell, & Robb, 1996). Then, three items were collapsed into a single aggregate statement for each subscale. Thus, the short form is derived directly from the CSAI-2 and multidimensional anxiety theory (Martens, Vealey, & Burton, 1990). In addition, results of previous investigations (Cox, Russell, & Robb, 1998; 1999) have shown scores on the short version to be moderately correlated (.60 to .70) with anxiety and self-confidence components of Martens et al's (1990) inventory. The shortened version of the questionnaire was chosen in this case due to the requirement for repeated administration and the belief that participants' motivation to provide valid data would be sustained better by reducing the information processing load placed upon them. For use in this study the ARS was modified to include "direction" scales for each of the three items. The facilitative/debilitative scale measures the extent to which respondents believe their symptoms to be helpful or harmful to performance. This scale was based on a similar measure that forms part of the modified CSAI-2 (Jones & Swain, 1992) and participants respond on a 7-point ordinal scale ranging from 1 = 'harmful' to 7 = 'helpful'. An exploratory investigation showed the ARS-M to correlate positively with the modified CSAI-2 subscales for cognitive anxiety intensity (r=0.64), cognitive anxiety direction (r=0.76), somatic anxiety intensity (r=0.72), somatic anxiety direction (r=0.78), self confidence intensity (0.74), and self confidence direction (0.68).

Self-efficacy questionnaire. Self-efficacy level and self-efficacy strength were determined using a two item self-report questionnaire. Participants responded

to each question by using a rating scale from 0= 'no confidence' to 100= 'total confidence.'

Goal Commitment Questionnaire (GCQ). Goal commitment was assessed using a four-item scale derived from a scale used by Weingart and Weldon (1991). The participants were required to respond, using a six-point scale (1 = 'strongly disagree' to 6 = 'strongly agree'), to the following statements: 'I was strongly committed to pursuing this goal', 'I didn't care if I achieved this goal or not' (reverse scored), 'I was highly motivated to meet my goal', and 'It was very important to me that I achieved my goal'. The scale produced a total goal commitment score ranging from 4 (very low commitment to that goal) to 24 (very high commitment). Cronbach's alpha coefficients for the scale ranged from $\alpha = 0.83$ to $\alpha = 0.93$.

Perceived effort measure. A measure of perceived effort was taken using a single-item ordinal scale ranging from 1= 'almost no effort' to 7 = 'near maximum effort'.

Goal Conditions

Outcome goal only (success) group. Participants were informed that they had been entered into a competition with eleven other participants who had performed similarly at the pre-test stage, and that their outcome goal should be "to win the competition". It was stressed to participants that the other people in the competition were of similar ability to themselves and that they should therefore regard the goal of winning the competition as realistic. A cash prize and trophy were also offered as further incentives to participants. Regardless of the true position, all participants in this group were told before each training session that "you're doing well in the competition – you're in the top four". During the week before the first of the six bench-pressing sessions, the experimenter worked with participants to develop an individually tailored, three-step pre-performance routine: Step One, Goal Statement; Step Two, Stretching; and Step Three, Goal Statement. The development of the routine consisted of a learning stage that began with a one hour group session on goal-setting and pre-performance routines. This group session was followed by an

individual meeting with each participant of about half an hour, during which their routines were developed and recorded. Participants were then told to practice using their routine, initially being encouraged to verbalize their goal statements at each step. Participants in the no goals control group underwent a similar process of group and individual sessions to develop their pre-performance stretching routine. Before the start of the competitive phase, all participants reported that they were able to use their pre-performance routine accurately without assistance. Because of the focus on the effect of goal-setting experiences on anxiety responses, it was necessary to avoid the use of any other psychological strategies in the pre-performance routine (e.g. centering, positive key words) that could have confounded the goal effects.

Outcome goal only (failure) group. The conditions in this group were identical to those in the outcome goal only (success) group in all respects apart from the goal attainment information. Participants in this group were told before each training session that "you're not doing very well in the competition – you're in the bottom four".

Performance goal group. The performance goal chosen for use in this study required the participant to aim for a "personal best performance" at each training session. A "personal best performance" was recorded when the weight pressed for the final set of 6 repetitions was higher than had been achieved previously. Participants in this group were unaware of any competition or inter-personal comparisons being made as part of the study.

Outcome goal (success) with performance goal group. The conditions in this group were created by incorporating aspects of the outcome goal (success) group and aspects of the performance goal group. Participants were thus assigned both an outcome goal and a performance goal (i.e. to win their competition and to achieve a personal best performance at each training session). Before each training session participants were given the same type of bogus information about their current level of attainment regarding the outcome goal, and were told what weight they would need to press to achieve a personal best performance. Participants were instructed

that the goal statement at Step One should be "my long-term aim is to win first prize in the competition, and my short-term aim is to achieve my performance goal" and that the goal statement at Step Three should be their individual performance goal statement (e.g. "my aim is to lift seventy kilos").

Outcome goal (failure) with performance goal group. The protocol was similar to that for the outcome goal (success) with performance goal group. The only difference between the groups was in the nature of the information given about progress towards the outcome goal.

No goals control group. Participants attended a weekly training session and completed the same five set bench-press task as the other goal intervention groups. Participants were not assigned goals, but were told that the study aim was to investigate the effect of the pre-performance stretching routine on bench-pressing performance. Their pre-performance routine consisted only of the stretching at Step Two.

4.3 Results

Data Analysis

Group means were compared between the six goal intervention groups at the seven stages of the training program using a series of two-way analyses of variance (ANOVA) (group and test), with repeated measures on test. To protect against the increased chance of a Type I error occurring when conducting a series of analyses the Bonferroni correction was used. Hence, for a result to be considered significant within this study, it had to be equal to or less than .00455 (.05 divided by 11). Mauchly sphericity tests were conducted on the data used in all of the ANOVAs to ensure that the assumption of sphericity was not violated in any of the analyses. In accord with Schutz and Gessaroli (1993) a critical e value of 0.70 was set, and where applicable the Huynh-Feldt epsilon correction factor was used. Post-hoc Fisher LSD

tests were employed to determine between which means the significant differences were evident.

Bench-Press Performance

A significant group by test interaction was obtained for bench-press performance ($F_{(30,294)}$=4.85, p<.005, η^2=0.33) (see Figure 4.1). Post-hoc tests showed that the outcome goal (success) with performance goal group, and the performance goal only group, both outscored the outcome goal only (failure) group from week three onwards. By week four the outcome goal (success) with performance goal group were additionally significantly outperforming the no goals control group. From week five onwards, the outcome goal (failure) with performance goal group performed significantly worse than both the outcome goal (success) with performance goal group and the performance goal only group. In week six, the performance goal only group outperformed both the outcome goal only (failure) group and the no goals control group. At this stage, the outcome goal only (failure) group also did significantly worse than the outcome goal only (success) group. The main effect for group was non-significant ($F_{(5,49)}$=0.17, p>.005), but a significant main effect for test ($F_{(6,294)}$=34.25, p<.005, η^2=0.41) was found.

Anxiety Rating Scale - Modified (ARS-M).

Somatic anxiety intensity. No significant interaction effect was found for somatic anxiety intensity ($F=_{(25,245)}$=.86, p>.005,). The main effect for group was significant ($F_{(5,49)}$=5.10, p<.005, η^2=0.34), whilst the main effect for test ($F_{(5,245)}$=.17, p>.005) was non-significant. Post-hoc tests indicated that the no goals control group reported significantly lower levels of somatic anxiety than did each of the other intervention groups (see Table 4.2).

Somatic anxiety direction. The group by test interaction effect ($F=_{(25,245)}$=3.40, p<.005, η^2=0.26) was significant. Differences between groups in their interpretation of somatic anxiety symptoms emerged in week three. At this stage, the outcome goal (success) with performance goal group reported symptoms as more facilitative than did each of the outcome goal only (failure) group, the outcome

goal (failure) with performance goal group, and the no goals control group. The outcome goal only (success) group also reported more facilitative interpretations than did the no goals control group. From week four, the outcome goal only (success) group interpreted symptoms significantly more positively than did the outcome goal only (failure) group. The main effect for group was also significant ($F_{(5,49)}$=9.95, $p<.005$, η^2=0.50), though the main effect for test ($F_{(5,245)}$=.82, $p>.005$), was non-significant.

Cognitive anxiety intensity. The interaction effect ($F_{(25,245)}$=1.39, $p>.005$) and the main effect for test ($F_{(5,245)}$=.38, $p>.005$) were both non-significant. A significant main effect was found for group ($F_{(5,49)}$=2.88, $p<.005$, η^2=0.23), with the no goals control group reporting lower cognitive anxiety than each of the other groups.

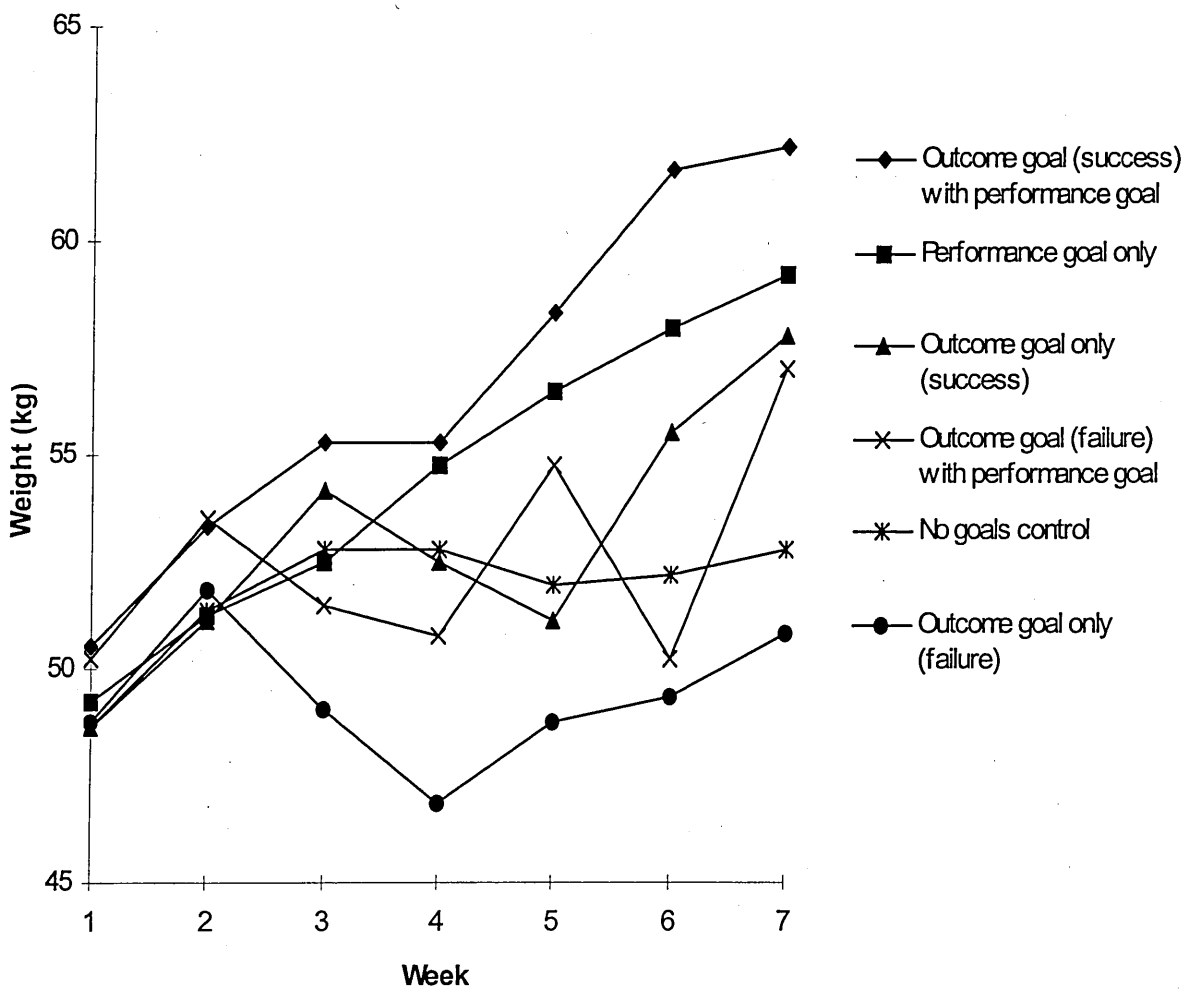

Figure 4.1: The Intervention Group by Test Interaction for Bench-Press Performance.

Table 4.1: Anxiety Rating Scale-Modified subscale for each group. Figures are Mean and Standard Deviation.

Group	ARS-M subscales											
	Somatic Intensity		Somatic direction		Cognitive Intensity		Cognitive Direction		Self con. Intensity		Self con. Direction	
	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D
PG	2.55	0.58	4.98	0.65	2.67	0.92	4.55	0.53	3.95	0.43	4.85	0.62
OGS	2.22	0.64	5.00	0.79	2.93	0.53	4.76	0.71	4.26	0.99	4.80	0.79
OGF	2.33	0.64	3.88	1.24	3.23	1.19	4.02	1.33	3.65	1.11	3.92	1.04
OGSP	1.98	0.45	5.33	0.43	2.56	0.92	5.43	0.36	4.70	0.69	5.28	0.33
OGFP	2.03	0.52	4.27	0.89	3.13	0.64	4.22	0.98	4.00	0.68	4.52	0.92
NGC	1.37	0.40	3.22	0.28	1.76	0.59	2.87	0.29	4.91	1.32	3.76	0.60

Cognitive anxiety direction. The interaction effect ($F=_{(25,245)}=1.70$, $p>.005$) and the main effect for test ($F_{(5,245)}=.65$, $p>.005$) were both non-significant. However, a significant main effect was demonstrated for differences between groups ($F_{(5,49)}=11.06$, $p<.005$, $\eta^2=0.53$). In comparison with each of the other groups, the no goals control group interpreted low levels of cognitive anxiety symptoms as being more debilitative to their performance.

Self-confidence intensity. The interaction ($F=_{(25,245)}=2.29$, $p<.005$, $\eta^2=0.19$) and the main effect for test ($F_{(5,245)}=6.44$, $p<.005$, $\eta^2=0.12$) were both found to be significant. Post-hoc tests indicated that from week one the performance goal only group had reported higher self-confidence levels than had the no goals control group. No significant main effect was revealed for group ($F_{(5,49)}=1.95$, $p>.005$).

Self-confidence direction. Significant effects were demonstrated for both the group by test interaction ($F=_{(25,245)}=3.44$, $p<.005$, $\eta^2=0.26$), and the group main effect ($F_{(5,49)}=5.40$, $p<.005$, $\eta^2=0.36$) . From week three the outcome goal (success) with performance goal group reported more positively than did the no goals control group. By week four the outcome goal (success) with performance goal group were also interpreting symptoms as more facilitative than were the outcome goal only (failure) group. Finally, from week five onwards, the no goals control group reported more debilitative interpretations than did each of the performance goal only group, the outcome goal only (success) group, the outcome goal (success) with performance goal group, and the outcome goal (failure) with performance goal group. The main effect for test ($F_{(5,245)}=1.15$, $p>.05$) showed no significant difference.

Self-Efficacy Level

A significant group by test interaction ($F=_{(20,205)}=2.07$, $p<.005$) , $\eta^2=0.17$ was found. Post-hoc tests established that the only significant mean difference occurred in week six, where the outcome goal (success) with performance goal group reported significantly higher self efficacy levels than the outcome goal only (failure) group. The main effects for group ($F_{(4,41)}=.99$, $p>.005$), and test ($F_{(5,205)}=1.61$, $p>.005$) were both non-significant (see Table 3).

Table 4.2: Self-efficacy level, self-efficacy strength, goal commitment and effort for each group. Values are Mean and Standard Deviation.

Group	Self-efficacy Level		Self-efficacy Strength		Goal Commitment		Effort	
	M	SD	M	SD	M	SD	M	SD
PG	68.2	13.3	72.0	10.5	20.6	2.12	5.90	0.80
OGS	66.8	13.0	66.5	9.91	18.8	3.95	5.81	1.11
OGF	63.4	18.3	54.1	17.3	18.5	3.38	5.13	0.35
OGSP	75.6	6.70	76.1	6.52	21.1	1.30	6.22	0.62
OGFP	70.2	12.9	61.8	12.4	20.5	1.73	5.75	0.47
NGC							5.61	0.75

Self-Efficacy Strength

Both the interaction effect ($F=_{(20,205)}=2.66$, $p<.001$, $\eta^2=0.21$) and the group main effect ($F_{(4,41)}=4.73$, $p<.005$, $\eta^2=0.32$) were found to be significant. From week four onwards, the outcome goal only (failure) group reported lower self-efficacy strength than both the performance goal only group and the outcome goal (success) with performance goal group. Also at this point, the outcome goal (success) with performance goal group began to report higher self-efficacy strength than the no goals control group. The main effect for test was not significant ($F_{(5,205)}=2.33$, $p>.05$).

Goal Commitment (GCQ)

The group by test interaction ($F=_{(20,205)}=2.46$, $p<.001$, $\eta^2=0.19$) was significant. Post-hoc tests established that the only significant mean difference occurred in week six, where the outcome goal (success) with performance goal group reported significantly higher goal commitment levels than the outcome goal only (failure) group. The main effects for group ($F_{4,41)}=1.68$, $p>.05$), and test ($F_{(5,205)}=1.23$, $p>.05$) were both non-significant.

Effort

A significant group by test interaction ($F=_{(30,294)}=2.46$, $p<.001$, $\eta^2=0.20$) was produced. Post-hoc Fisher LSD tests demonstrated that from week four onwards, the outcome goal only (failure) group had reported lower effort levels than both the outcome goal (success) with performance goal group and the performance goal only group. The main effect for both group ($F_{(5,49)}=1.46$, $p>.05$), and test ($F_{(6,294)}=.38$, $p>.05$) were non-significant.

4.4 Discussion

The results of this study provide further evidence for the beneficial effects of goal-setting within a sport and exercise setting. The use of outcome and performance goals, particularly when combined within a multiple-goal strategy, elicited significantly higher performances when compared to a no goals control group. Furthermore, although mean differences did not always reach statistical significance,

data generally supported hypotheses regarding the effect of varied goal-setting experiences on bench-pressing performance. Partial support was also evident for hypothesized effects on psychological variables that have been identified as mediating the goal-setting and performance relationship. Specifically, the data seem to support Jones' (1995) model of facilitative and debilitative anxiety related symptoms. Participants' interpretation of anxiety symptoms appeared to be affected in a predictable manner by factors related to goal attainment. A further prominent feature of this study was the experimental confirmation of the propensity for goals to have both positive and negative effects on performance. In particular, the singular use of outcome goals was examined in a controlled situation which allowed comparison of performers with different goal attainment expectancy levels. It was possible, therefore, to identify goal attainment expectancy as an important factor in determining the impact of varied goal-setting experiences on performance. The establishment of positive effects resulting from the use of outcome goals provides empirical support for researchers who have suggested that such goals should not be wholly disregarded (e.g. Hardy, 1997; Kingston & Hardy, 1994).

An important finding from this study was that the when the outcome goal only group perceived themselves to be succeeding on their assigned goal, performance was affected positively, and the measurement of psychological variables also confirmed the potential for there to be both positive and negative effects from using outcome goals. The reported goal commitment and effort scores were significantly lower within the outcome goal only (failure) group than in the other intervention groups. There were no significant differences in commitment and effort between the outcome goal only (success) group and the other goal intervention groups. However, inspection of the mean scores for each group does suggest that the outcome goal only (failure) group exhibited lower levels of goal commitment and allocated less effort to the task.

The measurement of participants' levels of anxiety related symptoms, and the measurement of their interpretation of these symptoms, also produced some interesting results. Significant differences were found between experimental groups

that indicated that varied goal-setting experiences had affected both the intensity of anxiety related symptoms and associated levels of facilitation. The no goals control group reported significantly lower anxiety levels than the other goal intervention groups. These low levels of anxiety indicate that the control group did not feel worried or threatened about the task itself. Incidentally, this finding could be seen as suggesting that the efforts made to avoid the covert setting of goals were successful.

The direction measures for somatic and cognitive anxiety supported Jones's (1995) model of debilitative and facilitative anxiety and generally imitated the results found by Jones and Hanton (1996) suggesting that when athletes had a high perception of their own ability to attain a goal, both competitive somatic and cognitive anxiety were felt to be more positive than negative to performance. Therefore the hypothesis that groups having positive goal experiences would report levels of anxiety to be more beneficial to performance than those having negative goal experiences was supported by this study. Significant interaction effects showed that the outcome goal (success) with performance goal group, and the outcome goal only (success) group, interpreted the somatic anxiety symptoms as more helpful to performance than each of the no goals control group, the outcome goal only (failure) group and the outcome goal (failure) with performance goal group.

It was also evident from trends in the data that from week one (when the goals were assigned) the performance goal only group interpreted their somatic anxiety symptoms more positively than any other goal group up until week three when the outcome goal feedback took effect and the outcome goal (success) with performance goal group started to become more positive about their goal attainment expectancy. On a slightly different tack, inspection of mean scores for the interpretation of the level of cognitive anxiety symptoms showed that all goal intervention groups reported more facilitation than did the no goals control group. A possible interpretation of this result could be that the no goals control group did not feel as concerned about the performance outcome as the other goal groups, and being sports persons they understood that not caring about the task would be likely to be detrimental to performance.

CHAPTER V

5.1 Overview of results in relation to research objectives.

The results of study one supported the hypothesis that multiple-goal strategies are significantly advantageous when compared to methods that do not combine different types of goal. Statistically significant interactions were found which indicated that groups using multiple-goal strategies performed better, both in training and in competition, than did groups using only one type of goal or no goals. Evidence was also provided to reinforce the opinion that using outcome goals immediately prior to competition may be detrimental to performance. Commitment both to process and outcome goals was found to increase with time spent using the goals as part of a pre-performance routine in practice sessions.

Study two provided further evidence for the beneficial effects of goal-setting within a sport and exercise setting. The use of outcome and performance goals, particularly when combined within a multiple-goal strategy, elicited significantly higher performances when compared to a no goals control group. Furthermore, although mean differences did not always reach statistical significance, data generally supported hypotheses regarding the effect of varied goal-setting experiences on bench-pressing performance. Partial support was also evident for hypothesized effects on psychological variables that have been identified as mediating the goal-setting and performance relationship. Specifically, the data seem to support Jones' (1995) model of facilitative and debilitative anxiety related symptoms. Participants' interpretation of anxiety symptoms appeared to be affected in a predictable manner by factors related to goal attainment.

5.2 Multiple-goal effects on performance.

The poor performance of the process goal only group and the outcome goal only group in study one, when compared with the control group, suggest the potential for a negative effect on performance if such goals are used in the absence of complementary strategies. The use of a process goal only strategy might result in under-performance if the strategy causes the diminution of other components of

performance such as a competitive sense of urgency, or commitment to expending high levels of effort during training periods. In contrast, the negative effect of an outcome goal only strategy might be derived from increased levels of competitive state anxiety and degraded attentional focus during performance.

In conclusion, the growing body of research attesting to the effectiveness of process goals and the benefits of developing a process orientation was strengthened by study one. The findings also confirmed the potential for outcome and performance goals to be dysfunctional if used inappropriately. Most importantly, however, empirical evidence was provided to support the proposal of Kingston and Hardy (1994) that process goals are most beneficially used within a hierarchy of goals that should also include both performance and outcome goals. It is the need to combine effectively, and subsequently prioritize, goals that should be stressed to performers. Such a strategy is likely to have significant advantages, when compared to pursuing the current trend of presenting a 'process good'/ 'outcome bad' dichotomy in the area of goal-setting.

Goal commitment

The result that commitment to the goals being used increased over the course of the training stage of study one is interesting. This could be due to the effect of continued use resulting in the participant becoming more accepting of a goal that had initially been partially rejected. Initially, participants were perhaps less accepting of goals which conflicted with their usual goal-setting style. Performance goal commitment was initially relatively high and the lack of an increase in this instance may therefore have been due to a ceiling effect. The higher commitment may have been present because the performance goal of a personal best score was readily acceptable to more of the participants in the first instance, as it already formed part of their goal-setting style.

5.3 Processes underlying goal-setting effects.

The mechanism by which process goals might exert an influence on performance is an issue currently open to debate. One of the difficulties in this area is a lack of definition in terms of what precisely a process goal comprises. For instance, Hardy, Mullen, and Jones (1996, p.623), reported the current goal-setting literature as suggesting that "athletes should be encouraged to use process goals which involve consciously attending to specific aspects of a movement in order to remain focused during performance". But if proposals such as Masters' (1992) explicit knowledge hypothesis, Baumeister's (1984) conscious monitoring explanation of the effect of stress on performance, and Singer, Lidor, and Cauragh's (1993) conclusions about the problems associated with awareness during performance are accepted, it is hard to explain how such a process goal could actually be beneficial. Nevertheless, several studies have provided support for the use of process goals (e.g., Kingston & Hardy, 1994, 1997; Kingston, Hardy & Markland, 1992; Orlick & Partington, 1988; Zimmerman & Kitsantas, 1996). Examination of the "process goals" used in such studies suggests that, rather than attending consciously to any specific aspect of a movement, performers should be encouraged to focus attention using cues of a more holistic nature. Zimmerman and Kitsantas (1996) proposed that this type of process goal should involve a single context relevant cue, such as the center of a target, and that this would not result in the predicted reduction in automaticity. Similarly, Kingston and Hardy (1997) suggested that the use during performance of holistic conceptual cues, such as "tempo", may actually encourage "chunking" and allow the implicit generation of sub-actions.

The superior performance of both multiple-goal strategy groups, when compared to the process goal only group, supports the view of Hardy (1997) that a balance should be maintained between setting outcome, performance, and process goals. The qualitative data generated in this study also provided evidence for the beneficial role of different types of goals in facilitating competitive preparation and performance. Furthermore, these findings appear to support the suggestion of Kingston and Hardy (1997) that the most important factor in goal-setting training is the extent to which a performer learns to prioritize their different goals. An outcome goal of winning a

competition provide the motivation necessary to approach difficult training periods in a positive frame of mind. Performance goals might be used in several ways as intermediate product measures. For example, to monitor progress, build confidence, or simulate competition. Finally, the value of process goals, used during both practice and competition, lie in the provision of a mechanism for directing attention and limiting anxiety.

A prominent feature of study two was the experimental confirmation of the propensity for goals to have both positive and negative effects on performance. In particular, the singular use of outcome goals was examined in a controlled situation which allowed comparison of performers with different goal attainment expectancy levels. It was possible, therefore, to identify goal attainment expectancy as an important factor in determining the impact of varied goal-setting experiences on performance. The establishment of positive effects resulting from the use of outcome goals provides empirical support for researchers who have suggested that such goals should not be wholly disregarded (e.g. Filby, Maynard, & Graydon, 1999; Hardy, 1997; Kingston & Hardy, 1994).

Hemery (1991), in an anecdotal report based on his own career experiences, described the way in which the use of outcome goals could provide motivation throughout difficult periods of training. This observation does seem useful in that outcome goals which specify targets in terms of highly desirable, often externally rewarded, future achievements should be encouraged as sources of competitive motivation. It can also be argued that when such outcome goals are achieved successfully, there are benefits to the performer which do not accrue from the use of other types of goal.

An important finding from study two was that the when the outcome goal only group perceived themselves to be succeeding on their assigned goal, performance was affected positively, and the measurement of psychological variables also confirmed the potential for there to be both positive and negative effects from using outcome

goals. The reported goal commitment and effort scores were significantly lower within the outcome goal only (failure) group than in the other intervention groups. There were no significant differences in commitment and effort between the outcome goal only (success) group and the other goal intervention groups. However, inspection of the mean scores for each group does suggest that the outcome goal only (failure) group exhibited lower levels of goal commitment and allocated less effort to the task. Such a result would support Martens' (1987) proposal that failure to achieve outcome goals results in reduced motivation.

According to Locke and Latham (1990) self-efficacy can be used as a measure of goal attainment expectancy. Therefore, the lower levels of self-efficacy reported by the outcome goal only (failure) group can reasonably be interpreted as reflecting negative expectancies of both their ability to cope, and their likely level of goal attainment. Results from this study have therefore highlighted both the negative effects that the use of outcome goals in sport have been reported to create (Burton, 1989) and the proposed positive motivational effect that outcome goals can create (Hemery, 1991; Kingston & Hardy, 1994).

Significant interaction effects in study two indicated that the use of a performance goal, in either a combined strategy or used singularly, was beneficial and therefore supported previous research that has found beneficial effects for this type of goal. Indeed the performance goal only group, performed second only to the outcome goal (success) with performance goal group and scored consistently higher than the outcome goal only (failure) goal group from week three, and the no goals control group from week six. The high ratings for strength of self-efficacy level within the performance goal only group suggested that they felt their level of goal attainment to be something that was relatively under their own control. This finding supports the view of Jones and Hanton (1996) that the degree of perceived control varies between different goal types.

The view that performance goals may increase the participants control over performance, was additionally supported by the experiences of the outcome goal (failure) with performance goal group, who received bogus negative feedback on their level of attainment on the outcome goal. This group not only improved on their bench-press performance from the pre-test to week six but also did not experience significantly reduced self-efficacy, effort or goal commitment, as was seen in the outcome goal only (failure) group. It is an interesting point for discussion as to why, when failing on their outcome goal and receiving negative feedback, this group did not suffer from the variety of negative cognitions seen within the outcome goal only (failure) group. The use of a performance goal appears to have buffered the negative cognitions, evident in the outcome goal only (failure) group. This can perhaps be explained using a similar argument to that first put forward by Jones and Hanton (1996). They speculated that swimmers who used more than one type of goal might be "hedging their bets" and, furthermore, they suggested that this approach to goal-setting could in fact be providing a coping strategy for performers should their outcome goal not be realised.

Significant interactions indicated higher self-efficacy levels within the outcome goal (success) with performance goal group and performance goal only group. Trends in the data also suggested that the outcome goal only (success) group also kept a relatively high and consistent self-efficacy level and strength throughout the study. In line with the predictions of Jones' (1995) model it would appear fair to suggest that these high self-efficacy ratings were responsible for facilitative interpretations. According to Jones the level of perceived 'control' in a situation determines how an athlete interprets anxiety related symptoms. This hypothesis was generally supported in that groups using a performance goal, and those groups having positive experiences regarding an outcome goal, did perceive anxiety symptoms as being more facilitative to performance.

Relating findings to goal orientations literature.

Dissatisfaction with the use of outcome goals to motivate performers has largely arisen as a result of research examining achievement goal orientations. In the goal orientations literature there are two different types of goal orientation which describe the mechanism by which performers measure their achievements (Duda, 1992). Task-oriented performers base their perceptions of competence on personal improvement or absolute measures of performance, whereas the perceptions of competence of ego-oriented performers are formulated by comparing their own ability with that of others. The bulk of research into the effect of achievement goal orientation on motivation and performance has contrasted the advantages that result from performers developing a strong task orientation with the possible negative effects associated with high ego orientations (Duda, 1992). The tendency of achievement goal orientation researchers to equate the setting of outcome goals with "ego-orientation" and to label both negatively has resulted in considerable debate. Hardy, Jones, and Gould (1996) strongly criticized the trend towards the denigration of an ego orientation and the implied rejection of outcome goals as a method for enhancing motivation. Hardy, Jones, and Gould (1996) referred to the practices of elite athletes and concluded that "it is difficult to see how one could become a genuinely elite performer without having a strong ego orientation" (p.78). A further viewpoint, which perhaps offers a compromise position between the extremes, has been offered by Hall and Kerr (1997, p.37), who suggested that "outcomes are important when adopting a task orientation, they just do not reflect on one's self-worth".

5.4 Goal-setting strategy development.

The use of a pre-performance routine, as a means for controlling the prioritisation of goals before training and competition, was a strength of the present studies. Additionally, the fact that the tasks chosen were of comparatively short duration may have contributed to participants reporting that they felt the goal prioritized immediately before performance had, in most cases, exerted an influence throughout. Over a longer period of time, and under more stressful conditions, participants may have experienced more problems in maintaining the required focus of attention. Facilitating the development of strategies that enable the performer to maintain an

appropriate process orientation, particularly when under extreme pressure, should be a priority for sports psychologists and coaches.

5.5 Practical significance of findings.

The findings of this thesis confirm that there are benefits from using outcome, performance, and process goals in sport. As explained above, the importance of prioritizing different goals at different times has also been highlighted. Young athletes should be educated about the nature and effects of the different types of goal and encouraged to practice using goals for training and competition. The most effective way to achieve improved self-regulation through goal-setting is to integrate the activity into coaching programmes. Athletes should be educated about the importance of "practicing with purpose" and helped to develop the habit of setting specific process goals both for training sessions and for matches. Throughout a training session the coach should emphasise the continued pursuit of the goals set and at the end of the session a formal evaluation of individual achievement should be completed.

The use of an outcome goal (e.g. winning an Olympic gold medal) can be highly motivational and the results of this thesis support current thinking about the need for an "end result" aspect to target setting. This has been highlighted recently as an issue in relation to the funding of elite athlete development programmes. There should be no problem with setting very challenging outcome goals for individuals provided that appropriate performance goals and process goals are also set and prioritized when appropriate. The key to successful goal-setting lies in the generation of effective strategies to achieve the goals that have been set. A typical progressive strategy might include starting off by practicing techniques without pressure and then gradually building pressure through the manipulation of variables such as time, space and opposition.

5.6 Limitations and methodological considerations.

The chief methodological consideration in both studies was the extent of ecological validity and the possibility that participants might deliberately reject assigned goals or fail to adhere to goal-setting conditions. The generally "artificial" nature of the experimentally derived competitive situations in both studies is also a cause for concern along with the success of the goal attainment expectancy manipulation in study two. The management of the control group in a goal-setting experiment is always going to be a challenge. The use of pre-performance routines to act as a reminder to participants immediately before each experimental trial was considered to be an innovative means for increasing the likelihood that assigned goals were prioritized. The qualitative and quantitative manipulation checks employed appear to support the use of such a strategy and it is recommended for use in future goal-setting research.

In both studies there was also an acknowledged danger of contamination between experimental groups due to the fact that the participants were all sports students studying at the same university. In study one the main danger was that participants in groups that were operating without an outcome goal would get to know about the final competition and covertly set a goal to win. Whilst at first sight this appears a likely scenario and therefore a serious problem, the control group in fact had no reason to think that they would be included in the competition and were instructed that the study was concerned with the efficacy of pre-performance routines. In study two, a similar possibility existed that participants would discuss their bench-press performance with each other and thus discover the bogus nature of the goal attainment feedback. As a preventative measure it was stressed to participants that they should not talk to anyone about the experiment and a manipulation check in the form of the self-efficacy ratings suggested that the bogus feedback was effective. This may have been due to the way in which the competitive groups were structured meaning that it would have been very difficult for two or more participants to work out that they were in opposition with each other and therefore reach any conclusions about the true nature of their current rankings.

It is also important that the strengths and weaknesses of the measurement instruments employed should be considered. The general principle adopted for selection of tools for the measurement of psychological variables was that they should be practically useful in the testing environment whilst maintaining acceptable levels of validity and reliability. In both studies, the repeated measures nature of the research design and the ambitious frequency and duration of the testing protocol meant that brevity and simplicity in methods were reasonable priorities. The use of the ARS rather than the full CSAI-2 is a good example of the issues at hand. It is my contention that, taking into account the frequency with which measurement tools were administered, the quality of data collected from the single item measures used in these studies is significantly more trustworthy than it would have been had long and complex inventories been employed.

5.7 Future directions in goal-setting research.

Optimal goal difficulty. Of the longstanding areas of goal attribute research it is goal difficulty that offers the most scope for future development. The results of this thesis have confirmed the significance of goal attainment expectancies and the potential for goals that are not achieved to have a negative effect on both performance and underlying psychological processes. The majority of the existing goal difficulty research has been conducted in experimental and non-competitive settings. Future research needs to continue to examine the nature of the goal difficulty and performance relationship within more ecologically valid settings. Whether a linear or curvilinear model of the relationship is more appropriate is yet to be properly established and the importance of adjusting goal difficulty in response to changing environmental conditions has also still to be addressed.

Components of goal commitment. Locke and Latham (1990) emphasised the importance of individuals having a high level of commitment to attaining a goal if that goal is to have real motivational value. Both of the studies in this thesis recognised the need to measure goal commitment within goal-setting research and considered the way in which commitment to assigned goals might vary over the duration of a goal-setting intervention and influence the effectiveness of that

intervention. Factors proposed as affecting goal commitment include participation in setting the goal, incentives available for goal achievement, and the extent of perceived support within the social environment. How goal-setting relates to achievement goal orientations and the way in which dispositional goal-setting styles might influence goal commitment are interesting questions for future research to consider.

Goal monitoring and evaluation. Sport psychology consultants have long appreciated that the key to maximising goal-setting effectiveness is that athletes adhere to a process of self-monitoring and evaluation of their goal attainment. The question of how best to encourage and manage this self-monitoring process is one that has yet to receive sufficient attention from goal-setting researchers. The use of "performance evaluation" interventions as a complementary means for monitoring goal attainment is one possibility, but the optimal frequency and extent of such self-evaluation needs to be assessed. Investigation of the role for social support and other factors affecting adherence to self-regulation, such as locus of control and enjoyment, would also represent useful contributions to knowledge.

Multiple-goal strategies for complex tasks. The beneficial effects of multiple-goal strategies demonstrated in this thesis provide a useful starting point for further research into the realities of practical goal-setting for enhancing sport performance. The results support previous research that has suggested that outcome goals used in isolation can have both positive and negative effects, and that performers should therefore be encouraged to prioritize self-referent goals. The real challenge for applied practitioners remains that of determining how best to help performers use high level product goals as sources of motivation, without those goals disrupting the performer's competitive focus. In addition to the possible advantages of self-referent performance goals, the benefits of process-oriented goals for both training and competition have also been confirmed.

The need for consultants to be aware of the psychological processes underlying goal-setting effects and to ensure that intervention packages are tailored to individual

needs and environments is paramount. Future research in this area will need to continue to concentrate on relationships among different types of goal and should seek to provide practitioners with greater understanding of the structural and dynamic aspects of pursuing multiple goals.

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APPENDIX 1

Filby, W.C.D., & Maynard, I.W. (1998). Changes in goal commitment as a result of training with different types of goal. ***Proceedings of the Third Annual Congress of the European College of Sport Science,*** **p.283.**

CHANGES IN GOAL COMMITMENT AS A RESULT OF TRAINING WITH DIFFERENT TYPES OF GOAL.

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The advantages for athletes of using a multiple goal-setting style are increasingly being recognised by sports psychology consultants. The current suggestion being that benefits are available from outcome, performance and process goals, provided the different types of goals are prioritised appropriately during training and competition (Kingston & Hardy, 1997). Also, research has found goal commitment to be a significant mediating factor in the effect of goal-setting on task performance (Locke & Latham, 1990). The aim of this study was to examine whether commitment to different types of goal would vary over the course of a pre-competition training period.

Participants were 40 (23 male and 17 female) students of Chichester Institute (mean age = 21.68 years, S.D. = 2.36 years). Five groups (n=8), matched for ability on a soccer task (Wall Volley Test), were established; four of the groups used different types of goal-setting combinations, and the other acted as a control group. The four goal-setting styles employed were: (1) outcome goal only; (2) process goal only; (3) outcome goal and process goal; and (4) outcome goal, performance goal, and process goal. Participants were trained in the use of a pre-performance routine which consisted of a centring procedure, a positive thought and their goal statements. The soccer task was then performed on ten separate occasions over a five week training period, and finally in a competition.

Goal commitment was assessed at three points during the study using a four-item scale derived from a scale used by Weingart and Weldon (1991). The participants were required to respond, using a six-point scale (1 = 'strongly disagree' to 6 = 'strongly agree'), to the following statements: 'I was strongly committed to pursuing this goal', 'I didn't care if I achieved this goal or not' (reverse scored), 'I was highly motivated to meet my goal', and 'It was very important to me that I achieved my goal'. The scale produced a total goal commitment score ranging from 4 (very low commitment to that goal) to 24 (very high commitment). Cronbach's alpha coefficients for the scale ranged from $\alpha = 0.83$ to $\alpha = 0.93$.

Scores for commitment to outcome and process goals were compared between the three relevant intervention groups at the three stages of the training phase of the experiment using separate two-way analyses of variance (ANOVA) (group and stage), with repeated measures on the second factor. Scores for commitment to a performance goal were compared between three stages of the training phase of the experiment using a one-way ANOVA with one repeated measure and no main effect was found for trials. Significant main effects were found, however, for trials for both commitment to an outcome goal, $F_{(2,42)} = 13.24$, $p<.05$, and commitment to a process goal, $F_{(2,42)} = 11.50$, $p<.05$. Post-hoc tests indicated that commitment to an outcome goal was significantly higher at training sessions five and ten than it had been at training session one. Similarly, commitment to a process goal was found to be significantly higher at training sessions five and ten than it had been at training session one. No significant interaction effects were found for either outcome or process goals.

The consistently high level of commitment to a performance goal perhaps indicates more ready acceptance of such a goal. However, the observed changes in commitment to process and outcome goals suggest that training in the use of such strategies may lead to greater acceptance of this type of goal. Sport psychology practitioners may need to give greater consideration to individuals' dispositional achievement goal orientations when designing and monitoring their goal-setting programmes.

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The Effect of Multiple-Goal Strategies on Performance Outcomes in Training and Competition

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Many sport psychologists have been fighting against the pervasive "winning is everything" mentality and have encouraged athletes to set only self-referenced performance and process goals. However, studies that have explored the practices of successful performers have found that they do in fact make effective use of outcome goals (Weinberg, Burton, Yukelson, & Weigand, 1993; Jones & Hanton, 1996). The aim of this study was to examine empirically Hardy, Jones, and Gould's (1996) suggestion, that consultants should now be promoting the use of a multiple-goal strategy. Forty participants were split into five groups of equal number and matched for ability on a soccer task. Four of the groups used different combinations of outcome, performance, and process goals while the other acted as a control group. Performance on the soccer task was measured over a 5-week training period, and then in a competition. Two-factor (Group X Test) ANOVA's indicated significant differences ($p < .05$) between the groups for both training and competition performance. The superior performance of the groups using multiple-goal strategies provided evidence to support the efficacy of maintaining a balance between the use of outcome, performance, and process goals.

Goal-setting has long been accepted as a practical technique to increase and direct motivation in achievement-oriented fields, such as business, education and sport (Burton, 1992). Enthusiasm for the use of goal-setting has grown as a result of overwhelming evidence for the motivational and performance enhancing effects of goals, particularly from the management and organizational research literature (Locke & Latham, 1990). Locke and Latham (1985) first asserted that the findings from goal-setting research could be applied effectively in the sports environment, and goal-setting has subsequently emerged as a popular intervention strategy of-

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fered by sport psychology consultants. Indeed, Gould, Hodge, Peter and Giannini (1989) found that goal-setting is the most often used p chological intervention during athlete and coach consultations.

However, the introduction of goal-setting to sport has also resulte the emergence of equivocal findings in the research literature. Altho many studies have shown that participants in goal-setting conditions form better than participants given "do your best" instructions, sev investigations have also failed to find the expected performance dif ences (Hall, Weinberg, & Jackson, 1987; Weinberg, Bruya, & Jack 1985; Weinberg, Bruya, Jackson, & Garland, 1987). It has been propc that the lack of goal-setting effects in such studies might be the resul differences between the sport and industrial settings. High levels achievement orientation, competitiveness, and self-management skills commonly found in sports performers, but are not typical in the indust setting (Beggs, 1990). The absence of goal-setting effects on performa in some studies has also partly been attributed to the tendency of searchers to isolate single aspects of performance goals, such as speci ity, difficulty, and proximity. The suggestion being that the absence complete and longitudinal training programs is responsible for erod potential goal-setting effects in these studies (Kingston & Hardy, 199

More recent research, however, has begun to stress the importance distinguishing between three types of goals (outcome, performance, process) and to investigate the possible benefits of emphasizing the ative salience of each goal type in different situations (Jones & Hant 1996; Kingston & Hardy, 1994, 1997). Outcome goals usually meas success by making a comparison with other competitors; for exam finishing first in a race or league table. Performance goals are set identifying an end product of performance that can be achieved relativ independently of others; for example, running a certain time over the r distance. Process goals are less easily defined, but are usually spec about the behaviors necessary for successful performance. Examples process goals might include "staying relaxed" during a race, or "wat ing the ball" in a striking game (Hardy, Jones, & Gould, 1996).

Before the advent of studies comparing different types of goals, m research into goal-setting in sport had been based on the use of perf mance goals. This limitation applied equally to investigations conduct in experimenter-controlled settings, and to the more ecologically va field-based studies (e.g., Burton, 1989; Swain & Jones, 1995). The p dominance of performance goals in research studies was also reflected the practice of sport psychology consultants encouraging the use of su goals instead of outcome goals (Burton, 1992). This promotion of the u of performance goals being underpinned by a belief that beneficially i creased levels of perceived control would result. Support for this vie was provided by Jones and Hanton (1996), in a study which assess swimmers using three types of goals. They found that the predictions Jones' (1995) control model of debilitative and facilitative anxiety we best supported in the case of performance goals. However, the enthusias

for the use of exclusively performance goals has proved relatively short-lived after Beggs (1990), and then Burton (1992), pointed out how even self-referenced performance standards may actually be dysfunctional in certain circumstances.

Zimmerman and Kitsantas (1996) examined the use of process goals during self-regulated learning of dart throwing and found that process goals improved skill acquisition more than did product goals. The process goals in this study required the participants to concentrate on successfully achieving the final three steps in each throw which, having been described in detail, were labeled as "sighting," "throwing," and "follow through." The finding that such goals were beneficial to performance would appear to support the recommendation that process goals should be "holistic" in order to encourage chunking and automaticity (Kingston & Hardy, 1994).

The findings of Zimmerman and Kitsantas (1996) were supported and extended by Kingston and Hardy's (1997) study, which compared the relative efficacy of two types of goal-setting training programs on the performance of club golfers over a whole season. A group using process goals showed an improvement in skill level, as measured by handicap, at an earlier stage in the season than did a group using performance goals. This study also measured processes that support performance and found that, relative to the group using performance goals, the process goals group demonstrated significant improvements in self-efficacy, cognitive anxiety control, and concentration. The authors concluded that there is no rationale for assuming that the effects of process goals on performance are mediated only by anxiety changes. The content of process goals may lead to improved performance through enhanced attentional focus, regardless of whether performers are consciously aware of using the information. Kingston and Hardy (1994) stressed the importance of recognizing that the work of Masters (1992) would actually predict performance decrements as a result of focusing consciously on specific aspects of a complex movement.

Hardy, Jones, and Gould (1996) reviewed the state of goal-setting research and drew several conclusions that have yet to be fully investigated. Their suggestions included the following hypotheses: Outcome goals, made explicit several weeks before a competition, will motivate effort and strategy development; performance goals aid self-confidence; process goals should be used during both practice and performance, to aid the allocation of attentional resources and to increase self-efficacy; outcome and performance goals should not be emphasized immediately before performance; and process goals should focus on holistic aspects of technique during skill execution.

Goal commitment has also been proposed as an important moderating factor in the relationship between goals and performance (Erez & Zidon, 1984; Locke, Shaw, Saari, & Latham, 1981). Goals will only have an impact on performance if the performer is committed to the particular goal. Indeed, Theodorakis (1996) used path analysis to reveal a direct effect from goal commitment to performance, and recommended that all goal-setting research studies should include a goal commitment mea Hollenbeck and Klein (1987) suggested that goal commitment is d mined by the attractiveness of attaining the goal and the belief that can successfully achieve the goal.

Locke and Latham (1990) argued that assigned, as opposed to pa ipative, goal-setting would not result in reduced goal commitment as as the person using the goals perceives them to be reasonable and are presented in a supportive manner. Fairall and Rodgers (1997) ducted a field experiment using track and field athletes which exam the effect of three methods of goal setting (participative, assigned, self-set) on various goal attributes. They found no difference betwee three conditions in terms of goal commitment as measured immedi after a single goal-setting session. However, they did suggest that v tions in goal attributes, due to goal-setting method, might emerge time.

Giannini, Weinberg, and Jackson (1988) highlighted, as a limiting tor in the goal-setting research literature, the predominance of stu employing goals that only encourage mastery and improvement. Sp ically, they pointed to the importance in sport of competitive goal which the goal becomes the performance of another person (i.e., c petitor), and the level of the goal can be flexible in response to cha in the competitor's performance. Giannini et al. (1988) failed to fi difference in basketball shooting performance between groups using c petitive goals and mastery goals. The competitive goal in this study to score higher than a training partner, and the mastery goal wa achieve a personal best score on the task. It would, therefore, seem sonable to regard these goals as equivalent to an outcome goal ar performance goal, using Hardy, Jones, and Gould's (1996) definitions the participants in this study were recreational basketball players, were required only to complete two 3-minute shooting tasks, the lac a goal-setting effect is perhaps understandable. The types of goal use Giannini et al. (1988) could be hypothesized as having potentially ferential effects on motivation in the longer term, depending on achievement and perceived ability. However, the relative power of come and performance goals to motivate effort would be unlikely to h resulted in the immediate accrual of a significant advantage for ei group, in terms of current shooting performance.

A recent study by Kingston and Hardy (1997) compared the goal entations of professional, county amateur, low handicap amateur, and h handicap amateur golfers across pre-season, pre-practice, and pre-c petition situations. They found that, as competition approached, the p fessionals and high handicap golfers significantly increased their ego entation. Ego orientations of the low handicap and county amateur gol remained stable across the three situations. Interestingly, only the h handicap golfers exhibited a significant reduction in task orientation fore competition. It appears that the professional golfers in this study t to use the competition as an extra source of motivation, but not at

expense of focusing on the controllable aspects of their performance. The absence of an increase in ego orientation for the intermediate golfers may be the result of just trying to replicate the feel of a practice performance in a competitive setting; whereas perhaps the high handicap golfer tends to prioritize an outcome goal to the detriment of their performance (Hardy, 1997).

Sport psychology consultants are increasingly valuing the perceived advantage of process-oriented goal setting, when compared to the more traditionally used performance or outcome goals. Recently published sport psychology handbooks have reflected this favoring of a process-orientation and some have gone so far as to recommend that outcome goals, such as "Finish in the top three" (Butler, 1996, p. 23), should be rejected as inappropriate. Empirical studies testing the effects of different types of goals have also begun to provide evidence for the positive impact of process goals in competitive situations (e.g., Kingston & Hardy, 1997). However, in spite of these developments, Hardy, Jones, and Gould (1996) pointed to the relative lack of information available about setting goals for performance on complex tasks such as sports skills, and they could only provide "educated guesses" (p. 109) regarding best practice. The aim of the current study was to examine the suggestion made by Kingston and Hardy (1997) that sportsmen and women should in fact be encouraged to use multiple-goal strategies to maximize their level of performance in training and competition. This study compared the effect of four different goal-setting strategies, and a no goals control condition, on performance of a soccer task during training sessions and in competition. It was hypothesized that performance in both situations would be affected most beneficially by a multiple-goal strategy that made use of an outcome goal, a performance goal, and a process goal. It was also expected that using a process goal in conjunction with an outcome goal would be of more benefit than singly using either type of goal.

METHOD

Participants

The sample consisted of 40 (23 male and 17 female) students of Chichester Institute (mean age = 21.68 years, SD = 2.36 years). All the students were reading for sport related degrees and all participants volunteered to be involved in the study.

Experimental Task

The sport-related task used in this study was a variation of McDonald's (1951) Wall Volley Test, first used by McMorris, Gibbs, Palmer, Payne, and Torpey (1994), in which participants had continuously to kick a soccer ball at a target 7.6 meters away. The target was 30 cms wide and a hit scored 10 points. Either side of the 10-point zone were two 8-point zones, also 30 cms wide. Outside of these zones there were 6-, 4-, and 2-point zones, also 30 cms wide. Any kick hitting outside of the 2-point zone scored zero points. For a score to be recorded the ball had, not o to hit the target but also to rebound back over the 7.6 meter line. participant had 1 min 30 secs to score as many points as possi McMorris et al. (1994) measured reliability using a test re-test met and demonstrated an intra-class correlation coefficient of 0.79 for t points scored. McMorris et al. also suggested that the test should be cepted as a valid and objective measure of passing accuracy in socce should be noted that, in contrast with the present study, McMorris et used experienced male soccer players as participants. In the present st it was expected that there would be a learning effect on the task, and t this would be observable through the extent of the improvement in control group.

Quantitative Data Collection

Wall Volley Test Performance Measures. Performance on the Wall V ley Test was measured by recording the total score achieved by the p ticipant in each trial.

Goal Commitment Questionnaire. Goal commitment was assessed ing a 4-item scale derived from a scale used by Weingart and Welc (1991). The participants were required to respond, using a 6-point sc ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), to the followi statements: "I was strongly committed to pursuing this goal," "I did care if I achieved this goal or not" (reverse scored), "I was highly m tivated to meet my goal," and "It was very important to me tha achieved my goal." The scale produced a total goal commitment sc ranging from 4 (very low commitment to that goal) to 24 (very hi commitment). Cronbach's alpha coefficients for the scale ranged from = 0.83 to α = 0.93.

Qualitative Data Collection

Semi-structured Interviews. Two members of each of the interventi groups, 10 participants in total, were randomly selected to participate a semi-structured interview after the final competition. The purpose the interviews was to provide an alternative form of evaluation of t effectiveness of the intervention strategies, and also to gain insights ir the participant's experiences during a "goal-setting study." An issue particular importance was the examination of the extent to which part ipants had ignored externally assigned goals and set their own cov goals, as this has been identified as a significant methodological fl within the sport psychology literature (Locke & Latham, 1990).

Interviews lasted for about 20 minutes each, and were all based on t same series of open-ended questions. The schedule of questions ensur a similar structure to all interviews and that all participants were treat in a standard way. The potential for interviewer bias was further a dressed by asking each participant, at the conclusion of the intervie "How did you think the interview went?", "Did you feel you could ful

outline your experiences?", and "Did I lead you or influence your responses in any way?" (Orlick & Partington, 1988, p. 108). All participants reported that they were not unduly influenced in their responses by the interviewer.

Goal Conditions

Outcome Goal Only. Participants were told that they had been entered into a competition, based on a simple soccer skill and involving nine other participants of similar ability to them. They were informed of the date of the competition, the schedule of training sessions, and that there was a cash prize for the winner of the competition. Participants in this group were also informed that the experiment was concerned with the effectiveness of different approaches to goal setting. Approximately one week before the first of the 10 training sessions, the experimenter worked with participants to develop an individually tailored, four-step pre-performance routine: Step One, Goal Statement; Step Two, Centering; Step Three, Positive Thought; and Step Four, Goal Statement. The development of the routine consisted of firstly, instruction on how to use the centering technique as described by Hardy and Fazey (1990). This technique is a relaxation strategy that requires participants to change their center of consciousness from their head to their center of gravity (a point just below the navel). Centering provides a mechanism for quickly relaxing and then focusing attention on what needs to be done and how it is going to be achieved (Hardy & Fazey, 1990). Secondly, participants were required to generate a task relevant positive thought for inclusion at step three of their routine. Participants were guided towards the use of a positive statement that was materially similar to "I'm feeling good" or "I'm ready." Finally, the participants were told that their goal statement, at both Step One and Step Four, should be to affirm "my aim is to win first prize in the competition."

The learning stage began with a one hour group session on centering, positive thinking, goal-setting, and pre-performance routines. This group session was followed by an individual meeting with each participant of about half an hour, during which their routines were developed and recorded. Participants were then told to practice using their routine, initially being encouraged to verbalize their thoughts at each step. Before the start of the training phase, all participants reported that they were able to use their pre-performance routine accurately without assistance. The purpose of the centering and positive thought steps was to add substance to the pre-performance routine without confounding goal effects. Because the second and third steps in the routine were standard across experimental groups, the internal validity of the study was maintained.

Outcome Goal and Process Goal. This protocol was identical to that for the outcome goal only group except for the goal statements in the pre-performance routine. Participants were given information regarding the use of process goals, and then they were helped to generate a process

goal statement that could be used in their routine. Examples of the proc goals arising included "low and straight," "pace," "concentrate for whole 90 seconds," "focus on the ten," and "first time every tim Following this, participants were instructed that the goal statement at S One should be "my long-term aim is to win first prize in the competiti and my short-term aim is to achieve my process goal," and that the g statement at Step Four should be their individual process goal stateme

Process Goal Only. Participants in this group were informed only t the experiment was concerned with the effectiveness of different proaches to goal setting (i.e., they were not told about the competitio The protocol was then the same as that for the outcome goal and proc goal group, except for the goal statement at Step One being "my aim to achieve my process goal."

Outcome Goal, Performance Goal, and Process Goal. The protocol this group was similar to that for the outcome goal and process goal gro except for the goal statements in the pre-performance routine. In additi to information about process goals, participants were told that part of th routine should include setting a performance goal of achieving a perso best score. Finally, participants were instructed that the goal statement Step One should be "my long-term aim is to win first prize in the co petition, and my short-term aims are to achieve my process goal anc personal best score," and that the goal statement at Step Four should their individual process goal statement.

No Goals Condition. Participants in this group were informed only tl the experiment was concerned with the efficacy of pre-performance rc tines (i.e., they were not told about the competition, and they complet the experimental tasks without the use of explicit goal statements). Th used a two-step pre-performance routine: Step One, Centering; and St Two, Positive Thought.

Procedure

Initially all participants performed the Wall Volley Test and we ranked by their score. All testing was conducted at the same outdo location and participants attended individually to eliminate any audien effects. The Wall Volley Test performance ranking was then used as tl basis for the selection of five matched ability groups ($n = 8$).

All participants completed the learning stage of the study and th attended two training sessions in each of the next five weeks. Each trai ing session consisted of participants rehearsing their pre-performance ro tine and then using the routine before performing the Wall Volley Tes Goal Commitment Questionnaires were used to investigate changes commitment to the different types of goal during the training phase. Pa ticipants in the four goal setting groups also completed the Goal Con mitment Questionnaire before training sessions 1, 5, and 10. Separa Goal Commitment Questionnaires were completed for each type of go being used by the participant.

Table 1
Means and standard deviations of wall volley test performance scores

Goal-setting group	Pre-test		Training		Competition	
	M	*SD*	*M*	*SD*	*M*	*SD*
Outcome goal only	128.6	53.0	147.5	52.6	150.6	49.6
Process goal only	128.3	50.3	152.6	61.8	167.2	60.1
Outcome and process goals	129.0	48.0	179.6	48.6	194.5	57.9
Outcome, performance, and process goals	130.0	49.2	182.1	54.6	194.3	54.0
No goals control	130.4	55.1	154.4	49.8	171.8	47.8

The post-training phase competition comprised one trial of the Wall Volley Test for which participants were instructed to use the pre-performance routine that they had been using in the training phase of the study. All participants were in attendance throughout the competition and trophies, including cash prizes, were awarded to the winners of each group in the competition. After the competition, two participants were randomly selected from each experimental group to take part in a semi-structured interview. Qualitative data reported in this study was generated by the participants' responses to a series of open-ended questions.

RESULTS

Quantitative Data

Wall Volley Test Performance Scores. The means and standard deviations for Wall Volley Test performance scores are presented in Table 1. The score for the training stage of the study represents the participant's average Wall Volley Test performance score for the 10 trials performed.

Suitable homogeneity of variance was established prior to statistical manipulation (p values ranged from 0.128 to 0.997). Scores for Wall Volley Test performance scores were compared between the five intervention groups at the three stages of the experiment using a two-way analysis of variance (ANOVA) (group and test), with repeated measures on the second factor. Mauchly sphericity tests were conducted on the data used in all of the ANOVAs to ensure that the assumption of sphericity was not violated in any of the analyses. In accord with Schutz and Gessaroli (1993) a critical e value of 0.70 was set, and where applicable the Huynh-Feldt epsilon correction factor was used. Following Huck, Cormier, and Bounds (1974), where significant interactions were evident, interpretations of main effects were considered inappropriate. Post-hoc Fisher LSD tests were employed to determine between which means the significant differences were evident.

The intervention group by test interaction for Wall Volley Test performance score was significant, $F_{(8,70)} = 3.14$, $p < 0.05$ (see Figure 1). The results from the follow-up tests indicated that, for all groups, both average

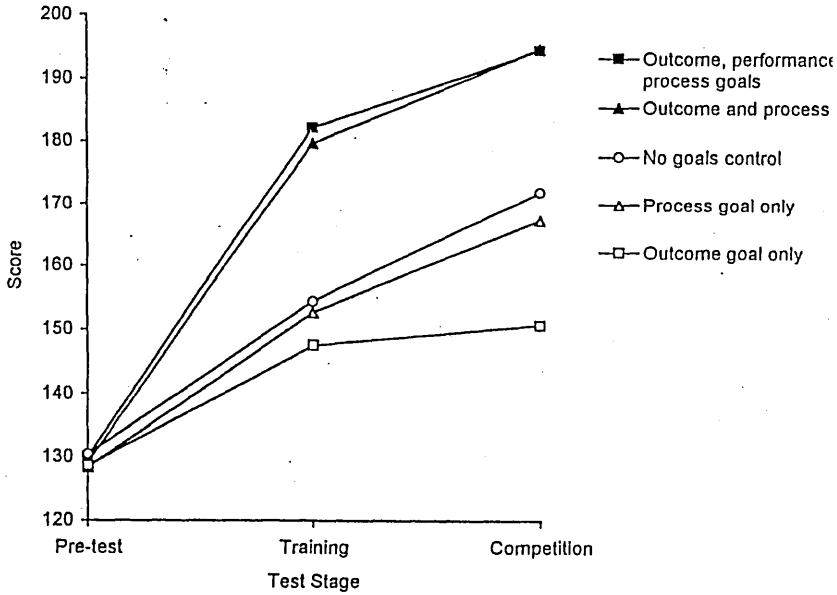

Figure 1. The intervention group by test interaction for Wall Volley test performanc

training performance and competition performance were significa higher than was pre-test performance. As expected, due to the matcl procedure employed, there were no significant differences between of the groups for pre-test performance. The two groups using multi goal strategies performed significantly better during the training phas the study when compared to each of the other three groups. The c group to improve significantly from average training performance to c petition performance was the no goals control group.

Comparison between the groups for performance in competition revealed that the two groups using multiple-goal strategies performed nificantly better than each of the other three groups. Additionally at stage, both the process goal only group, and the no goals control grc scored significantly better than did the outcome goal only group.

Goal Commitment. The means and standard deviations for the G Commitment Questionnaires are presented in Table 2. Scores for cc mitment to outcome and process goals were compared between the th relevant intervention groups at the three stages of the training phase the experiment using separate two-way analyses of variance (ANO (group and stage), with repeated measures on the second factor. Scc for commitment to a performance goal were compared between th stages of the training phase of the experiment using a one-way ANO with one repeated measure and no main effect was found for trials. S nificant main effects were found, however, for trials for both commitm

Table 2

Means and standard deviations of goal commitment questionnaire scores for each type of goal, measured after training sessions one, five, and ten

	Session One		Session Five		Session Ten	
Type of goal	*M*	*SD*	*M*	*SD*	*M*	*SD*
Process goal	16.2	3.2	18.8	3.5	19.9	3.5
Outcome goal	16.8	3.6	19.0	2.5	19.3	2.8
Performance goal	19.0	3.9	21.6	2.4	21.0	3.2

to an outcome goal, $F_{(2,42)} = 13.24$, $p < .05$, and commitment to a process goal, $F_{(2,42)} = 11.50$, $p < .05$. Post-hoc Fisher LSD tests indicated that commitment to an outcome goal was significantly higher at training sessions 5 and 10 than it had been at training session 1. Similarly, commitment to a process goal was found to be significantly higher at training sessions 5 and 10 than it had been at training session 1. No significant interaction effects were found for either outcome or process goals.

Qualitative Data

Questions addressed to participants in the interview situation specifically referred to issues related to the content, format, adherence, and effect on performance in both training and competition of the various goal-setting interventions. Due to the length of each interview, it was impossible to report all of the information obtained. Consequently, only representative interview quotes are presented to illustrate the basis upon which statements are formulated.

All the participants interviewed reported that they had accepted and adhered to the pre-performance routine developed for them to use in this study. They said that they had understood the steps in the routine and felt they had generally been successful in carrying out the correct sequence. Additionally, they all thought that the "positive thought" and "centering" steps were probably beneficial in terms of preparing to perform. In line with the guidance given to them, the positive thought statements used were mainly of a general nature (e.g., "I'm feeling good," "I can do well at this"). Several of those interviewed reported that they had occasionally used slightly different forms of wording, but that the statements had remained conceptually very similar. Centering was regarded by all of the participants as a useful step in the routine. Typical observations were, "the centering bit was good because it settled you down" and "it made it easier to focus on what you're meant to be doing."

With respect to the goal statements, the general view of those interviewed was that the use of a routine was a successful strategy for controlling which goals were being prioritized. Possibly due to this, the reported incidence of covert goal setting was relatively low. There were, however, still times when participants thought that they had not formed exactly to the expected procedure. The most frequent breac ported was the occasional spontaneous use of a personal best perforn goal. This is perhaps not surprising given the nature of the task an fact that all participants received knowledge of results feedback. Ir tantly, all of the four participants, who had not been assigned an out goal, reported that they had been unaware that there was going t competition at the end of the training phase of the study. Further none of the selected participants reported using explicit process goal s ments which were not part of their routine.

A valuable aspect of each interview was the part when partici were invited to comment on how they felt their goal setting might influenced performance. Interestingly, both participants who had only an outcome goal clearly expressed the feeling that the prioritiz of such a goal had been an ineffective strategy. One of them reporte during the training phase he had been "worried about whether I scoring high enough against the opposition" and that "if a ball went . . . it was like a downward spiral . . . what I needed to do was refoc The other participant echoed this feeling and also felt that she had formed worse in the competition due to "extra pressure" that mea didn't take my time . . . when it went wrong I just started whacking

The two participants from the process goal only group reported they felt their routine had had a positive effect on performance in trai When asked about their experience of the competition, however, t was a difference of opinion. One of them said that his/her process had "helped with confidence" and "helped with focus . . . every tim ball came back, I aimed at the 10." By contrast, the other participan that in the competition "other peoples' scores created pressure" and "I think that the process goal got forgotten really."

All four participants who had used a multiple-goal strategy repc that they felt the pre-performance routine had been effective in cre a strong tendency to prioritize their process goal immediately before t ing performance. Their comments on process goals reflected those n by members of the other groups and included observations such as helped you focus on what you were trying to do," and "I liked challenge of trying to stick to my process goal for the whole minute a half." In addition, they all considered their outcome goal to have b beneficial, in terms of providing an incentive to improve. A typical c ment was, "I think that knowing that there was going to be a competi made me try harder." Finally, the two participants who had set pe mance goals both seemed to feel that this had also influenced their formance in training. One of this pair suggested that "trying to beat best score was a good idea. . . . I really wanted to do it each time," w the other reported that "any mistakes meant I started to think negati . . . that I'm not going to make my P.B. [personal best]."

CONCLUSIONS AND DISCUSSION

The results of this study clearly support the hypothesis that multiple-goal strategies are significantly advantageous when compared to methods that do not combine different types of goal. Statistically significant group by test interactions were found which indicated that groups using multiple-goal strategies performed better, both in training and in competition, than did groups using only one type of goal or no goals. Evidence was also provided to reinforce the opinion that using outcome goals immediately prior to competition may be detrimental to performance. Commitment to both process and outcome goals was found to increase with time spent using the goals as part of a pre-performance routine in practice sessions.

As expected, due to a learning effect on the performance task, the no goals control group did improve across the three periods tested. It is important, therefore, to consider comparisons with the control group when assessing the performance of the other groups. This line of analysis reveals that the process goal only, and outcome goal only groups both failed to outperform the control group, during any period of testing. Indeed, at the competition stage, the performance of the outcome goal only group was significantly supressed compared with the control group. The poor performance of the process goal only group and the outcome goal only group, when compared with the control group, suggest the potential for a negative effect on performance if such goals are used in the absence of complementary strategies. The use of a process goal only strategy might result in under-performance if the strategy causes the diminution of other components of performance such as a competitive sense of urgency, or commitment to expending high levels of effort during training periods. In contrast, the negative effect of an outcome goal only strategy might be derived from increased levels of competitive state anxiety and degraded attentional focus during performance.

The qualitative data produced within this study also revealed some considerations that may be important for practitioners when advising performers on how best to implement an effective goal-setting training program. Support has been demonstrated for Hardy's (1997) suggestion that outcome goals may have a significant role to play through motivating effort during periods of training. However, it appears that the benefits of adopting an outcome goal are realized only when the outcome goal is combined with the prioritization of a "process orientation" immediately before, and during performance. The potential for a performance goal to be a "double-edged sword" (Beggs, 1990) was confirmed, and the difficulty of maintaining a focus on process goals when under pressure (Hardy, 1997) was also highlighted.

The superior performance of both multiple-goal strategy groups, when compared to the process goal only group, supports the view of Hardy (1997) that a balance should be maintained between setting outcome, performance, and process goals. The qualitative data generated in this study also provided evidence for the beneficial role of different types goals in facilitating competitive preparation and performance. Furth more, these findings appear to support the suggestion of Kingston a Hardy (1997) that the most important factor in goal-setting training is t extent to which performers learn to prioritize their different goals. outcome goal of winning a competition may provide the motivation n essary to approach difficult training periods in a positive frame of mi Performance goals might be used in a number of ways as intermedi product measures. For example, to monitor progress, build confidence, simulate a competitive situation. Finally, the value of process goals, us during both practice and competition, may lie in the provision of a mec anism for directing attention and limiting anxiety.

The use of a pre-performance routine, as a means for controlling t prioritization of goals before training and competition, was a strength the present study. Additionally, the fact that the soccer task chosen w of comparatively short duration may have contributed to participants r porting that they felt the goal prioritized immediately before performan had, in most cases, exerted an influence throughout. Over a longer peri of time, and under more stressful conditions, participants may have e perienced more problems in maintaining the required focus of attentio Facilitating the development of strategies that enable the performer maintain an appropriate process orientation, particularly when under e treme pressure, should be a priority for sport psychologists and coache

The result that commitment to the goals being used increased over t course of the training stage of the experiment is interesting. This cou be due to the effect of continued use resulting in the participant becomir more accepting of a goal that had initially been partially rejected. Initiall participants were perhaps less accepting of goals which conflicted wi their usual goal-setting style. Performance goal commitment was initial relatively high and the lack of an increase in this instance may therefo have been due to a ceiling effect. The higher commitment may have bee present because the performance goal of a personal best score was readil acceptable to more of the participants in the first instance, as it alread formed part of their goal-setting style.

The mechanism by which process goals might exert an influence o performance is an issue currently open to debate. One of the difficultie in this area is a lack of definition in terms of what a process goal com prises exactly. For instance, Hardy, Mullen, and Jones (1996, p. 623 reported the current goal-setting literature as suggesting that "athlete should be encouraged to use process goals which involve consciousl attending to specific aspects of a movement in order to remain focuse during performance." But if proposals such as Masters' (1992) explic knowledge hypothesis, Baumeister's (1984) conscious monitoring expla nation of the effect of stress on performance, and Singer, Lidor, and Cau agh's (1993) conclusions about the problems associated with awarenes during performance are accepted, it is hard to explain how such a proces goal could actually be beneficial. Nevertheless, several studies have pro

vided support for the use of process goals (e.g., Orlick & Partington, 1988; Kingston, Hardy, & Markland, 1992; Kingston & Hardy, 1994, 1997; Zimmerman & Kitsantas, 1996). Examination of the "process goals" used in such studies suggests that, rather than attending consciously to any specific aspect of a movement, performers should be encouraged to focus attention using cues of a more holistic nature. Zimmerman and Kitsantas (1996) proposed that this type of process goal should involve a single context relevant cue, such as the center of a target, and that this would not result in the predicted reduction in automaticity. Similarly, Kingston and Hardy (1997) suggested that the use during performance of holistic conceptual cues, such as "tempo," may actually encourage "chunking" and allow the implicit generation of subactions.

Dissatisfaction with the use of outcome goals to motivate performers has largely arisen as a result of research examining achievement goal orientations. In the goal orientations literature there are two different types of goal orientation which describe the mechanism by which performers measure their achievements (Duda, 1992). Task-oriented performers base their perceptions of competence on personal improvement or absolute measures of performance, whereas the perceptions of competence of ego-oriented performers are formulated by comparing their own ability with that of others. The bulk of research into the effect of achievement goal orientation on motivation and performance has contrasted the advantages that result from performers developing a strong task orientation with the possible negative effects associated with high ego orientations (Duda, 1992). The tendency of achievement goal orientation researchers to equate the setting of outcome goals with "ego-orientation" and to label both negatively has resulted in considerable debate. Hardy, Jones, and Gould (1996) strongly criticized the trend towards the denigration of an ego orientation and the implied rejection of outcome goals as a method for enhancing motivation. Hardy, Jones, and Gould (1996) referred to the practices of elite athletes and concluded that "it is difficult to see how one could become a genuinely elite performer without having a strong ego orientation" (p. 78). A further viewpoint, which perhaps offers a compromise position between the extremes, has been offered by Hall and Kerr (1997, p. 37), who suggested that "outcomes are important when adopting a task orientation, they just do not reflect on one's self-worth."

In conclusion, the growing body of research attesting to the effectiveness of process goals and the benefits of developing a process orientation has been strengthened by this study. The current findings also confirm the potential for outcome and performance goals to be dysfunctional if used inappropriately. Most importantly, however, empirical evidence is provided to support the proposal of Kingston and Hardy (1994) that process goals are most beneficially used within a hierarchy of goals that should also include both performance and outcome goals. It is the need to combine effectively, and subsequently prioritize, goals that should be stressed to performers. Such a strategy is likely to have significant ad-

vantages, when compared to pursuing the current trend of presenting "process good"/"outcome bad" dichotomy in the area of goal-setting

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Ongoing research is looking to provide a more sensitive and externally valid method of investigating the nature of map reading expertise.

Motivational goal orientations in adolescent female runners of different running abilities

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The basic tenets of goal perspective theory are that individuals strive to demonstrate competence and determine subjective success by employing task- or ego-involving criteria. Although there is support for a relationship between goal perspectives and motivated behaviour in the sport domain (Duda, 1992: In *Motivation in Sport and Exercise*, edited by G.C. Roberts. Champaign, IL: Human Kinetics), its consideration among adolescent female athletes is of particular interest because it may hold clues to patterns of their persistence and participation in sport.

This study examined motivational goal orientations among adolescent female middle-distance runners, in different ability groups, to help determine what motivational factors are important for running participation. The participants were 295 females aged 15.3 ± 2.4 years (mean ± *s*) classified into three running ability groups (elite, $n = 73$; county, $n = 122$; club, $n = 64$) in accordance with the English Schools Athletic Association Standard Tables (1996). All participants completed the Task and Ego in Sport Questionnaire (TEOSQ: Duda and Nicholls, 1992, *Journal of Educational Psychology*, 84, 290–299), the Sport Orientation Questionnaire (SOQ: Gill and Deeter, 1988, *Research Quarterly for Exercise and Sport*, 59, 191–202) and the Perceived Motivational Climate in Sport Questionnaire (PMCSQ: Sefriz *et al.*, 1992, *Journal of Sport and Exercise Psychology*, 14, 375–391). A cross-sectional multivariate design was used, with status as the independent variable and goal and sport achievement orientations and perceived motivational climate as the dependent variables.

Multivariate analysis of variance revealed a significant main effect across status groups (Pillais $F_{18,488} = 3.59$, $P < 0.01$). Univariate follow-up (Table 1) indicated that the source of this effect was higher ego orientation in elite athletes compared to county and club athletes. Elite and county athletes were higher in competitiveness (desire to enter sport achievement situations and strive for success), win (desire to win) and goal (desire to reach personal goals) orientations than club athletes. Because age was also different across status groups, a multivariate analysis of covariance with age as a covariate was conducted to assess whether differences in status were a function of age. However, even after taking into account the age of the athletes, the group differences remained (Pillais $F_{16,488} = 2.76$, $P < 0.01$). All participants were high in task-involved orientation and perceived a mastery climate. These results suggest that adolescent female athletes who are higher in running ability are more ego-, competitive-, win- and goal-oriented than lower ability athletes independent of age.

The influence of anxiety direction on processing bias

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Mathews (1993, *The Psychologist*, 6, 493–499) suggested that the presence of anxiety leads to a biased response where threatening (i.e. negative affect) stimuli are allocated greater processing priority, resulting in slower processing. The recent concept of anxiety direction (Jones and Swain, 1992, *Perceptual and Motor Skills*, 74, 467–472) demands an investigation as to the processing bias associated with challenging (i.e. positive affect) stimuli, since the individual's perception of anxiety as being either negative or positive to performance may play an important and influential role in determining how the processing mechanism operates. The aim of this study was to test for differences in the processing bias of anxiety 'facilitators' (i.e. those who interpret their anxiety symptoms as positive) and 'debilitators' (i.e. those who interpret their anxiety symptoms as negative) between neutral, positive and negative stimuli across neutral, positive and negative mood conditions.

Anxiety direction was determined by scores on the trait version of the Competitive State Anxiety Inventory-2 (Albrecht and Feltz, 1987, *Journal of Sport Psychology*, 9, 231–248), modified to include a direction scale indicating the subjectively perceived valence of each item (Jones and Swain, 1995, *The Sport Psychologist*, 9, 201–211). The three mood conditions were created through the use of methods developed by Velten (1968, *Behaviour and Research Therapy*, 6, 473–482). Ten positive and 10 negative anxiety-related mood statements were selected to formulate a positive and negative mood set. In addition, the investigators developed their own positive and negative mood vignettes. It was considered that the combination of these techniques would create the desired manipulation of the affective state. The task required participants to carry out a modified Stroop test (Stroop, 1958, *Journal of Experimental Psychology*, 18, 643–661) in each mood condition. Each participant was instructed to ignore the meaning of mood-related words which appeared in four different colours on a computer screen, and to respond to the colour that the word was written in by pressing one of four corresponding colour-matched keys. The set of words was developed through pilot investigation, and contained 60 stimulus words made up of 20 positive, 20 negative and 20 neutral coloured words presented in a random order.

Analysis of variance revealed that facilitators exhibited a significant between-group difference in processing bias for positive stimuli relative to the negative and (in some cases) neutral stimuli in all mood conditions, with the greatest processing bias for positive stimuli being observed in the positive mood condition ($F_{2,32} = 6.53$, $P < 0.05$, ES = 0.60). Conversely, debilitators exhibited a significant between-group processing bias for negative stimuli relative to the positive and (in some cases) neutral stimuli in all mood conditions, with the greatest processing bias for negative stimuli being observed in the negative mood condition ($F_{2,32} = 26.67$, < 0.05, ES = 0.80).

We suggest that the concept of anxiety direction partially challenges what is inferred by the traditional interpretation of processing bias, which contends that anxious individuals are hypervigilant towards threatening information. This appears to be the case only when the anxiety is labelled with a negative perception. Anxiety facilitators may still be hypervigilant, but towards emotionally positive stimuli that indicate challenge. Hence anxiety direction would appear to be a powerful determinant of processing bias. From an applied perspect the findings reinforce the importance of interventions t focus on the active manipulation of the way in which ir viduals interpret their anxiety response. The challenge sport psychologists is to adopt such a manipulation a coping-based intervention strategy, which may alleviate current emphasis placed on dealing with anxiety us conventional stress management techniques.

Table 1 Results of the multivariate analysis of variance by status (mean ± *s*) for motivational profiles among adolescent female runners

Inventory/subscale	Elite ($n = 74$)	County ($n = 124$)	Club ($n = 65$)	$F_{18,488}$	P	After including age as a covariate: $F_{16,488}$	P
TEOSQ							
Task	4.10 ± 0.53	4.11 ± 0.42	4.15 ± 0.48	0.55	0.57	0.35	0.71
Ego	3.50 ± 0.72	3.28 ± 0.78	3.22 ± 0.76	4.64	0.01[a]	4.63	0.01[a]
SOQ							
Competitiveness	4.14 ± 0.48	3.98 ± 0.52	3.75 ± 0.60	9.33	0.01[b]	10.22	0.01[b]
Win	3.53 ± 0.76	3.43 ± 0.72	3.96 ± 0.76	12.73	0.01[b]	9.81	0.01[b]
Goal	4.27 ± 0.45	4.10 ± 0.54	4.05 ± 0.58	3.30	0.03[b]	3.74	0.02[b]
PMCSQ							
Mastery	3.93 ± 0.45	3.93 ± 0.43	3.96 ± 0.47	0.13	0.87	0.02	0.98
Perform	2.77 ± 0.65	2.73 ± 0.64	2.63 ± 0.63	0.71	0.49	0.42	0.66
Perceived ability	4.93 ± 1.54	4.75 ± 1.44	5.18 ± 1.19	1.88	0.15	0.57	0.56
Age (years)	15.18 ± 3.02	15.62 ± 2.10	14.15 ± 1.88	10.63	0.01[b]	—	—

Note: Superscripts indicate significant status differences: [a] elite > club; [b] elite and county > club.

The effect of multiple goal-setting styles on performance outcomes in training and competition

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Many sport psychologists have been fighting against the pe vasive 'winning is everything' mentality and have encourag athletes to set only self-referenced performance and proce goals. However, studies that have explored the practices successful performers have found that they also make effecti use of outcome goals (Hardy *et al.*, 1996, *Understandi Psychological Preparation for Sport: Theory and Practice of El Performers*. Chichester: Wiley). The aim of this study was examine empirically the suggestion that consultants should l promoting the use of a multiple goal-setting style.

The participants were 40 sports students (23 males, 1 females) aged 21.68 ± 2.36 years (mean ± *s*). Five groups eight participants each, matched for performance on the Wa Volley Test for soccer passing skill, were established; four the groups used different types of goal-setting combination and the other acted as a control group. Participants wer trained in the use of a pre-performance routine which cor sisted of a centring procedure, a positive thought and the goal statements. Performance on the soccer task was the measured on 10 separate occasions over a 5-week trainin period, and finally in a competition.

The Wall Volley Test performance scores are presented i Table 1, and were compared between the five interventio groups at the three stages of the experiment using a two-wa analysis of variance (group and test), with repeated measure on the second factor. The intervention group × test inter action for Wall Volley Test performance score was significan ($F_{8,70} = 3.14$, $P < 0.05$). The results of *post-hoc* Fisher LSI tests indicated that, for all groups, both average trainin performance and competition performance were significantly higher than pre-test performance.

The two groups using multiple goal-setting styles per formed better, during both the training and competitior phases of the study, when compared to each of the othe three groups. Additionally, the process goal only group and the no goals control group each scored better in the com petition than the outcome goal only group. The only group to improve significantly from average training performance to competition performance was the no goals control group. This may have been due to the control group abandoning their instructions and actually setting goals for competition performance.

Table 1 The Wall Volley Test performance scores (mean ± s)

Goal-setting group	Pre-test	Training	Competition
Outcome goal only	128.6 ± 53.0	147.5 ± 52.6	150.6 ± 49.6
Process goal only	128.3 ± 50.3	152.6 ± 61.8	167.2 ± 60.1
Outcome and process goals	129.0 ± 48.0	179.6 ± 48.6	194.5 ± 57.9
Outcome, performance and process goals	130.0 ± 49.2	182.1 ± 54.6	194.3 ± 54.0
No goals control	130.4 ± 55.1	154.4 ± 49.8	171.8 ± 47.8

The results of this study support the view that the advantages of adopting a process orientation immediately before and during performance should be combined with the motivational benefits of performance and outcome goals. Such a strategy is likely to have significant advantages, when compared to pursuing the current trend of presenting a 'process good'/'outcome bad' dichotomy in the area of goal-setting.

Why the attitude–intention relationship in a physical activity context may be spurious

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Theories of motivation have traditionally focused on the relationship between attitudes and intentions to explain the psychological influences on goal-directed behaviour. While research in social and exercise psychology has indicated that this relationship is strong, the origins of development of these beliefs and their respective planned intentions has not been addressed. This study examined the attitude–intention relationship in an exercise context by utilizing three theoretical approaches proposed in social psychology: Ajzen's (1985: In *Action Control*, edited by J. Kuhl and J. Beckmann. Heidelberg: Springer) Theory of Planned Behaviour, Skinner's (1996, *Journal of Personality and Social Psychology*, 3, 549–570) system of control beliefs and Deci and Ryan's (1985, *Intrinsic Motivation and Self-Determination in Human Behaviour*. New York: Plenum Press) Self-Determination Theory. Specifically, it is hypothesized that a person's control beliefs are related to perceived behavioural control and also influence intentions and attitudes with perceived behavioural control as a mediator. In addition, it is expected that perceptions of relative autonomy in physical activity behaviour will exert an influence on attitudes and intention and may thereby regulate this relationship.

In a first study, 60 adolescents completed an inventory with items to measure attitudes, intentions and their intrinsic (IN), identified (ID), introjected (IJ) and extrinsic (EX) reasons for participating in physical activity. The measures were re-administered 6 weeks later (time 2). A structural equation model hypothesizing paths between ID (a measure of competence-developing reasons for engaging in physical activities), attitudes and intentions at the two time-points demonstrated a satisfactory fit with the data (CFI = 0.99). The model indicated that no paths existed between attitudes and intentions at both time points, but ID influenced both constructs and served as a mediator. More importantly, the total effect of ID on intention was greater at time 2 than at time 1, indicating that perceptions of autonomy remained constant or improved over time, while those of attitudes and intention were inconsistent resulting in poor prospective prediction.

In a second study, 1088 adolescents completed the same inventory concurrently with a measure of perceived behavioural control and control beliefs in the physical domain. A structural equation model using latent variables was developed using one half of the sample randomly selected. The revised model was then retested on the second half of the sample and subjected to multisample analysis. The model demonstrated adequate fit with the data for both the group 2 (CFI = 0.93) and multisample (CFI = 0.92) analyses. The analysis was repeated on the entire sample (CFI = 0.92) and these coefficients are reported. Significant paths of high magnitude between perceived behavioural control and attitudes ($\lambda = 0.68$) and between perceived behavioural control and intentions ($\lambda = 0.61$) were found. The unconfounded attitude–intention relationship (Pearson's $r = 0.55$) was greatly reduced ($\lambda = 0.25$) by the inclusion of the perceived behavioural control–attitude path. In addition, control beliefs were significantly related to perceived behavioural control but the relationships were regulated by the direct effect of a relative autonomy index, derived from a weighted composite of the IN, ID, IJ and EX scores, on perceived behavioural control. Furthermore, the relative autonomy index indirectly regulated the attitude–behaviour relationship through its influence on perceived behavioural control.

The present findings demonstrate that the attitude–intention relationship has little motivational importance in this model and is incidental to the influence of autonomy and control on intentions. The mediating influence of identification on intentions and attitudes in the first study provides evidence that autonomy-seeking reasons for engaging in physical activity are directly related to the formulation of intentions to behave. This is in line with self-determination theory, which suggests that a need to demonstrate competence towards a given behaviour in a context of high autonomy will positively influence intention to engage in that behaviour without any contribution from attitude. This idea was taken further in the second study, where intended behaviour was modelled in a dual regulatory system incorporating perceived behavioural control and control beliefs with autonomy. The regulation of the attitude–intention relationship was a result of the direct influence of perceived behavioural control on attitude and intentions. Although the direct influence of the perceived behavioural control variable on intention has been documented, perceived behavioural control has traditionally been made to covary with attitudes, but no direct relationship has been hypothesized. This relationship could be accounted for by the degree of spontaneity in the decision-making process. The formulation of intentions may be executed on the basis of control beliefs and bypass the consideration of attitudes in conditions of experience with the behaviour at hand, a high internal locus of control and high competency. However, for novel behaviours or in situations of compromised control, intention may be formed on the basis of more a deliberative consideration of attitudes, behavioural beliefs and barriers. Overall, these studies serve to highlight the influence of autonomy and control over the formation of intention and imply that the formation of attitudes may be coincidental to the influence of these variables.

Cognitive and affective correlates of perceived motivational climate among disadvantaged youths

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Recent research in physical activity contexts has indicated that perceptions of the situational goal structure, referred to as perceived motivational climate, are related to participants' cognitive and affective responses (e.g. Kavussanu and Roberts, 1996, *Journal of Sports and Exercise Psychology*, 18, 264–280; Treasure, 1997, *Journal of Sport and Exercise Psychology*, 19, 278–290). In particular, research has demonstrated that participants in mastery climates (i.e. contexts in which learning and skill development are encouraged) enjoy the activity more, are more satisfied and believe that effort causes success; in contrast, participants in performance climates (i.e. contexts in which competition and outperforming others are emphasized) experience more tension during participation in the activity, and view ability and deception strategies as causes of success. The aim of the present study was to extend previous research by examining the relationships between perceived motivational climate, beliefs about the causes of sport success and intrinsic motivation among disadvantaged youths (i.e. youths coming from low-income families) participating in summer sports programmes.

The participants included 2043 youths, ranging in age from 10 to 16 years, enrolled in the National Youth Sports Program, a programme organized by various universities in the USA for disadvantaged youths. Questionnaires were mailed to the programme directors and were administered during a class period. Participants completed an adapted form (i.e. some items were eliminated and the term 'players' was replaced with the term 'children') of the Perceived Motivational Climate in Sport Questionnaire (PMCSQ; Seifriz *et al.*, 1992, *Journa Sport and Exercise Psychology*, 14, 375–391), an abbrevia version (i.e. only eight items were used) of the Intrin Motivation Inventory that measured the effort, enjoym competence and tension dimensions of intrinsic motivat (Ryan, 1982, *Journal of Personality and Social Psychology*, 450–461) and the Beliefs About the Causes of Sport Succ scale (Duda and Nicholls, 1992, *Journal of Educatic Psychology*, 84, 290–299).

Based on a median split on the mastery and performa subscales of the PMCSQ, participants were classified into f groups: youths with perceptions of high versus low mast climate, and youths with perceptions of high versus performance climate. A 2 × 2 (high *vs* low mastery × high low performance) multivariate analysis of variance revea a significant interaction between mastery and performa climates ($F_{7,2033} = 5.06$, $P < 0.001$), and significant m effects of mastery ($F_{7,2033} = 76.59$, $P < 0.001$) and perfor ance ($F_{7,2033} = 68.99$, $P < 0.001$) motivational climates. T interaction was significant for the effort, enjoyment a tension dimensions of intrinsic motivation. In additi youths who perceived a high mastery climate in the Natio Youth Sports Program reported significantly higher sp competence, exerted more effort, experienced more enj ment, were more likely to attribute sport success in t Program to motivation and effort, and less likely to consic deception and luck as precursors of success in the Progra Youths with perceptions of a high performance motivatio climate, on the other hand, applied significantly less effo experienced less enjoyment and more tension, and were mc likely to consider ability, luck and deception as causes of sp success in the Program, and less likely to view effort as a cau of success.

These findings suggest that the critical dimension the situational goal structure for most indices of intrin motivation is the degree of mastery-oriented climate perceiv by participants. Thus, even if we encourage competiti success among youths, we may still observe the positive ou comes of sport participation as long as we emphasize learni and improvement even with disadvantaged youths. Perce tions of a mastery-oriented climate were also linked adaptive beliefs (i.e. motivation, effort), whereas perceptio of a performance-oriented climate were associated wi maladaptive beliefs (i.e. ability, luck, deception) regarding t important precursors of sport success. Clearly, disadvantage youths benefit from being placed in a mastery-orient climate, they experience positive affect and their beliefs a conducive to ongoing participation.

Flags versus lights: A comparative study of signals to racing drivers

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Some sports still rely on the use of flags as a means of relayin information, including soccer and rugby union, the start c

Filby, W.C.D., Maynard, I.W., & Patey, T. (2000). The effect of different goal-setting experiences on bench-press performance. ***Journal of Sports Sciences,*** **18, p.48-49.**

test 1 and 2, plotted against the means of those tests (Bland and Altman, 1995: *Lancet*, 346, 1085–1087).

After brain injury, those with less impaired memories (n = 16) demonstrated reasonable reliability in recording exercise motives, as shown in Fig. 1. The relationship between the EMI-BI and pre-morbid exercise frequency provides some evidence of the validity of using this scale as a measure of exercise motives after brain injury. The apparent inability of brain-injured individuals to exercise to prescribed training zones at high intensities may not therefore be mediated by motivational issues.

The impact of blocked and random imagery sessions on movement error rate

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Wrisberg (1991: *Journal of Teaching in Physical Education*, 11, 21–30) has shown the advantage of practising badminton serves in a random rather than a blocked manner. He argues that random practice produces more contextual interference and this in turn leads to better performance of the motor skill. There is also strong evidence that a combination of physical practice with imagery practice can lead to improved performance compared with either method independently (Feltz and Landers, 1983: *Journal of Sport Psychology*, 5, 25–27), but research to date has not examined the issue of the best combination between random/blocked imagery and random/blocked physical practice.

The focus of the present study was on the impact of factorial combinations of physical practice conditions with imagery practice conditions. Thirty-six students acted as participants. The apparatus consisted of a perspex board upon which were connected four buttons each 2 cm in diameter, spaced in a diamond. The participant's task was to hit the buttons in a prescribed sequence and to be as accurate as possible in terms of goal movement times. A factorial counterbalanced block design was adopted. Participants were randomly assigned to one of six groups: blocked physical–blocked imagery, blocked physical–random imagery, random physical–random imagery, random physical–blocked imagery and two control groups. In the control groups, participants used either blocked or random physical practice but no imagery was involved (controlled by asking them to count backwards).

Absolute error was calculated by summing the absolute differences between the goal movement times and actual movement times. Relative timing performance, as a measure of gross motor performance, was obtained by summing the absolute differences between the goal proportions and the actual proportions; thus this measure is independent of errors in time parameterization. No main effects were found for the two imagery conditions ($F_{1,20} = 1.3$, $P < 0.26$) or the two physical movement conditions ($F_{1,20} = 0.67$, $P < 0.79$). There was a significant interaction when combining physical movement and imagery ($F_{1,20} = 4.3$, $P < 0.05$), such that a combination of blocked imagery and random physical practice produced the fewest errors and random imagery with random physical practice produced the most errors (Table 1). One possible explanation for this is that, to create the optimal level of performance enhancement, a random factor – either movement or imagery – is required. This may be interpreted as information overload (Sidaway *et al.*, 1991: *Research Quarterly for Exercise and Sport*, 62, 27–32).

Table 1 Errors in relative timing (n = 36)

	BP/BI	BP/RI	RP/BI	RP/RI	BP/NI	RP/NI
Trial 1	0.167	0.169	0.136	0.176	0.169	0.176
Trial 2	0.174	0.151	0.123	0.239	0.204	0.159

Abbreviations: BP, blocked physical; BI, blocked imagery; RP, random physical; RI, random imagery; NI, no imagery.

The effect of different goal-setting experiences on bench-press performance

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The emergence of theoretical perspectives, and associated research evidence, concerning the efficacy of multiple goal strategies in sport is a comparatively recent phenomenon (Hardy *et al.*, 1996: *Understanding Psychological Preparation for Sport: Theory and Practice of Elite Performers*. Chichester: Wiley). The aims of this study were to examine the use of outcome and performance goals and to investigate the effect of different goal-setting experiences on psychological processes that have been suggested as mediators of the relationship between goal-setting and performance.

Participants were 60 sports students (42 males, 18 females; mean ± s: age 20.3 ± 2.6 years). Each of six groups (n = 10; 7 males, 3 females), matched for performance on a bench-press task, was allocated to one of the following goal-setting conditions: performance goal; outcome goal (success); outcome goal (failure); outcome goal (success) with performance goal; outcome goal (failure) with performance goal; no goals. Participants were trained in the use of a pre-performance routine, which included sport-specific stretching exercises and affirmations of goal statements. Performance on the bench-press task was recorded over 7 weeks, together with self-report measures of effort and self-efficacy. To maintain experimental control over experiences of success and failure, participants in the four groups using an outcome goal were given bogus feedback about their position in a ranked competition. For the purposes of the outcome goal competitions, participants were told that they had been placed in a group with nine others, each of whom had performed similarly to themselves at the pre-test stage. At the beginning of each training session, participants were then told either that they were 'doing well, currently in the top four of your competition group', or 'doing badly, currently in the bottom four of your competition group'.

Scores for bench-press performance were compared between the six intervention groups at the two stages of the experiment using a two-way analysis of variance (group and test), with repeated measures on the second factor. The intervention group × test interaction for bench-press performance score was significant ($F_{5,49} = 10.42$, $P < 0.001$; effect size $\eta^2 = 0.47$, estimated power at 5% probability = 1.00). The results from *post-hoc* Fisher LSD tests indicated that the outcome goal (failure) group was outperformed by all other groups. In addition, the outcome goal (success) with performance goal group performed better than the control group, the outcome goal (success) group, and the outcome goal (failure) with performance goal group.

The intervention group × test interaction for effort was significant ($F_{5,49} = 4.93$, $P < 0.01$; effect size $\eta^2 = 0.50$, estimated power at 5% probability = 0.97). *Post-hoc* tests revealed that the outcome goal (failure) group had rated their effort at a lower level than all other groups. Scores for self-efficacy during the performance stage of the experiment were compared between the five goal-setting groups using a one-way analysis of variance ($F_{4,41} = 4.73$, $P < 0.01$). *Post-hoc* tests showed that the outcome goal (failure) group had lower self-efficacy than the performance goal group, the outcome goal (success) group, and the outcome goal (success) with performance goal group. The outcome goal (success) with performance goal group also had higher self-efficacy than the outcome goal (failure) group.

Our results support previous research that has suggested that outcome goals used in isolation can be dysfunctional and that performers should be encouraged to prioritize self-referent goals.

The impact of collective efficacy beliefs on team-referent attributions

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According to Bandura (1997: *Self-Efficacy: The Exercise of Control*. New York: Freeman), collective efficacy should have similar consequences as self-efficacy. One of the implications of this is that collective efficacy beliefs should influence the way in which team members explain the causes of their teams' performances (team-referent attributions). Because no published research has examined such a proposal, the aim of this study was to examine the impact of collective efficacy upon team-referent attributions. A secondary objective was to examine the influence of subjective evaluations of team performance on team-referent attributions.

A sample of 115 male undergraduates (mean ± s: age 21.09 ± 2.75 years) participating in a range of interdependent teams, either at an intercollegiate or intra-mural level, were asked to complete two questionnaires, one before and one after a fixture. The pre-match questionnaire ascertained levels of outcome collective efficacy ('On a scale of 0 to 100 (0 = no chance, 100 = can't fail), what are your team's chances of winning the game?') and importance levels of the game. The post-match questionnaire consisted of the Causal Dimension Scale (Russell, 1982: *Journal of Personality and Social Psychology*, 52, 1248–1257) modified to measure attributions for the whole team's performance. Participants were also asked to rate how successful they felt their team's performa had been on a 5-point scale from very poor (1) to excellent

A 2 × 3 (collective efficacy × perceptions of performa multivariate analysis of variance revealed a significant col tive efficacy × perceptions of performance interaction ef (Wilks' $\lambda = 0.80$, $F_{6,136} = 2.74$, $P < 0.05$; effect size $\eta^2 = 0$ estimated power at 5% probability = 0.86). Follow-up anal of variance showed that the interaction effect occurred team attributions along the locus of causality dimens ($F_{2,70} = 6.25$, $P < 0.01$; effect size $\eta^2 = 0.15$, estimated powe 5% probability = 0.88). *Post-hoc* Fisher's LSD tests revea that individuals high in collective efficacy used more exte attributions following poor performances than individ low in collective efficacy, whereas following successful p formances those high in collective efficacy used more inte attributions than low collective efficacy individuals.

The analysis of variance conducted on the main effect collective efficacy on controllability ratings revealed individuals high in collective efficacy made more controlla attributions than those low in collective efficacy ($F_{1,70} = 4.$ $P < 0.05$; effect size $\eta^2 = 0.06$, estimated power at 5% pr ability = 0.54). This supports the contentions of Band (1997). Follow-up analyses of variance also indicated t perceptions of team performance contributed to the exten which the causes of performance were seen to be controlla ($F_{2,70} = 9.89$, $P < 0.001$; effect size $\eta^2 = 0.22$, estimated po at 5% probability = 0.98), stable ($F_{2,70} = 5.48$, $P < 0.01$; eff size $\eta^2 = 0.14$, estimated power at 5% probability = 0.83) a internal or external ($F_{2,70} = 4.11$, $P < 0.05$; effect size $\eta^2 = 0.$ estimated power at 5% probability = 0.71). *Post-hoc* Fishe LSD tests indicated that individuals rating their te performance as good used more controllable attributions th those rating the performance as poor or neutrally, that th used more stable attributions than either those rating t performance poorly or neutrally, and that there was a s nificant difference in stability attributions between the rating performance as poor and those rating it neutrally.

This study thus provides support for the proposal th collective efficacy beliefs and the subjective rating of te performances will interact to influence an individual's tea referent attributions. Our results partially mirror resear findings conducted on the self-efficacy–self-referenced att bution relationship (Biddle, 1993: In *Handbook of Resea on Sport Psychology*, edited by R.N. Singer *et al.* New Yo Macmillan). Our results may provide the impetus for furth research examining the nature of team-referent attributio specifically the role of team-referent attributions in gro motivation.

Exercise dependence among triathletes: Possible effec of competitive orientation, triathlon experience and training volume

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Exercise dependence among athletes has been documente in many case reports (see Pierce, 1994: *Sports Medicine*, 1

APPENDIX 2

Name : _____ GS Group:

Directions: A number of statements that athletes have given to describe their feelings before competition are given below. Read each statement then circle the appropriate number on the vertical scale from 1 to 7 to indicate how you are feeling right now. Then for each statement circle an appropriate number on the horizontal scale from 1 to 7 to signify how facilitative (helpful) or debilitative (harmful) you perceive your response to be. There are no right or wrong answers. Do not spend too much time on any one statement.

I feel nervous, my body feels tight and/or my stomach tense :

1. Not at all
2. A little bit
3. Somewhat
4. Moderately so
5. Quite a bit
6. Very much so
7. Intensely so

Very Debilitative — Very Facilitative

1 2 3 4 5 6 7

I feel concerned about performing poorly and that others will be disappointed with my performance.

1. Not at all
2. A little bit
3. Somewhat
4. Moderately so
5. Quite a bit
6. Very much so
7. Intensely so

Very Debilitative — Very Facilitative

1 2 3 4 5 6 7

I feel secure, mentally relaxed, and confident of coming through under pressure.

1. Not at all
2. A little bit
3. Somewhat
4. Moderately so
5. Quite a bit
6. Very much so
7. Intensely so

Very Debilitative — Very Facilitative

1 2 3 4 5 6 7

APPENDIX 3

Name : _____ GS Group:

Directions: Please respond to the questions below with regard to your current bench-pressing performance.

1. On a scale of 0 to 100 (0 = 'no chance', 100 = 'can't fail') what is your chance of achieving your goal(s)?

_____

2. How sure are you of this prediction?

_____

APPENDIX 4

Name : _____ GS Group:

Directions: Please respond to the question below with regard to your recent bench-pressing performance.

On a scale of 1 to 7 (1 = 'almost no effort', 7 = 'near maximum effort') how much effort did you put into the session just completed? Please circle the number that best describes your performance.

Almost No Effort						Near Maximum Effort
1	2	3	4	5	6	7

APPENDIX 5

Name:
Type of Goal:
Trial No:

Please respond to these questions using the six-point scale, where 1= "strongly disagree" and 6= "strongly agree". Don't spend too much time on any of the items - there are no 'right' or 'wrong' answers.
Thanks.

I was strongly committed to pursuing my goal

1 2 3 4 5 6

I didn't care if I achieved my goal or not

1 2 3 4 5 6

I was highly motivated to meet my goal

1 2 3 4 5 6

It was important to me that I achieved my goal

1 2 3 4 5 6