

A TOOL FOR MEASURING SELF-CONTROL
IN ATHLETES

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A Thesis
Presented to the
Faculty of University Schools
Lakehead University

* * *

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
in the
Theory of Coaching

* * *

by
Lynne E. Evans (C)
1985

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ABSTRACT

Title of Thesis: A Tool for Measuring Self-Control in Athletes

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The purpose of this study was to develop a practical assessment tool based on Rosenbaum's (1980) Self-Control Schedule (SCS) for measuring self-control in athletes. A questionnaire was developed which in its final form, contained 35 items. The tool was shown to be a valid, reliable, readable and internally consistent assessment tool. It demonstrated objectivity and provoked honest, accurate responding in subjects. Responses to the questionnaire were weighted, depending on attitudinal direction and its desirability for indicating self-control. The developed questionnaire was administered to two samples of athletes whose performances were partially attributed by the coach to a lack of self-control or a high level of self-control. The tool demonstrated sensitivity to differing levels of self-control. The questionnaire was capable of providing immediate feedback to coaches concerning an athlete's level of self-control. The questionnaire provides a total score which can be quickly interpreted by the coach as a measure of self-control in athletes.

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CHAPTER 1

INTRODUCTION

Purpose

The purpose of this study was to develop and test a sport specific self-report instrument. The instrument aimed to assess the application of self-control methods by individual athletes to behavioural problems concerned with their sport.

Significance of the Study

In response to the need for a reliable and valid instrument by which individual differences could be assessed in the tendency to employ self-control behaviours, Rosenbaum (1980) developed the Self-Control Schedule (SCS) (see Appendix A). At present this is the only published self-control schedule, and while proven to be a valid and reliable instrument, the need for further investigation and empirical research have been identified (Redden, Tucker & Young, 1983).

More recently, sport psychologists have identified the importance of the role of self-control to both coach and athlete alike in their pursuit of sporting excellence (Dickenson, 1977; Orlick, 1980). It has been suggested that the most consistent, most confident and better athletes are those exhibiting high levels of self-control (Orlick, 1980). It has also been suggested that the best performance results may be achieved by an athlete when he/she conducts any

psychological preparation for competition him/herself (Singer, 1984). To date there exists a distinct lack of empirical research into self-control in the sporting context, and no comparable test to the SCS exists for use within the sporting environment.

This study aimed to develop such a tool for use by coaches and athletes in sporting environments. The tool was intended to act as a measure, not only of an athlete's self-control, but his/her ability to apply self-controlling contingencies to behavioural problems within sport. The advanced knowledge provided by the tool could assist coaches in: (1) obtaining immediate feedback about the athlete's level of self-control, (2) indicating the specific contexts which threaten the athlete's level of self-control, (3) devising self-controlling contingencies in response to the behavioural problems of the athlete, (4) coordinating a structured environment to minimize any threats to the athlete's self-control, and, (5) teaching the athlete how to apply self-controlling contingencies to his/her own behaviour independently of the coach.

The advantage of such a psychological tool would be not only in its simplicity for coaches to administer, but its propensity for on spot evaluation with immediate relevant feedback which the coach could quickly act upon. Especially in the pre-competition situation, information, if deemed important enough by the coach, could then be used to design

controlling contingencies. This could aid in facilitating maximum competitive performances (Rushall, 1979a).

Since the use of general inventories for determining the relationships between behavioural inferences and sport classifications has been found to be unsatisfactory (Kroll, 1970; Rushall, 1978), Rosenbaum's SCS should be developed into a sport specific SCS to be of value in the applied sporting environment. In support of sphere specific instruments, Kroll (1970) has pointed out that the validity of tests becomes better as tests are developed more specifically for specific situations.

In summary, the development of a psychological tool, capable of both measuring self-control and an athlete's ability to apply self-controlling contingencies to his/her own behavioural problems, would contribute a valuable tool to the psychological assessment measures presently available to coaches. It could be used to prevent undesirable behavioural changes and could act as a technique to maintain behaviour once change had been achieved (Kazdin, 1980).

The development of a sport specific SCS would help fill the gap in the literature left by the lack of empirical research into self-control in the sporting context. It could serve as an instrument of great value to coaches and athletes alike by: (1) enabling the improved preparation of athletes for competition, (2) reducing an athlete's dependence upon

the coach, (3) serving as a means by which both athlete and coach could gain a clearer understanding of the athlete's behaviour, and in response, modify the behaviour or the environment to facilitate good performance.

Delimitations

This study was concerned with the measurement and application of self-controlling contingencies to behavioural problems within the sports environment. The tool developed was restricted to pencil and paper form and is, therefore, suitable for use in the practical sporting environment.

The content, structure, and nature of the tool has to suit a wide variety of age groups. It is intended that subjects of at least 16 years of age should be capable of successfully completing the questionnaire. The utility of the tool was evaluated by testing divergent groups of performers.

Limitations

- i) The content of the instrument measured the construct 'self-control', as stated by Rosenbaum (1980).
- ii) The instrument was reliable and objective if the correlation coefficient exceeded $r = .80$.
- iii) The validity of the tool was established through a content assessment by an expert panel of judges.
- iv) Acceptable wording was established by trial evaluations by members of the low-end age group for

which the tool was targetted.

- v) The self-report technique was assumed to indicate the behaviour capacities of self-control.
- vi) The transfer of the implications of questions to the real-life sporting situations produced valid items.
- vii) Reliability was established on a limited sample size in an attempt to replicate the situation of intended use, that is, limited sized samples of athletes.
- viii) An alpha level of .05 was established as the level of significance for statistical tests.

Definitions

Self-controlling behaviours were defined as those self-controlling responses cued by any internal event such as anxiety, pain, or thought that disrupts the effective performance of a target behaviour within the sporting context (Rosenbaum, 1980). Self-controlling responses are responses directed at reducing the interference caused by such events (Rosenbaum, 1980).

Self-efficacy was defined as the conviction that one can successfully execute behaviours to produce an outcome. In other words, in relation to sport, before an athlete applies any specific controlling skill he/she must believe that he/she can control his/her own behaviour without outside help (Bandura, 1977).

CHAPTER 2

REVIEW OF LITERATURE

The past decade or so has witnessed an accelerated interest in the use of self-control procedures in behaviour modification (Goldfried & Merbaum, 1973; Jones, Nelson & Kazdin, 1977). Both clinical and applied research have attempted to analyse self-control with partial success (Critchfield, 1981). Much of the application of self-control has been derived from numerous studies which have suggested that individuals can control their own behaviour either by using self-generated stimulation or by modifying the environment to maximize the probability of a particular response (Jones et al., 1977).

Models of self-control have been used to analyse various forms of normal and deviant behaviour and have generated self-administered behaviour change programmes applicable to various target behaviours (Rehm, 1977). Those target behaviours have included obesity and overeating (Penick, Filion, Fox & Stundard, 1974; Stuart, 1967), smoking (Axelrod, Hall, Weis & Rohrer, 1974; Shapiro, Tursky, Schwartz & Shnidman, 1971; Roberts, 1969), study behaviour (Beneke & Harris, 1972; Bolstad & Johnson, 1972), and tolerance of noxious stimuli (Kanfer & Goldfoot, 1966; Kanfer & Seidner, 1973). Though a high degree of variability has been found among subjects in their ability to apply self-control methods (Bellack & Schwartz, 1976), the

assessment of individual differences in the ability to employ self-control procedures has been identified by Rosenbaum (1980) to have been given only scant attention in the literature.

Traditionally, in the absence of a clear understanding of the concept of self-control, it had frequently been attributed to 'will-power'. The consensus among self-control researchers virtually has been unanimous, that volitional approaches to self-control (such as will power) have seriously impeded the collection and interpretation of meaningful knowledge about self-control (Mahoney & Thoresen, 1974; Thoresen & Mahoney, 1974).

Self-control is considered to be a behaviour learned in the same way as other behaviours (Goldfried & Merbaum, 1973; Lazarus, 1976). In order to exercise self-control, the individual must learn to understand what factors influence his/her actions and how he/she can alter those factors to bring about the desired change (Kazdin, 1980; Thoresen & Mahoney, 1974). Therefore, a person who is aware of how certain stimuli control his/her behaviour, can structure the environment to maximize the likelihood that the desired behaviour occurs (Kazdin, 1980).

Self-Control Defined

Self-control has been defined as the choice of a large temporally-distant reinforcer over a smaller, more immediate one (Rachlin, 1974). Kanfer (1970) saw

self-control as the process by which people manage their own goal-directed behaviours in the relative absence of immediate external constraints. Thoresen & Mahoney (1974), in an attempt to define self-control stated:

A person displays self-control when in the relative absence of immediate external constraints he engages in a behaviour whose previous probability has been less than that of alternatively available behaviours (p. 12).

The above definition draws attention to the three important features of self-control;

- 1) it always involves two or more alternative behaviours,
- 2) the consequences of those behaviours are usually conflicting, and,
- 3) the self-regulatory pattern is usually prompted and/or maintained by external factors such as long-term consequences.

This supports the reciprocal relationship that exists between the individual and the environment, so that while a person is a product of his environment, his behaviour in turn shapes the environment. Thus, the individual is able to modify the conditions under which he/she lives (Kanfer, 1977; Lazarus, 1976; Skinner, 1953).

In summary, models and contingencies of self-control have been identified as being applied to the solution of a number of behavioural problems. It has been suggested that self-control is a behaviour learned, as are other behaviours. Therefore, a high degree of variability has been found to exist among subjects in their ability to apply self-control methods. The relationship between the individual and the environment is a reciprocal one. Self-control may be defined in terms of the choice between two or more conflicting behaviours which may be maintained by long-term consequences.

Self-Control Conceptualized

Researchers, in their attempts to conceptualize self-control, have tended to identify the elements and component process (Jeffrey, 1974; Mahoney & Thoresen, 1974; Rehm, 1977). According to Mahoney & Thoresen (1974), self-control generally involves three important processes; the specification of a behaviour, the identification of its antecedent cues, and environmental consequences. Preliminary research has identified three basic elements in behavioural self-control;

- 1) self-observation;
- 2) environmental planning, and,
- 3) behavioural programming.

An alternative conceptualization of self-control behaviours is that adopted by Rosenbaum (1980). For the

classification of his Self-Control Schedule (SCS), he categorized self-control behaviours in the following way: (a) use of cognitions and 'self-statements' to control emotional and physiological responses, (b) the application of problem solving strategies (eg. planning, problem definition, evaluating alternatives, anticipation of consequences), (c) the ability to delay gratification, and (d) perceived self-efficacy (Meyers, 1978). The feedback loop postulated by Kanfer & Karoly (1972), and supported by Rehm (1977), conceptualizes self-control in terms of, self-monitoring, self-evaluation, and self-reinforcement.

The techniques, therefore, that can be identified in the training of individuals in the application of self-controlling contingencies, which may include many variations, consist of stimulus control, self-observation, self-reinforcement and self-punishment, self-instruction, procedures based on cognitive strategies, and perceived self-efficacy. These conceptualizations lean heavily on the importance of thought and language in delaying impulsive action, and for introducing a competing cognitive alternative into the self-regulatory sequence (Goldfried & Merbaum, 1973).

Stimulus control is exhibited when specific behaviours are performed in the presence of specific stimuli. Individuals who are aware of how certain stimuli control their behaviour can structure their environment to maximize the likelihood that the desired behaviour occurs (Kazdin,

1980).

Stimulus control has been used as the basis for the treatment of many behavioural problems, for example, smoking (Roberts, 1969; Shapiro, Tursky, Schwartz & Shnidman, 1971), study behaviour (Beneke & Harris, 1972), and other personal behaviour problems (Goldiamond, 1965). Research into the control of overeating has had resounding success with stimulus control. Researchers have pointed out that eating behaviours especially are associated with specific environmental cues (Mahoney & Thoresen, 1974). By manipulating these cues, researchers have been able to successfully control overeating and obesity (Stuart, 1967; Penick et al., 1974). This systematic altering of one's environment is perhaps the simplest example of self-control (Mahoney & Thoresen, 1974).

The ongoing feedback provided by self-monitored data also plays a crucial role in effective self-control (Kanfer, 1970). While proven to have utility as an assessment tool (Kanfer, 1977), research has shown that self-monitoring may also act as a treatment strategy (Mahoney & Thorsen, 1974). Studies have shown that simply keeping track of a behaviour may result in changes in that behaviour (Hanna, 1978; Johnson & White, 1971; Kirschenbaum, Ordman, Tomarken & Holtzbauer, 1982).

Research into self-monitoring to date has shown

that stable self-change can occur with fairly unreliable self-observations (Broden, Hall & Mitts, 1971); as a measurement device, self-observation represents a crucial preliminary stage in self-control (Kanfer, 1970; Mahoney & Thoresen, 1974); reactive effects from self-observation may effect behavioural change (Kazdin, 1974b); self-monitoring allows access to data that might not otherwise be available (Kazdin, 1974a); self-monitoring of anxiety levels can increase overall well-being (Klavora, 1982); and that, self-monitoring provides a method by which a person can become quantifiably more aware of his/her own behaviour and the factors that influence it (Thoresen & Mahoney, 1974).

There are many self-controlling actions that a person can perform after a certain behaviour occurs. These behaviours are self-conditioned or self-regulated consequences. Self-reinforcement is one of these self-controlled consequences.

Self-reinforcement processes occupy a prominent position in various theoretical analyses of self-control (Jones et al., 1977). Although authors differ somewhat in their conceptualizations of self-reinforcement, each has argued that behaviour can be acquired and maintained through the self-delivery of reinforcers contingent on performing certain responses. Self-punishment has been used relatively infrequently in behaviour modification programmes (Kazdin, 1980).

Research has supported the effectiveness of self-reinforcement and, to a lesser extent self-punishment, in effecting behaviour change. In the treatment of obesity Penick et al. (1974) used positive and negative self-reinforcement, as did Beneke & Harris (1972) in the self-control of study behaviour. Axelrod et al., (1974) effectively used positive self-punishment in the reduction of smoking behaviour, while Bolstad & Johnson (1972) utilized self-reinforcement in the self-regulation of disruptive classroom behaviour. Self-reinforcement has been found to be effective in the elimination of many target behaviours. It may also supplement external reinforcement in controlling behaviour.

The things that people say to themselves have been considered important in controlling their own behaviour (Skinner, 1953). However, very little research has been done solely on the effect of self-instruction as a self-controlling contingency. One of the few investigations into verbal self-instruction was carried out by Bem (1967). The results of that study indicated that verbal self-control can be produced experimentally in seven year old children, and emphasized the importance of learning in the establishment of effective self-instruction.

Bandura (1977) proposed a theory that psychological procedures, whatever the form, alter the level and strengths of self-efficacy. Self-efficacy, as defined by Bandura (1977),

is the conviction that one can successfully execute the behaviours to produce a certain outcome. Efficacy in dealing with one's environment, as in self-control, involves a 'generative capability' in which component cognitive, social, and behavioural skills must be organized into purposes (Bandura, 1982). In this process, judgements of personal efficacy are essential for the application of coping capabilities.

According to Averill (1973), behavioural control not only allows an individual to manage the aversive aspects of an environment, it also affects how the environment is likely to be perceived. Potentially stressful situations that can be controlled are construed as less threatening, and such cognitive appraisals further reduce anticipatory emotional arousal.

Information that is relevant for judging personal competencies only becomes instructional through cognitive appraisal. Self-regulation or control can be achieved either behaviourally or cognitively (Averill, 1973). In behavioural control, individuals take actions that modify or forestall aversive events. In cognitive control, people believe they can cope with environmental threats. Changes in self-percepts of efficacy predict coping and self-regulatory behaviour (Bandura, 1982).

Self-control has been conceptualized in terms of

many behavioural contingencies including stimulus control, self-observation, self-reinforcement and self-punishment, self-instruction, cognitions, and perceived self-efficacy. Research has argued cases for the inclusion of each of these contingencies within a self-control programme. Each may be considered a necessary, but not sufficient, contingency for behavioural change.

Self-Control in Sport

The literature to date has unequivocally supported the importance of behavioural self-control within the sporting context; a need has been identified to emphasize the potential of the application of self-control techniques (Klavora, 1982).

Support for the contention that one of the distinguishing features of elite, as compared to non-elite athletes, has been that of self-control, appears to be unanimous amongst sport psychologists supporting the situational approach to personality (Orlick, 1980; Rushall, 1982), and from those supporting the trait approach (Cattell, Eber & Tatsuoka, 1970; Ogilvie, 1976). Elite athletes have a skill for preparation which enables them to control their mental and physical reactions prior to competitions (Rushall, 1979b); they have a heightened self-awareness which produces consistent competitive performance and enhances predictability of competitive efforts (Rushall, 1982). Self-control was identified by

1964 Olympic gold medalists as one of the traits that separated them from non-gold medalists, and it has also been identified as one of the most significant traits found in profiles of men coaching at the highest competitive level (Ogilvie, 1976).

Similarly, Orlick (1980), in studying the components necessary for sporting excellence, found almost total agreement on the psychological attributes of commitment and self-control. Self-control has been identified as one of the major behavioural problems which occurs at Games' competition sites (Rushall, 1979a).

An important component of self-control, as identified in the literature, is that of motivation (Orlick, 1980; Nitsch, 1982; Wenz & Strong, 1980). According to Wenz & Strong (1980), motivation, psychological self-awareness, and an internal sense of physiological responsiveness underlie much of the effectiveness in obtaining self-regulation. Motivation may be closely linked with goal setting and locus of control. In order to be effective, self-control must be combined with self-determined goals. Realistic self-determined goals help the athlete to become more aware of what the athlete can ask of himself/herself (Halliwell, 1979; Nitsch, 1982).

Whether intrinsic motivation or stress prevail depends greatly on whether the individual athlete feels

capable of functioning competently and with a reasonable level of personal control in the competitive sport setting. The most direct way to enhance intrinsic motivation is to structure the environment so that the athlete perceives a match between response capabilities and performance demands (Scanlan, 1982). Perceptions of incompetence and lack of control are fundamental to the experience of competitive stress (Harris, 1982; Rushall, 1982). A multi-faceted and integrated approach utilizing self-regulation techniques, biofeedback, relaxation, and other psychological approaches can be viewed as an appropriate way of overcoming individualized performance stress responses (Wenz & Strong, 1980). Anxiety and disruption of cognitive control never facilitates good performance. It is important, therefore, that the athlete learns how to control performance anxiety. Lack of self-control has been repeatedly identified in the literature as one of the main causes of competition anxiety (Klavora, 1982; Kroll, 1979; Rushall, 1979a).

Psychological techniques for improving self-control, which have been found to be effective in sport practice, include physical self-regulation, mental practice, visuo-motor behaviour rehearsal, and verbal formulas (Klavora, 1982). According to Klavora, by improving attention and enabling the athlete to monitor his/her own arousal and anxiety levels, these self-control techniques are designed firstly to increase overall well-being, and secondly to

stimulate maximum performance. Features highlighted for achieving self-control include athlete awareness, recapturing and association with previous feelings, development of consistent preparation, and employment of monitoring and measurement procedures in preparation (Rushall, 1982).

Nitsch (1982) suggested that most self-control techniques are cognitions based on self-augmentation, self-suggestion and self-instruction. Orlick (1980) maintained, regardless of which self-control strategy(ies) used, goal setting, motivation and self-reinforcement can be helpful in implementing that approach. Orlick's suggestions for self-controlling strategies included mental imagery, relaxation, concentration, self-statements, and cognitive or coping strategies.

A collaborative relationship between athlete and coach, the use of self-control techniques, and an understanding of the psychological impact of competition, all aid in the development of self-esteem and self-control and more effective performances (Wenz & Strong, 1980). Self-control should begin with self-assessment; a self-awareness by the athlete of his/her capabilities, strengths and weaknesses (Orlick, 1980; Rushall, 1982). Self-control determines goal setting, motivation, and strongly relies on self-reinforcement for its effectiveness. Self-selected goals, self-reinforcement and positive

self-thoughts tend to be more effective for helping most people reach their goals than directives from others.

Research into Self-Control in Sport

Research into the area of self-control in sport has been somewhat neglected, though areas relating to self-control have received some attention.

Studies directly concerned with self-control in sport include Kirschenbaum (1984), and Paulhus, Molin & Schuchts (1979). In Kirschenbaum's (1984) study, the process of maximizing sporting performance was conceptualized as a self-regulatory problem. Kirschenbaum indicated that athletes should specify their goals, establish commitments to change, manage their physical and social environments to facilitate the pursuit of goals, execute the components of self-regulation to achieve goals (self-monitor, self-evaluate, self-consequence), and attempt to generalize changes achieved via the development of obsessive-compulsive styles of self-regulation. He concluded that self-regulatory models and principles can lead to effective interventions in sport psychology.

In the study conducted by Paulhus et al. (1979), control profiles of three samples of male college students were determined by administering a battery of sphere specific scales measuring perception of control. Athletes scored higher than non-athletes in all behavioural spheres.

These reported studies seem to support the need for further empirically based research into behavioural self-control in sport. Research into the peripheries of self-control in sport gives further support to this claim. In a study on the effects of self-recording on attendance and performance in a competitive swimming environment, McKenzie & Rushall (1974) reported an increase in both measures. Kirschenbaum, Ordman, Tomarken, & Holtzbauer (1982) meanwhile found an increase in bowling averages as a result of self-monitoring.

Research conducted by El-Gamal (1981) into the effects of relaxation and visuo-motor behaviour rehearsals on wrestler's tournament performance, indicated that Relaxation Self-Control technique controlled the facilitating response in trait anxiety, and the cognitive component score in state anxiety. Further, Relaxation Self-Control developed positive perceptions of the ability of the group subjects to participate in wrestling tournaments, and they, therefore, achieved a significant improvement in wrestling performance.

Investigations into the effects of the use of cognitions on the performance of various motor tasks have similarly shown positive effects for performance (Glore, 1982; Shelton & Mahoney, 1978). Features of these studies include the emphasis on arousal control, attention control, and imagery control. Both studies showed performance improvements.

Further studies investigating the effects of cognitions on performance include Gravel, Lemieux, & Ladouceur, 1980; Mahoney & Avenier, 1977; Meyers, Schleser & Okwumabua, 1982; Morgan & Pollock, 1977). All of these studies have found a positive relationship between the use of cognitions and an increase in athletic performance. In Mahoney & Avenier's (1977) study, as in Morgan & Pollock's (1977) study, the use of cognitions and associative imagery distinguished elite from non-elite athletes.

Research into the relationship between self-efficacy and athletic performance has shown self-efficacy to be correlated significantly with learning and performance of a 'high-avoidance' springboard-diving task (Feltz, Landers & Raeder, 1979). It has been shown to be an important discriminating factor between 'qualifiers' and 'non-qualifiers' in Olympic gymnastics (Mahoney & Avenier, 1977), in Canadian National Wrestling (Highlen & Benett, 1979), and between successful and unsuccessful Big Ten Wrestlers (Gould, Weiss & Weinburg, 1981).

A major criticism against these studies is that, although they have demonstrated a relationship between self-efficacy and performance, a casual relationship cannot be inferred from their correlational designs (Feltz, 1984).

Empirical research into behavioural self-control in sport has been neglected. Many sport psychologists have

identified self-control as an area of importance to both coach and athlete and as a differentiating factor between elite and non-elite athletes. The existing empirical research within the area of self-control and its peripheries gives support to the important role it plays in the pursuit of athletic excellence.

Assessment of Self-Control

Psychometric tools that are behaviourally oriented are becoming clearly more important in sport psychology and the role of sporting excellence. Although this need is slowly being met, there still exists a need for more such tools in certain areas (Suinn, 1979). Within the area of self-control, the only published assessment tool is Rosenbaum's (1980) Self-Control Schedule (SCS).

The need to be able to identify and assess an athlete's ability to apply self-controlling contingencies to himself/herself has been recognized by several prominent sport psychologists (Nitsch, 1982; Orlick, 1980; Rushall, 1982). The use of general inventories for determining relationships between behavioural inferences and sport classifications has proven to be unsatisfactory (Rushall, 1978). In support of sphere specific assessment tools, Jeffrey (1974) and Redden, Tucker & Young (1983), have recognized the potential ability of assessment tools relevant to specific situations.

The development of a sport specific SCS in this

study will aim to provide a means of assessing an athlete's ability to apply self-controlling contingencies to behavioural problems in sport.

CHAPTER 3

METHODS AND PROCEDURES

Re-Statement of Purpose

The purpose of this study was to develop and test a sport specific self-report instrument. The instrument aimed to assess the application of self-control methods by individual athletes to behavioural problems within sporting situations.

Questionnaire Design

The tool developed in this study was not original in design. Rather it was developed from Rosenbaum's (1980) Self-Control Schedule (SCS). Rosenbaum's final 36 item schedule was subdivided with 12 items referring to the use of cognitions to control emotional and physiological sensations, 11 items referring to the subject's tendency to employ problem-solving strategies, 4 items relating to the person's perceived ability to delay immediate gratifications, and 9 items indicative of general expectations for self-efficacy. The questionnaire in this study, in order to be more meaningful for sporting environments, aimed to measure the same parameters, but in sport specific situations.

Measurement Technique

The test developed in this study consisted of 35 items. These items were modified versions of Rosenbaum's (1980) 36 item schedule (see Appendix A).

As in Rosenbaum's (1980) study, this study utilized a Likert-type scale. The Likert-type scale is a summated scale, and the most frequently used in the study of psychological traits, especially of attitudes (Selltitz, Wrightsman & Cook, 1976). This scale has a number of advantages: (a) it allows for differences in degree or intensity on a trait, (b) it is less difficult to construct than some other scales, (c) it is usually highly reliable, and (d) it has produced meaningful results in many studies to date (Nunnally, 1978).

In the Rosenbaum (1980) study, subjects were required to indicate on a 6 point Likert-type scale, the degree to which the item described a behaviour characteristic of his/her own. This study will differ from the Rosenbaum study on the range of the scale points. Whereas Rosenbaum used a scale ranging from +3 to -3, this study used a scale ranging from 0 to 5. The scale was changed for this study due to concern over the inconsistency of the intervals in the original scale, for example +3 to +2 as compared to +1 to -1. Such concern was supported by the contention that the intervals in a Likert-type scale should be approximately equal (Kerlinger, 1973). In this study the intended scale ranged from 0 to 5. The weightings 0 to 5 were assigned depending upon the nature of the question and its desirability for indicating self-control.

The instructions with the questionnaire directed

the subjects to select one of the response alternatives for each question. Since a subject's score on the SCS was the sum of all his/her own responses, it was vital that responses were scored consistently in terms of the attitudinal direction they indicated (Selltiz, Wrightsman & Cook, 1976).

Readability

A readability check was performed by a convenient group of subjects (N = 30), of ages upward of 16. This check aimed to establish the suitability of the questionnaire for that age group, and to ensure that the meaning of each question was comprehensible to the subjects.

Subjects were required to indicate any item they had difficulty understanding by underlining the pertinent part. The criterion for readability was set at 10 percent. Therefore, any same item which was underlined by three or more of the 30 subjects was replaced through consultation with a Roget's Thesaurus with a word of similar meaning. This procedure was repeated until all question items met the 10 percent criterion.

Content Validity

Content validity, in its strictest sense, should depend upon the adequacy with which a specified domain or universe of content is sampled (Nunnally, 1978). This is frequently impossible (Selltiz, Wrightsman & Cook, 1976), as is the case in this instance where content is being

transferred from the Rosenbaum (1980) schedule.

An acceptable alternative is agreement from potential users, or a panel of judges in positions of responsibility, which in itself can ensure a test has a high degree of content validity (Nunnally, 1978). Content validation of the questionnaire to be developed would, therefore, rest on the validation by individuals considered to be experts in the field of sport psychology.

Each question's validity was assessed by a panel of judges (N = 15), with respect to the following criteria:

(a) is the item understandable? (b) does the item describe a situation that could be experienced by a wide range of athletes in a wide range of sports? and (c) does the item reflect one of the following four features?:

- i) the item refers to the use of cognitions to control emotional and physiological sensations in sporting situations;
- ii) the item refers to the subject's tendency to employ problem-solving strategies in response to behavioural problems in sport;
- iii) the item is related to the person's perceived ability to delay immediate gratification in sport, or;
- iv) the item indicates general expectations for self-efficacy.

The judges were also asked to compare each item in the proposed questionnaire to the original item from the Rosenbaum (1980) SCS, as well as give suggestions for improving the re-wording of question items.

Reliability

The reliability procedures followed in this study were almost identical to those followed in the Rosenbaum (1980) study. The reliability was determined through a test-retest procedure. Each of the two test-retest samples were tested on two different occasions, and were comprised of convenient physical education students and varsity team members. The samples were comprised of both males and females (N = 30).

On each occasion, the questionnaire was administered under a standardized testing procedure. The time between the test-retest procedure for each sample was two weeks. Reliability was assessed using the Pearson Product Moment Correlation Coefficient. To ensure the reliability of the questionnaire, the criterion for reliability was set at $r = .80$.

As in Rosenbaum's study, the mean scores and standard deviations (SD) were computed from the test-retest data. A t-test was performed on this data to assess whether there was a significant difference between the means of the test-retest procedures. The criterion was set at statistical

significance at the .05 level.

The possibility existed that an individual question did not meet the $r = .80$ reliability criterion. In the case where this happened, but the overall scale scores met or exceeded the .80 criterion, no questions were eliminated from the schedule. However, in the case where both individual question items and overall scale scores failed to meet the .80 criterion, then the individual item with the lowest reliability score was eliminated from the schedule. Reliability scores were then recomputed. This procedure was repeated until the overall scale scores met the $r = .80$ criterion. These procedures ensured the reliability of the questionnaire.

Item Analysis

The internal consistency of the inventory was assessed through an item analysis. To this end, the procedures which were successful in the development of Rosenbaum's SCS, and supported as being established procedures for the development of scientifically useful self-report measures, (Redden et al, 1983) were followed. Test data from the three samples was used ($N = 81$). All questions had to conform to one or more of the following criteria: (a) all of the points of the Likert-type scale were endorsed across subjects, (b) the SD of the item was at least one, and (c) the item contributed to the internal consistency of the items (i.e. the removal of the item would reduce the alpha coefficient).

The item analysis added to the information already gained from the content validity and reliability procedures, and ensured the internal consistency of the questionnaire.

Honesty Set

In any self-evaluation questionnaire, unless control is exercised, response falsification can be a problem. The 'response set' to answer honestly was established as follows: (1) subjects were warned verbally of the hazards of answering dishonestly, (2) subjects were asked to either publicly commit themselves to answer each question honestly, or to leave the testing room without answering the questionnaire, and (3) instructions were included in each test booklet reminding the subjects of the hazards of response falsification.

The instructions employed when administering the questionnaire were a modified version of an existing set of instructions which have already been proven to be successful in creating a 'set' to answer honestly (Rushall, 1976).

Objectivity

A test-retest procedure was used to ensure the objectivity of the questionnaire. This required the questionnaire to be administered to the same group of subjects on two separate occasions by two different administrators. The test was deemed objective if the correlation coefficient exceeded $r = .80$. The sample consisted

of convenient physical education students and varsity team members, $N = 51$, and age > 16 .

The administrators were given no information concerning the nature or character of either the questionnaire or its purposes. The questionnaire's objectivity was calculated using the same procedures as were used in calculating questionnaire reliability. The same standards applied. In its completed form the scale was expected to be reliable, valid, and objective in nature.

Standardization

The test was administered according to a standard format as has already been explained (see Appendix B). An answer sheet was designed for use with the questionnaire and administered to all respondents (see Appendix C).

Scoring

The Likert-type scale consisted of 6 points or response alternatives. Each item was indicative of a score on a continuum 0 to 5. The response items consisted of:

- very characteristic of me, extremely descriptive,
- rather characteristic of me, quite descriptive,
- somewhat characteristic of me, slightly descriptive,
- somewhat uncharacteristic of me, slightly undescriptive,
- rather uncharacteristic of me, quite

undescriptive,
- very uncharacteristic of me, extremely
non-descriptive.

The weightings 0-5 were assigned depending upon the nature of the question and its desirability for indicating self-control.

The subject's score on the SCS was the sum of all his/her own responses. Attitudinal direction was reflected by the scores. For example, a high total score reflected a subject high in self-control.

Test of Practicality

Finally, the developed schedule was tested in the practical sporting situation. For this purpose, two samples were selected. One sample (N = 15) consisted of athletes whose high calibre sporting performance the coach attributed to self-control. The other sample (N = 15) consisted of athletes whose poor sporting performances were attributed by the coach to lack of self-control.

Both samples were administered the schedule and were allowed to complete it at their own convenience. They were instructed not to discuss the questions with anyone, and an honesty set was established. A t-test for independent samples was used to determine whether a significant difference existed between the means of the two samples. If a significant difference was revealed ($\alpha = .05$) then the test was deemed to have practical utility for discriminating

between varying levels of self-control in sports.

CHAPTER 4

DISCUSSION AND RESULTS

Scale

A sport specific self-control scale was developed from Rosenbaum's (1980) SCS. The lack of empirical research into self-control in the sport specific sphere has meant that Rosenbaum's (1980) SCS is at present the only published self-control schedule that might be used in that sphere. Since Rosenbaum's SCS has proven to be a valid and reliable instrument (Redden, Tucker & Young, 1983), it was used as the basis from which a sport specific tool could be developed.

Content Validity

In order to ensure the developed questionnaire had a high degree of content validity, the translated sport specific self-control schedule was sent to a panel of judges, N = 15, who were considered to be experts in their field (see Appendix D). Although content validity in its strictest sense should depend upon the adequacy with which a specified domain or universe of content is sampled, an acceptable alternative is agreement from potential users or a panel of judges in positions of responsibility. This in itself can ensure a test has a high degree of content validity (Nunnally, 1978).

The judges were required to evaluate each question according to certain criteria (see Appendix E). As a result of the suggestions and information gained from the

panel of judges, one item which had been deleted from the questionnaire as unsuitable was reinstated as a satisfactory item in its new form.

In order to ensure that all items were understandable, a readability check was performed. Those items indicated by two or more of the judges as being slightly ambiguous in meaning were reworded to increase their clarity to potential respondents. A readability check was also performed by a convenient group of subjects ($N = 30$), of ages upward of 16. The criterion for readability in this case was set at 10 percent. Any same item which was underlined by three or more of the 30 subjects was replaced through consultation with a Roget's Thesaurus with a word of similar meaning.

As a result of the content validity and readability procedures, a valid test was deemed to have been constructed containing 35 items, and suitable for subjects over the age of 16 years.

Reliability

Since the reliability coefficient is a correlation coefficient, the size of the reliability coefficient is directly related to the standard deviation of obtained scores for any sample of subjects (Nunnally, 1978). Therefore, prior to the computation of a Pearson Product Moment Correlation Coefficient, mean score and standard deviations were determined for test-retest data, $N = 81$. To determine

whether a significant difference existed between test-retest sample means a t-test for dependent samples was utilized. This was in accordance with the procedures followed by Rosenbaum (1980). The value achieved of $t = .2388$ indicated that the difference between the means was not significant at the .05 level.

Reliability was then assessed using the Pearson Product Moment Correlation Coefficient. Two samples were administered the questionnaire under standardized testing procedures. The time between test-retest procedures for each sample was two weeks. The reliability criterion was set at $\underline{r} = .80$. For early stage research into psychological traits this criterion is considered to be acceptable (Nunnally, 1978). The values achieved of $\underline{r} = .80$ ($N = 10$) and $\underline{r} = .85$ ($N = 20$) met with this criterion. These values and individual item reliabilities are reported in Table 1. While it might be observed that some of the individual item reliabilities did not meet the criterion for acceptability, it was earlier stated that no items would be deleted if the overall reliability met the .80 criterion.

Since the reliability of a test is partly attributable to the number of test items and sample size (Helmstadter, 1964), it was felt that this might have attributed for the comparatively low value of $\underline{r} = .80$ and for the low individual item values. However, it was considered important that the reliability be established on small sample

Table 1

RELIABILITY CORRELATION COEFFICIENTS		
Question Item	Sample 1 N = 20	Sample 2 N = 10
1	.42	.58
2	.45	.66
3	.55	.61
4	.57	.53
5	.25	.65
6	.52	.67
7	.72	.19
8	.83	.80
9	.54	.56
10	.02	.37
11	.65	.74
12	.03	.25
13	.49	.38
14	.47	.37
15	.66	.84
16	.61	.36
17	.68	.66
18	.85	.42
19	.48	.53
20	.09	.18
21	.47	.75
22	.33	.82
23	.65	.71
24	.66	.25
25	.21	.52
26	.48	.87
27	.62	.74
28	.47	.57
29	.11	.34
30	.42	.47
31	.72	.62
32	.28	.61
33	.29	.82
34	.21	.58
35	.45	.56
ALPHA	$\underline{r} = .85$	$\underline{r} = .80$

sizes in order to replicate the situation of intended use; groups of athletes of limited numbers.

The results of the reliability procedures were supportive of the findings of Rosenbaum's (1980) study as well as those of Redden et al. (1983). From these procedures the 35 item schedule was deemed to be reliable.

Objectivity

The objectivity of the questionnaire was assessed through a test-retest procedure similar to that used for reliability. The questionnaire was administered to a group of subjects (N = 51), on two separate occasions by two different administrators.

The criterion for objectivity utilizing a Pearson's Product Moment Correlation Coefficient was $\underline{r} = .80$. The correlation achieved of $\underline{r} = .81$ met this criterion. The questionnaire was, therefore, deemed to be objective.

Item Analysis

The internal consistency of the inventory was assessed through an item analysis. The procedures followed by Rosenbaum, and later verified by Redden et al. (1983) as sufficiently stringent to ensure the internal consistency of the instrument, were followed in this study. The criterion for item retention was that all items met at least one of the following criteria: (a) all of the points of the Likert-type scale were endorsed across subjects, (b) the

standard deviation of the item was at least one, and (c) the item contributed to the internal consistency of the items (i.e., the removal of the item would reduce the alpha coefficient).

Standard deviations (SD) of the 35 items are reported in Table 2. The SD's of all question items were at least one. Further, all of the points of the Likert-type scale were observed to have been endorsed across subjects.

In order to meet the third criterion for internal consistency, item-total score correlations were computed. For this procedure, samples 1, 2 and 3 were utilized (N = 81). Item-total correlations are reported in Table 3. Once again, all items met the criterion that their removal from the schedule would reduce the alpha level. The alpha level obtained from the item-total correlation was $\underline{r} = .81$. This level has already been deemed acceptable. The reason why the three samples were pooled together for this procedure was that Nunnally (1978) has indicated that if the number of subjects does not markedly exceed the number of items, the results from an item analysis may be highly misleading. It was therefore, deemed necessary to have as large a sample size as possible.

The 35 items in the schedule achieved all the criterion set down to ensure internal consistency.

Table 2

Question Item	Mean Score	Standard Deviation
1	3.425	1.329
2	3.049	1.612
3	3.346	1.501
4	3.150	1.808
5	3.235	1.486
6	2.238	1.816
7	3.617	1.319
8	1.481	1.704
9	3.275	1.615
10	3.654	1.266
11	3.148	1.621
12	3.185	1.621
13	3.679	1.395
14	2.099	1.729
15	2.333	1.810
16	3.338	1.542
17	2.778	1.549
18	1.926	1.687
19	3.321	1.386
20	2.864	1.759
21	2.901	1.497
22	4.063	1.162
23	4.346	1.086
24	4.025	1.183
25	3.370	1.553
26	2.704	1.699
27	3.123	1.528
28	2.875	1.578
29	2.988	1.670
30	4.210	1.069
31	2.663	1.771
32	3.342	1.458
33	3.914	1.015
34	2.827	1.603
35	3.506	1.550

Table 3

ITEM-TOTAL SCORE CORRELATIONS	
Question Item	Sample N = 81
1	.24
2	.24
3	.35
4	.31
5	.28
6	.21
7	.37
8	.16
9	.11
10	.50
11	.32
12	.27
13	.48
14	.15
15	.43
16	.13
17	.14
18	.20
19	.47
20	.22
21	.29
22	.19
23	.11
24	.43
25	.45
26	.43
27	.42
28	.29
29	.20
30	.25
31	.27
32	.30
33	.37
34	.51
35	.27
ALPHA = .81	

Measurement Techniques and Scoring

As in Rosenbaum's study, this study utilized a six point Likert-type scale. The scale in this study ranged from 0 to 5 ensuring equal intervals between each point on the scale. The weightings of 0 to 5 were assigned to each question depending on its desirability for indicating self-control. A high composite score was indicative of greater self-control.

The maximum total score that may have been achieved on the schedule was 175. A subject's score on the SCS was the sum of all his or her own responses. All of the points of the Likert-type scale were endorsed across subjects.

Summary

In its final form (see Appendix F), the 35 item sport specific self-control schedule was deemed objective, reliable and internally consistent. The procedures followed in this study were almost identical to those adopted by Rosenbaum (1980) in the development of his SCS. These established procedures have been found to be sufficiently stringent to produce scientifically useful self-report measures (Redden et al, 1983). The Sport Specific Self-Control Schedule was shown to be reliable, valid, readable, and internally consistent.

CHAPTER 5

TESTING OF THE SSCS

The final stage of this study was the testing of the developed Sport Self-Control Schedule (SSCS) to determine its sensitivity to measuring what it was purported to measure - self-control in athletes. It was deemed to be an important part of this study that the developed SSCS be tested amongst the population for which it had been targeted.

Subjects and Setting

The questionnaire was administered to two samples comprised of both male and female athletes (N = 30) of ages upward of 16 years. One sample (N = 15) consisted of athletes whose high-calibre sporting performance was partially attributed by the coach to a high level of self-control, and the second sample consisted of athletes whose poor sporting performances were attributed by the coach to a lack of self-control. The samples consisted of athletes actively involved in basketball, wrestling, track and field and soccer.

Since convenient times could not be found for athletes to be administered the schedule, athletes were allowed to complete the questionnaire at their own convenience. They were, however, instructed not to discuss the questions with anyone. Response falsification was controlled by telling the athletes that it was in their best interests to

answer the questions honestly.

Data Analysis

A t-test for independent samples was used to determine whether a significant difference existed between the means of the two samples. Statistical significance at the .05 level was the criterion set to determine whether the test had practical utility for discriminating between varying levels of self-control in athletes.

Results and Discussion

The data collected from the two samples in terms of each athlete's total score is shown in Table 4. A t-test for independent samples was performed. The value attained of $t = 2.44$ ($df = 28$) exceeded the level of statistical significance at the .05 level. The SSCS was, therefore, deemed to have practical utility for discriminating between varying levels of self-control in athletes. These results support what has been indicated in the literature that one of the distinguishing features of high-calibre, as compared to low-calibre athletes, is that of self-control (Ogilvie, 1976; Orlick, 1980; Rushall, 1982). Since self-control is considered to be a behaviour learned as other behaviours (Goldfried & Merbaum, 1973; Lazarus, 1976), the identification of varying levels of self-control by the SSCS could assist coaches in: (1) obtaining immediate feedback about the athlete's level of self-control, (2) indicating

Table 4

Total Scores for SCSS	
*Sample 1 (N = 15)	**Sample 2 (N = 15)
91	143
101	116
94	112
67	103
91	134
88	116
87	149
71	133
103	106
82	149
71	154
85	127
98	134
86	129
105	119

*Low-calibre performance attributed to lack of self-control.

**High-calibre performance attributed to self-control.

the specific contexts which threaten the athlete's level of self-control, (3) devising self-control contingencies in the response to the behavioural problems of the athlete, (4) coordinating a structured environment to minimize any threats to the athlete's self-control, and, (5) teaching the athlete how to apply self-controlling contingencies to his/her own behaviour independently of the coach.

Summary

The results obtained from the testing of the scale amongst the athletes for whom the test was targetted, indicated that the scale is sensitive to discriminating between varying levels of self-control. These findings, that athletes capable of high-calibre performances possess greater self-control as compared to athletes of lower-calibre performances, supports what has been indicated in the literature, that one of the distinguishing features of high-calibre as compared to low-calibre athletes is that of self-control.

CHAPTER 6

CONCLUSIONS

A 35 item questionnaire was constructed. Its intended purpose was to provide an assessment tool to measure the self-control of athletes. Since the questionnaire's validity, reliability, objectivity and readability were established, it is believed that the questionnaire does measure what it was intended to; the behavioural capacities of self-control of athletes.

The questionnaire in its final form was simple to administer and evaluate. The questions were easily understood by the respondents and required little or no interpretation on the part of the administrator. Since the items were developed from Rosenbaum's (1980) 36 item schedule, they were not considered to be a completely representative or exhaustive sample of the domain of self-control. The items, however, were considered an adequate sample of the domain of self-control in the sporting sphere. The results of this study indicated that the developed Sport Self-Control Schedule (SSCS) is an acceptable assessment tool of an athlete's level of self-control.

Summary

Based on Rosenbaum's (1980) SCS, the principle reason for developing this tool was the absence of a tool applicable for measuring an athlete's level of self-control. The 35 item questionnaire was intended to be employed in the

athletic environment for the purpose of measuring levels of self-control.

The procedures followed in the construction of the Sport Self-Control Schedule included readability, content validity, objectivity, reliability and item analysis. The first of those procedures, a readability check, was performed by a convenient group of subjects, $N = 30$. This check ensured the clarity of the questions to potential respondents.

The schedule was then sent to a panel of judges ($N = 15$) who assessed its content validity. The judges were requested to evaluate the questions according to certain criteria. On the basis of this evaluation, and their suggestions, one item which had been deleted as unsuitable was reinstated in a suitable form. Other questions were reworded to ensure the retention of the content from the original schedule.

The reliability of the questionnaire was determined through a test-retest procedure. The test-retest procedure and criterion adopted, ensured the reliability of the questionnaire. The objectivity of the schedule was also determined through a test-retest procedure. From this procedure, the developed schedule was found to be objective in nature.

The final developmental stage which the schedule underwent was an item analysis. This item analysis

determined the internal consistency of the schedule. The procedures which were followed by Rosenbaum (1980) were adopted and ensured the internal consistency of the schedule.

Finally the developed Sport Self-Control Schedule was tested for practical utility. Two samples, one consisting of athletes whose high-calibre performances were attributed to self-control, and the other consisting of athletes whose low-calibre performances were attributed to lack of self-control, were administered the schedule. The results of this test showed the schedule to be sensitive to varying levels of self-control in athletes. The test was, therefore, deemed to have practical utility.

The original questionnaire underwent a number of developmental stages. In its final form, it contained 35 items. It was shown to be a valid, reliable, objective, readable, and internally consistent tool that provoked honest, accurate responding in subjects. The test was capable of providing immediate feedback to coaches relating to an athlete's self-control. Responses on the scale were weighted depending on attitudinal direction and the desirability of the question for indicating self-control. The schedule provides a total score which indicates an athlete's level of self-control.

Recommendations

The questionnaire developed in this study provides an instrument capable of measuring self-control in athletes.

More extensive research is needed in this area with a more extensive item pool from which a schedule may be developed. Where possible, larger sample sizes should be used in the developmental stages.

Until such research is undertaken, this study provides a tool for assessing self-control in athletes. The SSCS is a valuable contribution to the assessment tools presently available to coaches. The constructed tool can be used for coaching assessment in practical or research studies irrespective of the sport.

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ORIGINAL SCS QUESTIONS

REWORDED SPORT SCS QUESTION

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| 1. When I do a boring job, I think about the less boring parts of the job and the reward that I will receive once I am finished. | When doing a boring training session, I think of other activities and the rewards that I will receive once I am finished. |
| 2. When I have to do something that is anxiety arousing for me, I try to visualize how I will overcome my anxieties while doing it. | When I have to do some aspect of my sport that makes me anxious, I try to devise ways to overcome my anxiety while doing it. |
| 3. Often by changing my way of thinking I am able to change my feelings about almost everything. | I am able to change me feelings about almost everything within my sport by changing my way of thinking. |
| 4. I often find it difficult to overcome my feelings of nervousness and tension without any outside help. | I find it difficult to overcome feelings of nervousness and tension in my sport without any outside help. |
| 5. When I am feeling depressed I try to think about pleasant events. | When I feel depressed about my sport I try to think about pleasant events. |
| 6. I cannot avoid thinking about mistakes I have made in the past. | I cannot avoid thinking about mistakes I have made in my sport in the past. |
| 7. When I am faced with a difficult problem, I try to approach its solution in a systematic way. | When faced with a difficult problem in my sport, I try to approach its solution in a systematic way. |
| 8. I usually do my duties quicker when somebody is pressuring me. | I do the activities in my sport quicker when somebody is pressuring me. |

ORIGINAL SCS QUESTIONS

REWORDED SPORT SCS QUESTION

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9. When I am faced with a difficult decision, I prefer to postpone making a decision even if all the facts are at my disposal.
 10. When I find that I have difficulties in concentrating on my reading, I look for ways to increase my concentration.
 11. When I plan to work, I remove all the things that are not relevant to my work.
 12. When I try to get rid of a bad habit, I first try to find all the factors that maintain this habit.
 13. When an unpleasant thought is bothering me, I try to think about something pleasant.
 14. If I would smoke two packages of cigarettes a day, I probably would need outside help to stop smoking.
 15. When I am in a low mood, I try to act cheerful so my mood will change.

- When I am faced with a difficult decision in my sport, I prefer to postpone making a decision even if I know all the facts.
- When I find that I have difficulties in concentrating on aspects of my sport, I look for ways to increase me concentration.
- When I plan to train or compete, I try remove all the things that are not relevant to my sport.
- When I try to get rid of a bad habit that I have formed within my sport, I first try to find out all the factors that cause the habit.
- When a negative thought concerning my sport bothers me, I try to think about events and features which are more positive.
- If I adopted a bad technique in my sport, I would probably need outside help to get rid of it.
- When I am in a low mood about my sport, I try to act cheerful so my mood will change.

ORIGINAL SCS QUESTIONS

REWORDED SPORT SCS QUESTION

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| 16. If I had the pills with me, I would take a tranquilizer whenever I felt tense and nervous. | In sporting situations where I felt tense and nervous, I would take a tranquilizer if I had the pills with me. |
| 17. When I am depressed, I try to keep myself busy with the things that I like. | When I am depressed, I try to keep myself occupied with the aspects of my sport that I like. |
| 18. I tend to postpone unpleasant duties even if I could perform them immediately. | I postpone the unpleasant aspects of my sport even if I could perform them immediately. |
| 19. I need outside help to get rid of some of my bad habits. | I need outside help to get rid of some of my bad habits in my sport. |
| 20. When I find it difficult to settle down and do a certain job, I look for ways to help me settle down. | When I find it difficult to settle down and do certain aspects of my sport, I look for ways to help me settle down. |
| 21. Although it makes me feel bad, I cannot avoid thinking about all kinds of possible catastrophes in the future. | Although it makes me feel bad, I cannot stop thinking about possible problems that might affect my future in my sport. |
| 22. First of all I prefer to finish a job that that I have to do and then start doing the things I really like. | I prefer to finish the parts of my sport that I have to do before I start doing the things I really like. |
| 23. When I feel pain in a certain part of my body, I try not to think about it. | When I feel pain or fatigue, I try not to think about it. |
| 24. My self-esteem increases once I am able to overcome a bad habit. | My self-esteem increases once I am able to overcome a bad habit in my sport. |

ORIGINAL SCS QUESTIONS

REWORDED SPORT SCS QUESTION

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| 25. In order to overcome bad feelings that accompany failure, I often tell myself that it is not so catastrophic and that I can do something about it. | In order to overcome bad feelings that accompany failure in my sport, I tell myself that it is not so bad and that I can do something about it. |
| 26. When I feel that I am too impulsive, I tell myself "stop and think before you do anything". | When I feel that I am too impulsive in my sport, I tell myself "stop and think before you do anything". |
| 27. Even when I am terribly angry at somebody, I consider my actions very carefully. | Even when I am very angry at somebody in my sport, I consider my reactions very carefully. |
| 28. Facing the need to make a decision, I usually find out all the possible alternatives instead of deciding quickly and spontaneously. | Facing the need to make a decision in my sport, I find out all the possible alternatives instead of deciding quickly and impulsively. |
| 29. Usually I do first the things I really like to do even if there are more urgent things to do. | In my sport, I usually do first the things I really like to do even if there are more urgent things to do. |
| 30. When I realize that I cannot help but be late for an important meeting, I tell myself to keep calm. | When I realize that I cannot help being late for an important event in my sport, I tell myself to keep calm. |
| 31. When I feel pain in my body, I try to divert my thoughts from it. | When I feel pain or fatigue in my sport, I try to distract my thoughts from it. |
| 32. I usually plan my work when faced with a number of things to do. | I plan my sport when faced with a number of things to do. |

ORIGINAL SCS QUESTIONS

REWORDED SPORT SCS QUESTION

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33. When I am short of money, I decide to record my expenses in order to plan more carefully for the future.
34. If I find it difficult to concentrate on a certain job, I divide the job into smaller segments.
35. Quite often I cannot overcome unpleasant thoughts that bother me.
36. Once I am hungry and unable to eat, I try to divert my thoughts away from my stomach or try to imagine that I am satisfied.

- If I find it difficult to concentrate on a certain feature of my sport, I divide it into smaller parts.
- Quite often I cannot overcome negative thoughts that bother me in my sport.

THANK YOU FOR HELPING WITH THIS PROJECT

Sport SCS Scale

INSTRUCTIONS FOR ADMINISTERING THE
SPORT SELF-CONTROL SCHEDULE

PRELIMINARY PROCEDURES

1. Check the number of test booklets and answer sheets which have been supplied.
2. Make sure that the number of persons to take the tests does not exceed the number of books or answer sheets that are available.
3. Schedule a time period of at least 1 hours for testing. The test takes from 15 to 30 minutes; administration from 10 to 15 minutes; and usually there needs to be some time allowed for late comers. Impress upon the persons scheduled to take the test that they must arrive before the stipulated time.
4. Obtain an adequate testing site (well-lighted, quiet, with comfortable writing facilities).
5. Obtain a supply of pencils with erasers for each individual or notify the subjects beforehand that they will need to provide their own pencil with eraser.
6. Notify those who are to take the test stating when and where the testing will be done and that early arrival is essential. Mention pencils with erasers if they need to be supplied.
7. Read the testing instructions so that you will be fully aware of what must be done in the testing situations. It is advised that the test administrator should complete the test him/herself so that he/she will be familiar with the content.

TESTING PROCEDURES

A. PREPARATION

1. Prepare the testing room beforehand so that the atmosphere is comfortable and well-lighted.
2. Check the testing materials. Insert the answer sheet in the test booklet. Make sure you have an extra supply of pencils with erasers and facilities for sharpening pencils.
3. Do not crowd the people to be tested. It is essential that all subjects work individually. There should be sufficient space between the subjects to avoid distraction or looking-on to another's work.
4. Do not give out any material until the appropriate time.

Sport SCS Scale

B. ADMINISTERING THE TESTS

1. When subjects are seated and the tester decides to administer the test no more people should enter the room.
2. Read the following passage to the group:

"The test that you are about to take concerns your associations with your sport. Your answers will be marked and analyzed by a computer.

The results of this test will be used to tell (me/the coach/the head coach/the coaching staff) what are the best training and competitive procedures for you. These procedures are designed to help you perform better. They are designed to help (me/the coach/the head coach/the coaching staff) to do a better job of coaching.

It is essential that you answer the test as truthfully as possible. False answers will cause (me/us) to proceed in the wrong manner with your coaching. It is better for you not to take the test if you are not prepared to answer the test truthfully. If you are not prepared to do this you should leave the room now."
(Pause)

If necessary say the following:

"Hold up your hand if you do not have a pencil with eraser." (Distribute pencils)
OR

"I will now give out the pencils."

"You are now in testing conditions so there will be no further talking. I will now hand out the test booklets with an answer sheet inside. Do not write anything. You may read the cover of the test booklet."

3. Hand out the test booklets.
4. Read the following passage to the group:

"Take out the answer sheet that is in the test booklet. Is there anyone without an answer sheet?"

(Hand out extra answer sheets if necessary.)

"Print your name clearly in the top left hand corner of the first page of the answer sheet. Print it clearly.

Respond by placing an X on the appropriate line on the answer sheet.

You must answer every question. Do not leave any unmarked. Each question has six alternatives. You should select the alternative which is closest to how you feel even if it is not exactly what you would describe. You must choose one of the alternatives. Please note that each question has two lines of answers. One indicates what is characteristic of you and the other uncharacteristic of you. The first line is not always what is characteristic of you. Some questions are

Sport SCS Scale

reversed. Be careful when answering and note the order of the lines. The uncharacteristic alternatives are highlighted by the "un" of uncharacteristic being underlined. You must read the questions and answer sheet alternatives carefully.

Are there any further questions? When you have finished the test, bring it and the answer sheet to me and leave the room. Turn the page and begin".

5. After about 10 minutes say to the subjects:

"Make sure the question you are answering matches the question you are marking on the answer sheet."

6. Periodically check the work and progress rate of each subject. Most subjects should complete the test within 30 minutes.

Some subjects will be very slow as they try to provide the most truthful information that is possible. The test administrator should not worry about a wide range of response rates. The test information is sufficiently interesting to maintain the attention of most athletes for a very long period of time.

7. As answer sheets are handed in, check for duplicated or missing answers and any incorrect or indistinct information.

C. FOLLOW-UP

If the tests are to be computer analyzed collect all the booklets and arrange the answer sheets in alphabetical order within the team or teams.

APPENDIX C

SPORT SELF-CONTROL SCHEDULE

Place an "X" in front of the alternative that best describes you.

- | | | | | |
|-----|--|--|--|--|
| 1. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 2. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 3. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 4. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | <u>un</u> characteristic or descriptive of me
characteristic or descriptive of me |
| 5. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 6. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | <u>un</u> characteristic or descriptive of me
characteristic or descriptive of me |
| 7. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 8. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | <u>un</u> characteristic or descriptive of me
characteristic or descriptive of me |
| 9. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | <u>un</u> characteristic or descriptive of me
characteristic or descriptive of me |
| 10. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 11. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 12. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 13. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 14. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | <u>un</u> characteristic or descriptive of me
characteristic or descriptive of me |
| 15. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 16. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | characteristic or descriptive of me
<u>un</u> characteristic or descriptive of me |
| 17. | <input type="checkbox"/> very
<input type="checkbox"/> somewhat | <input type="checkbox"/> rather
<input type="checkbox"/> rather | <input type="checkbox"/> somewhat
<input type="checkbox"/> very | <u>un</u> characteristic or descriptive of me
characteristic or descriptive of me |

APPENDIX D

Panel of Judges

1. Dr. John Albinson - Queen's University
2. Dr. A.V. Carron - University of Western Ontario
3. Dr. Jane Crossman - Lakehead University
4. Dr. A. Craig Fisher - Ithaca College
5. Dr. John Gross - University of Wollongong
6. Dr. Wendy Jerome - Laurentian University
7. Dr. Larry Leith - Lakehead University
8. Dr. Jim McClements - University of Saskatchewan
9. Dr. Tom O'Hara - Riverside Medical Centre
10. Dr. John Partington - Carleton University
11. Dr. John Salmela - Universite de Montreal
12. Dr. William Straub - Ithaca College
13. Mr. Don Talbot - Canadian Amateur Swimming Association
14. Mrs. Toni Widdop - Lakehead University
15. Dr. Nancy Wood - Coaching Association of Canada



Lakehead University

THUNDER BAY, ONTARIO, CANADA, POSTAL CODE P7B 5E1

SCHOOL OF PHYSICAL EDUCATION & OUTDOOR RECREATION

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Dear XXXXXXXXXXXX:

We are working on a research project concerned with developing and testing a sport specific test to measure the concept of self-control. Since Rosenbaum (1980) has produced a Self-control Schedule (SCS) it would seem an appropriate procedure to convert that already existing tool to a sport specific tool. That is the strategy that is being adopted in this project.

Attached is a list of Rosenbaum's original SCS questions and our first attempt at transposing the conceptual base and meaning to a sport specific scale. Would it be possible for you to act on the content validation panel by comparing the two sets of items question by question? If it is not possible to do so, could you return the materials in the enclosed envelope.

While making the comparisons please feel free to suggest appropriate alterations to the proposed questions. Each question should be evaluated according to the following criteria:

1. Is each question understandable?
2. Does the new item describe a situation that could be experienced by a wide range of athletes in a wide range of sports?
3. Does the item reflect at least one of the following;
 - a. the item refers to the use of cognitions to control emotional and physiological sensations in sporting situations;
 - b. the item refers to a subject's tendency to employ problem-solving strategies in response to behavioral problems in sport;
 - c. the item is related to a person's perceived ability to delay immediate gratification in sport; or
 - d. the item indicates general expectations for self-efficacy in sport.

Enclosed is a stamped, return envelope. If the materials could be returned at your very earliest convenience it would be most appreciated. After the study is completed a full set of completed materials concerning the test will be forwarded to you. We hope that you will be able to support this venture.

Thank you for your attention to this matter.

Sincerely yours,

Brent S. Rushall, Ph.D.
Professor

Lynne Evans, B.Sc.
Graduate-assistant

BSR/trs

SPORT SELF-CONTROL SCHEDULE

1. When doing a boring training session, I think of the less boring parts of training and the rewards that I will receive once I am finished.
2. When I have to do some aspect of my sport that makes me anxious, I try to visualize ways to overcome my anxiety while doing it.
3. I am able to change my feelings about almost anything within my sport by changing my way of thinking.
4. Without outside help, I find it difficult to overcome feelings of nervousness and tension in my sport.
5. When I feel depressed about my sport I try to think about pleasant events.
6. I cannot avoid thinking about previous mistakes I have made in my sport.
7. When faced with a difficult problem in my sport, I try to approach its solution in a systematic way.
8. I train and compete better when somebody is pressuring me.
9. When I am faced with a difficult sport-related decision, I prefer to postpone making the decision even if I know all the facts.
10. When I find I have difficulties concentrating during training or competitions, I look for ways to increase my concentration.
11. When I plan to train or compete, I try to remove all the things that are not relevant to the planned activities.
12. When I try to get rid of a bad habit that I have developed within my sport, I first try to find out all the factors that maintain the habit.

13. I try to think about positive events and features when a negative thought concerning my sport bothers me.
14. If I developed a bad habit in my sport, I probably would need outside help to get rid of it.
15. When I develop a bad mood at training or competitions, I try to act cheerful so my mood will change.
16. When I get depressed about aspects of my sport, I try to occupy myself with activities that I like.
17. I tend to postpone the unpleasant aspects of my sport even if I could perform them immediately.
18. I need outside help to get rid of some of the bad habits I have developed in my sport.
19. When I find it difficult to settle down and do things in my sport, I look for better ways to help me apply myself to the task at hand.
20. Although it makes me feel bad, I cannot stop thinking about possible problems that might occur and affect my future in sport.
21. I prefer to finish aspects of my sport that I have to do before I start doing the things I really like.
22. When I feel pain or fatigue, I try not to think about it.
23. My self-esteem increases when I am able to overcome a bad habit or technique in my sport.
24. In order to overcome bad feelings that accompany failure in my sport, I tell myself that it is not so bad and that I can do something about it.
25. When I feel that I am being too impulsive in activities associated with my sport, I tell myself "stop and think before you do anything."

26. When I am very angry at somebody in my sport, I consider my actions very carefully.
27. Facing the need to make a decision in my sport, I usually find out all the possible alternatives instead of deciding quickly and spontaneously.
28. When I train, I usually do the things I really like to do first, even if there are more urgent things to do.
29. When I realize that I cannot help being late for an important competition, I tell myself to keep calm.
30. When I feel pain or fatigue, I try to divert my thoughts away from it.
31. I usually plan my training sessions when I am faced with a number of things to do.
32. When I cannot participate in a competition because of financial reasons, I decide to budget and plan more carefully for the future.
33. If I find it difficult to concentrate on a technical aspect of my sport, I divide the task into smaller parts.
34. Quite often I cannot overcome unpleasant thoughts that bother me about my sport.
35. If I get hungry during training or competitions, I try to divert my thoughts away from my hunger by concentrating harder on what I am doing.

THIS COMPLETES THE SCHEDULE. PLEASE HAND THE QUESTIONS AND ANSWER SHEET TO THE TESTER.