THE CONSTRUCTION OF AN ACHIEVEMENT MOTIVATIONS SCALE FOR USE IN SPORTING ENVIRONMENTS

A Thesis

Present to the

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In Partial Fulfillment

of the Requirements for the Degree

Master of Science

in the

Theory of Coaching

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by

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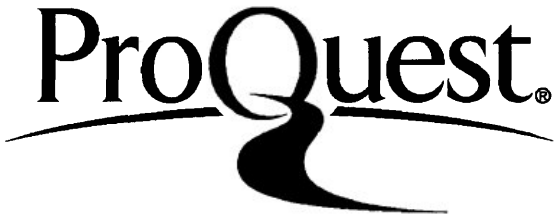

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ABSTRACT

Title of Thesis: The Construction of an Achievement Motivations Scale for use in Sporting Environments

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The purpose of this study was to construct an Achievement Motivations Scale, based on the Achievement Motives Scale of Nygard and Gjesme. The 28 item questionnaire was intended to be employed in the athletic environment for the purpose of measuring levels of Motivation to Approach-Success (Ms) and to Avoid-Failure (Mf) in athletes. The developed scale was then administered to 176 male and female swimmers at the 1977 Canadian Winter Swimming Championships for the purpose of testing the scale's value as a predictor of an athletes predisposition to changing his/her performance. According to Miller's theoretical model it was expected that athletes high in Ms and low in Mf (approach-oriented) would increase their levels of performance whereas those athletes low in Ms and high in Mf would decrease their levels of performance. An increase in performance was described by bettering one's previous best time in each event entered, while a decreased performance was described as when an athlete failed to cover the event distance at least as fast as he had done on his best effort prior to competing in the 1977 championships.

It was expected that the methods of scale construction adhered to would insure that the questionnaire was fulfilling its intended purpose. The results, however, failed to demonstrate any practical relationship between levels of achievement motivation and swimming performance. At best, in

the case of the females alone, the scale was capable of predicting swimming performance only 10% of the time. This figure was less for males and the total group.

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CHAPTER 1

INTRODUCTION

Statement of the Problem

The purpose of this study was to develop a tool for measuring achievement motivation of athletes, and to test the discriminatory capacity of the tool within a population of sport participants.

Significance of the Study

Gjesme and Nygard, in a 1970 study, developed a scale for the purpose of measuring motives to approach success (Ms) and to avoid failure (Mf). Gjesme (1974) used an Achievement Motives Scale (AMS) in an academic setting and found that persons high in motive to approach success and low in motive to avoid failure (hereafter referred to as approach-oriented or Ms persons) tended to increase both the quantity and quality of work as a goal approached in time. In addition to this, persons who scored low in motive to approach success and high in motive to avoid failure (hereafter referred to as avoidance-oriented or Mf persons) decreased the quality of work with the approach of that same goal. If the Achievement Motives Scale could be modified for use in the athletic environment to measure an athlete's levels of achievement motivation, then it could prove valuable as a predictor of an athlete's predisposition to improving performance with the approach of competitions. The scale could also indicate which athletes are most likely to not live up to expectations or not perform their best while competing.

The proposed scale could fill a gap left by the lack of good psychological predictive tests in athletics today. The advance knowledge offered

by this test could assist coaches in: (1) developing better individualized training programs, (2) pre-screening and selecting athletes, (3) optimizing efforts at motivating individual athletes, and (4) coordinating control procedures for coaching staff members. In addition to this the scale should be simple for the coach to administer and evaluate.

The scale developed in this study was not original in design. Rather, the scale's basic format and content was borrowed from an existing achievement-related motives scale and modified so as to measure achievement motivation in the athletic situation. Thus, the development of the scale was not based entirely on theory.

An additional feature that added value to this scale was that it was capable of measuring achievement motivation in both the contingent and non-contingent conditions of a sport. In other words, the scale described an athlete's predisposition to approach success and avoid failure in training and competition. This, for the coach, would help to facilitate and optimize the development of training programs for individuals.

The production of a tool that lends itself to measuring achievement motivation in the athletic environment would be a valuable addition to the psychological assessment procedures presently available to coaches.

Delimitations

Subjects for this study were taken from a population of male and female swimmers tested during the 1976-77 Canadian Winter Swimming Championships. The dependent variable was Achievement Motivation and the independent variable the relative average performance improvement over each athlete's best previous time for all events entered.

The investigation was delimited by: the nature of the measuring instrument, the availability of all subjects to be tested at one time in one

place, the honesty of subjects' responses, the differences in individual interpretations of questions, and the momentary level of motivation of the subjects.

This study did not control for those extraneous factors, such as physiological differences of subjects and their past histories in the sport, which had a direct affect on final respective competitive performances.

An attempt was made to test a population of swimmers. It was assumed that all individuals tested were representative of competitive swimmers in general.

Limitations

Past research questioned the validity of female scores on achievement tests. For the purposes of this study it was assumed that males and females can be tested in the same manner. The results were equally valid. It was also assumed that athletes viewed competitions as goals, that competition involved a certain amount of risk with respect to success or failure, and that the probability of performance improvement in competition was the same for all subjects. The final assumption was that the original data described by the scale questions could be added to produce a ratio scale of cumulative scores.

An alpha level of .05 was established as the level of significance for statistical tests.

Definition of Terms

1. Motive. " a strong affective association, characterized by an anticipatory goal reaction and based on past association of certain cues with pleasure or pain (McClelland, 1955, p.226)."

2. Motivation. "the aroused state of the person that exists when a motive has been engaged by the appropriate expectancy, i.e., an expectancy that performance of some act is instrumental to attainment of the goal of that motive (Atkinson and Reitman, 1956)."

3. Motivation to approach success. The anticipation of positive affects by the individual in a specific goal attainment situation.

4. Motivation to avoid failure. The anticipation of negative affects by the individual in a specific goal attainment situation.

5. Approach-oriented. Persons whose scores fall above the median on the approach success scale and below the median on the avoid failure scale.

6. Avoidance-oriented. Persons whose scores fall below the median on the approach success scale and above the median on the avoid failure scale.

7. Neutral-oriented. Persons whose scores fall either, above the median on the approach success scale and above the median on the avoid failure scale or below the median on the approach success scale and below the median on the avoid failure scale.

CHAPTER II

REVIEW OF RELATED LITERATURE

The Measurement of Achievement Motives

Cronbach (1946) suggested that many psychological and educational tests did not measure what they were intended to. He reasoned that tests reflect not only the content of examination material but also how the examination is presented. Those extraneous factors which might have an effect on test results, due to the form of presentation of material, were examined and suggestions for controlling them offered.

Excluding content of question, a person is often predisposed or "set" to react to test items in certain ways depending on how the question is presented. Cronbach referred to this predisposition as "response set" and defined it as follows:

> A response set is any tendency causing a person consistently to give different responses to test items than he would when the same content is presented in a different form. (Cronbach, 1946, p.476)

Those response sets listed in Cronbach's paper were: (1) tendency to gamble, (2) definition of judgment categories, (3) inclusiveness, (4) bias or acquiescence, (5) speed versus accuracy, and (6) miscellaneous response sets on essay tests, related to style of response. These response sets tended to most influence performance in ambiguous or unstructured situations. In addition to this, response sets always tended to reduce logical validity. There is insufficient evidence to indicate whether or not response sets generalize from one area to another.

Cronbach admitted that many of the points raised were trivial yet a clear need existed "to raise mental measurement from its present imperfect

level." The following suggestions were offered to aid in controlling for the effects of response sets upon validity:

a) The multiple-choice form, which appears free from response sets, would be used wherever possible.
b) The test pattern should be made less ambiguous, by reducing the number of alternatives for a judgment and eliminating the neutral response. Alternatives in Likert-type scales should be clearly defined.
c) Directions should be changed to eliminate variations in response set. Directions to respond when in doubt are recommended.
d) The test-wiseness of the student may be increased by an explanation regarding his response sets.
e) Scores of persons revealing strong response sets may be discarded.
f) Because most item forms permit more than one degree of freedom in the response, methods of retaining all of the information are needed. Interpretation of profiles or patterns of scores is desirable. Statistical methods for handling two scores at once are referred to.
g) Scores may be weighted so that response tendencies which correlate with lack of knowledge in the majority of cases are penalized. (Cronbach, 1946, p.492)

Nygard and Gjesme (1973) reviewed and appraised measuring instruments being used in achievement motivation research. The authors dealt specifically with motive to approach-success (Ms) and motive to avoid-failure (Mf). Before developing an instrument to measure achievement motives the authors contended that a clear understanding of the characteristics of achievement motives was mandatory.

Motive, as defined in Nygard and Gjesme's 1973 paper, "is seen to be a learning result, in terms of a capacity to anticipate positive or negative affects in connection with certain kinds of situations. It follows then that anticipation of positive affects describe the motive to approach-success while motive to avoid-failure should result from an anticipation of negative affects."

A distinction between "motive" and "motivation" described motive as

being an underlying personality characteristic while motivation was the manifestation of motive in a specific situation.. Atkinson (1957) offered a more elaborate definition in suggesting that motivation was a function of motive strength, subjective probability of success or failure, and the incentive value of success or failure.

Nygard and Gjesme questioned the validity of need Achievement scores obtained from projective tests being used at the time. The need Achievement scores for women were especially questioned (Veroff et al. 1953, p.117). As an alternative they suggested a preference for objective tests over projective ones. An objective test would also facilitate administration and evaluation.

Many scales tended to measure the strength of motivation rather than motive because the questions were specific in nature. However, if the purpose of a scale is to reflect the level of motivation in a given situation then it is valuable.

Measurements of motive to avoid failure have been secured through Mandler and Sarason's (1952) Test Anxiety Questionnaire (TAQ). They suggested:

> The test anxiety questionnaires deal with subjects' experiences in terms of negative affects in achievement situations, thereby being in accordance with the theory lying behind the Mf concept so far as the affective aspect is concerned. (Nygard and Gjesme, 1973, p.44)

The test anxiety questionnaire however, also tended to measure in specific situations and therefore was subject to the same criticisms as need Achievement scales.

Nygard and Gjesme (1973) concluded by suggesting that scales designed to measure motive to approach success and motive to avoid failure be loaded with items referring to positive and negative affects, respectively,

in achievement situations. Further, all scale items should refer to situations which offer the same probability of success for all individuals being tested.

Rushall (1975) criticized the general personality inventories being used to describe relationships between "behavioral inferences and sport/activity classifications." An alternative approach was suggested and the specific steps required to develop sport specific self-report behavior inventories were outlined. Methods for incorporating validity and reliability into the inventories were discussed. In addition to this, Rushall offered specific suggestions for reducing response falsification in self-report inventories. He also pointed out how these inventories would prove useful to coaches and clinical psychologists.

It would appear that the methods being used to measure motive to approach success and motive to avoid failure were less than perfect. This was especially true in the measurement of achievement motives for women. Many of the tests designed to measure "motive" were, in fact measuring motivation. However, scales designed to measure motivation in specific situations are of value.

There was a clear need for ensuring that tests measure what they are intended to measure. This suggested that more effort must be devoted to ensuring that tests are both reliable and valid, which in turn, implies that efforts must be directed towards controlling for those extraneous factors which tend to reflect characteristics other than those being evaluated.

Achievement Motive and Test Anxiety

Atkinson and Litwin (1960) conceived n Achievement (achievement motive)

and Test Anxiety as being synonymous with motive to approach-success and motive to avoid-failure, respectively. In addition, they examined the construct validity of three different measures of achievement related motives. Those measures investigated were: the French Test of Insight (French, 1958), the Mandler-Sarason Test Anxiety Questionnaire (TAQ) (Mandler and Sarason, 1952), and the Edwards Personal Preference Schedule (Edwards, 1954). Atkinson and Litwin (1960) assumed that the French Test of Insight would prove indicative of the strength of motive to approach-success, while the strength of motive to avoid-failure would be described by the Mandler-Sarason Test. The investigation of the Edwards PPS, of secondary importance to the study, was expected to measure n Achievement.

As a basis for testing, the authors referred to Atkinson's theoretical model which explained how motive to approach-success and motive to avoid-failure influenced level of performance in achievement situations (Atkinson, 1957). According to Atkinson's theory, if motive to approach-success is stronger than motive to avoid-failure, and should a conflict between the two manifest itself, then the result is always positive. However, should the motive to avoid-failure be the stronger of the two, then the result would be negative. The resultant level of motivation in either case would be strongest for tasks where the subjective probability of success is 0.5. In addition to this, Sarason and Mandler (1952) suggested that for an individual, in whom the motive to avoid-failure was the strongest, all achievement tasks would be unattractive, especially those of intermediate difficulty. This being the case, the individual would attempt the tasks "only when constrained by social pressures, and perform them inefficiently."

Atkinson and Litwin (1960) observed 49 subjects for whom both measures of n Achievement and Test Anxiety were available. Tasks, from which results were taken, were a modified ring toss game and a three hour final examination. The results from the study offered support to the hypothesis set down by the investigators. Subjects higher in motive to approach-success than in motive to avoid-failure, selected tasks of intermediate difficulty, had higher final examination scores and tended to work longer at the final examination. In addition, Atkinson and Litwin (1960) concluded that the French Test of Insight and the Mandler-Sarason TAQ were, in fact, assessing motive to approach-success and motive to avoid-failure, respectively.

Strength of Motivation

Atkinson's theoretical model for risk taking suggested that "motivation" was a function of several things, one of which was motive strength (Atkinson, 1957). Nygard and Gjesme (1973) suggested that motivation was a manifestation of motive in a specific situation. This implied that motivational strength is directly dependent on strength of motive.

Brown (1948) offered four assumptions in an effort to describe the relationship between strength of motivation and gradients of approach and avoidance responses. Those assumptions were:

1. When a motivated organism is suitably reinforced for approaching a given region in space, a gradient in the strength of its excitatory tendency to approach that region will be established, the strength of the tendency increasing with nearness to the goal.
2. When an organism has escaped from a noxious stimulus located at a given region in space, a gradient in the strength of its excitatory tendency to avoid that region will be set up, the strength of the tendency decreasing with distance from that region.

3. Other things equal, gradients in the strength of excitatory tendencies to avoid are steeper than gradients for excitatory tendencies to approach.
4. The heights of the approach and avoidance gradients vary directly with strength of drive and intensity of the noxious stimulus, respectively. (Brown, 1948, p.450)

The first and second assumptions were supported in an achievement-oriented investigation conducted by Bugelski and Miller (1938).

To offer support for assumptions three and four was Brown's (1948) primary goal. In addition to this, the author offered further support to the findings of others with respect to the first two assumptions. Brown was successful in lending support to each of the four assumptions.

Bugelski and Miller (1938) demonstrated that the tendency for an organism to approach a goal was stronger the nearer the organism was to that goal; and that the tendency for an organism to avoid a potentially noxious stimulus was stronger the nearer the organism was to that stimulus. This was in accordance with Hull's (1932) postulation that the further an organism was from a goal the weaker were the excitatory tendencies.

Brown (1941) investigated the relationship between generalization of approach responses with respect to stimulus intensity and strength of motivation. He hypothesized that conditioned approach responses to a given stimulus could be evoked by similar stimuli of different intensities and that the strength of the approach response would decrease as the intensity of stimulation became increasingly different. In addition to this he suggested:

> A reduction in motivation will result in an over-all decrease in the height of the gradient of generalized approach responses.
>
> When the effects of reduced motivation are measured in terms of latency of response, the gradient will show an increase in apparent steepness. (Brown, 1941, p.210)

Brown's (1941) results demonstrated that approach responses did generalize from one stimulus to another, even when the intensities of the stimuli were very different. However, the generalized approach responses tended to extinguish more rapidly with non-reward than did rewarded responses. He found also that with a reduction in motivation came a greater decrease in the strength of generalized responses than in the strength of the actual conditioned response.

The motivational level was, in part, a function of motive level. Since this was the case then, research pertaining to motives might also be applicable to studies of motivation.

Levels of motivation within an organism depended on a number of factors. Those factors were: (1) the strength of the tendency to approach a goal increased with nearness to the goal, (2) the strength of tendency to avoid a noxious stimulus decreased with distance from the region of noxious stimulation, (3) gradients in the strength of excitatory tendencies to avoid were steeper than gradients of excitatory tendencies to approach, (4) the heights of the approach and avoidance gradients varied directly with strength of drive and intensity of the noxious stimulus, respectively, and (5) a generalization of the approach response occurred when stimulus intensities were varied.

Performance

Gjesme (1974) instituted a study, based on Miller's (1944) theoretical model, which suggested that the nearer a subject is to a goal the stronger will be the subject's tendency to approach that goal. Also, the avoidance gradient increased more rapidly, with nearness to a goal, than did the approach gradient. These assumptions were also supported in a study conducted by Bugelski and Miller (1938). In his 1974 investigation Gjesme

offered two primary hypotheses: (1) approach-oriented (Ms) pupils would increase their level of performance as a goal approached in time, and (2) avoidance-oriented pupils would decrease their level of performance with the approach of that same goal. A third hypothesis offered was that the rate of decrease in level of performance for avoidance-oriented pupils would be more rapid than would be the rate of increase in level of performance for approach-oriented pupils with the approach of a goal in time.

In the study, 1365 grade six pupils were tested for level of achievement motives using the Achievement Motives Scale (AMS) which was developed by Gjesme and Nygard (1970). Once tested, the pupils were divided into four motive groups according to how each pupil scored with respect to the median scores for the approach-success half of the scale and for the avoid failure half. The four groups were: (1) above median to approach success and below median to avoid failure (approach-oriented), (2) below median to approach success and above median to avoid failure (avoidance-oriented), (3) above median to approach success and above median to avoid failure (neutral, high-high), and (4) below median to approach success and below median to avoid failure (neutral, low-low).

The tasks assigned to each of the randomly selected groups were anagram problems and three types of numerical problems. Group one was given the task immediately, group two was allowed a practice session using the same task booklet. However, they were told that they would take the actual test in one week's time. Groups three and four were also offered practice sessions but they were told that they would be tested one month later and one year later, respectively. Any instructions concerning tests to be given at a later date were entirely fictitious.

The results demonstrated that there was an overall increase in the number of problems attempted for the group of approach-oriented pupils. In addition to this, the number of problems attempted increased successively from group four to group one. There was no significant decrease in the number of problems attempted between groups for the avoidance-oriented pupils. The actual scores of the approach-oriented pupils increased gradually with the approach of the goal in time while the scores for the avoidance-oriented group did decrease with the approach of the goal. There was a significant difference between the mean of the approach-oriented group and the avoidance-oriented group. No evidence was found to support the third hypothesis offered by Gjesme (1974).

Raynor and Rubin (1971) demonstrated that: (1) approach-oriented persons performed at a higher level on contingent tasks than they did on noncontingent tasks, while (2) avoidance-oriented persons performed at a lower level on contingent tasks than on noncontingent ones.

Atkinson and Reitman (1956) compared the relationship between performance and motive strength and expectancy of goal attainment. The investigators expected that persons, high in n Achievement (approach-oriented), would perform at a higher level than would persons low in n Achievement (avoidance-oriented) if both groups were given the same achievement-orienting instructions and then left to work on their own. They also suggested that the difference between levels of performance for the two groups would be greatly reduced should the achievement-orienting instructions be supplemented with the opportunity of attaining other goals, for example affiliation and money.

As was expected, the arousal of motives for attainment of other goals did affect the relationship between achievement motive and performance.

The reason for this was best explained by the authors when they concluded that:

> The relationship between achievement motive and performance was eliminated by systematically engaging other motives in the same performance. (Atkinson and Reitman, 1956, p.363)

Of considerable importance to the present study were two rather obscure findings which were reported by Atkinson and Reitman in their 1956 investigation. They suggested that those test subjects who showed the greatest increase in scores when additional motives were aroused were members of the low achievement group who were highly motivated to affiliate. Their study also showed that subjects who were low in aptitude profited most by strong motivation. These differences were not significant even though a general pattern surfaced.

Smith (1964) investigated the relationship between achievement-related motives, namely Need for Achievement and Test Anxiety, and three criterion variables which were assumed to reflect individual differences in motivation. The three variables observed were: intelligence test scores, performance levels, and persistence.

Smith offered the general assumptions that anxiety would have a debilitating affect on performance under stressful conditions, while achievement motivation was expected to facilitate performance under achievement-oriented conditions. There has been a considerable amount of research done to lend credibility to those assumptions (Atkinson and Litwin, 1960; Atkinson and Reitman, 1956; Gjesme, 1974; Raynor and Rubin, 1971). In addition to this and of considerable importance to Smith's (1964) study, Atkinson and Litwin (1960) pointed out that approach and avoidance-oriented tendencies were not mutually exclusive in the individual. In fact, it was

quite possible that persons high in Ms might also be high in Mf.

There was evidence, reported in Smith's investigation, which supported the assumption of a negative relationship between intelligence and Test Anxiety (Sarason, 1960). Contradictive evidence was offered with respect to the relationship between Test Anxiety and persistence at completing a task. Contrary to the findings of others, Atkinson and Litwin (1960) demonstrated that subjects high in Test Anxiety tended to be less persistent. The explanation offered for their results was as follows:

> Subjects in whom the Motive to Avoid Failure is stronger than the Motive for Success should wish to leave an examination early because the consequences of performance are potentially painful. On the other hand, subjects in whom the Motive for Success is stronger than the Motive to Avoid failure should wish to remain in the situation because it is potentially rewarding. (Atkinson and Litwin, 1960)

In his 1964 study, Smith failed to demonstrate a negative relationship between Test Anxiety and intelligence and performance. He did however, demonstrate that there was a positive relationship between Test Anxiety and persistence. His findings were not in accord with the findings of others. Feather (1961) suggested that, how a person perceives a task will dictate either a positive or negative relationship between achievement-related motives and persistence. It has already been suggested that the motives to approach success or to avoid failure were most strongly manifested in the individual when tasks were perceived to be of intermediate difficulty.

Ms persons tended to increase levels of performance as a goal approached in time, while Mf persons decreased performance levels. Also persons motivated to approach success performed better at contingent tasks than at noncontingent tasks. However, the opposite held true for persons motivated

to avoid-failure.

Final performance depended on many factors, two of which were motive strength and expectancy of goal attainment. The relationship between motivation and performance was reduced with the addition of other motives in the same performance situation. Individuals who most profited from the addition of these other motives were those persons who were low in achievement but high in motive to affiliate. In addition to this, persons who were low in aptitude profited most from strong levels of motivation.

Achievement Related Motives and Women

Nygard and Gjesme (1973) raised an interesting question as to how valid the need Achievement score was when the relationship between need Achievement score and performance was concerned, with respect to women.

Alderman (1975, p.311) suggested that "achievement is linked to a masculine sexual identity." He further suggested that, "attitudes and value systems that load heavily on what a girl will do with her life are often incompatible with achievement motivation. To retain a feminine identity then, most girls modulate their efforts to achieve." (Alderman, 1975, p.3.11) The above statement was offered by Alderman with respect to the athletic situation. This assumption was supported by Mead (1949) when she stated that once a female enters into adolescence her role becomes, with respect to males, noncompetitive and in fact, achievement becomes almost exclusively associated with the male role. Mead's assumption was, in turn, supported by the results of an investigation conducted by Veroff, Wilcox and Atkinson (1953).

In their study, Veroff, Wilcox and Atkinson (1953) attemped, in two successive efforts, to "determine whether or not the kinds of imaginative responses which indicate achievement motivation in men can also be used

as a basis for inference concerning strength of the motive when they occur in thematic stories written by women" (Veroff, Wilcox and Atkinson, 1953, p.108). The results of their study offered empirical evidence that "scoring procedures developed in studies of college age males are also applicable to stories written by female subjects as a means of obtaining a measure of achievement" (Veroff, Wilcox and Atkinson, 1953, p.118).

Summary

There has been a considerable amount of research effort devoted to the comprehension of achievement motive and achievement motivation. Much of this past research attempted to describe the relationship between achievement-related motives (approach success and avoid failure) and levels of performance.

When developing a measuring instrument it is of utmost importance to insure that the tool measures what it intends to measure. Controls for problems created by "response sets" must be incorporated into the questionnaire. In addition to this the questionnaire, in its completed form, must be both reliable and valid if it is to be of any value as a measuring instrument.

Measurements of need Achievement and Test Anxiety are, in fact, measures of motive to approach success (Ms) and motive to avoid failure (Mf). The French Test of Insight offered information concerning need Achievement while the Mandler-Sarason Test Anxiety Questionnaire (TAQ) dealt with Test Anxiety.

"Motivation" is a function of several factors, two of which are "motive" strength and expectancy of goal attainment. The actual strength of motivation to approach or avoid is directly dependent on several conditions. The strength of the excitatory tendency to approach a goal increases with near-

ness to that goal. However, the further an organism is from a noxious stimulus, the lower is the excitatory tendency to avoid that area of noxious stimulation. In addition to this the gradients in excitatory tendencies to avoid are greater than the gradients of excitatory tendencies to approach.

The actual level or strength of approach or avoidance tendencies varies directly with the strength of drive and intensity of the noxious stimulation. Also, motivational levels are most aroused when the probability of success is 0.5.

Approach and avoidance responses generalize to varying intensities of stimulation. However, generalized responses tend to extinguish more rapidly than do actual conditioned responses. Also, a reduction in motivational level results in a greater decrease for a generalized response than for a conditioned response.

Persons who are motivated to approach success tend to improve levels of performance as a goal approaches in time. However, avoidance-oriented persons decrease levels of performance with the approach of that same goal. There was also evidence which suggested that approach-oriented or Ms persons perform better at contingent tasks than at noncontingent ones. The opposite situation held true for avoidance-oriented persons who tended to perform better at noncontingent tasks.

The relationship between performance and achievement related motives is reduced when motives for attaining other goals are aroused. Persons low in achievement motive, profit most from the arousal of motives for the attaining of other goals. It was demonstrated that persons who profited most from strong achievement motives were those people who had a low aptitude for the task in question.

Motive to approach-success and motive to avoid-failure are not mutually exclusive in the individual. It is entirely possible for an individual to be high in both Ms and Mf.

Finally, the validity of need Achievement and Test Anxiety scores is questioned, expecially in the case of women. It was suggested that the female tended to adopt a noncompetitive role with respect to the male. In fact, achievement situations became almost entirely associated with the male role, while the female suppresses her achievement related motives in an effort to protect her feminine identity.

CHAPTER III

DEVELOPMENTAL METHODS AND PROCEDURES

Questionnaire Design

The tool developed in this study was not original in design structure. Rather, it was a modified version of the Achievement Motives Scale developed by Gjesme and Nygard (1970). Their original scale was divided into two sections of 15 questions each. Questions one to 15 were designed to measure an individual's motive to approach-success, while the remaining 15 questions were directed towards motive to avoid-failure. Questions were of a general nature and applied to no specific situation. Question items of approach-success or avoid-failure were mutually exclusive in content. That is to say that questions designed to measure motivation to approach-success did not also offer information pertaining to motivation to avoid-failure.

In order to be more meaningful for sporting environments, the questionnaire constructed in this study measured achievement motivations in both training and competitive situations i.e. it altered the original motives analysis to one of achievement motivation analysis. Four separate measures of achievement motivation were distinguished by the test: (1) motivation to approach-success in training, (2) motivation to approach-success in competition, (3) motivation to avoid-failure in training and (4) motivation to avoid-failure in competition. Some question items pertained to both training and competition. In other words, an individual's response to one item offered information about his motivation in the situations of training and competition.

In essence, the questionnaire of Gjesme and Nygard was altered to direct a respondant's attention to his/her behavior in a particular sporting environment. It was then possible to gleen information about an individual's achievement motivation to his/her sport participation.

Score Design

Initially, the Achievement Motivations Scale developed in this study consisted of 36 questions. Of these 36 question items 30 were modified versions of question items contained in Nygard and Gjesme's (1970) scale, while 6 were of original design (See Appendix C). The nature of the question items alternated consistently throughout the questionnaire from positive to negative.

There were four possible responses to each question item: (a) always, (b) frequently, (c) sometimes, and (d) never. Only one response was accepted for each item and responses were scored as follows: (a) 3 points, (b) 2 points, (c) 1 point, and (d) 0 points. An answer sheet was supplied with each questionnaire.

The questionnaire discerned more specific motivational classifications with respect to different sport situations. These more specific classifications were: (1) approach or avoidance-oriented with respect to competition, (2) approach or avoidance-oriented with respect to training, (3) total combined Ms competition and Ms training scores, (4) total combined Mf competition and Mf training scores, and (5) the difference score as described by subtracting the total Mf combined score from the total Ms combined score.

Reliability of the Questionnaire

Since each question was important, the reliability for each question

was determined through a test-retest procedure. Physical education students and convenient sporting teams of both sexes were given the test at two different times. Disagreement of responses between test and retest conditions were compared for each question. Any question which failed to elicit the same response from the same subject, at least 64 percent of the time, was deleted from the questionnaire. It was expected that this standard would insure the reliability of each questionnaire item. The criterion was roughly equivalent to an r of 0.80.

The questionnaire was administered to a group of convenient physical education students at Lakehead University (n = 29). Three days after the test was readministered to the same group of students and the responses of each student for each question compared. Eight question items failed to elicit the same response from the same subject at least 64 percent of the time (See Figure 1). Those question items deleted from the questionnaire were numbers 5, 10, 13, 14, 17, 21, 26, and 27.

Content Validity of the Questionnaire

After reliability was established, the questionnaire was sent to 12 individuals considered to be experts in the field of motivational psychology. These experts were asked to assess the content validity of the questionnaire with respect to two criteria:

1) did each question allude to achievement motivation and/or expectation for success, and
2) which questions referred to either or both training and competition.

The panel was also asked to assess whether the item content was similar or dissimilar with respect to the origional question item content in Nygard and Gjesme's scale. An evaluation of questionnaire form was designed and sent to the panel of experts. A letter explaining what was required

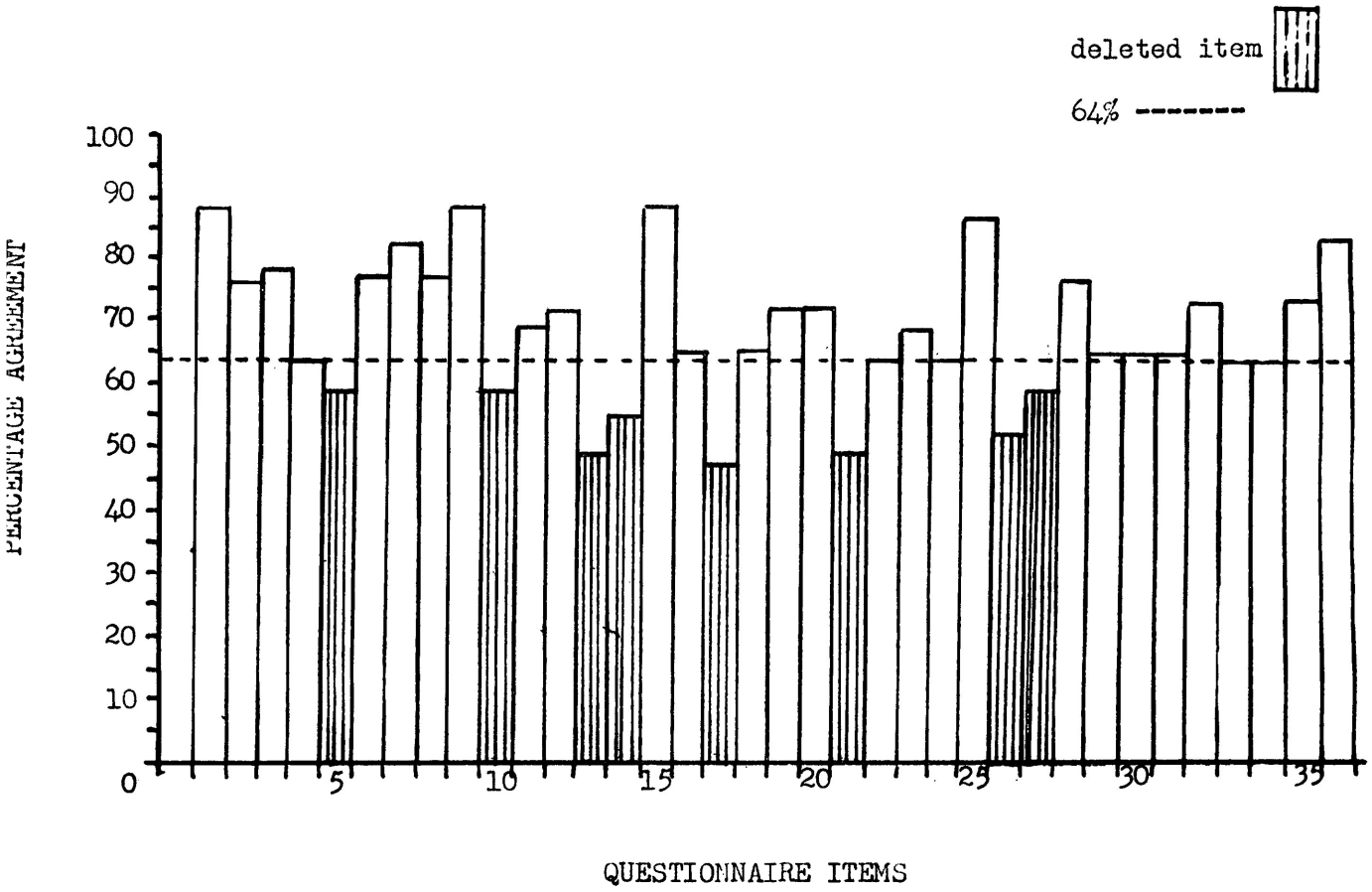

Figure 1: Test-retest percentage of agreements for the original 36 Achievement Motivations Scale items.

accompanied this evaluation sheet (See Appendix A).

A majority of expert opinion suggesting that a question item applied to neither competition nor training, i.e. it was not valid for sports, dictated the deletion of that item from the scale. All items exceeded this basic requirement (See Figure 2).

Each question should contain elements of achievement and/or expectation. All questions were considered by the majority of experts to be valid for assessing this aspect of content (See Figure 3). Thus, after considering these two features all questions were assessed as being valid for achievement motivation in sporting environments.

For interest sake, the experts were asked to decide whether each question was similar or dissimilar to the original question item from which it was modified. Of the 28 questions to be evaluated, five were original in design and they were exempted from this part of the assessment. Seventeen of the twenty-three items were considered to be similar to the original items of Nygard and Gjesme (See Figure 4).

Questions were deemed to apply to success or failure according to face validity. Items negatively connotated were deemed to be of avoidance (failure) orientation while those that were of positive connotations were deemed to be approach (success) oriented.

Honesty

In any self evaluation questionnaire response falsification will become a problem unless proper control is exercised. The "response set" to answer honestly was established as follows: (1) subjects were verbally warned 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)

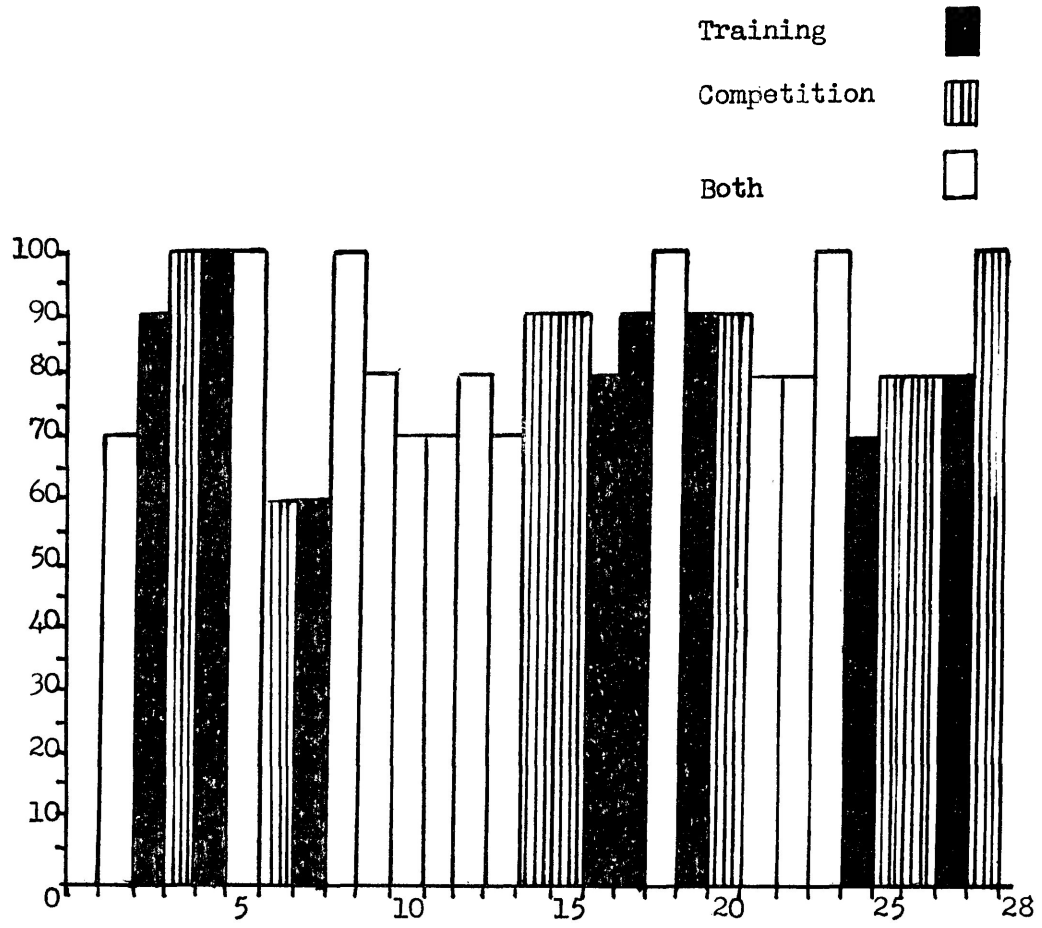

Figure 2: The majority percentage of expert opinion about the classification of training, competitions, or both for each item on the Achievement Motivations Scale. The shading of each bar indicates the classification of the item.

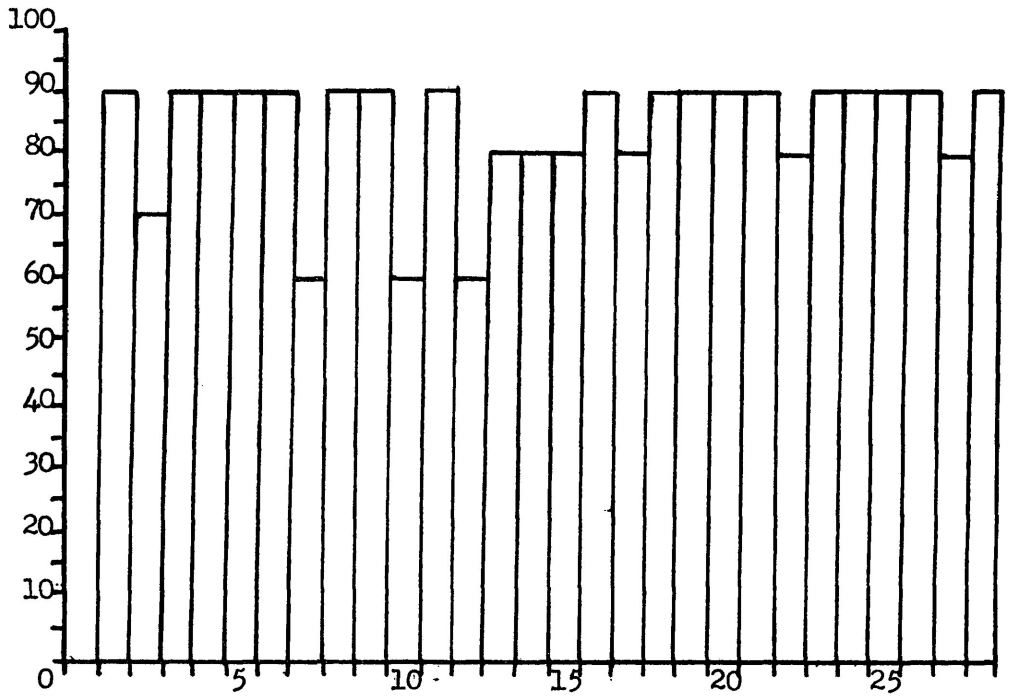

Figure 3: The percentage of expert opinions which agreed that a question assessed elements of achievement and/or expectation for all questions on the Achievement Motivations Scale.

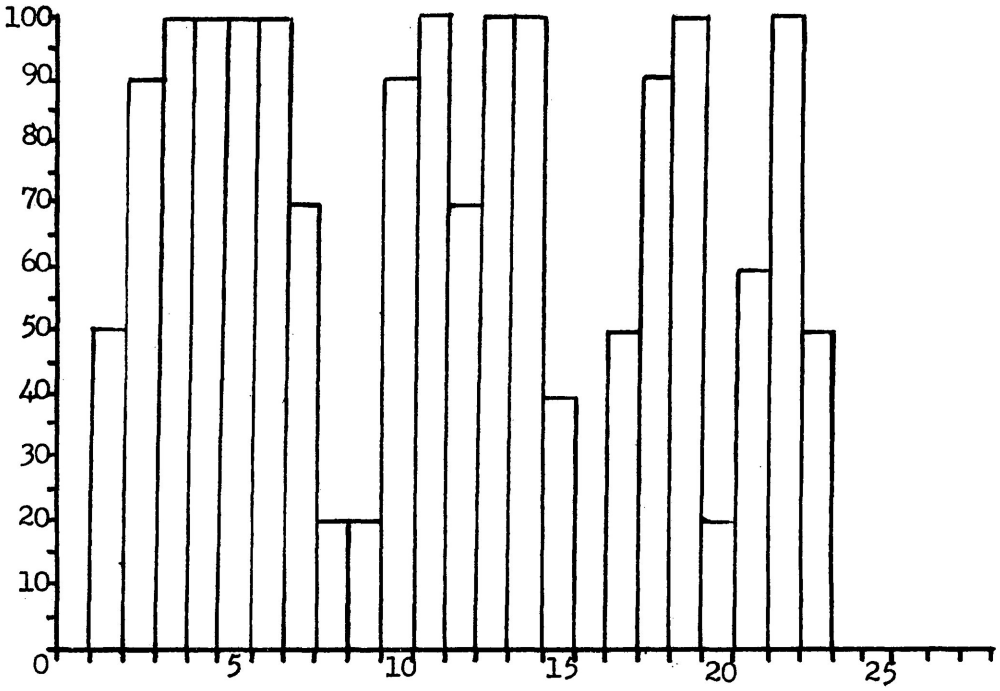

Figure 4: The percentage of expert opinions indicating the similarity of the 23 transposed items to their original content.

instructions were included in each test booklet reminding the subjects of the hazards of response falsification. The instructions, employed when administering this questionnaire were a modified version of an existing set of instructions which had already been proven to be successful in creating a set to answer honestly (Rushall, 1976). The administration procedures are included in appendix. (See Appendix B).

Objectivity

A test-retest situation was used in an effort to insure the objectivity of the questionnaire. The questionnaire was administered to the same group of subjects on two separate occassions by two different examiners. The examiners were offered no information concerning the nature of the questionnaire's purpose. The questionnaire's objectivity was calculated using the same procedures as were used in calculating questionnaire reliability. The same standards applied.

Since each question contained in the questionnaire was of proven reliability and because the instructions being employed for administering the questionnaire had been successfully used in the administration of other behavior inventories it followed then that the scales objectivity had already been established. Nevertheless, two graduate students at Lakehead University administered, on two separate occassions, the questionnaire to a covenient varsity team. The results from this test-retest situation were in accord with the results described in the establishment of reliability for the questionnaire. Thus, no additional question items were deleted from the questionnaire's content.

The scale in its completed form was expected to be reliable, valid and objective in nature (See Appendix D). It consisted of 28 ordered success and failure oriented questions. Each questionnaire contained a final

written warning to the subject concerning the hazards of response falsification.

An answer sheet was designed for use with the questionnaire. (See Appendix D). For each questionnaire item there were four possible responses, i.e. (a) always, (b) frequently, (c) sometimes, (d) never. Response choice for each question item was recorded by checking of the correct response block offered on the questionnaire.

Standardization

The test is administered in standardized form as indicated in appendix B. The development of these instructions has already been discussed above in the section titled "Honesty".

Scoring

As indicated, each question could elicit one of four possible responses (a) always, (b) frequently, (c) sometimes, (d) never. Numerical values were assigned to each response. These numerical values (always = 3, frequently = 2, sometimes = 1, and never = 0) were employed to facilitate data computation.

These numerical scores describe six possible factors for each individual tested. These six factors are motivation to: approach success, avoid failure, approach success in training, avoid failure in training, approach success in competition, and avoid failure in competition. Each of the twenty-eight questionnaire items applies to at least one of these factors. (See Table 1).

TABLE 1: CONTENT OF QUESTIONNAIRE ITEMS 1 - 28 WITH RESPECT TO FACTORS DESCRIBED BY SCALE.

Question	Ms	Mf	MsC	MfC	MsT	MfT
1	X		X		X	
2		X				X
3	X		X			
4		X				X
5	X		X		X	
6		X		X		
7	X				X	
8		X		X		X
9	X		X		X	
10	X		X		X	
11		X		X		X
12		X		X		X
13	X		X		X	
14		X		X		
15		X		X		
16	X				X	
17		X				X
18		X		X		X
19	X		X			
20		X		X		
21	X		X		X	
22	X		X		X	
23		X		X		X
24		X				X
25		X		X		
26	X		X			
27	X				X	
28		X		X		

Ms - Motivation to Approach Success
Mf - Motivation to Avoid Failure
MsC - Motivation to Approach Success in Competition
MfC - Motivation to Avoid Failure in Competition
MsT - Motivation to Approach Success in Training
MfT - Motivation to Avoid Failure in Training

CHAPTER IV

TESTING OF THE SCALE

One of the principal reasons for developing this tool based on Gjesme and Nygard's 1970 scale was that Gjesme (1974) reported prediction of performance in an academic setting using it. It would be a great advantage to coaching if this prediction capacity could be "transferred" to sporting settings. It was decided to assess whether any factor score or combination of factors was related to performance in an athletic environment.

Subjects and Setting

The questionnaire in its completed form was administered to a population of male and female swimmers, ranging from 12 to 26 years of age, who competed in the 1977 Canadian Winter Swimming Championships which were hosted in Montreal at the Claude Robillard Center during the latter part of March. The majority of the subjects were tested in a single room with the guidance of a supervisor who was available at all times to answer any questions that the subjects had. Because of the busy competition schedules a select few swimmers were permitted to write the test at their places of lodging. These people were given instructions as to how to write the test and then allowed to do so in their own times. All questionnaires administered in this fashion were returned very promptly. Data were collected on 90 male and 86 female swimmers.

Apparatus

The measuring instrument used was the Achievement Motivations Questionnaire which was developed in the present study.

Controls

The problem of response falsification was controlled for by employing instructions designed to create a "set" to answer honestly. These instructions were a modified version of "Instructions for Administering the Behavior Inventories for Athletes," which had already been proven to be effective in establishing a "set" to answer honestly (Rushall, 1976).

Variables

Nine factor scores were determined by assigning ranked values to each question answer (a. 3 points, b. 2 points, c. 1 point and d. 0 points). The factors were:

1) a general difference score obtained by subtracting the total motivation to avoid-failure score from the total motivation to approach-success score,

2) competition difference (motivation to approach-success in competition score less motivation to avoid-failure in competition score),

3) training difference (motivation to approach-success score less motivation to avoid-failure score in training),

4) a general motivation to approach-success score,

5) a general motivation to avoid-failure score,

6) a motivation to approach-success in competition score,

7) a motivation to avoid-failure in competition score,

8) a motivation to approach-success in training score, and

9) a motivation to avoid-failure in training score.

The average performance change score for each swimmer was determined by accumulating the best times for each event swum at the championships by a competitor and subtracting the accumulated best times for those events prior to the championships. The resulting difference was expressed as a

percentage with appropriate sign to indicate improvement or decline in championship performances.

The factor scores were then considered for possible relationships to the performance variable.

Data Analyses

Two statistical techniques were employed. Each factor score was correlated to the other using a Pearson product - moment correlation coefficient. A stepwise multiple-regression analysis was used to relate the factor scores to the performance score. Three sets of analyses were performed on, 1) the 176 swimmers, 2) the 90 male swimmers, and 3) the 86 female swimmers. The separate sex analyses were performed because the literature had suggested a sex difference in achievement motivation.

Results

All subjects. Table 2 indicates the correlation coefficients for the various combinations of achievement motivation factors and the performance index for all subjects. Only two factors, Motivation to avoid-failure in competition (MfC) and to approach-success in training (MsT) were not significantly correlated. No factors were significantly correlated with the performance scores. Table 3 indicates the results of the stepwise multiple-regression analysis for the 176 subjects. Three factors (MsT, MfC, and Ms-Mf) contributed to a significant multiple-correlation coefficient of $r = .217$. The inclusion of further variables did not add to the significance of this coefficient. This means that for all subjects the appropriate factor scores could only account for 4.65% of the performance variance. This is statistically significant but as a single predictor variable set

is non-significant in a practical sense. When all the information contained in the factor score data was considered the multiple correlation coefficient reached was .2438.

Male subjects. Table 4 indicates the correlation coefficients for the various combinations of achievement motivation factors and the performance index for all male subjects. Four factors, motivation to avoid-failure in competition and motivation to approach-success in training, and motivation to approach-success in training and motivation to avoid-failure in training were not significantly correlated. No factors were significantly correlated with the performance score.

The stepwise multiple-regression analysis for the 90 male swimmers is indicated in Table 5. Four factors (Mf, MsC, MsT, and Ms-Mf) contributed to a significant multiple-correlation coefficient of r = .209. The significance of this coefficient was minimally increased with the addition of further variables. Thus, in the case of the males, the appropriate factor scores could only account for 4.39% of the performance variance. Even though this is statistically significant it is, when considered as a single predictor variable set, non-significant in the practical sense. When all the information contained in the factor score data was considered in the case of the male swimmers only a multiple-correlation coefficient of .2267 was reached.

Female subjects. Table 6 indicates the correlation coefficients for the various combinations of achievement motivation factors and the performance index for the female swimmers. Four factors, motivation to approach-success(Ms) and motivation to avoid-failure in competition (MfC) and motivation to avoid-failure in competition (MfC) and motivation to approach-success in training (MsT) were not significantly correlated. Once again,

TABLE 2: INTERCORRELATION MATRIX OF FACTOR AND PERFORMANCE SCORES FOR 176 SWIMMERS.

FACTORS	Ms	Mf	MsC	MfC	MsT	MfT	Ms-Mf	MsC-MfC	MsT-MfT	Per.
Ms		-.246[a]	.954[a]	-.207[a]	.958[a]	-.264[a]	.726[a]	.662[a]	.772[a]	-.032
Mf			-.301[a]	.950[a]	-.217[a]	.923[a]	-.828[a]	-.835[a]	-.726[a]	.021
MsC				-.267[a]	.884[a]	-.309[a]	.740[a]	.731[a]	.754[a]	.030
MfC					-.171	.875[a]	-.973[a]	-.852[a]	-.666[a]	.007
MsT						-.243[a]	.679[a]	.599[a]	.785[a]	-.070
MfT							-.808[a]	-.785[a]	-.792[a]	.019
Ms-Mf								.961[a]	.943[a]	-.029
MsC-MfC									.879[a]	.009
MsT-MfT										-.056
Per.										

[a] Significant at the .05 level.

Ms - Motivation to approach success

Mf - Motivation to avoid failure

MsC - Motivation to approach success in competition

MfC - Motivation to avoid failure in competition

MsT - Motivation to approach success in competition

MfT - Motivation to avoid failure in competition

Ms-Mf - Motivation to approach success less motivation to avoid failure

MsC-MfC - Motivation to approach success in competition less motivation to avoid failure in competition.

MsT-MfT - Motivation to approach success in training less motivation to avoid failure in training

Performance - actual overage percent change score per swim

TABLE 3: STEPWISE MULTIPLE-REGRESSION ANALYSIS FOR NINE FACTORS AND ONE PERFORMANCE SCORE FOR ALL SUBJECTS (N = 176).

STEP NUMBER	VARIABLE ENTERED	MULTIPLE R	% VARIANCE ACCOUNTED FOR
1	MsT	.070	.49
2	MsC	.208	4.33
3	Ms-Mf	.217	4.64

Further variable inclusions resulted in non-significant contributions to variance estimates.

Regression equation after step 3.

Coefficient	Variable
-.2108	MsT
.2215	MfC
-.0186	Ms-Mf
-.4208	Constant

Final step 9 when all information used.

$R = .2438$

$R^2 = .0594$

TABLE 4: INTERCORRELATION MATRIX OF FACTOR AND PERFORMANCE SCORES FOR 90 MALE SWIMMERS.

FACTORS	FACTORS									
	Ms[b]	Mf	MsC	MfC	MsT	MfT	Ms-Mf	MsC-MfC	MsT-MfT	Per.
Ms		-.271[a]	.949[a]	-.260[a]	.947[a]	-.256[a]	.709[a]	.672[a]	.763[a]	-.002
Mf			-.322[a]	.954[a]	-.217[a]	.923[a]	-.859[a]	-.844[a]	-.749[a]	.089
MsC				-.314[a]	.852[a]	-.312[a]	.726[a]	.738[a]	.741[a]	.042
MfC					-.181	.886[a]	-.843[a]	-.872[a]	-.702[a]	.087
MsT						-.200	.636[a]	.566[a]	.759[a]	-.039
MfT							-.820[a]	-.791[a]	-.789[a]	.072
Ms-Mf								.793[a]	.943[a]	-.070
MsC-MfC									.880[a]	-.043
MsT-MfT										-.072
Per.										

[a] Significant at the .05 level.

[b] Abbreviation key as in Table 2.

TABLE 5: STEPWISE MULTIPLE-REGRESSION ANALYSIS FOR NINE FACTORS AND ONE PERFORMANCE SCORE FOR MALE SUBJECTS (N = 90).

STEP NUMBER	VARIABLE ENTERED	MULTIPLE R	% VARIANCE ACCOUNTED FOR
1	Mf	.089	.8
2	MsC	.117	1.36
3	MsT	.196	3.86
4	Ms-Mf	.209	4.37

Further variable inclusions resulted in non-significant contributions to variance estimates.

Regression equation after step 4.

Coefficient	Variable
-.0580	Mf
.2420	MsC
-.1121	MsT
-.0980	Ms-Mf
-.9529	Constant

Final step 9 when all information used.

$R = .2267$

$R^2 = .0514$

no factors were significantly correlated with the performance scores.

The results of the stepwise multiple-regression analysis for the 86 female swimmers are described in Table 7. Three factors (Mst, MsC and Ms) contributed to a significant multiple-correlation coefficient of $\underline{R}$ = .3004. The inclusion of further variables did not add to the significance of this coefficient. This means that for female subjects taken as a unique group the appropriate factor scores could only account for 9.02% of the performance variance. Once again this is statistically significant but as a single predictor variable set is non-significant in the practical sense. When all the information contained in the factor score data was considered the multiple correlation coefficient reached was .3146.

TABLE 6: INTERCORRELATION MATRIX OF FACTOR AND PERFORMANCE SCORES FOR 86 SWIMMERS.

FACTORS	FACTORS									
	Ms[b]	Mf	MsC	MfC	MsT	MfT	Ms-Mf	MsC-MfC	MsT-MfT	Per.
Ms		-.218[a]	.958[a]	-.151	.968[a]	-.266[a]	.744[a]	.659[a]	.781[a]	-.069
Mf			-.274[a]	.946[a]	-.209[a]	.925[a]	-.790[a]	-.820[a]	-.704[a]	-.039
MsC				-.214[a]	.912[a]	-.301[a]	.753[a]	.729[a]	.767[a]	.009
MfC					-.150	.862[a]	-.733[a]	-.824[a]	-.627[a]	-.060
MsT						-.272[a]	.719[a]	.632[a]	.805[a]	-.113
MfT							-.793[a]	-.775[a]	-.790[a]	-.014
Ms-Mf								.948[a]	.947[a]	-.002
MsC-MfC									.881[a]	.045
MsT-MfT										-.063
Per.										

[a] Significant at the .05 level.

[b] Abbreviation key as in Table 2.

TABLE 7: STEPWISE MULTIPLE-REGRESSION ANALYSIS FOR NINE FACTORS AND ONE PERFORMANCE SCORE FOR FEMALE SUBJECTS (N = 86)

STEP NUMBER	VARIABLE ENTERED	MULTIPLE R	% VARIANCE ACCOUNTED FOR
1	MsT	.1126	1.27
2	MsC	.2948	8.69
3	Ms	.3004	9.02

Further variable inclusion resulted in non-significant contributions to variance estimates.

Regression equation after step 3.

Coefficient	Variable
-.1115	Ms
.3532	MsC
-.2340	MsT

Final step 9 when all information used.

$R = .3146$

$R^2 = .099$

CHAPTER V

DISCUSSION

Scale Construction

Administration of the 28 item Achievement Motivations Scale, developed, in this study, is very simple. Each subject or group of subjects need only a pre-test briefing as described in the "Instruction for Administering the Achievement Motivations Scale for Athletes" - appendix B and then allowed to work quietly and on their own for a period of 12 to 20 minutes.

Because of the effort to insure that the questionnaire was reliable all question items were readily understandable, requiring very little or no interpretation on the part of the test administrator. In actual practice during the testing of the national calibre swimmers the number of subjects requiring item interpretation was negligable. During the establishment of the scale's reliability those questions which failed to meet or exceed the 64 percent standard were either double barrelled or abstractly vague in their content nature.

The method used to establish the scale's content validity was perhaps this study's most rewarding consequence. All but one of the experts who were asked to assist in developing the sclae did so promptly. In addition, each expert who did take part appeared to have evaluated the questionnaire with considerable interest. Many useful suggestions and comments were offered.

The most important decision that each expert had to make was which questions contained elements of achievement and/or expectation or neither. This part of the questionnaire evaluation proved to be the most difficult for the experts to decide on. Dr. T. Orlick best summed up the problem

that he encountered during this part of the evaluation.

> "For me achievement and expectation are very closely related primarily due to the fact that one's desire to achieve is related to expectations associated with achievement. Therefore I sometimes had problems checking that category. From this perspective both could have been checked on nearly all items related to achievement." [1]

Interestingly enough Dr. Orlick decided that every item in the scale contained elements of achievement and/or expectation.

Of the 10 experts who participated in the questionnaire's evaluation of content validity one abstained from making any achievement-expectation, both or neither decision which accounts for the fact that the highest percentage of agreement with respect to this criterion was 90 percent and the lowest 60. This, in itself, suggested that the questionnaire's direction of design was correct.

Majority of expert opinion was also the criterion for deciding which questions applied to training and/or competition. The percentage of agreement here was, once again quite high, with the exception of two cases. This, it was felt, increased the credibility of the item classifications.

Finally, experts were asked to compare this study's scale to that of Nygard and Gjesme's (1970). Many of the remanufactured questions were deemed to be dissimilar, however, they were not deleted from the present scale. If an item deemed to be dissimilar on the part of majority expert opinion contained elements of achievement and/or expectation and fell into the competition and/or training classification then it was retained. Thus, those six question items deemed to be dissimilar from the original scale were retained.

It is impossible to prove that the scale developed in this study does, in fact, measure Achievement Motivation. Sincere effort has been devoted

[1] Personal Communication

to ensuring that the scale does measure what it is intended to. Because of this it was assumed that the scale, in its final form was capable of describing, with reasonable accuracy an individual's levels of motivation to approach-success generally, in competition, and in training. Also, the scale was expected to offer an equally accurate description of that same individual's level of motivation to avoid-failure.

Testing the Scale

For all practical purposes the scale failed to describe any functional relationship between levels of achievement motivation and the swimming performances of the subjects tested. Generally, the scale was capable of predicting an individual's predisposition to improving his or her performance times only slightly more than five percent of the time. Even though this percentage of predictability was nearly doubled for the female subjects taken alone, it would hardly be of any practical value in a real sport situation.

These results disagree with those of Gjesme in his 1974 study. Additionally, the present study found little evidence to support the findings of others who suggested that a functional relationship exists between achievement motivation and performance.

The most immediate possible reason for not describing a relationship between levels of achievement motivation and performance change is that the scale developed in this study did not accurately describe an individual's levels of achievement motivation. However, the content validation procedure does make it reasonable to assume that the scale does fulfill its intended purpose. The scale was not the product of one effort but rather it was the result of two major studies, the second of which received input

from ten additional experts in the field of motivational psychology.

Other studies investigating the relationship between achievement motivation and performance did so in far more controlled environments than did the present study. Upon casual observation, this would appear to be erroneous on the part of this study, however; this was not the case. It was intended to investigate and describe the proposed relationship in a practical and real setting. It is because of this attempt that the major problem arose.

Initially, it was assumed that the probability of success for all subjects was the same, with success being performance time improvement. The opportunity to improve one's time was the same for each swimmer tested. However, a successful swim may be more than just improving personal performance time. Success to an athlete may be described as winning the race, i.e. being first. This factor was not accounted for in this study. In several instances swimmers placed first yet their times were not equal to their previous best times for that particular event. In short, even though the athlete had competed successfully (as far as winning was concerned) his/her effort was not recorded as a successful one when compared to his/her motivation scores. This being the expected case it is imperative that a concrete understanding of success be established before attempting any further studies in this area.

Although the anticipated problem of response falsification was controlled for the problem did occur in an inadvertent fashion. In several instances it was impossible to verify data supplied by subjects with respect to previous best times. It was not uncommon for performance change scores to differ by only tenths or even hundredths of a second. This being the case it is possible that the reliability of the change scores

was reduced. It is possible that swimmers tended to offer only approximate previous best effort times when their memories failed them.

The scale developed in this study was of little practical value to the coach and/or athlete in the real swimming environment. The tenet that achievement motivation is a determinate of athletic performance is accepted since the multiple correlation coefficients obtained from the regression equations were statistically significant. However, the low coefficients indicate that this determination is only as a minor contributory factor. Other factors need to be determined which when taken as a multivariate function can predict performance success or failure to a level of practical significance.

CHAPTER VI

CONCLUSIONS

A 28 item questionnaire was constructed. Its intended purpose was to measure levels of achievement motivation of athletes. Since the questionnaire's reliability, objectivity and content validity were established, it is believed that the questionnaire does measure what it was intended to -- namely Achievement Motivation.

The scale, in its final form, was simple to administer and to evaluate. In addition, the questions required little or no interpretation on the part of the administrator.

With respect to the results of this study the scale is unacceptable, in the practical sense, as a predictor of an athlete's predisposition to improving his/her performance.

Summary

Based on Nygard and Gjesme's Achievement Motives Scale an Achievement Motivations Scale was constructed. The 28 item questionnaire was intended to be employed in the athletic environment for the purpose of measuring levels of Motivation to Approach-Success (Ms) and to Avoid-Failure (Mf) in athletes. The developed scale was then administered to 176 male and female swimmers at the 1977 Canadian Winter Swimming Championships for the purpose of testing the scale's value as a predictor of an athlete's predisposition to changing his/her performance. According to Miller's theoretical model it was expected that athletes high in Ms and low in Mf (approach-oriented) would increase their levels of performance whereas those athletes low in Ms and high in Mf would decrease their levels of

performance. An increase in performance was described by bettering one's previous best time in each event entered, while a decreased performance was described as when an athlete failed to cover the event distance at least as fast as he had done on his best effort prior to competing in the 1977 championships.

It was expected that the methods of scale construction adhered to would insure that the questionnaire was fulfilling its intended purpose. The results, however, failed to demonstrate any practical relationship between levels of achievement motivation and swimming performance. At best, in the case of the females alone, the scale was capable of predicting swimming performance only 10% of the time. This figure was less for males and the total group.

Recommendations

Does the scale developed in the present study measure levels of achievement motivation? Until this question is answered, it is pointless to employ this scale in practical situations. Since the ability to predict athletic performance is valuable, then it follows that developing means of prediction are equally valuable. In order to establish the value of the present questionnaire it should be empolyed in a more clinical setting, such as that of Gjesme (1974), where greater controls can be exercised. The study should also be repeated in different sport settings.

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Appendix A

February 23, 1977

Dear

I wonder if you would be so kind as to aid one of my graduate students in his Masters thesis project. Enclosed is a content validity questionnaire.

His thesis is concerned with developing an achievement motivation scale for sports. The theory underlying the investigation is that sports motivation is limited to the summation of an underlying trait motive (to approach success or avoid failure) and an expectation (probability estimate) for success. This approach is that of Atkinson and more recently Nygard and Gjesme (note that incentive value has been omitted).

The process for development has been to take Nygard and Gjesme's questions and "convert" them from being general to specifying sport situations. The enclosed questionnaire asks you to determine the similarity of a new and original question, whether the new question pertains to training and/or competition, and finally whether it includes expectation and/or achievement in its content.

I would very much appreciate your prompt cooperation in this project.

Sincerely yours,

Brent S. Rushall, Ph.D.
Professor and Coordinator
of Graduate Studies

BSR/kp

Evaluation of Questionnaire Content Validity

Would you please compare the following pairs of questions and indicate whether you feel them to be similar or dissimilar in nature. Also, in your estimation does the first question of each pair apply to: (1) situations of competition or training, both or neither, and (2) achievement situations and situations of goal expectance, both or neither.

1. I believe it is important to succeed in achieving the goals that I set for myself in my sport.

   - compare to -

   I think it is important to succeed in doing something I think I can manage.

   similar ___ dissimilar ___

   competition ___ training ___ both ___ neither ___

   achievement ___ expectation ___ both ___ neither ___

2. I dislike doing things in training which I am not sure I will be able to do.

   - compare to -

   I dislike working with things which I am not sure I'll be able to do.

   similar ___ dissimilar ___

   competition ___ training ___ both ___ neither ___

   achievement ___ expectation ___ both ___ neither ___

3. I like situations in competition where I can test my abilities.

   - compare to -

   I like situations where I can test my abilities.

   similar ___ dissimilar ___

   competition ___ training ___ both ___ neither ___

   achievement ___ expectation ___ both ___ neither ___

4. I do not like doing things in training when I am not sure of how they will turn out.

   - compare to -

   I don't like working with things where I'm not sure how they'll turn out.

   similar ___ dissimilar ___

   competition ___ training ___ both ___ neither ___

   achievement ___ expectation ___ both ___ neither ___

5. I experience as challenging, sporting situations in which I have an opportunity to test my abilities.

   - compare to -

   I experience as challenging situations in which I have a possibility to test my abilities.

   similar ___ dissimilar ___

   competition ___ training ___ both ___ neither ___

   achievement ___ expectation ___ both ___ neither ___

6. I am afraid of failing in competition when I am left alone to prepare myself.

- compare to -

I'm afraid of failing in situations where the results are dependent upon my own efforts.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

7. I like to try new things in training even if they are not done by most others in my sport.

- compare to -

I like to try new, unfamiliar things even if they aren't really useful.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

8. I worry about goals and performance expectations which seem a little difficult to achieve.

- compare to -

I am anxious about failing when I'm given a task I think I can manage to do.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

9. I want to succeed in what I do in my sport whether anyone knows about it or not.

- compare to -

I want to succeed in what I do, even though no one knows about it.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

10. When I encounter problems in my sport that I cannot solve or understand immediately, I become interested in them.

- compare to -

I notice that I become easily interested when I meet problems I don't understand at once.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

11. I worry about performance goals I am not sure I can achieve.

- compare to -

I worry about work I'm not sure I can do.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

12. I become anxious when I encounter a problem in my sport that I do not understand immediately.

- compare to -

I become anxious when I meet a problem I don't understand at once.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

13. I feel satisfaction in my sport where I can make use of my abilities.

- compare to -

I feel satisfied in situations where I can make use of my abilities.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

14. I feel anxious about competing in new situations.

- compare to -

I feel anxious about working in new situations, even though no one knows what I do.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

15. I prefer to avoid competition situations where I will have to produce a maximum effort.

- compare to -

I feel the desire to avoid a situation where I have the possibility of using my talents.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

16. I like training when I have the opportunity to see if I have improved.

- compare to -

I am attracted to work in which I have the possibility to test my abilities.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

17. I become anxious when I know I will have to try new things in training.

- compare to -

I become anxious just thinking about working on new, unknown things.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

18. If a somewhat difficult goal is set, I hope I do not have to do it because I am afraid I will not be able to achieve it.

- compare to -

If a somewhat difficult job is to be done, I hope I don't have to do it, because I'm afraid I won't be able to manage it.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

19. I like to compete as well as I can even if the chance of winning is small.

- compare to -

I like to finish something I start, even though no one knows about it.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

20. I worry about competitions where I have to test my abilities and improvement.

- compare to -

I worry about work where I have to show how able I am.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

21. I enjoy tasks in my sport that are a little difficult.

- compare to -

I am attracted to things that are a little difficult.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

22. I apply myself to do all things in my sport as best I can.

- compare to -

I feel pleasure at working on tasks that are somewhat difficult for me.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

23. I worry about goals and performance expectations which seem difficult to achieve.

- compare to -

I worry about doing things which seem a little difficult.

similar ___
dissimilar ___

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

24. When my abilities are tested in practice, I do not like it.

- compare to -

This is a question of our own design.

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

25. I dislike doing things in competition which I am not sure I will be able to do.

- compare to -

This is a question of our own design.

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

26. I prefer competition to be challenging (i.e. difficult).

- compare to -

This is a question of our own design.

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

27. I am prepared to do my best in training.

- compare to -

This is a question of our own design.

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

28. I am worried about my preparedness to compete.

- compare to -

This is a question of our own design.

competition ___ both ___
training ___ neither ___

achievement ___ both ___
expectation ___ neither ___

Appendix B

INSTRUCTIONS FOR ADMINISTERING THE ACHIEVEMENT MOTIVATIONS SCALE FOR ATHLETES

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 test does not exceed the number of books or answer sheets that are available.

3. Schedule a time period of at least 1 hour for testing. The test takes from 10 to 20 minutes; adminstration from 20 to 25 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.

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 association with your sport. Your answers will be marked and analysed by a computer.

The result 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 sheets if necessary.)

"Look at the answer sheet to the square marked first initial. Put the initial of your first name in the box. Print it clearly.

Then print your name alongside in the boxes marked last name. Print it clearly. If there are not enough spaces fill in as much as you can. If there are two or more of you with the same last name and first initial place your second initial and a period in the first two boxes of the last name section.

Write your age to the nearest year in the next two boxes marked age in years.

Enter the date as "day nn/ month nn/ year nn" (e.g. 230175 which is Jan. 23, 1975.)

Look at the section marked "Indicate one of the following", and mark the appropriate square for you. For example, if you are a male and in college mark the box with a 2 over the top which indicates you are a male college student. If you were a high school student you would mark either box 1 or 4 depending upon your sex. Anyone not clear? (explain further if necessary.)

Look at the work done by the person next to you to see that the information has been entered correctly.

Respond by filling in the appropriate square complete. Make sure you do not mark the booklet but only mark the answer sheet.

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 5 minutes say to the subjects:

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

6. 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 answers and any incorrect or indistinct information.

POST-TESTING PROCEDURES

1. Complete the subjects' data sheets, i.e. record the name of each person tests and his/her performance categories and achievements.

2. Send the test booklets, answer sheets, and subjects' data sheets to:

   Dr. Brent S. Rushall
   School of Physical & Health Education
   Lakehead University
   Thunder Bay, Ontario
   P7B 5E1
   Canada

3. The analyses will be completed and returned to you via return mail.

This test contains statements dealing with reactions to situations which arise in your sport. The answers that you give to this test will be used to indicate to your coach what is the best way to coach you.

It is necessary that you answer each question as truthfully as possible. False or inaccurate answers will cause the test results to indicate improper coaching techniques. Take your time in answering each item so that you can answer what is true for you.

Answer every statement with only one response.

1. I believe it is important to succeed in achieving the goals that I set for myself in my sport.

   a. Always b. Frequently c. Sometimes d. Never

2. I dislike doing things in training which I am not sure I will be able to do.

   a. Always b. Frequently c. Sometimes d. Never

3. I like situations in competition where I can test my abilities.

   a. Always b. Frequently c. Sometimes d. Never

4. I do not like working in training when I am not sure of what will be expected of me.

   a. Always b. Frequently c. Sometimes d. Never

5. I experience as challenging, sporting situations in which I have an opportunity to test my abilities.

   a. Always b. Frequently c. Sometimes d. Never

6. I am afraid of failing in competition when I am left alone to prepare myself.

   a. Always b. Frequently c. Sometimes d. Never

7. I like to try new things in training even if they are not done by most others in my sport.

   a. Always b. Frequently c. Sometimes d. Never

8. I worry about goals and performance expectations which seem a little difficult to achieve.

   a. Always b. Frequently c. Sometimes d. Never

9. I want to succeed in what I do in my sport whether anyone knows about it or not.

   a. Always b. Frequently c. Sometimes d. Never

10. I feel ashamed of failing in competition whether anyone knows about it or not.

    a. Always b. Frequently c. Sometimes d. Never

11. When I encounter problems in my sport that I cannot solve or understand immediately, I become interested in them.

    a. Always b. Frequently c. Sometimes d. Never

12. I worry about performance goals I am not sure I can achieve.

a. Always b. Frequently c. Sometimes d. Never

13. When I am given a task to complete in my sport I like to start working on it without delay.

a. Always b. Frequently c. Sometimes d. Never

14. I become worried when I encounter problems in my sport that I do not understand or cannot solve immediately.

a. Always b. Frequently c. Sometimes d. Never

15. I feel satisfaction in situations in my sport where I can make use of my abilities.

a. Always b. Frequently c. Sometimes d. Never

16. I feel anxious about competing in new situations.

a. Always b. Frequently c. Sometimes d. Never

17. I like to set goals in my sport that I am not completely sure I will be able to achieve.

a. Always b. Frequently c. Sometimes d. Never

18. I prefer to avoid competition situations where I will have to produce a maximum effort.

a. Always b. Frequently c. Sometimes d. Never

19. I like to work in training where I have the opportunity to test my abilities and assess my improvement.

a. Always b. Frequently c. Sometimes d. Never

20. I become anxious just thinking about trying new things in training.

a. Always b. Frequently c. Sometimes d. Never

21. I like learning new things about my sport even though they may not be immediately useful.

a. Always b. Frequently c. Sometimes d. Never

22. If a somewhat difficult goal is set, I hope I do not have to do it because I am afraid I will not be able to achieve it.

a. Always b. Frequently c. Sometimes d. Never

23. I like to compete as well as I can even if the chance of winning is small.

a. Always b. Frequently c. Sometimes d. Never

24. I worry about competitions where I have to test my abilities and improvement.

a. Always b. Frequently c. Sometimes d. Never

25. I enjoy tasks in my sport that are a little difficult.

a. Always b. Frequently c. Sometimes d. Never

26. I am afraid of competing and trying to achieve a goal that I know is impossible for me.

a. Always b. Frequently c. Sometimes d. Never

27. I apply myself to do all things in my sport as best I can.

a. Always b. Frequently c. Sometimes d. Never

28. I worry about goals and performance expectations which seem difficult to achieve.

a. Always b. Frequently c. Sometimes d. Never

29. I prefer training to be more difficult than easy.

a. Always b. Frequently c. Sometimes d. Never

30. I do not like situations in training where my abilities are tested.

a. Always b. Frequently c. Sometimes d. Never

31. I like to try new things in competition even if they are not done by most others in my sport.

a. Always b. Frequently c. Sometimes d. Never

32. I dislike doing things in competitions which I am not sure I will be able to do.

a. Always b. Frequently c. Sometimes d. Never

33. I prefer competition to be more difficult than easy.

a. Always b. Frequently c. Sometimes d. Never

34. I become anxious just thinking about trying new things in competition.

a. Always b. Frequently c. Sometimes d. Never

35. I am prepared to do my best in training.

a. Always b. Frequently c. Sometimes d. Never

36. I am worried about my preparedness to compete.

a. Always b. Frequently c. Sometimes d. Never

THE TEST IS NOW COMPLETED.

HAND ALL THE TESTING MATERIALS TO THE PERSON WHO CONDUCTED THE TESTING.

Appendix D

INVENTORY A

A series of questions that are valid for competitive athletes. The information gained from this test is analyzed by a computer. The test results are then used to indicate to the coach the best procedures that can be used for coaching and handling the individual athlete.

This test contains statements dealing with reactions to situations which arise in your sport. The answers that you give to this test will be used to indicate to your coach what is the best way to coach you.

It is necessary that you answer each question as truthfully as possible. False or inaccurate answers will cause the test results to indicate improper coaching techniques. Take your time in answering each item so that you can answer what is true for you.

Answer every statement with only one response. Do not write in the test booklet.

1. I believe it is important to succeed in achieving the goals that I set for myself in my sport.

   a. Always b. Frequently c. Sometimes d. Never

2. I dislike doing things in training which I am not sure I will be able to do.

   a. Always b. Frequently c. Sometimes d. Never

3. I like situations in competition where I can test my abilities.

   a. Always b. Frequently c. Sometimes d. Never

4. I do not like doing things in training when I am not sure of how they will turn out.

   a. Always b. Frequently c. Sometimes d. Never

5. I experience as challenging, sporting situations in which I have an opportunity to test my abilities.

   a. Always b. Frequently c. Sometimes d. Never

6. I am afraid of failing in competition when I am left alone to prepare myself.

   a. Always b. Frequently c. Sometimes d. Never

7. I like to try new things in training even if they are not done by most others in my sport.

   a. Always b. Frequently c. Sometimes d. Never

8. I worry about goals and performance expectations which seem a little difficult to achieve.

   a. Always b. Frequently c. Sometimes d. Never

9. I want to succeed in what I do in my sport whether anyone knows about it or not.

   a. Always b. Frequently c. Sometimes d. Never

10. When I encounter problems in my sport that I cannot solve or understand immediately, I become interested in them.

    a. Always b. Frequently c. Sometimes d. Never

11. I worry about performance goals I am not sure I can achieve.

    a. Always b. Frequently c. Sometimes d. Never

12. I become anxious when I encounter a problem in my sport that I do not understand immediately.

a. Always b. Frequently c. Sometimes d. Never

13. I feel satisfaction in situations in my sport where I can make use of my abilities.

a. Always b. Frequently c. Sometimes d. Never

14. I feel anxious about competing in new situations.

a. Always b. Frequently c. Sometimes d. Never

15. I prefer to avoid competition situations where I will have to produce a maximum effort.

a. Always b. Frequently c. Sometimes d. Never

16. I like training when I have the opportunity to see if I have improved.

a. Always b. Frequently c. Sometimes d. Never

17. I become anxious when I know I will have to try new things in training.

a. Always b. Frequently c. Sometimes d. Never

18. If a somewhat difficult goal is set, I hope I do not have to do it because I am afraid I will not be able to achieve it.

a. Always b. Frequently c. Sometimes d. Never

19. I like to compete as well as I can even if the chance of winning is small.

a. Always b. Frequently c. Sometimes d. Never

20. I worry about competitions where I have to test my abilities and improvement.

a. Always b. Frequently c. Sometimes d. Never

21. I enjoy tasks in my sport that are a little difficult.

a. Always b. Frequently c. Sometimes d. Never

22. I apply myself to do all things in my sport as best I can.

a. Always b. Frequently c. Sometimes d. Never

23. I worry about goals and performance expectations which seem difficult to achieve.

a. Always b. Frequently c. Sometimes d. Never

24. When my abilities are tested in practice, I do not like it.

a. Always b. Frequently c. Sometimes d. Never

25. I dislike doing things in competitions which I am not sure I will be able to do.

a. Always b. Frequently c. Sometimes d. Never

26. I prefer competition to be challenging (ie. difficult).

a. Always b. Frequently c. Sometimes d. Never

27. I am prepared to do my best in training.

a. Always b. Frequently c. Sometimes d. Never

28. I am worried about my preparedness to compete.

a. Always b. Frequently c. Sometimes d. Never

THE TEST IS NOW COMPLETED.

HAND ALL THE TESTING MATERIALS TO THE PERSON WHO CONDUCTED THE TESTING.

ANSWER SHEET 1

3 15

LAST NAME

DATE

DAY MONTH YEAR

E IN YEARS

INDICATE ONE OF THE FOLLOWING

MALES	FEMALES
1 ☐ HIGH SCHOOL STUDENT	4 ☐ HIGH SCHOOL STUDENT
2 ☐ COLLEGE STUDENT	5 ☐ COLLEGE STUDENT
3 ☐ OTHER	6 ☐ OTHER

1	a ☐	b ☐	c ☐	d ☐	13	a ☐	b ☐	c ☐	d ☐	25	a ☐	b ☐	c ☐	d ☐
2	a ☐	b ☐	c ☐	d ☐	14	a ☐	b ☐	c ☐	d ☐	26	a ☐	b ☐	c ☐	d ☐
3	a ☐	b ☐	c ☐	d ☐	15	a ☐	b ☐	c ☐	d ☐	27	a ☐	b ☐	c ☐	d ☐
4	a ☐	b ☐	c ☐	d ☐	16	a ☐	b ☐	c ☐	d ☐	28	a ☐	b ☐	c ☐	d ☐
5	a ☐	b ☐	c ☐	d ☐	17	a ☐	b ☐	c ☐	d ☐					
6	a ☐	b ☐	c ☐	d ☐	18	a ☐	b ☐	c ☐	d ☐					
7	a ☐	b ☐	c ☐	d ☐	19	a ☐	b ☐	c ☐	d ☐					
8	a ☐	b ☐	c ☐	d ☐	20	a ☐	b ☐	c ☐	d ☐					
9	a ☐	b ☐	c ☐	d ☐	21	a ☐	b ☐	c ☐	d ☐					
10	a ☐	b ☐	c ☐	d ☐	22	a ☐	b ☐	c ☐	d ☐					
11	a ☐	b ☐	c ☐	d ☐	23	a ☐	b ☐	c ☐	d ☐					
12	a ☐	b ☐	c ☐	d ☐	24	a ☐	b ☐	c ☐	d ☐					