ABSTRACT

TOBIN, B.T. Self-efficacy and its relationship to performance in adolescent swimmers. MS in Recreation Management, December 1996, 65pp. (R. Pein)

A self-report scale for perceived self-efficacy (SE) was administered to adolescent (13-18 yr) subjects (N = 18) who were swimmers for the La Crosse Area YMCA 2 times before their final meet of the season and 1 time after. S's performance (P) in the final meet was classified as either successful (F) or unsuccessful (NF) based on their time for a 100 yard swim. Performances that resulted in an improvement upon previous lifetime best times were successful and no improvement was not successful. Data were examined for correlations between SE and P, fluctuations in P, and relationship of P and SE. No significant relationship was found between mean SE scores and P. There were fluctuations in P that differed for F and NF. F S's reported an increase in SE every time tested. NF S's experienced a decrease in SE from Test (T) 1 to T2, then an increase in SE from T2 to T3. The increase in SE by both groups after the P could be a result of verbal persuasion employed by the S's coach after the P but before the administration of T3.

SELF-EFFICACY AND ITS RELATIONSHIP TO PERFORMANCE IN ADOLESCENT SWIMMERS

A THESIS PRESENTED

TO

THE GRADUATE FACULTY

UNIVERSITY OF WISCONSIN-LA CROSSE

IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE

MASTER OF SCIENCE DEGREE

BY

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DECEMBER 1996

COLLEGE OF HEALTH, PHYSICAL EDUCATION, AND RECREATION

UNIVERSITY OF WISCONSIN-LA CROSSE

THESIS FINAL ORAL DEFENSE FORM

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We recommend acceptance of this thesis in partial fulfillment of this candidate's requirements for the degree:

Master of Science-Recreation Management

The candidate has successfully completed the thesis final oral defense.

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This thesis is approved by the College of Health, Physical, Education, and Recreation.

Associate Dean, College of Health, Physical Education and Recreation — Date: 10-24-96

Dean of Graduate Studies — Date: 11 November 1996

ACKNOWLEDGEMENTS

The following people deserve recognition for their contributions to this project:

Dr. Richard L. Pein, thesis committee chair and my mentor for his knowledge, expertise, and caring attitude.

The thesis committee members, Dr. Carol Oyster and Dr. Steve Simpson for their support and guidance.

Jon Brenner, head swim coach of the La Crosse Area Family YMCA.

Eric Wojta, senior group swim coach of the La Crosse Area Family YMCA.

My brother Tim, for helping to make me who I am.

My parents, for signing me up for a swim team because I had too much energy at the end of the day.

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CHAPTER I

INTRODUCTION

Performance in athletics is influenced by several factors. These factors include physical preparation, nutrition, biomechanics, and psychological preparation skills of the athlete. The task of the coach is to design a training program that can improve each of these factors.

In recent years the area of psychological preparation has become a major focus of research in human performance. Variables such as arousal, locus of control, confidence, attention, mood states (anxiety in particular), and self-efficacy have been analyzed for their affects upon the quality of performance.

"Each individual athlete, sport, position on the team, and sport situation has a level of arousal that will produce optimal performance" (Anshel, 1994; p. 83). Arousal (mental excitation) levels and performance are thought to be related. It has also been postulated that individuals have differing levels of arousal that enhance maximum

performance. Additionally, the athlete's level of optimal arousal can differ from one task to another.

Locus of control, which is a dimension of performance attribution, also affects performance quality (Granito & Carlton, 1993). Attribution refers to what the athlete believes affected the performance. Locus of control refers to whether the athlete believes that the outcome of the performance will be affected by their own actions, or outside influences.

Confidence, or the amount of comfort individuals have in their environment has been analyzed for its effect on performance (Swain & Jones, 1991). Emotional mood states of the athlete prior to competition have also been evaluated. It has been postulated that the emotions of the athlete before competition can influence the performance. Athletes who scored high on vigor, and low on tension, anger, fatigue, depression, and confusion the evening before competition were found to outperform their opponents (Prapavessis, Berger, & Grove, 1992). This has been referred to as the iceberg profile; elite athletes score lower on factors considered to be performance inhibitors,

and higher on factors considered to enhance performance than other athletes.

The optimal level of focus, or attentional focus, for athletes has also been debated. The amount of attention upon a task beforehand and its relationship to subsequent performance has been measured (Albrecht & Feltz, 1987).

One of the strongest predictors of future performance is self-efficacy. Self-efficacy is typically defined as an individual's confidence in his or her ability to perform the actions needed in order to bring about a desired result in a situation (Gould, Hodge, Peterson, & Giannini, 1989; Lee, 1988; Martin & Gill, 1991; Miller, 1993; Miller, Carlyle, & Pease, 1992). In athletics, when an individual's self-efficacy is high, it is often followed by a high quality performance (Bandura, 1977).

A high degree of self-efficacy in individuals is believed to be developed by four main factors. These factors are 1) the athlete's past performances, 2) verbal persuasion, 3) vicarious experiences, and 4) physiological states (Bandura, 1977). Past performances and verbal persuasion are believed to have the largest influence.

Past performances help to set the athlete's expectations from one competition to the next. Successful performances are thought to lead to future successes. Similarly, unsuccessful performances are believed to lead to less success in the future (Bandura, 1977).

Verbal persuasion most commonly takes the form of feedback from other sources, such as coaches, teammates, competitors, and family (Sinclair & Vealey, 1989). Feedback is thought to enhance self-efficacy. However, there are conditions that must be met in order to attain the desired result. The qualitative aspects of feedback are important. Specifically, direction, focus, appropriateness, timing, intent, and character must be addressed. Information can not be disseminated at random without reason. If the athletes do not believe the information being given to them, then it is less likely that it will have the intended consequences (Sinclair & Vealey, 1989).

Stories abound of athletes who were not in the best physical condition, but were still able to maximize their performances (Anshel, 1994). This indicates that conditioning alone does not determine performance. Bandura

(1977) hypothesized that the more individuals believe they can control the end result, then the greater the chance the individual has to achieve an optimal performance.

Anxiety (Burton, 1988), arousal (Anshel, 1994), confidence levels (Brustad & Weiss, 1987; Feltz & Doyle, 1981), attention (Albrecht & Feltz, 1987), mood states (Prapavessis, Berger, & Grove, 1992), locus of control (Granito & Carlton, 1993), and self-efficacy (Bandura, 1977) can vary in athletes at different developmental stages. Younger athletes have more of a tendency to believe that the greater the effort expended, the better they will do (Horn & Hasbrook, 1987). As they mature, the realization that ability and other factors play a role changes this perception (Miller, Carlyle, & Pease, 1992). These factors can either enhance or decrease an individual's self-efficacy perception.

Higher self-efficacy levels for individuals before competition are expected to be a predictor of success in the actual competition (Bandura, 1977). Bandura (1977) postulates that if athletes believe they can affect the outcome, they may expend a greater effort.

One of the methodological problems with sport psychology research is the measurement of success for the performance variable. How to measure whether an individual's performance was successful or unsuccessful is difficult. An individual's or team's win and loss record does not make a measurable dependent variable. This is due to the fact that the outcome does not always truly represent how the individual and/or team performed. A good performance does not always result in a win, and a poor performance does not always result in a loss.

Therefore, another measure that reflects the reality of the athlete's performance needs to be utilized. Burton (1988) used individual swimmer's times. He took the final performance time of the individual and subtracted it from the swimmer's personal best (PB). Burton (1988) then used an adjustment factor in order to facilitate comparison of races that differed in distance.

Swimming is a unique sport in that there is always a standard of measure that is consistent from one performance to the next. However, due to the fact that swimming is largely a conditioning sport, swimmers' average performance

times usually differ from their peak performance times by a significant margin (Burton, 1988). Due to these large fluctuations in performance, skill level is better represented by the previous personal best of the athlete, as opposed to the average performance.

Self-efficacy has been studied for its influence on performance in many different sports. The fact that swimmers have a performance that can be measured consistently regardless of the performance of other competitors makes swimming an appropriate place to study self-efficacy and its effect upon performance. Since the conditions at each competition are similar (the distance of the races are constant, and differences in pools are negligible), there are fewer limitations that can not be controlled by researchers.

Purpose of the Study

The primary purpose of this study was to determine if there was a correlation between performance and self-efficacy in adolescent swimmers. It was predicted that successful performances were related to high levels of reported self-efficacy. A successful performance is one in

which the athlete improves upon a personal best, and an unsuccessful performance is one where the athlete performs at the same or worse than their personal best.

Need for the Study

There were three questions this study attempted to answer. These questions focused on 1) adolescent athlete's self-efficacy and its relationship to performance, 2) self-efficacy affects on performance, and 3) performance affects on self-efficacy. There is limited research presently in the field of adolescent physical self-efficacy. If coaches have a better understanding of self-efficacy and its effect on performance, it may become easier to optimize subsequent performances, which is traditionally the role of the coach.

Hypotheses

The following hypotheses were made for this study:

1. It is hypothesized that there will be a correlation between athletes' self-efficacy scores and performances. Higher self-efficacy scores are expected to be reported by subjects with successful performances.

2. Subjects will have fluctuations in their levels of self-efficacy, and the reported self-efficacy immediately before competition will be most closely correlated with performance.
3. Successful performances will result in an increase in reported self-efficacy on a test administered after the contest.

Assumptions

The following assumptions were made for this study:

1. Subjects were all participating in their swimming events to the best of their capabilities.
2. The questionnaires were filled out accurately and given the complete attention of the subjects.
3. A successful performance was one in which there was an improvement in time (personal best).
4. Differences in environmental conditions (i.e., pool size and crowd size) were not influential on subjects' self-efficacy.

Delimitations

1. The subjects were all 13-18 years old members of the La Crosse Area Family YMCA swim team.

2. All subjects had been competing in swimming for at least 2 years and the previous year for the La Crosse Area Family YMCA swim team.

Limitations

1. Subjects were not chosen randomly.
2. All of the subjects competed for the same club team, therefore were not representative of the general population.
3. The subjects were of varying ability and experience levels.
4. The level of competition at the performance varied for different subjects.
5. Subjects have had different meet experiences.
6. Athlete's expectations of performance may influence their reported self-efficacy more than the actual performance.
7. Subjects were tested at different meets.
8. Some of the subjects may not have understood or thoroughly read all of the questions.

9. Although performance was measured as successful or unsuccessful based upon one performance, each subject participated in several performances during the study.
10. The subjects completed the self-report scale in different locations for each test.

Definition of Terms

Locus of Control - the perceived location of control for the outcome of situations that individuals have, be it internal or other (Skinner, 1995).

Motivation - incentive that causes a person to act (Merriam, 1966).

Performance - the execution of an action; the ability to perform (efficiency) (Merriam, 1966).

Personal Best - athlete's best previous performance (Burton, 1988).

Self-Efficacy - the personal belief that an individual possesses in his/her ability to execute a certain behavior that in turn will produce a particular result (Bandura, 1977).

Taper - the end of the season, a period of 2 to 5 weeks. The volume and intensity of practices are reduced in order

to produce the fastest possible swimming times (Maglischo, 1993).

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

For optimal athletic performance, many psychological factors need to be controlled. Arousal, locus of control, confidence, the athlete's attention or focus, mood state, and self-efficacy all need to be considered (Anshel, 1994).

A common question asked in athletics is how to achieve optimal performance on a consistent basis. Physiological conditioning alone may not be enough. Several psychological factors that influence performance will be discussed in the review of literature. Bandura's (1977) theory of self-efficacy, and studies related to his theory will be presented. Bandura (1977) has theorized that self-efficacy, or "the degree to which individuals feel their actions can produce the desired outcome" (1977), is an influential factor of performance.

Locus of control refers to whether the athlete believes control over the outcome of the contest is more greatly affected by their own actions or outside influences.

Gra o and Carlton (1993) analyzed the relationship between locus of control and satisfaction in volleyball players at the collegiate level.

The researchers used volleyball players from Divisions I, II, and III, and community college level teams. Subjects were given two written instruments to complete, a measure of locus of control, and a Sport Satisfaction Scale. It was hypothesized that there would be a positive relationship between internal locus of control and satisfaction.

The results stated that the quality of performance on the part of the athlete can be influenced by what she believes affects the outcome. The researchers also found that volleyball players who had an internal locus of control (believed the subjects affected the outcome) were more satisfied with their performance than were players who had an external locus of control.

This study lends support to Bandura's (1977) theory that how much control individuals feel they have over the end result affects the effort expended. Although the sample was limited in that it was all collegiate level volleyball players, the fact that there were no differences based on

level of competition may indicate that psychological factors influence individuals regardless of ability level.

Self-Efficacy

Self-efficacy as a construct has been theorized by Albert Bandura. Bandura (1977) defines efficacy expectations as, "the conviction that one can successfully execute the behavior required to produce the outcomes" (p. 193). Essentially, this is the degree to which individuals believe they can control the events in their lives.

Self-efficacy is hypothesized to determine 1) what behaviors the individual will perform, 2) how much effort they will expend, and 3) for how long the individual will persist against adversity. If the situation is perceived to be beyond the person's coping ability, then the individual will most likely have an avoidance behavior. Individuals are more likely to get involved in activities they judge themselves capable of handling (Bandura, 1977).

The stronger the perceived influence the individual has on the result, the more effort they will exert in order to affect the outcome. Similarly, the more individuals believe

they can influence events, the longer they will persist in attempting to obtain a favorable outcome.

Bandura (1977) proposes that a person has efficacy expectations as to how effective their behavior will be. This influences their behavior. Based upon their behavior, individuals develop outcome expectations. This means that they form an idea as to what the final outcome will be. Finally, this leads to the outcome, which in turn influences the individual's efficacy expectations for future behaviors.

Bandura (1977) also proposes four primary influences of self-efficacy. They are 1) performance accomplishments (past experiences), 2) vicarious experiences (observing or hearing of others accomplishments), 3) verbal persuasion (suggestion), and 4) physiological states (emotional arousal).

Performance accomplishments refers to past successes. Success at an activity in the past is believed to enhance self-efficacy (Bandura, 1977). Vicarious experiences (that are successful) are also thought to enhance performance. Vicarious experiences means relating stories of others' successes to individuals. "If they can do it, so can I" is

the line of reasoning. Verbal persuasion is positive feedback, or praise. It is believed that athletes can be "talked into" success. Physiological states is the optimal emotional arousal level for that individual for that task. It is measured by physiological reactions, such as palmar sweating, muscular tension, or heart rate.

Development of Self-Efficacy

When self-efficacy is developed is still a point of contention. Harter (1981b) argues that from approximately age 9 until 14, children increasingly make their own judgments about their performances on classroom tasks. Harter (1978) has also suggested a three-step sequence that leads to internalized perceived control.

The first stage is the teacher gives praise and approval, which acts as a reinforcer for appropriate behavior. In the second stage the praise and approval become secondary, as the child achieves mastery over the behavior. In the third stage the child is able to control, maintain, and reward her behavior. This diagrams the evolution of the child's developing self-efficacy (Harter, 1978).

Performance

Bandura (1977) hypothesized that the largest influence of self-efficacy is past performance. Successes are believed to enhance mastery expectations, while failures achieve the opposite effect.

Lerner and Locke (1995) investigated goal setting, self-efficacy, and competition's effects on performance in a situp task. Students were given a questionnaire in order to assess their self-efficacy prior to the task. Then they were randomly given goals; competition with a hard goal, competition with a medium goal, competition with no goal, no competition with a medium goal, or just told to do their best.

Competition did not appear to affect any of the factors. Self-efficacy did not appear to have an effect upon performance, either. However it is possible that there may have been too many variables to get an accurate assessment as to how self-efficacy affected performance.

Miller (1993) studied the relationship between efficacy strength and athletic performance in swimmers. The objective was to see if athletes of different skill levels

had a different relationship between the two variables. This was done with a self-report scale. It was not stated what criteria were used to divide the individuals into different groups.

Miller (1993) found that when efficacy was high, performance was enhanced, compared to low efficacy, which resulted in poor performance. Self-efficacy was also found to be a much stronger predictor of performance than either skill level or motivation. This provides support for Bandura's (1977) theory.

Miller, Carlyle, and Pease (1992) wanted to analyze motivation and self-efficacy in swimmers, basketball players, and ice hockey players. The expectation was that motivation would have a direct relationship with performance and self-efficacy. Using 113 athletes in the three sports, each athlete filled out a self-report scale, which was compared to their performance in a competition.

Unlike previous studies, they did not find a direct correlation between motivation and confidence. For the purpose of this study, confidence was defined as self-efficacy. It is generally thought that the higher the

degree of confidence, or self-efficacy, the more the performance will be enhanced.

One of the problems with this study is the context in which it was given. For ice hockey and basketball, it is difficult to analyze individual performance when other individuals have a significant influence on the final outcome.

The swimmers were given the test in a simulated competition. The researchers did not state where the athletes were in their training cycle. In swimming, seasons are designed so that peak performance is achieved only once or twice a year, at the end of a taper. Swimmers are not typically motivated to achieve maximal performance unless they are at the end of their taper. If the study had been performed when the swimmers were expecting an optimal performance as opposed to the middle of their peak training, the results may have been significantly different.

Martin and Gill (1991) found outcome self-efficacy, or how the athletes (runners) believed they would place was a strong predictor of performance. They analyzed 73 high school runners using the Competitive Orientation Inventory

and the Sport Orientation Questionnaire. The questionnaires measured outcome orientation, performance orientation, and competitiveness. The purpose was to see if there was a relationship between trait and state sport-confidence.

Trait sport-confidence is how confident athletes usually feel about their abilities in a sport. State sport-confidence is how confident athletes feel just prior to competition in a sporting event. Trait sport-confidence is believed to affect state sport-confidence (Martin & Gill, 1991).

Although the athletes could predict the outcome, they were not able to accurately predict their performance. It was postulated that this could have been related to the small competitive field. The athletes were familiar with one another, and each other's abilities. This could have led to a subconscious expectation of where they thought they should place, and subsequently affected their performance.

It is possible that the researchers were attempting to analyze too many factors, and could not control enough variables. Additionally there were other factors at work, such as the athlete's commitment to the sport, length of

time in the sport, and physiological training. All of these factors affect the performance.

Verbal persuasion is a preferred method of enhancing an athlete's self-efficacy for coaches. Gould, Hodge, Peterson, and Giannini (1989) asked wrestling coaches what techniques they preferred to utilize in developing self-efficacy in athletes. Rated highly among the majority of the coaches polled was the coaches' modeling confidence, and encouraging of positive talk. Although verbal persuasion was actually utilized the most, attempting to adjust physiological states (emotional arousal) and vicarious experiences (telling of others' successes) were also utilized. This held true for coaches of all levels of athletes. This shows a practical application of the four influences of self-efficacy as proposed by Bandura (1977).

Sinclair and Vealey (1989) wanted to see if coaches' feedback to athletes affected self-efficacy. At three times during the field hockey season in Canada, three coaches were asked to rank their athletes by ability. The feedback the coaches gave to each athlete throughout the season was then recorded and categorized. The athletes were given

questionnaires to analyze their self-perceptions throughout the season.

The athletes that the coaches had a high level of expectancy for received more immediate feedback from the coaches. At the end of t season, athletes who had received more feedback experienced gains in their levels of self-confidence (efficacy). This study provided valuable information about the use of feedback, and its effect on athlete's self-perceptions.

Performance Measure

In many sports, it is difficult to analyze a successful individual performance from an unsuccessful one. There can be many factors that influence the outcome, such as the weather, the playing field, teammates performance, or the performance of the opponents. Swimming allows an accurate measure in a time standard. Performances can be compared from one to another objectively.

Burton (1988) examined the relationship between anxiety and performance in swimmers. In order to analyze performance, he compared the swimmer's time to his or her previous personal best. Previous best times were used

instead of average performance because swimming relies heavily upon conditioning, so peak performances are expected only a couple of times a year. Other performances are expected to be slightly slower than the athlete's best.

Burton (1988) calculated scores by subtracting their personal best (PB) from the time at the competition, and then dividing the scores by an adjustment factor in order to convert the performances to a similar distance (swimming events differ in distance from 50 to 1500 meters). The researcher found a relationship between anxiety and performance. The performance measure he utilized was useful, because it truly can reflect a good performance independent of win/loss records.

Self-efficacy, among other psychological factors, has been shown to be related to performance in athletics. The relationship is not clearly defined and needs to be further analyzed. However, it needs to be done in an environment where performance can be objectively measured and comparisons made only within individuals.

Instrumentation

Ryckman, Robbins, Thornton, and Cantrell (1982) attempted to develop a means of measuring individual's perceived physical self-efficacy (PPSE). They believed that tests currently being used did not adequately measure physical self-efficacy.

Ninety prospective questions with a 6-point Likert scale ranging from strongly agree to strongly disagree were given to 363 subjects. The subjects were all undergraduate students enrolled in introductory courses at the University of Maine. Two more studies were completed in order to check the test's reliability. These were administered to psychology majors at the University of Maine. Subjects were also given alternate personality tests to help check for validity.

The test was administered three more times to new subjects in order to test for validity. The researchers concluded that the instrument had acceptable reliability and validity scores. The scale also allowed for strong predictive validity, in that subjects who scored highly outperformed other subjects on skills tasks.

The final product consisted of 22 questions. This allowed enough questions to test for consistency in the subjects' answers and still complete the instrument in a reasonable period of time.

After reviewing the data presented by the researchers, the test has acceptable reliability and validity for testing perceived self-efficacy. The only concern with the testing of the instrument is that the samples were always students at the University of Maine, which may not have been representative of the population in general.

Summary

From the information presented here, there are several conclusions that can be drawn. That self-efficacy is related to performance is well known. How it is related and to what degree is not known.

Since self-efficacy is developed in individuals, it is possible that self-efficacy changes over time. Bandura (1977) states what leads individuals to have high or low degrees of self-efficacy, but not at what age or if it fluctuates.

Past performance is one factor that influences self-efficacy. How athletes perform shapes their expectations for future competitions. Success leads to success, and the opposite is also true.

Finally, in many situations performance is difficult to measure. However, in swimming there is an objective standard that can be used to facilitate decisions regarding successful or unsuccessful performances.

CHAPTER III

METHODS

Introduction

The purpose of this study was to examine the reported levels of self-efficacy in adolescent swimmers, and attempt to determine if there was a relationship between self-efficacy and performance. Self-efficacy was measured at three different time periods to determine the relationship it has to performance. This was done by utilizing the Ryckman Physical Self-Efficacy Scale (Ryckman, 1982).

Subjects

The subjects were age group swimmers from the La Crosse Area Family YMCA swim team, who had been swimming competitively for at least 2 years. The subjects ranged from 13 to 18 years of age.

Initially, the head coach of the La Crosse Area Family YMCA swim team was contacted in order to seek permission to ask the swimmers to participate in the study. A copy of the original physical self-efficacy scale (PSS) was given to the coach (see Appendix A). The coach expressed concern about

the appropriateness of a question regarding sexual encounters for the age group. After consultation with the researcher who developed the instrument, the question was eliminated from the PSS.

A letter explaining the study and a copy of the questions was put in each potential subject's file at the YMCA for the parents (see Appendix B). These were stapled shut in order to keep the potential subjects from viewing the questions beforehand. This was done on February 21, 1996.

The subjects and their parents were required to fill out an informed consent form (see Appendix C) prior to the initiation of this study. This was done 1 week prior to the first testing date. Anyone who did not fill out the consent form, or chose not to participate, was excluded from the study.

The subjects and any concerned parents were read an explanation of the study (Appendix D) before the informed consent forms were collected. The signed informed consent forms will be retained for 5 years from completion of the study in room 147 Mitchell Hall.

Testing and Procedures

In order to facilitate the answering of the PSS, the scale for the answers was placed on the same page as the questions. This was then attached to the original cover sheet which explains the answering scale (see Appendix E).

The athletes were given the first PSS before practice 30-32 days prior to the first day of the meet. The test was administered over a period of 4 days in order to maximize participation. The athletes were informed of the testing date a week in advance in order to plan ahead.

The second test was administered within 2 hours of the start of the meet. This allowed the athletes enough time to fill out the PSS and still have enough time to warm up for the meet. The environmental conditions were as similar as possible to the initial testing.

The final administration of the test took place after the conclusion of the meet, or when the subject completed all of their events. The test was administered as similarly as possible to the first tests.

The testing times and dates were chosen for their convenience for the subjects, and minimal impact upon the

subjects' actions. The tests were meant to be as nonintrusive as possible.

Instrumentation

The test that was utilized is the Physical Self-Efficacy Scale (PSS), by Dr. Richard R. Ryckman (1982). This test has been previously utilized in analyzing individual's perceptions of their own abilities (Duncan & McAuley, 1987; Godin & Shepard, 1985; Ryckman, Robbins, & Thornton, 1982; Ryckman, Robbins, Thornton, & Kaczor, 1983).

The PSS was chosen for two main reasons: 1) It is one of the few accessible tests for physical self-efficacy, and 2) Since the subjects were all adolescents, the briefness and simplicity of the questions would facilitate responses. In the interest of keeping the subject's attention, it was necessary to find a test that was short and easy to answer. The PSS had been shown to have significant reliability ($r = .78$, $p < .05$) and validity (correlated with the Tennessee Physical Self-Concept subscale $r = .40$ $p < .001$).

The subjects' scores on the PSS were compared to their performance in the last meet of the season. For seven of the subjects, the YMCA sectional meet was the end of the

season. Ten of the subjects competed in the YMCA State meet, and one subject competed at the Junior National Meet.

When applicable, the 100 yard freestyle was used as the standard measure. If the subject did not participate in this event, then a 100 yard swim of the subject's fastest qualifying stroke was utilized. The fastest qualifying stroke was determined by subtracting the subject's personal best from the qualifying time for that meet. The event with the largest number was then determined to be the subject's fastest qualifying stroke.

A successful performance was defined as one in which the subject improved upon the lifetime best time (personal best) in the chosen event, and an unsuccessful performance was one that was slower than the previous personal best. The subject's time from the performance was subtracted from their personal best. A positive number meant the swim was successful, and a negative number meant the swim was not successful. There were no results that were zero.

Burton's (1988) measure of performance was modified. Since times were used only to define a successful or unsuccessful performance for each subject, there was not a

need to compare races of differing distances. Therefore, an adjustment factor was not needed.

Statistical Treatment of Data

The written instrument was given at three different time periods. The subjects' scores were then compared to see if there were fluctuations in their levels of reported self-efficacy.

The results of the subject's performance were then categorized as either 1) significant improvement, or 2) no improvement. These scores were compared with the athlete's reported self-efficacy level from each of the three tests and their average (mean) of the three tests, in order to determine if any had a correlation with the athlete's performance. The VAX SPSS system at the University of Wisconsin-LaCrosse computer lab was utilized to analyze the raw data.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

The purpose of this study was to analyze the relationship between perceived self-efficacy in adolescent swimmers and performance. There were a total of 18 participants (6 males, 12 females), ranging from age 13 to 18. No subjects withdrew during the study.

Results

The first hypothesis predicted that there would be a correlation between the subjects' performances and self-efficacy levels. The three test scores of the subject's perceived self-efficacy were each compared individually to their performance. The three scores were also averaged to find the mean, which was then compared to their performance. The mean of the scores was utilized due to the fact that there were fluctuations in the reported self-efficacy of the subjects, and the mean provided a standard of measure. The subjects' average scores did not have a significant

correlation with their performances. The coefficient was found to be -.0505.

The second hypothesis was that subject's self-efficacy would vary between tests. Subject's levels of reported self-efficacy did fluctuate between tests (see Table 1).

Table 1. Self-efficacy scores of successful and unsuccessful performers

	Successful Performers	Unsuccessful Performers
Test 1	92.000*	96.500
Test 2	98.000	95.750
Test 3	99.800	98.250

*the possible score range was from 22 to 132

The subjects who were considered successful performers showed an increase in their reported self-efficacy from test 1 to test 2 to test 3. The subjects who were not considered successful performers reported a decrease in their self-efficacy from test 1 to test 2, and then their highest reported score was on test 3. Univariate F-tests were (2, 32) = 3.59, p = .039.

The third hypothesis was that a successful performance would lead to an increase in reported self-efficacy, while

an unsuccessful performance would lead to a decrease in reported self-efficacy. However, after their performance both groups experienced an increase in their reported self-efficacy (see Figure 1).

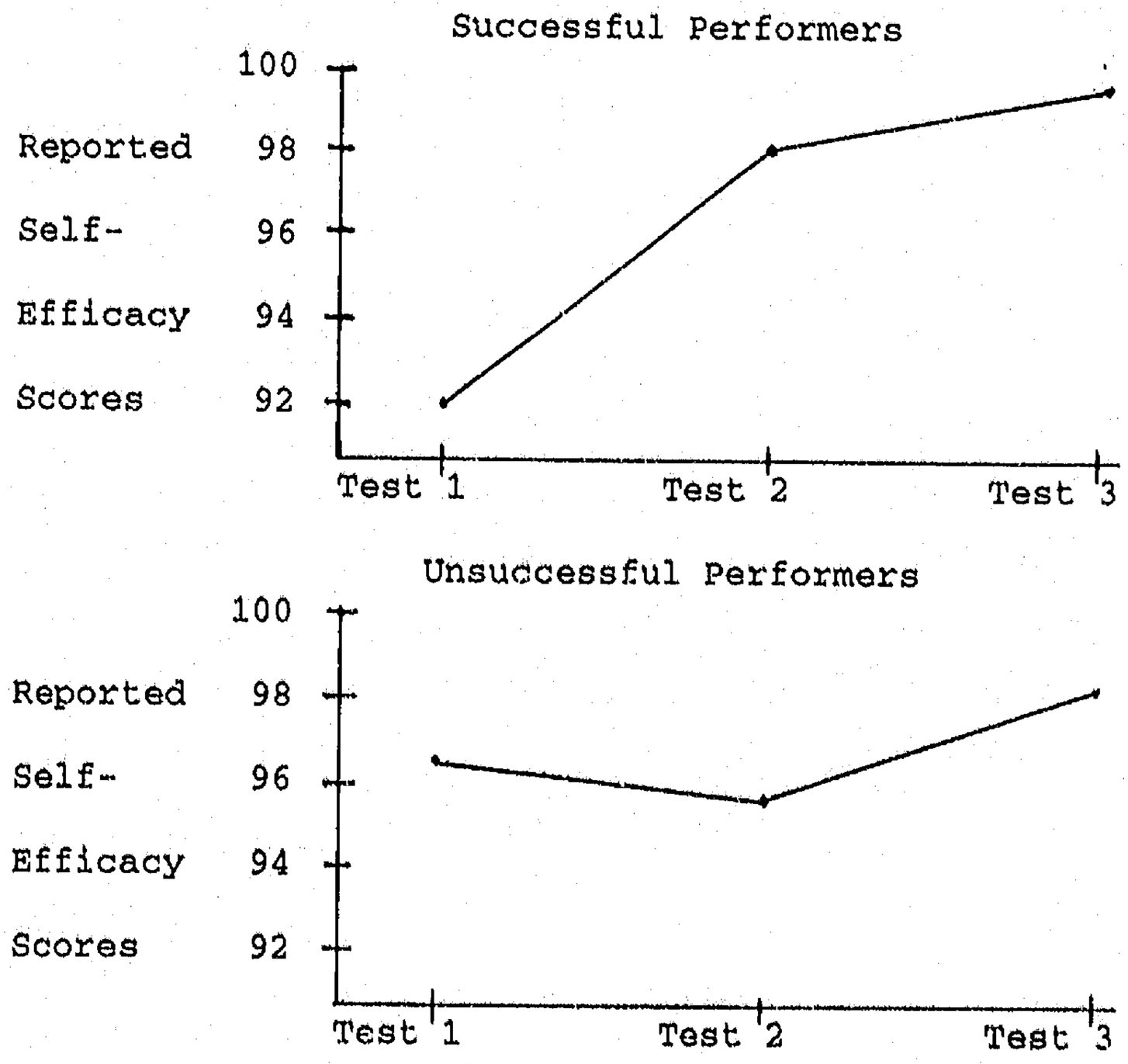

Figure 1. Comparison of successful performers with unsuccessful performers regarding time drop and reported self-efficacy

Subjects were also compared in groups based on age, gender, and ability level. There were no significant correlations found for age, gender, or ability level.

Discussion

There was not a correlation between subject's reported mean self-efficacy scores and performance. The subjects did report fluctuations in their self-efficacy on the PSS. This could mean that self-efficacy is not a stable construct. How the reported self-efficacy fluctuated may give information about its relationship to performance.

Successful performers had an increase in their self-efficacy prior to performance. After their performance, they reported another increase in self-efficacy.

Unsuccessful performers experienced a slight decrease in their self-efficacy prior to performance. However, after their performance unsuccessful performers reported their highest level of self-efficacy.

It is less accurate to attempt to predict performance based upon one test than multiple tests. A combination of two tests may be able to reveal a correlation with performance, in that increases in reported self-efficacy may

be predictors of successful performances while decreases in self-efficacy may be predictors of unsuccessful performances.

The increase in the reported self-efficacy on the third PSS for successful performers was predicted. However, the increase in reported self-efficacy by unsuccessful performers on the third test was not predicted. However, it is possible that one bad performance is not enough to negatively influence an athlete's self-efficacy.

There may have been another reason for the reported increase in self-efficacy by unsuccessful performers. Previous performances or the immediate feedback provided to the athlete by the coach (verbal persuasion) may have affected the result.

Summary

Results of the study show that there was not a significant positive relationship between reported self-efficacy and performance. However, there was a relationship between the first two tests and subsequent performance. Subjects who experienced an increase in their reported physical self-efficacy were more likely to experience a

successful performance than subjects who did not report an increase in their perceived self-efficacy.

After the performance, both groups experienced an increase in their reported self-efficacy. It is not possible to state for certain why both successful and unsuccessful performers would experience an increase due to the fact that there are numerous factors that could have affected the subjects' self-efficacy.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The relationship between performance and perceived physical self-efficacy appears to be more elusive than originally believed. There was not a positive relationship shown between the two. However, since a self-report scale was utilized comparisons between subjects could not be made. The self-report instruments require an individual assessment on the part of the subjects which is not conducive to a comparison between subjects. This could have been the cause of the lack of a relationship. However, there were trends between the reported self-efficacy of the subjects and the subsequent performances.

There were fluctuations in the reported scores by the subjects between tests. Successful performers experienced an increase in self-efficacy on the PSS every time tested. Unsuccessful performers experienced a decrease in reported self-efficacy prior to performance, and then an increase subsequent to performance.

Performance did not have the expected result upon the reported self-efficacy scores. It was predicted that successful performances would lead to higher reported self-efficacy, and unsuccessful performances would lead to lower reported self-efficacy. However, both successful and unsuccessful performers reported higher scores after performance, regardless of whether or not it was successful.

Conclusions

The pattern of change in reported self-efficacy prior to performance may be a predictor of performance. Subjects who experienced a successful performance reported an increase in their self-efficacy from the first test to the second. Unsuccessful performers experienced a decrease in reported self-efficacy from the first test to the second. This could mean that it may be possible to predict performance based upon athlete's reported scores on at least two tests prior to competition.

If self-efficacy fluctuates, and there is a pattern for reported self-efficacy of successful and unsuccessful performances prior to competition, then the possibility of manipulating self-efficacy levels prior to performance

should be investigated. Increasing perceived self-efficacy in athletes prior to competition may be necessary for optimal performance.

Past performances may not be as significant an influence of perceived self-efficacy than previously believed. There are numerous other factors that may affect the individual's self-efficacy.

After their performance, each subject was required to discuss the performance with the coach. It is possible that the discussion of the performance had as significant an impact upon the subject's perceived self-efficacy as the performance itself. The salience of the performance to the individual may also have affected the result of the tests. There is not enough information to positively state why the subjects experienced an increase on their final test.

There were no significant differences found between males and females, or between subjects of different ability levels. Ability level was analyzed by comparing the 7 subjects who competed at the sectional meet to the 11 subjects who competed at either the state meet or junior nationals. Since the state meet and junior national meet

had more rigid time standards in order to qualify for them, it was used as the standard for ability.

Recommendations

Self-efficacy, as a construct, has not received much attention from researchers regarding its influence on performance. Further research may support the results found, specifically that high self-efficacy can influence performance and that an increase in self-efficacy can result in successful performances.

Further research should attempt the study, in order to see if the results can be duplicated. If the study is attempted again, factors that need to be addressed are other influences on self-efficacy. If the coaching staff is utilizing verbal persuasion on all of the subjects and there is an increase in perceived self-efficacy in all of the subjects regardless of performance, then it may show that verbal persuasion may be a more influential factor than past performance on athlete's self-efficacy levels.

The subjects should be studied for a longer period of time in order to see if the performances at the conclusion of this season influence future performances (next season).

This should be done for an additional season, and longer if possible.

Administering the instrument throughout the competitive season, instead of just at its conclusion may also provide valuable information regarding athlete's perceived efficacy. It is possible that performances earlier in the season have a significant influence on self-efficacy, and that the athletes' expectations are already set before the taper period.

Subjects should be examined earlier in their athletic careers. After competing in the same sport for the same team for a number of years, it is possible that the individual's self-efficacy levels have reached a point where they will not fluctuate as dramatically as they would if the individuals were just beginning to compete.

This can be done by looking at different age groups (younger athletes) or athletes of the same age who are just joining the sport. The instrument should then be administered before the beginning of the season, and periodically thereafter.

Runners are another population that could be analyzed. The sport is similar to swimming in that performance is judged solely on the individual's performance, and is not dependent upon others. One possible difference is the comparison to lifetime best times. Runners may more frequently have a tendency to do personal bests during the season.

A questionnaire should also be given to the athletes in order to analyze their perception of a successful performance. Also, the importance of swimming in their lives may have an influence upon their reported self-efficacy.

Finally, the instrument may need to be adapted specifically for swimmers. The questions may have not adequately addressed the perceptions that are most important in the sport of swimming. A sport-specific questionnaire may give entirely different results.

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APPENDIX A

ORIGINAL QUESTIONNAIRE

Personal Value Survey*

This questionnaire is a series of attitude statements about you. We are interested in the extent to which you agree or disagree with them.

Please read each statement carefully. Then indicate the extent to which you agree or disagree by marking the appropriate number on your answer sheet. The numbers and their meaning are indicated below:

If you agree strongly - 1

If you agree somewhat - 2

If you agree slightly - 3

If you disagree slightly - 4

If you disagree somewhat - 5

If you disagree strongly - 6

If you find that the numbers to be used in answering do not adequately indicate your opinion, please use the one which is <u>closest</u> to the way you feel.

* (Ryckman, 1982)

1. I have excellent reflexes.
2. I am not agile and graceful.
3. I am rarely embarrassed by my voice.
4. My physique is rather strong.
5. Sometimes I don't hold up well under stress.
6. I can't run fast.
7. I have physical defects that sometimes bother me.
8. I don't feel in control when I take tests involving physical dexterity.
9. I am never intimidated by the thought of a sexual encounter.
10. People think negative things about me because of my posture.
11. I am not hesitant about disagreeing with people bigger than me.
12. I have poor muscle tone.
13. I take little pride in my ability in sports.
14. Athletic people usually do not receive more attention than me.
15. I am sometimes envious of those better looking than myself.
16. Sometimes my laugh embarrasses me.
17. I am not concerned with the impression my physique makes on others.
18. Sometimes I feel uncomfortable shaking hands because my hands are clammy.
19. My speed has helped me out of some tight spots.
20. I find that I am not accident prone.
21. I have a strong grip.
22. Because of my agility I have been able to do things which many others could not do.

APPENDIX B

LETTER TO PARENTS WITH QUESTIONS

February 21, 1996

To the parents of La Crosse YMCA swimmers,

The purpose of this letter is to ask for your consent regarding your children's participation in a graduate research project. The project is titled, "Self-efficacy and its relationship to performance in age group swimmers." The purpose of the research is to determine if there is a correlation between an athlete's physical self-perception and their performance (as related to their past performances).

Due to the fact that the athletes are minors, it is necessary to receive parental permission regarding their participation. The project has already been reviewed and approved by UW-La Crosse's Institutional Review Board, which is responsible for reviewing all of the research done at UW-La Crosse. The project has also been reviewed by Jon Brenner, who has given his approval.

The project will ask the participants to fill out a questionnaire three times in the next month. A copy of the questionnaire has been enclosed with this letter for your perusal. All that is asked is that you do not share the questions with your children, as this may bias the study. After completing the questionnaire at different times, the answers will be compared to their swimming performances. This will be done as a group. The only person who will be aware of what each athlete answered will be the researcher.

The supervisor of this project is Dr. Richard L. Pein. Dr. Pein is the head swim coach and a professor at UW-La Crosse. The primary researcher is Brian Tobin, a graduate student at UW-La Crosse. If there are any questions or concerns regarding this project, feel free to contact the researcher at the phone number listed on the bottom of this letter. Also, Brian Tobin will be at the La Crosse YMCA's team practice Monday, February 26, and again later in the week. Feel free to ask any questions if you have reservations about this project. The athletes will be asked

to participate, and the project will be explained in greater detail on Monday, March 4.

Thank you for your time and consideration regarding this matter. Your consent and your children's participation will be greatly appreciated.

Sincerely,

Brian Tobin

If you have any questions, you can call:
Brian Tobin: (608) 782-0144
If you get the answering machine, leave a message and I will return your call ASAP

Here is a copy of the questions that will be asked in the study, "Self-efficacy and its relationship to performance in age group swimmers." The answers will be given in a six point range, from strongly agree to strongly disagree.

1. I have excellent reflexes.
2. I am not agile and graceful.
3. I am rarely embarrassed by my voice.
4. My physique is rather strong.
5. Sometimes I don't hold up well under stress.
6. I can't run fast.
7. I have physical defects that sometimes bother me.
8. I don't feel in control when I take tests involving physical dexterity.
9. People think negative things about me because of my posture.
10. I am not hesitant about disagreeing with people bigger than me.
11. I have poor muscle tone.
12. I take little pride in my ability in sports.
13. Athletic people usually do not receive more attention than me.
14. I am sometimes envious of those better looking than myself.
15. Sometimes my laugh embarrasses me.
16. I am not concerned with the impression my physique makes on others.
17. Sometimes I feel uncomfortable shaking hands because my hands are clammy.
18. My speed has helped me out of some tight spots.
19. I find that I am not accident prone.
20. I have a strong grip.
21. Because of my agility I have been able to do things which many others could not do.

APPENDIX C

INFORMED CONSENT

University of Wisconsin-La Crosse
La Crosse, Wisconsin 54601

Project Title: Self-efficacy and its relationship to performance in adolescent swimmers

Principal Investigator: Brian T. Tobin

INFORMED CONSENT

I, _____, desire to be a volunteer for the study about self-efficacy in age group swimmers. The purpose of the study is to attempt to see if there is a correlation between levels of self-efficacy and performance in swimmers ages 13-19.

There will be a written questionnaire that I will complete approximately one month before our shave and taper meet, before we begin our taper. The questionnaire will ask about my feelings regarding different situations, and how much control I feel I have over them. I will answer the questions as honestly and fully as possible, to the best of my knowledge.

I will continue to attend practice on a regular basis, and prepare for our shave and taper meet. I will not change any of my practice habits due to the questionnaire.

I will complete the same questionnaire within two hours

of the start of the meet. Since the time and place has been arranged with my coach, there will be no need to worry about it taking away from warmup time. I will complete the questionnaire one more time, at the conclusion of the meet. If I am planning on leaving before the meet's conclusion, I will complete the questionnaire before I leave. If I am not leaving before the end of the meet, I will complete it within two hours of the meet's end.

The questionnaire will ask me questions about how I feel in different situations. This will require me to think about my reactions, and will require my full attention. I will answer the questions honestly, without worrying about other's opinions about my answers. The answers will not be shared with anyone except for the researcher, Brian Tobin, unless I say otherwise. My answers will be coded by number, so that no one else will know what I filled out.

I have read the above and understand its contents. I agree to participate by the guidelines stated above, and will do so the best of my ability. I acknowledge that no promises, guarantees, warranties, or offers have been made by the researcher, the University of Wisconsin-La Crosse, or

others associated with the study. I also understand that I may withdraw from the study at any time without penalty, and may refuse to answer anything I do not want to.

Signed:_____ Date:_____

Witness:_____ Date:_____

I, _____, the parent and/or legal guardian of the above-named individual, have read the consent form in its entirety and understand the procedures involved. I consent to allow _____ to participate in the study.

PARENT/GUARDIAN Signed:_____

Date:_____

If there are any questions, please call:

Brian Tobin, primary researcher: (608) 782-0144

Dr. Richard L. Pein, supervisor: (608) 785-8185

APPENDIX D

SUBJECT'S INTRODUCTION TO THE STUDY

Subject's Introduction to the Study

Hello, my name is Brian Tobin. I am a graduate student at the University of Wisconsin-La Crosse, working on my master's degree in recreation management. As a partial requirement for my degree, I am interested in doing a study about how swimmers feel and comparing it to how they swim. The study will require you, the swimmers, to fill out a questionnaire three times; the first time today, the second time right before you swim at the meet at the end of the season, and then right after the meet.

Your answers to the questions will be kept private, and will not even be shared with your coach or your parents unless you say that it is okay to tell them. It is important that you answer every question as honestly and truthfully as possible.

You will not be harmed in any way by this study. You will not be punished in any way if you decide not to participate. Does anyone have any questions?

Thank you for your time, and if you are interested in participating both the swimmer and the parent or guardian

need to have signed the informed consent form. If you want to participate but don't have your parents signature, you can bring it in later this week.

After I have collected the informed consent forms, if anyone who is not participating in the study and all of the parents would leave the room, then I will give out the questionnaire for the first time.

APPENDIX E

FINAL QUESTIONNAIRE

Personal Value Survey*

This questionnaire is a series of attitude statements about you. We are interested in the extent to which you agree or disagree with them.

Please read each statement carefully. Then indicate the extent to which you agree or disagree by marking the appropriate number on your answer sheet. The numbers and their meaning are indicated below:

If you agree strongly - 1

If you agree somewhat - 2

If you agree slightly - 3

If you disagree slightly - 4

If you disagree somewhat - 5

If you disagree strongly - 6

If you find that the numbers to be used in answering do not adequately indicate your opinion, please use the one which is <u>closest</u> to the way you feel.

* (Ryckman, 1982)

Name:_____ Date:_____

		Strongly Agree					Strongly Disagree
1.	I have excellent reflexes.	1	2	3	4	5	6
2.	I am not agile and graceful.	1	2	3	4	5	6
3.	I am rarely embarrassed by my voice.	1	2	3	4	5	6
4.	My physique is rather strong.	1	2	3	4	5	6
5.	Sometimes I don't hold up well under stress.	1	2	3	4	5	6
6.	I can't run fast.	1	2	3	4	5	6
7.	I have physical defects that sometimes bother me.	1	2	3	4	5	6
8.	I don't feel in control when I take tests involving physical dexterity.	1	2	3	4	5	6
9.	People think negative things about me because of my posture.	1	2	3	4	5	6
10.	I am not hesitant about disagreeing with people bigger than me.	1	2	3	4	5	6
11.	I have poor muscle tone.	1	2	3	4	5	6
12.	I take little pride in my ability in sports.	1	2	3	4	5	6
13.	Athletic people usually do not receive more attention than me.	1	2	3	4	5	6
14.	I am sometimes envious of those better looking than myself.	1	2	3	4	5	6
15.	Sometimes my laugh embarrasses me.	1	2	3	4	5	6
16.	I am not concerned with the impression my physique makes on others.	1	2	3	4	5	6
17.	Sometimes I feel uncomfortable shaking hands because my hands are clammy.	1	2	3	4	5	6
18.	My speed has helped me out of some tight spots.	1	2	3	4	5	6
19.	I find that I am not accident prone.	1	2	3	4	5	6
20.	I have a strong grip.	1	2	3	4	5	6
21.	Because of my agility I have been able to do things which many others could not do.	1	2	3	4	5	6