1999

Competitive orientation and weight loss methods in high school wrestlers

David A. Albert
San Jose State University

Follow this and additional works at: https://scholarworks.sjsu.edu/etd_theses

Recommended Citation

Albert, David A., "Competitive orientation and weight loss methods in high school wrestlers" (1999).
Master's Theses. 1910.
DOI: <https://doi.org/10.31979/etd.n9bb-pwrj>
https://scholarworks.sjsu.edu/etd_theses/1910

This Thesis is brought to you for free and open access by the Master's Theses and Graduate Research at SJSU ScholarWorks. It has been accepted for inclusion in Master's Theses by an authorized administrator of SJSU ScholarWorks. For more information, please contact scholarworks@sjsu.edu.

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

Bell & Howell Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA

UMI[®]
800-521-0600

**COMPETITIVE ORIENTATION AND WEIGHT LOSS METHODS IN HIGH
SCHOOL WRESTLERS**

A Thesis

Presented to

The Faculty of the Department of Human Performance

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

By

David A. Albert

December 1999

UMI Number: 1397708

UMI[®]

UMI Microform 1397708

Copyright 2000 by Bell & Howell Information and Learning Company.

All rights reserved. This microform edition is protected against
unauthorized copying under Title 17, United States Code.

Bell & Howell Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

© 1999

David A. Albert

ALL RIGHTS RESERVED

APPROVED FOR THE DEPARTMENT OF HUMAN PERFORMANCE

Dr. David Furst, Chair

Dr. Craig Cisar

Dr. Leamor Kahanov

APPROVED FOR THE UNIVERSITY

ABSTRACT

COMPETITIVE ORIENTATION AND WEIGHT LOSS METHODS IN HIGH SCHOOL WRESTLERS

by David A. Albert

This thesis investigates the relationship between competitive orientation and weight loss methods in high school wrestlers. The subjects' specific competitive orientations and methods for losing weight are examined in the study. Anonymous surveys were used to retrieve the information, and the data were statistically analyzed to study the relationship between the two variables.

Chi square analyses found no relation between win or goal orientation and weight loss methods; however, the majority of the subjects admitted using unsafe weight loss methods for wrestling, and a large variety of unsafe weight loss methods was reported. There were also interesting finds in the comparison of some secondary variables. It appears relationships may exist between the wrestlers' age and their weight group (upper versus lower weight classes) and competitive orientation and unsafe weight loss methods. These finds call for further investigation in these areas.

Acknowledgments

For somebody like me to pull off a major project like this, there would need to be many people involved in helping me along the way. There are, in fact, three groups of people who deserve to be mentioned in this acknowledgment.

The first group, obviously, is my thesis committee, which includes Dr. Craig Cisar, Dr. Leamor Kahanov, and was chaired by Dr. David Furst. Their help and guidance over the two or so years I worked on this is very much appreciated. I would also like to thank Diane Rudy, ATC, for listening to my worries on starting a thesis, and helping me form the idea for this research.

Secondly, I owe a lot of what success I have had as a student to my parents and siblings. Their guidance and the examples they set for me from my pre-school years up through graduate school have helped nurture the abilities needed to study and research throughout my education. I would like to especially mention Charley, who mentored me through many frustrating instances with formatting the word processing, and Larry and my mom and dad, for patiently allowing me to commandeer their computers over the last year while I frantically typed to meet deadlines. Also thanks to my brother-in-law Jeramy Peterson for his useful insight on high school wrestling and the contacts he was able to help me with.

Finally, I want my own family to know how much they had helped me. I know it was hard on my wife Dianna, and my kids, Samantha and Jeramy, while I was either cooped up in a training room on the other side of town, or stuck at night classes or the library during my two years in graduate school. I hope to make it up to them and prove that it was worth it. I'm sure with this degree, I will be able to do that by obtaining a high income, family-friendly career in sports medicine!

TABLE OF CONTENTS

LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
CHAPTER	
1 INTRODUCTION.....	1
Statement of Problem.....	4
Null Hypothesis.....	4
Delimitations.....	5
Limitations.....	5
Definition of Terms.....	5
2 LITERATURE REVIEW.....	8
Physiological Effects of Weight Loss in Wrestlers.....	8
Achievement Motivation.....	13
Goal Orientation.....	16
Competitive Orientation.....	19
Development of the Sport Orientation Questionnaire.....	21
Methodology Issues.....	25
Summary.....	26

3 METHODOLOGY.....	28
Participants.....	28
Surveys.....	28
Procedures.....	30
Analysis of Data.....	31
Summary.....	32
4 RESULTS AND DISCUSSION.....	34
Discussion.....	36
Summary.....	39
5 CONCLUSION.....	41
Recommendations for Future Study.....	41
Conclusion.....	43
REFERENCES.....	45
APPENDICES.....	49
A. Sport Orientation Questionnaire.....	49
B. Weight Loss Survey.....	50
C. Parental Permission Letter.....	53
D. Subject Permission Letter.....	54

List of Tables

Table 1. Incidence of Types of Weight Loss Methods.....	39
--	-----------

List of Figures

Figure 1. Competitive Orientation Versus Weight Group.....	36
Figure 2 Weight Loss Methods Versus Weight Group.....	37
Figure 3 Weight Loss Methods Versus Age Group.....	38

Chapter I

Introduction

It is common knowledge that competitive wrestlers follow one of the most physically demanding regimens in season among their athletic peers (Perriello et al., 1995). Due to strict weight class limits, competition for a spot on the team, and the belief that wrestling at the lowest weight possible gives an edge over opponents, wrestlers often combine severe dietary habits with exhausting workouts to obtain the leanest weight their body will allow (Choma, Sforzo, & Keller, 1998; Clark, 1995; Freishclag, 1984). With increased knowledge in the realm of sports nutrition, exercise physiology, and sports medicine, it appears this training protocol goes against what is being suggested to athletes today for optimal performance (Mourier et al., 1997; Tarnopolsky et al., 1996). In fact, various studies have shown detrimental effects on health as a result of such training regimens (Roemmich & Sinning, 1997b; Webster, Rutt, & Weltman, 1990; Yankanich, Kenney, Fleck, & Kraemer, 1998). Undesirable consequences, such as decreased anaerobic power and upper body strength (Webster et al., 1990), interference with metabolism (Oopik et al., 1996), and overall decline in performance (Rankin, Ocel, & Craft, 1996) have appeared in many results.

In recent years, the wrestling community has slowly begun to update the training methods among the athletes (Hunt, 1998). Training-aid publications have listed tips on how wrestlers can reach and maintain a healthy body weight (Merk, 1995). Among the suggestions are keeping fat percent above 4%, eating at least 1,500 calories per day,

allowing up to several weeks to lose a large number of pounds, and avoiding certain types of food during the season (Clark, 1995). There has also been responsibility placed on coaches to improve weight loss techniques, such as recommendations to prohibit the use of rubber suits, steam rooms, saunas, laxatives, and diuretics to make weight. It is also suggested that weigh-ins take place just before competition and more frequently between matches (Metz, 1998).

Have these advancements eliminated the risk from unsafe training methods?

Apparently that is not the case. Steen and Brownell (1990) conducted a survey inquiring about the eating and exercise habits of high school and college wrestlers. They concluded that 30 to 40% of wrestlers were involved in "unsafe" practices. According to an article in USA Today, in 1997 three collegiate wrestlers from separate programs collapsed and died during rigorous workouts within a span of 6 weeks. Since the National Collegiate Athletic Association began documenting college sport related deaths in 1982, none had occurred in wrestling until then (Mihoces, 1997). Perriello et al. (1995) report that 93% of wrestlers in a study used some means other than exercise to lose weight. Eighty-two percent of the wrestlers were losing 5-10 pounds every week to maintain their weight class. Repetitive rapid body weight reduction such as this has been reported to cause negative physiological effects in athletes (Freischlag, 1984; Roemmich & Sinning, 1997a). Even with the knowledge that extreme training methods can cause harm, and with alternate methods suggested by sport medicine professionals, it appears that a number of athletes risk their health with traditional training methods. The problem is no longer

whether or not wrestlers are still jeopardizing themselves with extreme training behavior; the problem is now why they are doing so.

Research on the behavior of athletes can be traced to the development of the theory of achievement motivation (Nicholls, 1984). In achievement situations, Nicholls believes people behave in a manner that maximizes their demonstration of ability and minimizes their demonstration of low ability. Therefore, achievement goals can be linked to whatever conception of ability the participant holds. Nicholls specifically names two major types of goals in achievement that involve different conceptions of competence: task-involved and ego-involved goals.

Task-involved goals, Nicholls (1984) states, will be to improve their own performance or perform better than expected. To accomplish this would give the person a feeling of success or competence. Ego-involved goals, however, are based more on comparisons of the individuals' performances with that of fellow performers. Ego-involved people would deem self-success based on their performance standing among their peers.

Duda (1987) explains how athletes, in general, process their goals in a task or ego involved manner. Athletes can define success based on task mastery or social comparison. For example, a wrestler who primarily determines success by how much he improves his technique over a period of time would have be mastery oriented, or task-involved by Nicholls' (1984) definition. A wrestler who finds success primarily on whether or not he wins, and disregards personal improvement, is more ego-involved.

Further research in sport psychology on this topic has led to the development of measuring competitive orientation in athletes. Gill and Deeter (1988) developed a questionnaire designed to show competitive orientation and competitiveness in athletes. Their definition of orientation is similar to Nicholls' (1984) and Duda's (1987), although the terminology is different. Their questionnaire measures win orientation and goal orientation among athletes. A win oriented athlete focuses on interpersonal comparison and winning in competition, while someone who is goal oriented will focus on personal performance standards. Despite the detailed research on the many negative responses to some wrestlers' training programs, there is little published knowledge on why these procedures are still common practice in the sport. In order to understand this issue, this research will investigate the relationship between wrestlers' competitive orientations and the weight loss methods used in their regimen.

Statement of the Problem

The problem to be investigated is the relationship between the competitive orientations of wrestlers and the weight loss methods that they use.

Null Hypotheses

Two null hypotheses are examined in this research:

1. There is no relationship between win orientation and weight loss methods in high school wrestlers.
2. There is no relationship between goal orientation and weight loss methods in high school wrestlers.

Delimitations

1. The participants in this study will be competitive wrestlers at the high school level.
2. All participants will have been wrestling competitively for at least one wrestling season.
3. The competitive orientation of each subject will be determined by the Sports Orientation Questionnaire (Gill & Deeter, 1988).
4. The wrestlers' weight loss methods will be determined by a questionnaire developed for this study.

Limitations

The limitation in this research is dependent upon honest participant responses to the surveys. Each athlete must answer each item truthfully in the weight loss and competitive orientation surveys for the conclusions to be valid.

Definition of Terms

Achievement Motivation: the motivating factor in an individual which determines the type of choice the person makes on whether or not an/or how to perform and how much effort to put forth in an assignment, task, or other achievement situation (Hartman & Maehr, 1984).

Competitive Orientation: achievement motivation applied to athletic competition (Gill, 1993).

Competitive Wrestling: For the purpose of this study, competitive wrestling is defined as the style of wrestling used in the American high school level with rules set by

the California Interscholastic Federation, involving set weight classes and three 3 minute rounds in regular competition.

Ego- Involved Goal: a goal that is attained through favorable comparisons of one's ability relative to that of others' (Nicholls, 1984).

Goal Orientation: An athlete who is goal oriented focuses on personal performance standards for success (Gill, 1993).

Sport Orientation Questionnaire (SOQ): The SOQ is a "multidimensional, sport-specific measure of individual differences in sport achievement orientation" (p. 191). An athlete's competitiveness, win orientation, and goal orientation are assessed (Gill & Deeter, 1988). (See Appendix A)

Task (Mastery)- Involved Goal: This goal is attained through the experience of improving one's performance or performing a task better than one expected (Nicholls, 1984).

Unsafe Weight Loss Methods: Unsafe weight loss occurs when the weight reduction takes place in less than 1 week. Weight loss this rapid requires dehydration rather than negative energy balance. Typical methods include exercising in a rubber suit or heated room (above 30° C), limiting fluid and/or food intake, taking laxatives, inducing vomiting, or any combination of these methods (Fogelholm, 1994).

Upper/ Lower Age Group: The subjects were categorized in age groups of 16 years old and older, and under 16 years old.

Upper/ Lower Weight Group: The subjects were categorized in the upper weight group (145 pound class or above) or lower weight group (under 145 pounds).

Weight-Loss Survey (WLS): The WLS is a survey developed for this study to determine what types of methods competitive wrestlers use to qualify for their weight class. (See Appendix B)

Win Orientation: Win orientation suggests a focus on interpersonal comparison and winning in competition (Gill, 1993).

Chapter II

Literature Review

In order to give a proper understanding of the research problem, an in depth review of the various domains involved in the problem is necessary. Initially, a review of literature discussing the physiological effects weight loss causes in wrestlers is presented. Following this section is a broad analysis of the psychological aspect of the study. Beginning with the origins of achievement motivation theory, the topic is narrowed down from competitive orientation to competitive orientation in sports and finally to the development of the Sports Orientation Questionnaire (Gill & Deeter, 1988).

Physiological Effects of Weight Loss in Wrestlers

Because of the strict weight limits in competitive wrestling, a popular query in research has been what effects the demanding training regimen has on the physiological properties of wrestlers.

One obvious problem with limiting caloric intake while exercising intensely is the possibility of decreasing energy output. Webster et al. (1990) conducted a study based on this problem. Collegiate wrestlers were tested following a "typical" pre-competition weight loss regimen. In this case, the regimen consisted of 1 to 2 hours of exercise in a rubberized suit following wrestling practice. Additionally, in the 12-hour period between the exercise session and the weigh-in and testing, the participants were instructed not to eat or drink anything. The weigh-ins showed an average loss of 4.9% weight loss among the subjects. As a result of this weight loss regimen, the authors reported significant

decreases in many areas important to wrestlers: upper body strength, anaerobic power output, anaerobic capacity, and lactic acid threshold.

Utter, Stone, O'Bryant, Summinski and Ward (1998) observed the relationship between some training characteristics and similar physiological effects found in the previous study. Their study centered on the effect of weight fluctuation and body composition on muscle strength and anaerobic power. Members of a collegiate wrestling program were divided into two groups and tested during a season. Weight cyclers (wrestlers who either had a chronic loss of 3.5% of their body weight during the season, reported dieting often or always, or had to cut weight throughout the season) were compared in body weight, muscular strength, and anaerobic power to non-cyclers. Contradicting Webster et al. (1990), the cyclers did not significantly differ from non-cyclers in the strength and power levels. However, the cyclers did report losing 6% of their preseason weight while non-cyclers remained at constant body weight throughout the study. This weight loss was shown to include a significant amount of fat-free mass, which is not a desirable outcome for wrestlers. The authors concluded that although further research is needed to determine a relation between losing fat-free mass and impaired performance, it is important to note that common wrestling training regimens may cause decreased performance levels.

How fast can a wrestler recover from these deleterious effects of training? Many studies have researched the wrestlers' strength and endurance levels following an extended recovery period. Rankin et al. (1996) conducted three separate performance tests on

wrestlers following different stages of their training regimen. Wrestlers were given strict diets to follow for 72 hours before testing. The first test occurred before the participants took part in the strict diet during the wrestling season. Another test took place immediately following 72 hours of the diet, and the third test was given after a 5-hour refeeding period. During this period, the participants were allowed to eat or drink ad libetum. In comparing Test 1 to Test 2, there were significant decreases in work, peak power, and average power. There was also much more blood lactate measured in Test 2. For the refeeding period, one diet was a high carbohydrate (75% calories from carbohydrates) diet, and the second diet was at a moderate level of carbohydrates (47%). Following the refeeding period, the moderate carbohydrate group stayed essentially the same as in Test 2 while the high carbohydrate group basically returned to Test 1 levels. The authors concluded that energy restriction could impair anaerobic performance, but with proper diet, the levels could be regained during a refeeding period.

Tarnopolsky et al. (1996) conducted similar research on the before and after effects of weight loss on wrestlers. Unlike the previous study, the subjects were allowed to lose weight through a self-determined method. The dependent variable measured in this study was muscle glycogen content. The authors believe that fluid replacement can easily be obtained between the weigh-in period and the actual match, so their goal was to determine if glycogen levels could be replenished during that period. Two groups made up the study: one was measured for glycogen content only after a simulated tournament,

and the other was measured following the 3 day weight loss period. The subjects in the latter group were asked to lose 5% of their body weight over the 3 days.

The weight loss group had significant depletion in muscle glycogen concentration, while the simulated tournament did not significantly alter glycogen levels in the subjects. It was noted that after a 17-hour refeeding period of eating ad libetum, the stores were returned to normal. This study shows rapid weight loss does decrease important properties of performance, but with proper time allowed the properties can be restored.

Interestingly, a study with very similar methods did not show a normal return following the recovery period (Oopik et al., 1996). Wrestlers who lost 5.1 to 5.8% body weight over 3 days showed impairment in their quadriceps performance for peak torque, rate of peak torque development, maximal power output, and work performed. Again, an ad libitum refeeding period was allowed (16.5 hours), but this time the performance levels did not return to normal.

Utter and Kang (1998) studied the magnitude of weight gain between the weigh-in and competition and the relationship between that weight gain and the success of wrestlers. Collegiate wrestlers were weighed throughout the season at 6 and 24 hours after the official weigh-ins. The average weight gain (weight at time of match minus the official weigh-in weight) for the season for the subjects was 3.7 kilograms. There was no significantly different gain between the 6-hour and the 24-hour periods. Based on season win-loss records, there was no significant difference found in weight gains of successful (60% win rate) compared to unsuccessful wrestlers. Since there does not appear to be a

relationship between post-weigh-in weight gain and success as a wrestler, it may be that the detrimental effects of harsh training cannot be offset before competition.

Yankanich et al. (1998) studied the effect of weight loss rate on blood plasma volume. Subjects were given a week to lose 6% of their body weight through thermal and exercise induced dehydration. The varying rates of loss (gradual, moderate, or rapid) were measured by the change in body weight from day 1 to day 6. The gradual loss group had the most total body weight loss, but all three groups had similar plasma volume reduction prior to the weigh-in. Even after a 15-hour rehydration period, plasma volume rates had not returned to normal. It is concluded then, that although the rate of weight loss does not significantly effect plasma volume reduction, dehydration can be a main cause of this reduction.

Choma et al. (1998) examined the effects of rapid weight loss on the cognitive function of wrestlers. A group of wrestlers were tested to compare results with a control group. The wrestlers had lost at least 5% of their body weight in preparation for pre-competition weigh-ins. They were tested before and immediately after the weight loss and again following a rehydration period (72 hours of normal diet). The results showed that immediately following the weight loss period, the wrestlers had poorer performances than the control group in tests measuring memory recall ability. The wrestlers also had higher mood negativity than the control group members. Physiological properties, such as hypoglycemic profile, blood glucose, plasma volume, and body weight were also significantly reduced during this period. Although these were reversed during the

rehydration period, the authors caution that the long-term effects of such changes are not known.

In summary, many factors of rapid weight loss are shown to be detrimental to athletic performance. Studies found results such as decreased strength, power, aerobic capacity and lactate threshold following intense weight loss periods (Webster et al., 1990). Wrestlers who repeatedly lost and gained weight were also shown to lose more fat free mass than those who maintained a consistent weight (Utter et al., 1998). There was also found to be little relationship between post-weigh-in weight gain and success as a wrestler (Oopik et al., 1996) and negative cognitive functioning following significant weight loss within a short period of time (Choma et al., 1998). These studies show there is cause for concern of the effects wrestlers may receive from some training protocols.

Achievement Motivation

Smith (1969) says “Achievement motivation refers to the personality factors that come into play when a person undertakes a task at which he will be evaluated, enters into competition with other persons, or otherwise strives to attain excellence” (p. 1). Smith uses this definition to introduce the concept of achievement motivation (AM) in child development. In the circumstances stated in the definition, different motivational dispositions and cognitive assumptions influence children’s behavior (how much effort they give, their persistence in the activity, their thoughts on good or poor performance). These factors include the motive to achieve, anxiety about failure, expectations of success

or failure, and the incentives of success or failure (the pleasure of winning, making a good grade, or performing well, or the pain of criticism or doing poorer than companions).

Veroff (1969) simplified the definition of AM, stating it is “the overall tendency to behave with respect to achievement goals (defined in terms of competing with standards of excellence)” (p.47). However, he also divides AM in two types: autonomous AM and social AM. Autonomous AM involves internalized standards, for example, how people feel their performance level is compared to a criterion they previously set for themselves. Social AM is based on social comparison as a standard of performance. The basis for excellence is how well people perform in comparison to their peers. Both of these motivations can operate in the same situation, but their strength can vary depending on the individual. Different social groups, parents’ influence, or social situations can foster one type of AM in children as they mature. This allows classification of children based on the different types of AM to examine the different reactions within the groups to the same life situations.

How does maturity affect the level of motivation in an individual? Alderman (1974) names age development as a major factor of individual competitiveness. Competitiveness increases as age increases due to three conditions. As children learn a task, their desire to excel and master the task is increased, thereby increasing their competitiveness. Secondly, as one begins to realize the involvement of one’s peers in activities, competition can form between the two parties. Finally, competition can be nurtured by social education; that is, by growing up in a competitive society, one learns

that competition is the way of life. It can be seen in Alderman's theory how Veroff's (1969) autonomous and social motivations come into play. Competition developed through skill mastery and peer involvement shows similarities to internalized and social standards.

Although Hartman and Maehr (1984) give credit to David McClelland for initiating the study of AM in 1951, they subdivide the definition of AM by specifically focusing on the phenomenon of achievement. A standard of excellence, they explain, is usually involved in an achievement situation, and this allows the evaluation of performance quality. Also involved in an achievement situation is the uncertainty of outcome. This means the outcome can be more than what was previously accomplished or that it can be habitually accomplished. Therefore, a certain amount of effort is required to obtain these goals. These accomplishments are achieved through the person's own effort. It is not something done to or for the person.

Hartman and Maehr (1984) believe there are two types of responses involved in AM. The first is the choice made whether or not to perform in the situation. The second is, when performing, how much effort to put into the activity. By examining the choices individuals make, or the effort that is put forth, assumptions can be made about motivation. But the question concerning why individuals exhibit different motivation types remains the critical focus. Again, two categories of causes are brought up. Contextual factors, such as reward or punishment, are considered. So, too, are the thoughts and feelings about oneself and the ability to perform in the situation. Here it is

evident the authors are discussing, like Veroff (1969), social (reward) and internal (self-confidence) standards.

Although several developments have been made on the concept of AM, there is one similar theme amongst each one. Two types of AM (based on internal and external factors) exist and are developed as an individual matures. Based on which AM is stronger in the individual, that type will show more in achievement situations for the individual.

In summary, the ideas of Smith (1969) and Veroff (1969) convey the belief that behavior towards achievement situations is influenced by one of two types of motivation; internalized standards or social comparison. Based on which is stronger in a given individual, Hartman and Maehr (1984) believed, the individual would put forth a certain amount of effort to succeed in the situation.

Goal Orientation

Nicholls (1984) believed that achievement behavior is the “behavior in which the goal is to develop or demonstrate-to self or to others- high ability, or to avoid demonstrating low ability” (p. 328). Success, then, is what participants in competitive activities desire, since that is what indicates high ability. Failure, on the other hand, would demonstrate low ability. The distinguishing feature of achievement behavior is the subject’s goal of competence (what the subject feels is success), or at least a perception of competence. The theory that people can construe competence in two separate ways leads to the belief that two forms of goal orientation exist. These two conceptions, task

involvement and ego involvement, are then the major focus for the study of achievement behavior.

An individual who is task involved, Nicholls (1984) explained, is likely to see effort as the cause of task mastery, which leads to higher ability. An activity requiring little effort does not offer the chance of high ability demonstration. A balance must be kept, though, between these activities and those that require too much effort with little chance of demonstrating high ability. Therefore, task involved individuals should prefer tasks close to their own perceived level of competence. Ego involved people, on the other hand, depend on the ability of others to demonstrate their own ability. To demonstrate ability, one must perform at a level equal to or above that of others completing the same task. Since the success of the participants greatly involves the level of difficulty of the task, an ego involved person should prefer to engage in difficulty levels he or she is comfortable with.

Duda and Nicholls (1992) examined the theory of goal orientation across two different domains. The study compared the relationships among goal orientation, perception of ability, and intrinsic satisfaction with academic and sport settings. Although perceptions of ability and intrinsic satisfaction had little cross-domain generality, the goal belief dimensions cut across the two achievement settings. Goal orientation (beliefs about success) were basically the same in each situation. The ego involved individual believed that success requires high ability. Task orientation, though, was associated with beliefs that success requires interest, effort, and cooperation with peers.

Solmon and Boone (1993) researched the effect that Nicholls' (1984) framework of goal orientation (how the orientation affects effort output) influenced thought and action. The authors used college students in a physical education class to observe levels of skill, goal orientation, and thought and action. The main finding was that task involved students selected challenging tasks during the course, while ego involved students were less apt to do so. It appears that students who base success on the mastery of a skill tend to employ cognitive processes that foster the learning of that skill. Conversely, an ego involved perspective may impede skill acquisition or achievement. This study indicates that goal orientation may possibly predict an individuals' response to certain competitive situations.

Lochbaum and Roberts (1993) conducted a similar study focusing on goal orientations and its effects on the beliefs on success, competition and practice, and enjoyment in sports. High school athletes were surveyed to determine their goal orientation, perceived cause of success, competitive and practice strategies, practice benefits, and competitive satisfaction. The results revealed that a positive relationship exists between task or ego orientation and the perceptions previously listed.

Task involved athletes were found to believe practice was to optimize and enhance skill, and that satisfaction is achieved through personal mastery in competition. In general, they endorse adaptive achievement strategies: exerting effort, working hard to enhance skill, and considering their performance to be important. Therefore, these athletes are likely to engage in mastery strategies in competition and practice.

Ego involved athletes, on the other hand, were shown to endorse chance and social approval as causes of athletic success, and practice as a chance to demonstrate ability. These athletes appeared to avoid exertion and persistence as achievement strategies, instead of focusing on external sources of success.

Goal orientation, then, is seen as the factor that can influence athletes' attitudes and actions in an athletic setting. Duda and Nicholls (1992) found similar results of goal orientation in athletic and academic settings. The works of Solomon and Boone (1993) and Lochbaum and Roberts (1993) strengthen the belief that an ego involved athlete will focus on comparing oneself favorably to others as success while a task involved athlete views self-improvement as success.

Competitive Orientation

Duda (1989a) utilized these orientations of competitiveness in a sports setting to examine why people choose to become or not to become involved in sports. For those who do participate, why are some types of sport activities chosen over others, and why do some people become more intensely involved for a longer period of time than others? Although it may often be assumed that sports participants are primarily ego involved (sport success or failure is typically defined by winning or losing), Duda pointed out that competitive outcomes may not necessarily depend on a successful sporting experience.

In an effort to find a relationship between task and ego orientation and an athlete's view concerning the purpose of sport, Duda (1989b) measured the levels of sport orientation in athletes using Nicholls' (1984) definition of task and ego orientation.

Similar to Veroff's (1969) autonomous type of AM, task orientation is determined by a feeling of success with task mastery and/or personal involvement. Also, like Veroff's social type of AM, a strong ego orientation is indicated by a feeling of success by means of better performance relative to others.

The main purpose of Duda's (1989b) study was to relate these goal perspectives specifically to athletes' views of sports. High school varsity athletes participated in the study by completing the Task and Ego Orientation Questionnaire (TEOSQ) (Nicholls, 1989). This is a modified, sport-specific version of a survey developed to assess task and ego orientations in an academic setting. The TEOSQ required the subjects to think of when they felt most successful in their sport, and each of the 15 items reflected a task or ego orientation. The results of the TEOSQ were compared to the responses of a survey determining the subjects' views on the purpose of sports. Results indicated that athletes with strong task orientation believed sports would enhance self-esteem and teach athletes to give best efforts. Ego oriented athletes tended to view sports as a way to enhance self-esteem and social status. Duda concluded that sport administrators can influence an athlete's sport orientation based on the orientation with which the sport is coached. A sport that is taught with the promotion of task orientation, for example, would teach the young participants to try their best, cooperate with their teammates, obey the rules, and become model citizens, while a sport that is taught with goal orientation may promote a win-at-all-costs attitude among the participants.

In conclusion, competitive orientation was studied to determine how competitiveness influenced sport participation (Duda, 1989a). Duda (1989b) also used competitive orientation as a way to relate athletes' goals with their views on sports. She found task oriented athletes viewed sports as a way to increase self esteem while ego oriented athletes focused more on social status. These findings are important for associating competitive orientation with training methods.

Development of the Sport Orientation Questionnaire

In a handbook of research in sport psychology, Gill (1993) wrote on competitiveness and competitive orientation (CO) in sport. In her work, she explained the conceptual framework of research on competitiveness and how she developed a measure for CO. Gill stated that since competitiveness can be defined as a specific form of achievement orientation, theories on achievement motivation can be applied to the basis of research on competitive orientation. Gill believed, based on past research (Spence & Helmreich, 1983), that achievement may be best measured as a multidimensional construct (identifying mastery, work, and competitiveness dimensions), which suggests individuals emphasize different styles of achievement. Gill's development of the Sport Orientation Questionnaire (SOQ), therefore, is based on the principle that an individual's achievement orientation toward sports may differ from that person's orientation toward academics, work, or artistic endeavors.

In developing a sport-specific measure, Gill (1993) again applied principles from past research. Gill stated that Martens' research in 1977 on assessment of competitive

trait anxiety in sport-specific individuals demonstrated the value of sport specific measures and considering unique aspects of sport involvement in psychological review of athletes. Gill combined this sport-specific approach with the multi-dimensional view of orientation in developing the SOQ.

Gill and Deeter (1988) developed the questionnaire to examine the individual behavioral differences in sports achievement among participants. The SOQ is a sport specific, multidimensional measure covering the emphasis of performance, outcome, and competitiveness an individual has in regards to competing in various sports activities. The authors believed data collected from high school and college students provided good evidence that the SOQ is a reliable and valid measure of orientation in sport achievement. The competitiveness score differentiated students in competitive and noncompetitive classes as well as competitive athletes and non-participants. The authors believed this is due to the obvious fact that competitive people will participate in competitive sports situations.

Win and goal orientation, however, had less of an influence on competitive participation. Although competitive athletes tended to score higher in these areas than non-athletes, the differences were neither strong nor consistent. Highly competitive people apparently may have a high or low win and/or goal orientation. However, win and goal orientation may differentiate athletes in one sport from athletes in different sports according to Gill and Deeter (1988). This measure is the reason the SOQ is chosen in comparing the orientations of wrestlers specifically with their training methods.

In a comparison, Gill and Dzewaltowski (1988) examined competitive achievement orientation among intercollegiate athletes using three different measures. Male and female athletes and non-athletes were tested on three different orientation scales. The Sport Orientation Questionnaire (SOQ), the Competitive Orientation Inventory (COI), and the Work and Family Orientation Questionnaire (WOFO). The SOQ assesses three dimensions of sport achievement orientation: a) competitiveness- the athlete's feelings on how much competition is a factor in their enjoyment of sports, b) win orientation- to what extent winning is important to sports participation, and c) goal orientation- the focus the athlete has on personal standards in sports participation. The COI is meant to determine the relative emphasis that athletes place on their individual performance and winning in competitive sports. Combinations of performance level and outcome are compared to examine the relative proportions of the variance of these traits. The WOFO is not sport-specific, but measures general achievement orientation. Three dimensions are scaled: a) mastery- the desire one has to overcome a challenge, b) work- the desire to work hard, and c) competitiveness- how much one wants to win in interpersonal competition.

In this study by Gill and Dzewaltowski (1988), a sample of 107 athletes from a variety of collegiate sports was compared to a non-athlete group (n=106). All three measures were administered to each subject to obtain the competitive orientation levels. The SOQ, COI, and WOFO scores were analyzed to find differences in gender, athlete/non-athlete, and athletic teams. The results showed males had higher competitive levels and were more win oriented, while females had similar general achievement scores

and had higher performance and personal goal measures. Athletes, compared to non-athletes, were more competitive in terms of performance, but not significantly different in win orientation. Between athletes, the COI and SOQ had similar results. Wrestling had the highest overall score on the SOQ measures, as well as the highest outcome orientation on the COI. Interestingly, wrestling had the lowest COI performance orientation score.

The authors concluded their study shows that although athletes in general are highly competitive, there are differences within some sports that show an emphasis on performance more than outcome orientation. Winning, then, may not be the major motivator for all intercollegiate athletes.

In another comparison, Gill, Kelley, Martin, and Caruso (1991) conducted an examination of two sport-specific measures of competitive orientation. The SOQ, which assesses three scores (competitiveness, win orientation, and goal orientation), and the COI, which assesses the relative importance of performance and outcome goals in sports, were completed by all the subjects. The SOQ was found to be more psychometrically sound and is more useful in measuring multidimensional sport-achievement orientation than the COI. Because the COI is only designed to measure the relative importance of performance versus outcome in an athlete, the SOQ was determined by the authors to be more useful in measuring the three orientation scores and comparing them among athlete/non-athlete and inter-athletic groups.

In summary, the SOQ was developed to gain insight into athletes' orientations specifically towards sports (Gill, 1993). Numerous studies using the SOQ found it

effective in comparing competitive orientation among athletes from different sports (Gill & Dzewalowski, 1988) and measuring multiple orientation scores (Gill et al., 1991). These are important factors in using the SOQ specifically for wrestlers and their training.

Methodology Issues

Obviously, the validity of a study that measures personal training techniques, such as this one, is the honesty involved in the response to the questionnaires. In developing the questionnaire on training methods, it is essential to make inquiries in a manner that will best illicit a truthful response. Because few examples exist on self-reported weight loss methods by wrestlers, literature on self-report studies on similar subjects is reviewed.

In a book on anabolic steroid use in athletics, Yesalis (1993) wrote a chapter on methodological issues in survey research. Yesalis mentioned self-report methods which showed similar use rates to external report studies (blood tests, urine samples) on similar populations. Trust, the author believed, is a main cause of honest response, as is anonymity. Buckley et al. (1988) utilized a survey on the prevalence of steroid use in high school seniors. The response showed that 6.6% of those surveyed were steroid users. This is a similar use rate to the use rate the author had estimated before the study based on personal knowledge on the subject. The survey was developed in a manner to assure anonymity so that the participants would not feel their confidentiality was jeopardized. The survey consisted of 11 general questions regarding health and exercise. The eleventh question was specifically about steroid use. If the participants answered yes, they proceeded to 12 more questions on steroid use. If they answered no, they were directed

to 12 more general questions. This method guarantees equal completion time which helps insure confidentiality.

Perry, Anderson and Yates (1990) performed a similar study on illicit steroid use in athletes. They advertised openly for participants, who completed personality disorder and mental health questionnaires. Extensive private interviews were even conducted, providing detailed descriptions of steroid use protocols. The authors again stress confidentiality as the reason for the good participant response rate and willingness to be honest.

Because it is impossible to know for certain the validity of anonymous survey response, it is vital to encourage the subjects to reply as honestly as possible. Yesalis (1993), Buckley et al. (1988) and Perry et al. (1990) show that guaranteeing anonymity and privacy are effective ways to reveal a good response rate and trust among the subjects.

Summary

In summary, it should be restated that many studies have been conducted revealing detrimental effects certain training techniques can have on physical performance in wrestlers (Choma et al., 1998; Rankin et al., 1996; Webster et al., 1990). Yet, it has been established that many of these techniques are still being employed by today's' wrestlers (Periello et al., 1995). To understand why, the focus of this study has turned to the competitive orientation of wrestlers. Veroff (1969) explained how people view goals of achievement in two ways; by focusing on personal development or social rewards. Duda

and Nicholls (1992) focused this model on people in competitive situations in researching goal orientation. It was found that an ego involved person was likely to perceive success dependent on ability, while a task involved person would be more interested in self-development. Duda (1989b) applied goal orientation to athletics and found athletes exhibited the same orientations towards sports. This competitive orientation actually differentiates athletes from athletes in their sport and athletes in other sports. Gill and Deeter (1988) developed the SOQ to determine the level of competitive orientation in athletes and found it useful in determining which orientation was stronger in individual athletes. The objective, then, is to use the SOQ to determine certain wrestlers' competitive orientation, and compare that with their weight loss practices to find any significant relationship.

Chapter III

Methodology

The purpose of this study was to investigate two specific relationships between the competitive orientation of wrestlers with their weight loss methods. The results may help give insight to sports medicine personnel as to which wrestlers may be candidates for potentially unhealthy weight loss practices. After approval from the Human Subject Review Board and coaches from each program, a survey was conducted among competitive wrestlers from various high school athletic programs in the greater San Jose area.

Participants

Forty-four members of high school wrestling teams, all males, (age 14-19, mean age 16.75 ± 1.27 years) completed the Sport Orientation Questionnaire (SOQ; Gill & Deeter, 1988) and the Weight Loss Survey (WLS). The athletes involved in the study had at least 1 year of experience in competitive interscholastic wrestling and had lost an average of 6.29 pounds from their offseason weight.

Surveys

Sport Orientation Questionnaire

The Sport Orientation Questionnaire (SOQ; Gill & Deeter, 1988) assesses an athlete's level of competitiveness, win orientation, and goal orientation. The survey consists of 25 questions designed in Likert fashion and is scaled from 1 (strongly disagree) to 5 (strongly agree). Thirteen questions assess competitiveness, six assess win

orientation, and six assess goal orientation. The participants circle the corresponding letter depending on the degree of agreement with statements on the scale (A= strongly agree, B= slightly agree, C= neither agree nor disagree, D= slightly disagree, E= strongly disagree). (see Appendix A)

The authors of the SOQ found three factors based on selection criteria: level of competitiveness, win orientation, and goal orientation (Gill & Deeter, 1988). High alpha coefficients for three samples of competitiveness (mean of .94), win (.86), and goal orientation (.80) indicate good internal consistency. Separate test-retest correlations for each item ranged from 0.39 to 0.76 indicating good stability over time (competitiveness $r = .89$, win $r = .82$, and goal $r = .73$). Interclass R also showed as good reliability (competitiveness $R = .94$, win $R = .90$, goal $R = .84$).

Weight Loss Survey

The Weight Loss Survey (WLS) is an 18-item questionnaire developed for this study to gain insight on weight loss techniques used by wrestlers. More specifically, it is designed to determine the frequency of unsafe weight loss methods (as defined in Chapter I) used by wrestlers. Nine questions were based on general training practices. The tenth question inquired if the athlete is required to make weight weekly. If the answer was yes, the athlete was directed to answer eight questions specifically oriented towards unsafe methods of weight loss. These questions also involved the frequency of practice of these methods. If the athlete was not required to make weight weekly, the participant went to eight different questions on general training practices. Where applicable, some questions

are expanded to determine the frequency of methods used (once a week/ two to three times a week/ more than three times a week) (see Appendix B).

The concern for honest responses from such a survey is an important one. To obtain the most valid and reliable results, the WLS design was patterned after surveys involving similarly sensitive subjects. A study on anabolic steroid use, for example, indicates strong participation and results equal to the estimated steroid abuse in the population (Buckley et al., 1988).

Procedures

To recruit participants for the survey, the researcher contacted administrators from two high schools in the San Jose area. The principal of the high school was the first contact. With permission granted, the coach of the team was then contacted. Coaches were informed that their wrestlers were needed to participate in a voluntary survey conducted to determine a relationship between training techniques and competitive orientation. That this survey is intended for research purposes only and that negative publicity will not result from the wrestlers' responses was stressed to the coaches. Also explained was the fact that the surveys were to be done in a completely anonymous and confidential manner for the participants. As the coaches agreed to allow their teams to participate, the researcher made appointments to personally meet with each team to present the survey.

Because most of the high school wrestlers are minors, following the introduction at the initial meeting subjects who volunteered to participate were given parental consent

forms (see Appendix C). The researcher made another appointment to return and administer the survey to the participants. Those participants who were 18 years old and older were not required to obtain parental consent and filled out subject consent forms (see Appendix D). The researcher administered the survey to the participating group upon receiving the consent forms during the following visit. Again, privacy and anonymity were emphasized.

Because the high school wrestling season ended soon before all the data could be collected, the remaining subjects were high school wrestlers who competed on freestyle wrestling clubs in the San Jose area (13 subjects from eight different clubs). Each subject used from these clubs was also a member of a high school team during the interscholastic season. These subjects were contacted during practices for their club, and, like the high school team wrestlers, permission from the club's coach was initially obtained. The procedures and explanations followed were the same as those with the high school teams. The subjects from the wrestling clubs were told that the survey pertained to their training habits during the high school season and not the freestyle season.

Analysis of Data

The win and non-win oriented athletes and the safe and unsafe weight loss method users were categorized as dichotomous variables for statistical analysis of the null hypothesis. The variables from the SOQ and the WLS were statistically compared to determine a relation between competitive orientation and unsafe training methods in wrestlers. To assess the relationship between win orientation and unsafe weight loss

methods categorized in this way, it was appropriate to use the chi square test. The assumptions for the chi square test were met, so the data were analyzed using chi square. The equation for chi square (Yeager, 1990) is as follows:

$$\chi^2 = \sum_R \sum_C [(O_{RC} - E_{RC})^2 / E_{RC}].$$

This equation states that chi square is the square of the difference of the rows' and columns' observed and expected frequencies divided by the expected frequencies for every row and column in the chi square matrix.

Having met the assumptions for a chi square test, the data for the hypotheses were analyzed using this statistical equation. The chi square value is compared to the critical value to determine the statistical relationship (Yeager, 1990). The critical value is obtained from a chi square table by searching under the alpha value being used, and scanning down that column by the numbers of degrees of freedom. The degrees of freedom for the chi square test is the value of the product of the number of rows in the matrix minus one and the number of columns in the matrix minus one (Yeager, 1990). Alpha for this study was set at 0.05, and the critical value was determined to be 3.84.

Summary

This chapter provides a description of the subjects, surveys, procedures, and analysis used in the study. The participants were 44 male high school wrestlers between the ages of 14 and 19 years old. The surveys were administered to the participants during practice sessions for either the high school team or the freestyle club. After proper consent was given, the participants completed the sport orientation and weight loss surveys

determining the level of competitive orientation and the methods of weight loss for wrestling. Based on the data collected, each subject was labeled as either win or not win oriented or goal or not goal oriented, and their weight loss methods were labeled safe or unsafe. To determine the extent of the relationship between weight loss methods and competitive orientation, the data were analyzed using the chi square test.

Chapter IV

Results and Discussion

This study was conducted to identify if any relationship exists between the two competitive orientations and weight loss methods used by high school wrestlers. The data collected from the surveys used in this study were statistically analyzed using the Excel[®] statistical program for Windows 95.

A total of 44 participants completed the SOQ and WLS. Scores from the SOQ were determined to find what number of high school wrestlers were or were not win oriented or were or were not goal oriented. Based on the WLS results, the researcher determined which high school wrestlers frequently used unsafe weight loss techniques and which did not by following the criteria set by the definition of unsafe weight loss techniques. The 44 subjects used in the study were current members of high school wrestling teams, and all signed informed consent forms for participation in the study. Those subjects younger than 18 years of age were also required to have a parental consent form signed in order to participate. Descriptive statistics were collected from these surveys to answer questions about age groups (under 16 years/16 years and over) and upper and lower weight class groups (145 lbs. and over/ under 145 lbs.). Of the 44 participants, 37 were 16 years old or older, and 23 wrestled in the lower weight classes. Thirteen of the subjects were win oriented, 23 were goal oriented, and eight had even scores. A total of 27 subjects reported using unsafe weight loss methods.

The number of win and non-win oriented athletes were entered into the chi square matrix with the number of users of safe and unsafe weight loss methods. After determining the expected and observed frequencies, the chi square equation was used to obtain a value for this test. In order to reject a null hypothesis, the chi square value had to be greater than the critical value found on the chi square table (3.84). The chi square value for win orientation versus weight loss methods in this study was 0.007. Therefore the null hypothesis was accepted, and no relationship could be found between win orientation and weight loss methods. To investigate the second hypothesis, the same steps were taken using goal and non-goal orientation. The chi square value in this case was 1.718, which, though closer, was still less than the critical value of 3.84. Both null hypotheses were accepted based on the data collected in this study. Therefore, no relationship exists between competitive orientation and weight loss methods.

Cross tabulations were studied on miscellaneous variables found in the study. The participants were divided into separate age groups (16 years old and older, under 16 years old) and weight groups (at or above the 145 pound weight class and below the 145 pound weight class). These groups were cross tabulated with competitive orientation and weight loss methods to find any notable data. Of the numerous cross tabulations, some interesting data were found. Among the 31 non-win oriented subjects, 27 were in the lower weight group. This was a much larger discrepancy than the comparison of win oriented subjects with weight group (nine in the upper group, four in the lower group; see Figure 1). A comparison between weight loss methods and weight group also revealed

Figure 1. The relationship between win orientation and weight group. Note the ratio of non-win oriented subjects/ lower weight group ($n=27$) compared to the other groups.

interesting data. The majority of the upper weight group did not use unsafe methods (12 of 19 subjects), while most of the lower weight group subjects did (19 of 24; see Figure 2). A third set of intriguing data was noted in the weight loss methods versus age group comparison. Twenty-three of the 26 subjects in the study who used unsafe weight loss methods were in the upper age group (see Figure 3). Although the extent of these relationships was not investigated, these findings may be cause for further study in these specific areas.

Discussion

The purpose of this study was to examine what extent the influence of competitive orientation has on behavioral patterns such as weight loss methods. Although certain methods have been advised against and shown to be unsafe, there are reports of a sizable portion of the high school wrestling population that still employs these methods

Figure 2. The relationship between weight loss methods and weight group. Most unsafe method users were in lower weight group ($n=19$), while most subjects in upper weight group did not use unsafe methods ($n=5$).

(Folgelholm, 1994; Perriello et al., 1995). Since it has been demonstrated that goal orientation can influence athletes' attitudes and actions (Duda & Nicholls, 1992; Lochbaum & Roberts, 1993), this investigation explored the strength of the relationship between competitive orientation and weight loss methods.

The null hypothesis stated in this thesis that there would be no relationship between win orientation and weight loss methods, and based on the statistical data, this hypothesis was accepted. The second hypothesis, which stated there is no relationship between goal orientation and weight loss methods, was also accepted. Of the 44 participants, 27 (61.4%) reported using unsafe weight loss methods. This number shows that unsafe practices are quite common among high school wrestlers, and this may be the result of one or a number of reasons. It has been discussed that due to the strict weight class regulations involved in wrestling, the use of rapid body weight reduction is seen as necessary by the wrestlers (Mourier et al., 1997; Steen & Brownell, 1990). There is also the common belief that by wrestling at the lowest weight possible, the wrestler is given a

Figure 3. The relationship between weight loss methods compared to age group. Older group had higher tendency to use unsafe methods ($n=23$), while majority of younger group did not ($n=3$).

competitive edge over an opponent who is normally a lighter person (Choma et al., 1998). The WLS did reveal that a large number of the athletes used a variety of unsafe techniques to lose weight (see Table 1). An athlete who was win oriented may use these methods to aid the chances of winning, while goal oriented wrestlers may also use the method to help achieve the personal goal of performing at their optimal level. In this case, unsafe methods of weight loss could be used regardless of the competitive orientation of the wrestler.

Another major reason for the high incidence of unsafe weight loss may be the terms used to define unsafe weight loss. For the purposes of this study, unsafe weight loss was defined as the loss of body weight in less than 1 week's time. Fogelholm (1994) stated that rapid body weight reduction such as this requires some form of dehydration, which is what makes these methods unsafe; however, there were no specific weights mentioned as the limit for which was an unsafe amount to lose. Therefore, an athlete who

Table 1

Incidence of Types of Weight Loss Methods

Method Type	Number of Reports
Food restriction	23
Fluid restriction	18
Exercise w/ rubber suit	10
Exercise in sauna	9
Induced vomiting	2
Use of diet pills	1
Use of laxatives	1

Note. Subjects may have reported more than one method type per athlete

only loses one pound of body weight per week, as what may have been the case with some of the subjects, is in the category of using unsafe weight loss methods whether this is physiologically unsafe or not. This would tend to skew the data collected, increasing the number of unsafe method users.

Summary

Chi square analysis of the data collected from the SOQ and WLS results showed that there is no relationship between competitive orientation and weight loss methods. The chi square values for win orientation and goal orientation versus unsafe weight loss methods (0.007 and 1.718, respectively) were far below the critical value (3.840). This

may be due to a variety of reasons, including the fact that both win and goal oriented wrestlers may be prone to using unsafe weight loss methods. Also found, though, were several secondary variables that may have a relationship with competitive orientation and weight loss methods.

Chapter V

Conclusion

The purpose of this study was to determine the relationship between competitive orientation and weight loss methods used by high school wrestlers. Statistical analysis of the data collected from the surveys used in this study showed that no significant relationship exists between these two variables. This chapter will discuss the recommendations for future studies and the conclusions on this research.

Recommendations for Future Study

When reproducing this study on the relationship of competitive orientation and weight loss methods in high school wrestlers, it may be beneficial to follow some recommendations. Primarily, planning should be made to obtain the optimal number of participants. This would entail doing the research early during a wrestling season, as this would more easily enable the researcher to find subjects and have the time to get them cleared through the human subjects review board. Such a task was not as easy using wrestlers from the freestyle clubs, as they were not as consistently together as those on a high school team. With a higher number of subjects, the statistical power would be stronger. Also, since the subjects from the club teams were surveyed outside of the high school season, there may have been an different mentality in answering the survey.

A clearer definition of unsafe weight loss methods would also be beneficial. Although Folgelholm (1994) clearly states that rapid body weight reduction can only result from dehydration, there were no specific data detailing what amount of weight loss

would actually be considered unsafe. This problem caused wrestlers who, for example, had lost as little as one pound in a week to be grouped with wrestlers who had lost five pounds in a week. Perriello et al. (1995) suggest that a 5% body weight reduction in a week's time is unhealthy. The percentage of weight loss, though, would be hard to determine while doing a survey. Instead, the defining limit of safe practice could be weight lost over a specified time frame, or number of pounds dropped by wrestlers of different body weights. For example, five pounds lost over a week's time could be considered unsafe, but five pounds over 5 weeks could be acceptable. Similarly, a heavy weight class wrestler would be able to lose a certain amount of body weight more safely than a light weight class wrestler. A more scientific method of measuring dehydration could be used in a research setting that allows for it. For example, a urine hydrometer can obtain specific readings on dehydration in a subject, yet using such a method may not be prudent with a subject base made up of high school athletes. However, having a clearer definition would be an ideal way to include the safe or unsafe method users in the proper categories.

A third recommendation would be to complete a pilot survey before starting the main research. Apparently, some of the WLS items were not completely clear to the subjects. The survey did not ask the subject to specify the approximate amount of weight that was lost every week; however, there was a subsection inquiring on the frequency of rapid weight loss, but these questions were unanswered by a number of participants. For example, the follow up questions to items 11 through 18 on the WLS were often left blank

when they were supposed to be answered. These pieces of information would be helpful in determining a level of safety for weight loss procedures. A pilot survey would give the investigator a chance to review the items in question and make sure there is no confusion among the surveyed subjects and the information was being delivered properly.

Finally, it should be noted that it appears some relationships may exist between some secondary variables that were investigated. Comparisons were made on another set of variables (age groups and weight groups) and competitive orientation and weight loss methods. Although these findings were not statistically analyzed, there appears to be a large enough discrepancy between competitive orientation and the age and weight groups to warrant further study. These variables may give clearer insight into the reasons for the popular use of unsafe weight loss methods.

The use of the SOQ and the methodology of administering the surveys appeared to be successful in obtaining information. The SOQ presented easily understood items and the scoring gave clear indications on which type of competitive orientation was emphasized. By maintaining anonymity and ensuring confidentiality, the responses on both the SOQ and the WLS appeared to be candid and truthful. This is an important quality in gaining reliable data.

Conclusion

Despite the several warnings and suggestions from the sports medicine field, it appears that a number of high school wrestlers are still practicing unsafe techniques during their training (Perriello et al., 1995; Steen & Brownell, 1990). As seen in 1997, the

extreme consequences of such techniques can be fatal (Mihoces, 1997). Fortunately, the wrestling community has begun to realize this, and changes in many of the normal practices have taken place. Collegiate wrestling has significantly changed rules regarding weight classes and legal weight reduction techniques. The high school associations have similarly informed coaches with national recommendations and position statements in hopes to curb some of the more intense modes of weight loss; however, as seen in past research (Perriello et al., 1995) as well as in this investigation, unsafe methods are still being commonly used by today's high school wrestlers. Because research in sports psychology (Duda & Nicholls, 1992; Solmon & Boone, 1993) has shown that different orientations could lead athletes to act and perform differently, a question could be posed on the involvement of this theory on current wrestler's weight loss decisions.

The results of this study do not reveal any relationship between competitive orientation and weight loss methods. Hopefully, this study will give future investigators informative data for a foundation on future studies. Future research, then, is still warranted in hopes of discovering why unsafe methods are still in use, and then gaining insight on how to eliminate this use.

References

- Alderman, R.B. (1974). Psychological behavior in sport. Philadelphia: WB Saunders.
- Buckley, W., Yesalis, C., Friedl, K., Anderson, W., Streit, A., & Wright, J. (1988). Estimated prevalence of anabolic steroid use among male high school seniors. Journal of the American Medical Association, 260, 3441-3445.
- Choma, C.W., Sforzo, G., & Keller, B. (1998). Impact of rapid weight loss on cognitive function in collegiate wrestlers. Medicine and Science in Sports and Exercise, 30, 746-749.
- Clark, N. (1995). Making weight: Tips for successful dieting. The First Aider, 66 (1), 1-7.
- Duda, J.L. (1987). Toward a development theory of children's motivation in sport. Journal of Sport Psychology, 9, 130-145.
- Duda, J.L. (1989a). Goal perspectives and behavior in sport and exercise settings. In J. Nicholls (Ed.), Advances in motivation and achievement: Motivation enhancing environments, (pp. 81-115). New York: JAI.
- Duda, J.L. (1989b). Relationship between task and ego orientation and the perceived purpose of sport among high school athletes. Journal of Sport & Exercise Psychology, 11, 318-335.
- Duda, J.L., & Nicholls, J.G. (1992). Dimensions of achievement motivation in schoolwork and sport. Journal of Educational Psychology, 84, 290-299.
- Fogelholm, M. (1994). Effects of body weight reduction on sports performance. Sports Medicine, 18, 249-267.
- Freishclag, J. (1984). Weight loss, body composition, and health of high school wrestlers. The Physician and Sportsmedicine, 12 (1), 121-126.
- Gill, D.L. (1993). Competitiveness and competitive orientation. In R. Singer, M. Murphey, & L. Tennant (Eds.), Handbook of research on sport psychology, (pp. 314-327). New York: Macmillan.
- Gill, D.L., & Deeter, T.E. (1988). Development of the sport orientation questionnaire. Research Quarterly for Exercise and Sport, 59, 191-202.

- Gill, D.L., & Dziewaltowski, D.A. (1988). Competitive orientations among intercollegiate athletes: Is winning the only thing? The Sport Psychologist, 2, 212-221.
- Gill, D.L., Kelley, B.C., Martin, J.J., & Caruso, C.M. (1991). A comparison of competitive-orientation measures. Journal of Sport & Exercise Psychology, 8, 266-280.
- Hartman, A., & Maehr, M. (1984). In search of a remedy. In D. Barty & M. Maehr (Eds.), Advances in motivation and achievement, (pp. 37-72). Greenwich, CT: JAI.
- Hunt, V. (1998, October). Wrestling with changes. NATA News, 10-12.
- Lochbaum, M., & Roberts, G. (1993). Goal orientations and perceptions of the sport experience. Journal of Sport & Exercise Psychology, 15, 160-171.
- Merk, M. (1995). Losing to win. Training and Conditioning, 5 (6), 13-17.
- Metz, G. (1998). The NCAA weighs in. Training and Conditioning, 7 (4), 16-23.
- Mihoces, G. (1997, December 18). Deaths raise suspicions. USA Today, p. 3C.
- Mourier, A., Bigard, A., de Kerviler, E., Roger, B., Legrand, H., & Guezennec, C.Y. (1997). Combined effects of caloric restoration and branch-chained amino acid supplementation on body composition and exercise performance in elite wrestlers. International Journal of Sports Medicine, 18, 47-55.
- Nicholls, J.G. (1984). Conceptions of ability and achievement motivation. In R. Ames & C. Ames (Eds.), Research on motivation in education: Student motivation, (pp. 39-73). New York: Academic.
- Nicholls, J.G. (1989). The competitive ethos and democratic education. Cambridge, MA: Harvard University Press.
- Oopik, V., Paasuke, M., Sikku, T., Timpmann, S., Medijainin, L., Ereline, J., Smirnova, T., & Gapeja, E. (1996). Effect of rapid weight loss on metabolism and isokinetic performance capacity. Journal of Sports Medicine and Physical Fitness, 36, 127-131.
- Periello, V.A., Almquist, J., Conkwright, D., Cutter, D., Gregory, D., Pitrezzi, M., Roemmich, J., & Snyders, G. (1995). Health and weight control management among wrestlers. Virginia Medical Quarterly, 122, 179-183.

Perry, P., Andersen, K., & Yates, W. (1990). Illicit anabolic steroid use in athletes. American Journal of Sports Medicine, 18, 422-427.

Rankin, J., Ocel, J., & Craft, L. (1996). Effect of weight loss and refeeding diet composition on anaerobic performance in wrestlers. Medicine and Science in Sports and Exercise, 28, 1292-1299.

Roemmich, J.N., & Sinning, W.E., (1997a). Weight loss and wrestling training: Effects on growth-related hormones. Journal of Applied Physiology, 82, 1760-1764.

Roemmich, J.N., & Sinning, W.E. (1997b). Weight loss and wrestling training: Effects on nutrition, growth, maturation, body composition, and strength. Journal of Applied Physiology, 82, 1751-1759.

Smith, C. (1969). Introduction. In C. Smith (Ed.), Achievement related motives in children, (pp. 1-11). New York: Russell Sage Foundation.

Solmon, M., & Boone, J. (1993). The impact of student goal orientation in physical education classes. Research Quarterly for Exercise and Sport, 64, 418-424.

Spence, J.T., & Helmreich, R.L. (1983). Achievement-related motives and behaviors. In J.T. Spence (Ed.), Achievement and achievement motives (pp. 7-74). San Francisco: W.H. Freeman.

Steen, S., & Brownell, K. (1990). Patterns of weight loss and regain in wrestlers: Has the pattern changed? Medicine and Science in Sports and Exercise, 22, 762-768.

Tarnopolsky, M.A., Cipriano, N., Woodroft, C., Pulkkinen, W., Robinson, D., Henderson, J., & MacDougall, J. (1996). Effects of rapid weight loss and wrestling on muscle glycogen concentration. Clinical Journal of Sports Medicine, 6, 78-84.

Utter, A., & Kang, J. (1998). Acute weight gain and performance in college wrestlers. Journal of Strength and Conditioning Research, 12, 157-160.

Utter, A., Stone, M., O'Bryant, H., Summinksi, R., & Ward, B. (1998). Sport-seasonal changes in body composition, strength, and power of college wrestlers. Journal of Strength and Conditioning Research, 12, 266-271.

Veroff, J. (1969). Social comparison and the development of achievement motivation. In C. Smith (Ed.), Achievement related motives in children, (pp. 46-101). New York: Russell Sage Foundation.

Webster, S., Rutt, R., & Weltman, A. (1990). Physiological effects of a weight loss regimen practiced by college wrestlers. Medicine and Science in Sport and Exercise, 22, 229-234.

Yaeger, R.M. (1990). Statistics: A spectator sport. Newbury Park, CA: Sage.

Yankanich, J., Kenney, W., Fleck, S., & Kraemer, W. (1998). Precompetition weight loss and changes in vascular fluid volume in NCAA Division I college wrestlers. Journal of Strength and Conditioning Research, 12, 138-145.

Yesalis, C. (Ed.). (1993). Anabolic steroids in sport and exercise. Champaign, IL: Human Kinetics.

Appendix A

The Sport Orientation Questionnaire

The following statements describe reactions to sport situations. We want to know how you usually feel about sports and competition. Read each statement and circle the letter that indicates how much you agree or disagree with each statement on the scale: A, B, C, D, or E. There are no right or wrong answers; simply answer as you honestly feel. Do not spend too much time on any one statement. Remember, choose the letter that describes how you usually feel.

	Strongly agree disagree	Slightly agree	Neither agree nor Disagree	Slightly disagree	Strongly
1. I am a determined competitor	A	B	C	D	E
2. Winning is important	A	B	C	D	E
3. I am a competitive person	A	B	C	D	E
4. I set goals for myself when I compete	A	B	C	D	E
5. I try my hardest to win	A	B	C	D	E
6. Scoring more points than my opponent is very important to me	A	B	C	D	E
7. I look forward to competing	A	B	C	D	E
8. I am most competitive when I try to achieve personal goals	A	B	C	D	E
9. I enjoy competing against others	A	B	C	D	E
10. I hate to lose	A	B	C	D	E
11. I thrive on competition	A	B	C	D	E
12. I try hardest when I have a specific goal	A	B	C	D	E
13. My goal is to be the best athlete possible	A	B	C	D	E
14. The only time I am satisfied is when I win	A	B	C	D	E
15. I want to be successful in sports	A	B	C	D	E
16. Performing to the best of my ability is very important to me	A	B	C	D	E
17. I work hard to be successful in sports	A	B	C	D	E
18. Losing upsets me	A	B	C	D	E
19. The best test of my ability is competing against others	A	B	C	D	E
20. Reaching personal performance goals is very important to me	A	B	C	D	E
21. I look forward to the opportunity to test my skills in competition	A	B	C	D	E
22. I have the most fun when I win	A	B	C	D	E
23. I perform my best when I am competing	A	B	C	D	E
24. The best way to determine my ability is to set a goal and try to reach it	A	B	C	D	E
25. I want to be the best every time I compete	A	B	C	D	E

Appendix B

Personal Training Information

Age_____Gender_____Normal Weight_____Years Wrestling_____Weight Class_____

Please circle yes or no for each question.

If you answer yes, please circle the frequency where applicable.

Do You:	Yes	No
1) Frequently exercise during the offseason?	Y	N
2) Consider yourself overweight in the offseason?	Y	N
3) Use weightlifting as a major part of your offseason regimen?	Y	N
4) Use endurance activities (running, biking, etc) as a major part of your offseason regimen?	Y	N
5) Use strength supplements (creatine, chromium picolonate, etc) ? -if yes, which one(s)_____	Y	N
6) Participate in other competitive sports?	Y	N
7) Follow a strict diet during the offseason?	Y	N
8) Use power exercises (olympic lifts, plyometrics) during the offseason?	Y	N
9) Alternate weight classes during the season? -if yes, how often once a year/ 2-3 times a year/ 3+ times a year	Y	N
10) Cycle your weight to make the weight class? (lose wt, gain it back, lose it the next week, etc) -if yes, how often once a year/ 2-3 times a year/ 3+ times a year	Y	N

If you answered yes to number 10, please answer number 11-18

If you answered no to number 10, please go to number 19

Do you:

11) Go without food for at least 12 hours?
-if yes, how often
times per week_____ or
times per season_____	Y	N
12) Go without drinking fluids for at least 12 hours?
-if yes, how often
times per week_____ or
times per season_____	Y	N
13) Exercise outside of practice during the season?
-if yes, how often
times per week_____ or
times per season_____	Y	N
<i>outside of practice, do you (#14-17);</i>		
14) Exercise with a rubber/plastic suit?
-if yes, how often
times per week_____ or
times per season_____	Y	N
15) Exercise in a sauna or steamed room?
-if yes, how often
times per week_____ or
times per season_____	Y	N
16) Use diet pills?
-if yes, how often
times per week_____ or
times per season_____	Y	N
17) Induce vomiting?
-if yes, how often
times per week_____ or
times per season_____	Y	N
18) Use laxatives?
-if yes, how often
times per week_____ or
times per season_____	Y	N

STOP please turn in survey...Thank you!

Do you:

19) Wrestle the same weight class in consecutive seasons?	Y	N
20) Eat 3 meals a day during the season?	Y	N
21) Drink fluid other than water during the season?
-if yes, what? _____	Y	N
22) Keep track of carbohydrates/ protein/ fat in your diet?	Y	N
23) Snack between meals during the season?	Y	N
24) Follow a vegetarian diet?	Y	N
25) Consider self knowledgeable in the area of nutrition?	Y	N
26) Consider self knowledgeable in the area of
strength training/ conditioning?	Y	N

PLEASE TURN IN SURVEY...THANK YOU!

Appendix C

Agreement to Participate in Research

Principal investigator: David Albert, graduate student, San Jose State University

Title of Project: Competitive orientation and weight loss methods in high school wrestlers

My child or ward has been asked to participate in a research study investigating the relationship between competitive attitudes and physical training and weight loss methods in wrestlers. My child or ward will be asked to complete an anonymous survey at his/her own leisure. There are no risks or benefits to my child or ward anticipated with participation in this study.

Questions about the research may be addressed to the principal investigator (David Albert-408-929-2203). Complaints about the research may be presented to Dr. David Furst, thesis committee chair (408) 924-3039 or to Dr. Carol Christensen, Chair, Dept. of Human Performance (408) 924-3010. Questions about research, subjects' rights, or research-related injury may be presented to Nabil Ibrahim, Ph.D., Acting Vice President for Graduate Studies and Research, at (408) 924-2480.

There will be no service of any kind lost for choosing not to participate in the study. This consent is voluntary. My child or ward may refuse to participate in any part of the study. If my child or ward refuses to participate, there will be no prejudice to my relations with San Jose State University.

I will keep one copy of the signed and dated consent form.

- The signature of the parent or guardian on this document indicates approval for the child or ward to participate in the study and that the child or ward is freely willing to participate.
- The signature of the researcher on this document indicates agreement to use the above named subject in research and that the subject has been fully informed of his or her rights.

Name of child or ward: _____

Parent/guardian signature: _____

Date: _____

Relation to child or ward: _____

Mailing address: _____

Investigator's signature: _____

Date: _____

Appendix D

Agreement to Participate in Research

Principal investigator: David Albert, graduate student, San Jose State University

Title of Project: Competitive orientation and weight loss methods in high school wrestlers

I have been asked to participate in a research study investigating the relationship between competitive attitudes and physical training and weight loss methods in wrestlers. I will be asked to complete an anonymous survey at his/her own leisure. There are no risks or benefits to myself anticipated with participation in this study. The results of this study may be published, but there will be no information identifying the subjects in the study.

Questions about the research may be addressed to the principal investigator (David Albert-408-929-2203). Complaints about the research may be presented to Dr. David Furst, thesis committee chair (408) 924-3039 or to Dr. Carol Christensen, Chair, Dept. of Human Performance (408) 924-3010. Questions about research, subjects' rights, or research-related injury may be presented to Nabil Ibrahim, Ph.D., Acting Vice President for Graduate Studies and Research, at (408) 924-2480.

There will be no service of any kind lost for choosing not to participate in the study. This consent is voluntary. I may refuse to participate in any part of the study. If I refuse to participate, there will be no prejudice to my relations with San Jose State University.

I will keep one copy of the signed and dated consent form.

- The signature of the subject on this document indicates agreement to participate in this study
- The signature of the researcher on this document indicates agreement to use the above named subject in research and that the subject has been fully informed of his or her rights.

Signature: _____ Date: _____

Investigator's signature: _____ Date: _____