

Mood States of Division III Collegiate Wrestlers

A THESIS

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by

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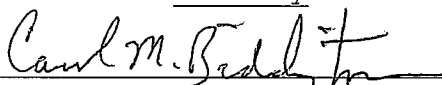
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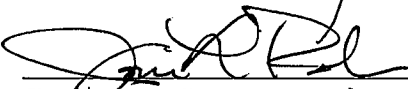
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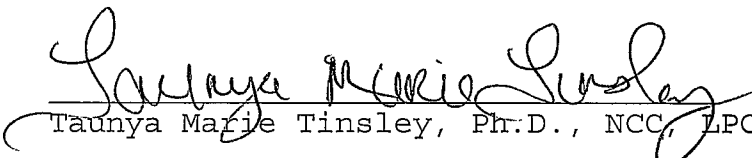
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INTRODUCTION

Wrestling places a high metabolic demand on the body and a vast amount of energy is required to allow peak performance in an athlete. However, wrestling is known for placing restrictions on weight, both to keep the competition level and to keep the athletes safe. These restrictions may hinder the athlete's ability to maintain proper nutrition levels while staying at their certification weight. Throughout a season a wrestler may undergo a wide range of weight fluctuation both gaining and losing weight. This rapid changing of weight, whether loss or gain, has an effect on the body. Physically, rapid weight loss can have drastic effects on the body. Mentally, rapid weight loss can affect the athlete's concentration and other cognitive processes.

The negative effects of rapid weight loss can be seen best in a series of incidences that occurred during the 1997-1998 wrestling season. Three wrestlers died within weeks of each other because of improper weight loss techniques.¹ The average amount of weight lost by these three athletes was a combined 14.5 pounds in only 13 hours. A healthy amount of time to lose 14.5 pounds is 8 weeks. These unfortunate deaths led to the NCAA changing some

rules regarding weight loss.²⁻⁴ Studies were also conducted evaluating different effects cutting weight has on the mental and physical functions of the athlete. These studies examined things ranging from mood state and emotions⁵⁻⁹ to body mass, hormone dysfunction, and incidence of injury.^{2,10-13}

The NCAA has many rules and regulations regarding the health and safety of its athletes.¹³ These rules govern how a wrestler may lose weight, how much weight they can lose in a set period of time, when they weigh in, and the amount of time allowed for the wrestler to reach a specific weight in a safe manner.

These new rule changes have led to studies being performed on their effectiveness in both keeping athletes healthy and allowing them to reach their prospective weight class. Three different studies evaluated all three divisions of wrestling,² the changes in weight loss before and after matches,¹⁴ and at 7 different rule changes and how they affect the athletes.¹³

Different techniques were examined for proper mechanisms to losing weight in wrestling. There are many different ways to cut weight. An athlete can work out and diet regularly. They can also take more drastic measures such as working out in a heated room, restricting food

intake, restricting fluids, increasing exercise, and working out while wearing sweat impermeable suits (anything that interferes with the body's ability to thermoregulate properly).

Oppliger et al⁴ performed a study which examined the different ways that wrestlers lose weight to help determine if the new rule changes have any effect. They took a survey of 52 different schools with a response of 19 subjects per team. The subjects were asked different questions about their weight loss methods, competitive performance/extent of weight loss, and their assessment of their eating behaviors. The results of this survey showed that the rule changes did seem to have some effect on how the athletes cut weight and that even though wrestlers know the proper ways to lose weight, they may use unsafe methods when the wrestlers feel the need calls for other weight loss methods.⁴

One main concern about cutting weight is the effect that rapid weight loss has on the body, both physically and mentally. The physical changes can be seen in muscles mass changes, losses in strength, and in decreases in endurance. One study¹⁰ examined the decreases in muscle mass and strength using a Biodex dynamometer to measure their force production. When evaluating body mass, there was a

significant increase in body mass from the midseason to postseason checks at 2.9% (2.38kg). There was also a significant increase of 3.8% (3.1kg) from preseason to postseason. Another study also showed that a decrease in hormone production during periods of cutting weight may not be harmful for short periods, but when the results last for a time, over a season, they can have negative effects on the health of the athlete. These effects can have an even greater affect in younger athletes who are still developing.¹⁰

Minimal research has been conducted on the psychological effects. Having the proper knowledge of the effects that cutting weight has on the psychology of athletes and their psychosocial development is especially important for collegiate and high school level athletes. Cognitively, these athletes are still learning and may be put at a disadvantage in the classroom if they are focused or not performing at their best due to cutting weight. There have been studies which evaluated the changes on the mood states, the changes in cognition levels, and how an athlete perceives their performance.

For example, Landers et al.⁸ examined the effect of weight loss on cognition using high school wrestlers. There were 45 athletes who were actively cutting weight. During

this time, they were given a series of cognitive tests and the results showed a decreased performance level in the experimental group.⁸ Other studies examined mood states and how they were affected by the act of cutting weight. These studies all showed a decrease in mood states over a period of time while cutting weight.⁵⁻⁷ Thus suggesting that after cutting weight for a period of time, the negative mood was more prevalent.

Other sports may also be affected by the requirements to cut weight.¹⁵⁻¹⁹ They include different martial arts, boxing, and horse racing. These other sports were shown to be affected by cutting weight just like wrestlers. These effects ranged from an increase in negative moods, decrease in cognitive function and concentration, and increase in concerns about weight and appearance.¹⁵⁻¹⁹

While other studies have examined the effects of weight loss on the physical and mental aspects of athletes, there is limited research regarding specific weight classes. The differences in weight classes may lead to different results between subjects especially since some wrestlers need to worry about cutting weight more than other wrestlers.

The purpose of this study is to answer the following research questions: (1) Is there a correlation between cutting weight over a 7 day period and mood state? (2) Is there a correlation between cutting weight over a 30 day period and mood states? (3) Is there a difference in mood state scores amongst weight classes?

METHODS

The following section will detail the methods employed in this research project. Included in this section are Research Design, Subjects, Instruments, Procedures, Hypotheses, and Data Analyses for the following descriptive research.

Research Design

This descriptive research examined the correlation between periods of time cutting weight and the mood state of Division III collegiate wrestlers. The independent variables were days per week of cutting weight, days per month cutting weight, and weight class. The dependent variable was the scores for the Profile Of Mood States (POMS) survey. This research may expand the knowledge athletic trainers, physicians, sport psychologists, counselors, and other sports medicine professionals have regarding mood state and weight loss. This study may not be applicable to all wrestling athletes as it is only being conducted in the Metropolitan Conference of NCAA Division III wrestling.

Subjects

The subjects consisted of 56 Division III wrestling athletes from 4 different schools in Pennsylvania averaging 14 wrestlers per team. The subjects ranged from freshmen to seniors and had varying levels of experience. The teams included Wilkes University, York College, Waynesburg University, and Washington and Jefferson University. The researcher met with each team at a predetermined time agreed upon by both the researcher and team coach. The researcher explained to the subjects their role in the study. All subjects were asked to complete a packet containing an Informed Consent Form (Appendix C1) and the Profile of Mood States (POMS) survey (Appendix C2). All subjects had the right not to participate in the study and subject numbers varied according to willingness of participants.

Instruments

All subjects were given a packet which included an informed consent form and the Profile of Mood States (POMS) survey. Demographic questions included current age, year in school, certification weight class, average weight

fluctuation between matches, current weight, starting position, alternate position, concerns about cutting weight, currently cutting weight, average number of days spent actively cutting weight in the past 7 days, and average number of days spent actively cutting weight in the past 30 days.

The Profile of Mood States (POMS) was used to measure the mood states of the athletes or how the athletes feel at a given time. The POMS is a 65 question self-reported survey which measures six subscales: 1) anger items including "angry" and "peevish", 2) depression items including "unhappy" and "sad", 3) tension items including "tense" and "worried", 4) confusion items including "uncertain" and "confused", 5) fatigue items including "listless" and "worn out", and 6) vigor items including "clear-headed" and "considerate". The POMS consists of a 5-point Likert scale ranging from 1(not at all) to 5(extremely). All subjects circle the corresponding number according to their present mood state. All subscales are tallied and a Total Mood Disturbance score (TMD) is measured adding the Anger, Depression, Confusion, Tension, and Fatigue scores and subtracting from that number, the Vigor score. A value of 100 points is added to each score to assure a positive value. The higher the number, the

greater the incidence the athlete faces for psychological disturbance or negative mood state. The range of the TMD score is -32 to +200, with higher scores indicating more mood disturbance. The POMS is commonly used in sport and exercise psychology^{5-8,17,18} and has an internal consistency reported at 0.63 to 0.96 Cronbach alpha rating for each subscale and TMD scale.²⁰

All subjects were asked to answer the questions on the survey honestly and to the best of their ability. The subjects were not required to write their names anywhere on the survey to secure their privacy.

Procedures

A Letter to Coaches (Appendix C3) introducing the researcher and explaining the purpose of the study was emailed to the head coaches for each institution surveyed. This email detailed information to inform the athletes what was expected of them. Response to this email provided consent for the researcher to meet with each team. The proposal of study along with each coach's permission letters were submitted to the California University of Pennsylvania Institutional Review Board (IRB) (Appendix C4) for approval. IRB required a letter (Appendix C5)

explaining to the coaches that they were not responsible for recruiting/requiring/coercing potential subjects. This letter was emailed to the four coaches. After IRB approval was received, a Letter to Meet Coaches (Appendix C6) was emailed to the head coaches for each of these schools to set up a meeting date. A follow up phone call was made to verify the receipt of the email. The researcher visited the schools at the agreed upon time to collect the data. When meeting with each team, the researcher talked with the athletes and explained the purpose and idea of the study. The researcher discussed how it will benefit them and answered any questions they had. The athletes were given a packet containing an informed consent form and the POMS survey. The athletes were asked to answer each question honestly and to the best of their ability. Upon completion of the survey packet, the packet was sealed in a locked cabinet that only the researcher had access to until all surveys were distributed and the results collected.

Hypotheses

The following hypotheses were used for this study:

- 1) There will be a correlation between number of days per week cutting weight and mood state.

- 2) There will be a correlation between number of days per month cutting weight and mood state.
- 3) There will be a difference between weight classes for mood state.

Data Analysis

The level of significance used for testing the hypotheses was set at an alpha level of .05.

- 1) A Pearson Product-Moment Correlation was used to determine if there was a correlation between number of days per week cutting weight and mood state.
- 2) A Pearson Product-Moment Correlation was used to determine if there was a correlation between number of days per month cutting weight and mood state.
- 3) An ANOVA was used to determine if there was a difference between weight classes for mood state.

RESULTS

Demographic Data

The sample consisted of Division III wrestlers (N=56) from Waynesburg University, Wilkes University, Washington and Jefferson University, and York College in Pennsylvania. Table 1 represents characteristics about the wrestlers of this study.

Table 1. Demographics of Wrestlers

Characteristic	Range	Mean \pm SD
Age	18-23	19.87 \pm 1.19
Certification weight Class	125-285	169.89 \pm 47.52
Pounds fluctuated between matches	0-19	7.67 \pm 3.93
Survey Weight	126-295	176.64 \pm 36.38
Number of days cutting In 7 days	0-6	2.13 \pm 2.06
Number of days cutting In 30 days	0-28	11.61 \pm 8.69

Table 2 shows the number of responses for each weight class. The wrestlers responses broken down by weight class are 125 lbs (9%), 133 lbs (12%), 141 lbs (9%), 149 lbs (18%), 157 lbs (11%), 165 lbs (7%), 174 lbs (11%), 184 lbs (4%), 197 lbs (4%), 285 lbs (12%). *Note that 183 and 177

are not typical NCAA weight classes but were filled in by the subjects.

Table 2. Certification Weight Class

Classification	Frequency	Percent
Lower Weight		
125	5	8.8
133	7	12.3
Middle Weight		
141	5	8.8
149	10	17.5
157	6	10.5
165	4	7.0
174	6	10.5
184	2	3.5
Heavy Weight		
197	2	3.5
285	7	12.3
*177	1	1.8
*183	1	1.8

Figure 1 shows the distribution ranges of the mood state scores based upon certification weight class.

Figure 1. Weight Class Certification Scores for Mood States

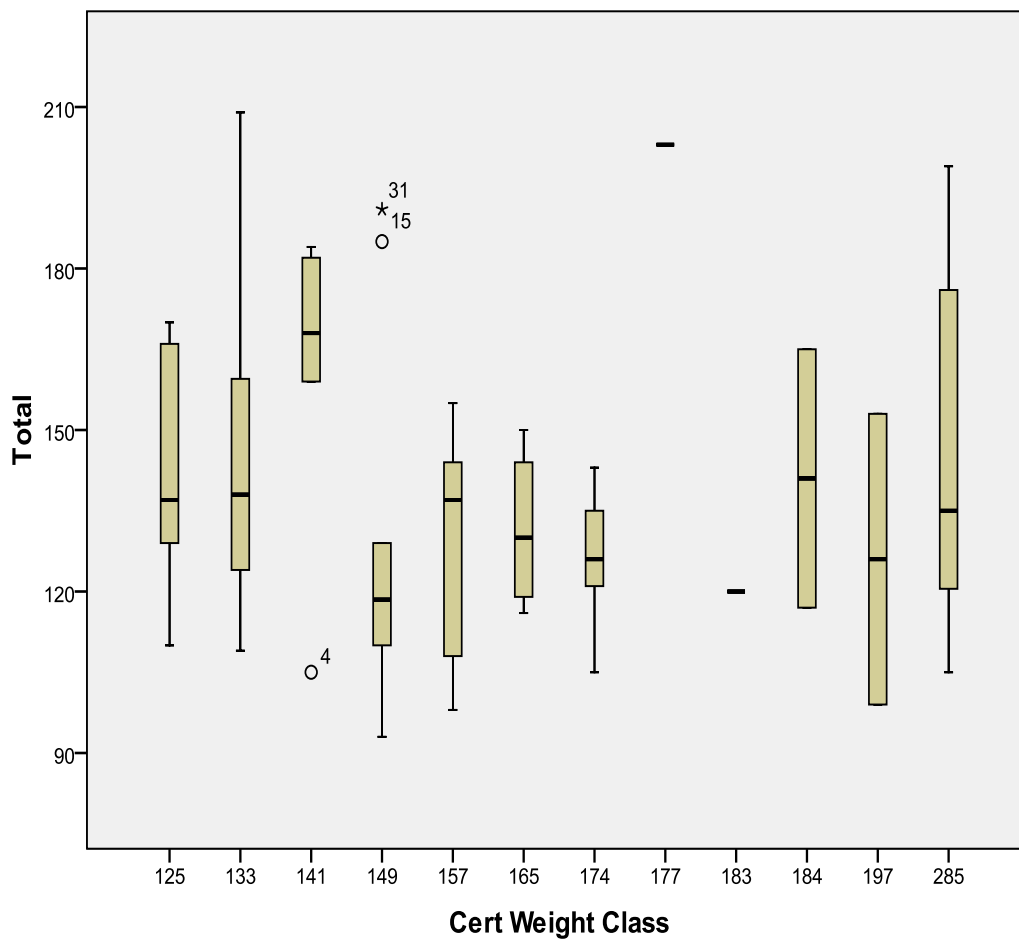


Table 3 shows the class ranking of wrestlers. A majority of the wrestlers were freshmen (33%) and sophomores (35%). Seniors totaled 16% of responses, juniors totaled 9%, and redshirt other counted for 5%.

Table 3. Class Rank

Classification	Frequency	Percent
Redshirt Freshman	0	0.0
Freshman	19	33.3
Sophomore	20	35.1
Junior	5	8.8
Senior	9	15.8
Redshirt Other	3	5.3

Table 4 states the frequency of wrestlers who are considered the starter at their weight class. A slight majority of those who responded are considered to be a starter at their weight class (60%) while 40% of those are not considered starters.

Table 4. Normal Starter at Weight Class

Classification	Frequency	Percent
Yes	34	59.6
No	22	38.6

Table 5 shows the frequency of wrestlers who are considered to be the alternate in their weight class. When asked if they were considered the alternate wrestler at their weight class a slight majority stated that they were (26%) while a small number were not (11%).

Table 5. Alternate Wrestler for Weight Class

Classification	Frequency	Percent
Yes	15	26.3
No	6	10.5

Table 6 shows the frequency of those wrestlers currently cutting weight. The responses were a majority of No to currently cutting weight (93%) while only 6% responded Yes.

Table 6. Currently Cutting Weight.

Classification	Frequency	Percent
Yes	3	5.3
No	53	93.0

Table 7 shows the number of subjects who worry about cutting weight in the off-season and those who do not. When asked if they worry about cutting weight in the off season, 21% responded that Yes, they worry. A majority (77%) stated that No, they do not normally worry about cutting weight.

Table 7. Normally Worry about Cutting Weight

Classification	Frequency	Percent
Yes	12	21.1
No	44	77.2

Table 8 states the weight loss effort amongst the subjects. A majority of the subjects found typical weight loss effort to be either fairly hard (21%) or quite a bit of work (37%). Other responses included not hard at all (14%), a little effort (9%), and extremely hard (18%).

Table 8. Typical Weight Loss Effort

Classification	Frequency	Percent
Not Hard at All	8	14.0
A little effort	5	8.8
Fairly Hard	12	21.1
Quite a bit of work	21	36.8
Extremely Hard	10	17.5

Hypothesis Testing

The level of significance used for testing the hypotheses was set at an alpha level of .05.

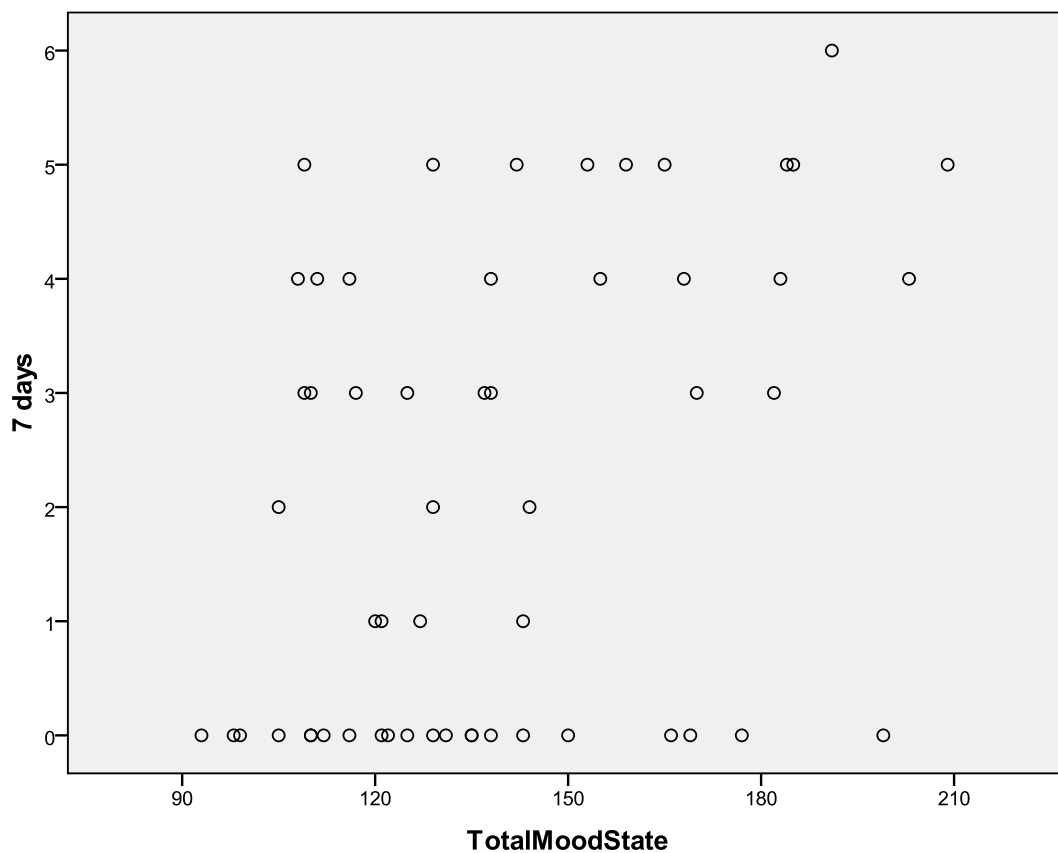
Hypothesis 1: There will be a correlation between number of days per week cutting weight and mood state.

A Pearson Product-Moment Correlation coefficient was calculated for the relationship between the TMD scores and the number of days cutting weight in a 7 day period. A weak, yet significant, positive correlation was found ($r_{54} = .383$, $p < .01$), indicating significant linear relationship between the two variables. The more days spent cutting weight in a 7 day period, the higher the negative mood. The results can be seen in Table 9 and Figure 2.

Table 9. Pearson Product-Moment Correlation between the TMD Scores and Number of days per 7 days cutting weight

Variable	n	r	P
TMD Scores and Number of Days	56	.383	.004

Figure 2. TMD Scores for 7 Days Cutting Weight



$$(r_{54} = .383, p < .01)$$

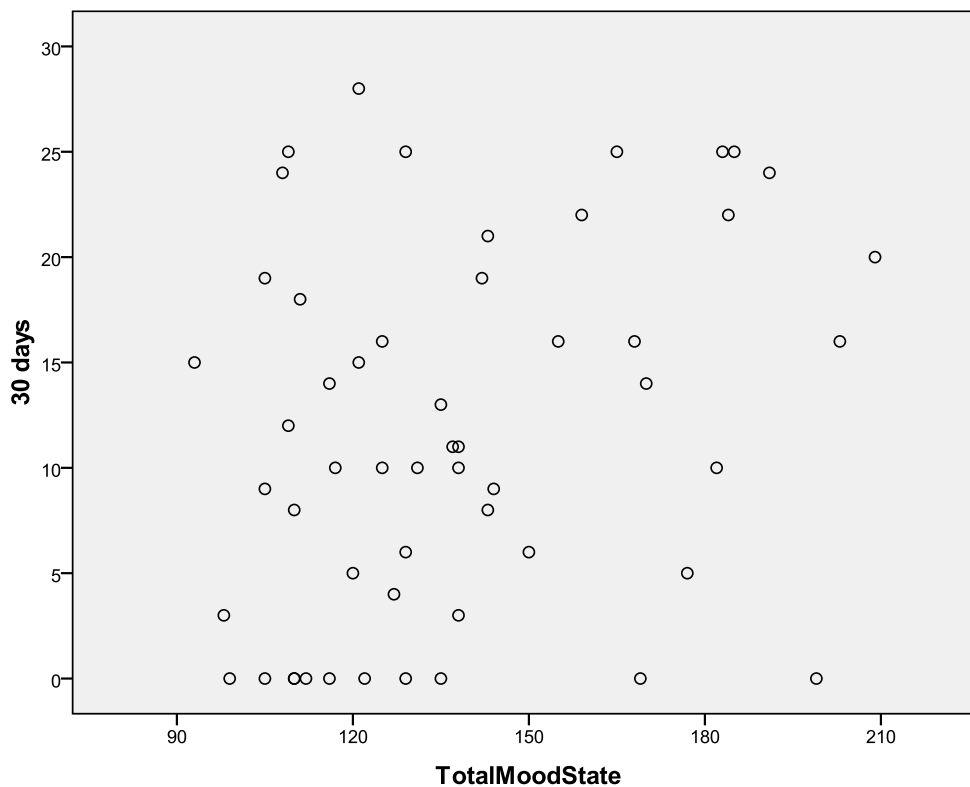
Hypothesis 2: There will be a correlation between number of days per month cutting weight and mood state.

A Pearson Product-Moment Correlation coefficient was used to calculate the relationship between the TMD scores and the number of days cutting weight in a 30 day period. A weak, yet significant, positive correlation was found ($r_{54} = .288$, $p < .05$) was found and this shows that there is a linear relationship between total mood scores and number of days in a 30 day period cutting weight. The more days spent cutting weight in a 30 day period, the higher the negative mood. These results can be seen in Table 10 and Figure 3.

Table 10. Pearson Product-Moment Correlation between the TMD Scores and Number of days per 30 days cutting weight

Variable	n	r	P
TMD Scores and Number of Days	56	.288	.035

Figure 3. TMD Scores for 30 Days Cutting Weight



$$(r_{54} = .288, p < .05)$$

Hypothesis 3: There will be a difference between weight classes for mood state.

The TMD scores from three different weight class categories were compared using a one-way ANOVA. No significant difference was found ($F_{2,53} = .463, p > .05$). The subjects from the three different weight classes did not vary amongst TMD. Subjects who were lightweight ($n=12$) had a mean score of 144.58 ± 30.68 . Subjects who were

middleweight (n=35) had a mean score of 135.83 ± 28.67 . Subjects who were heavyweight (n=9) had a mean score of 142.67 ± 35.55 . The results can be seen in Table 11.

Table 11. A One-Way ANOVA for TMD Scores Among Weight Classes.

	Type III Sum of Squares	df	MS	F	P
Between Groups	844.951	2	422.476	.463	.632
Within Groups	48409.888	53	913.394		
Total	49254.839	55			

Additional Findings

Additional testing examined a correlation between the amount of weight that a subject fluctuates between matches and their certification weight.

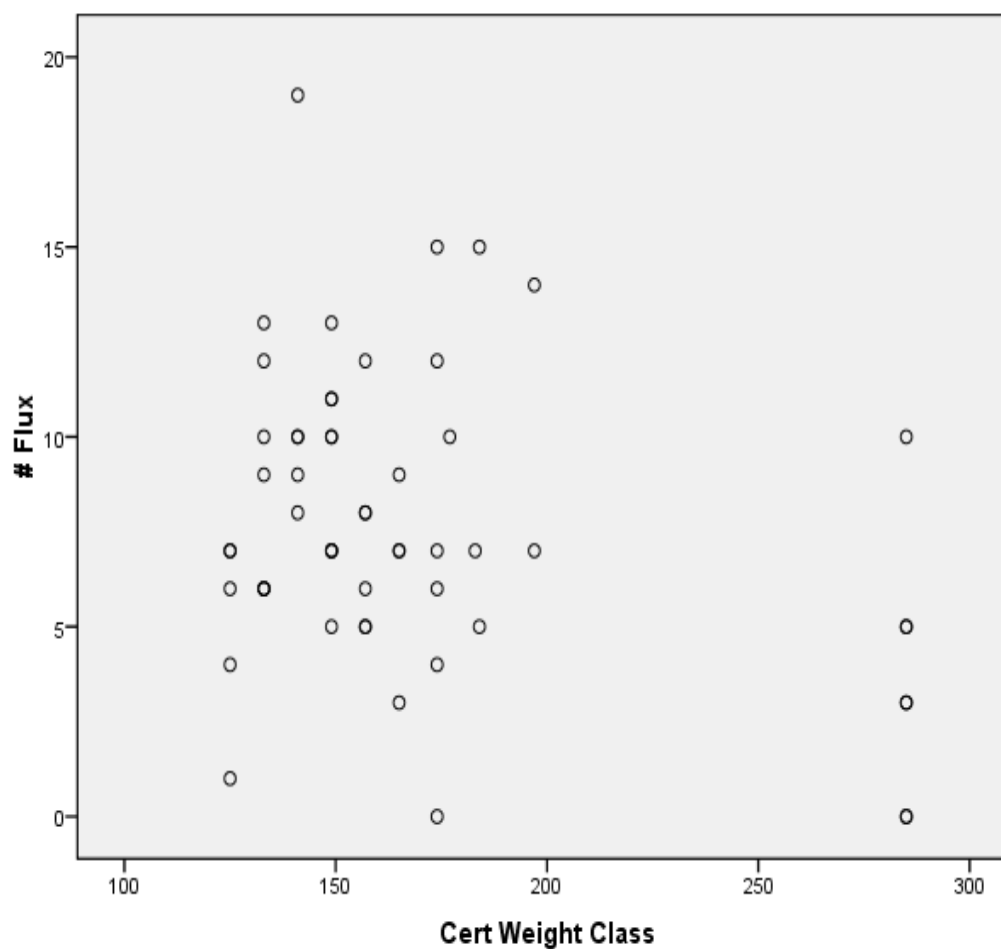
A Pearson Product-Moment Correlation coefficient was used and results showed a weak, yet significant, correlation between the two variables ($r_{54} = -.334$, $p < .05$). The results of this can be seen in Table 12 and Figure 2. These results indicate a negative correlation between the certification weight class and the amount of weight the wrestler fluctuates between matches showing that as the certification weight class gets higher the less

weight is fluctuated between matches. These results can be seen in Table 12 and Figure 4

Table 12. Pearson Product-Moment Correlation between the Number of Pounds Fluctuated and Certification Weight

Variable	n	r	P
Number of Pounds Fluctuated and Certification Weight	55	-.334	.013

Figure 4. Pounds Fluctuated and Certification Weight Class



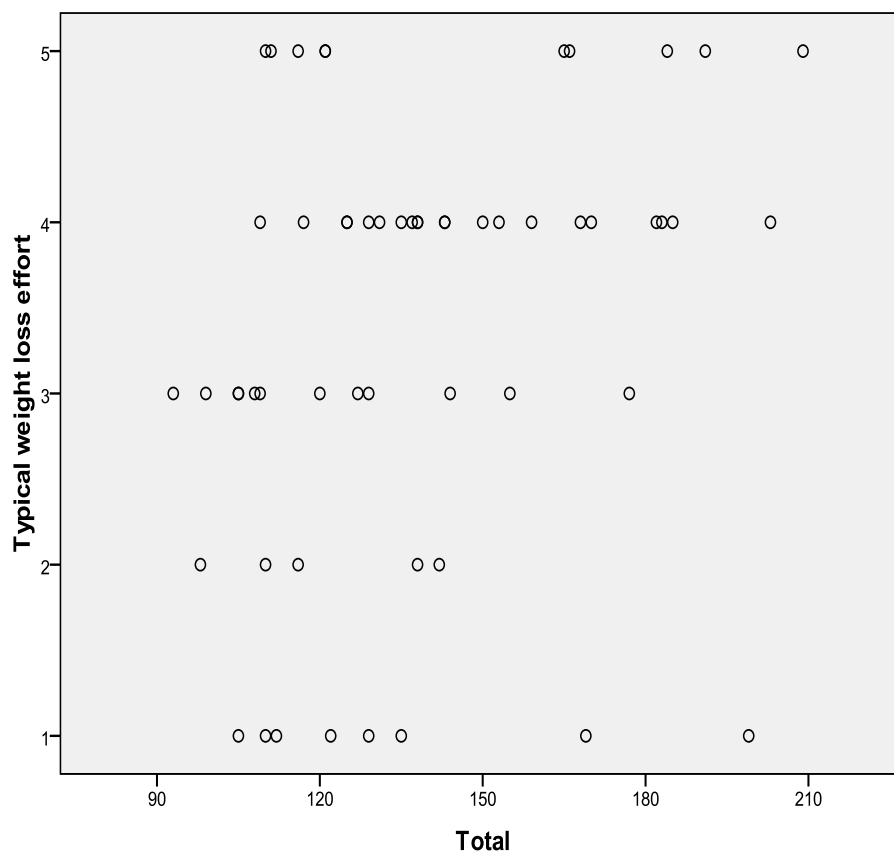
$$(r_{54} = -.334, p < .05)$$

Another Pearson Product-Moment Correlation was run using the TMD Scores and the total weight loss effort to determine any relationship between the effort needed by the subject to cut weight and their TMD. The results of this calculation showed a weak, yet significant correlation between TMD scores and weight loss effort ($r_{54} = .269, p < .05$). These results show a positive correlation which shows that the greater the effort the athlete must exert to cut weight the greater their TMD scores. The results of this can be seen in Table 13 and Figure 5.

Table 13. Pearson Product-Moment Correlation between the Typical Weight Loss Effort and TMD Scores

Variable	n	r	P
Typical Weight Loss Effort and TMD Scores	56	.269	.045

Figure 5. Typical Weight Loss Effort and TMD Scores



($r_{54} = .296, p < .05$)

The higher number of freshmen and sophomore responses led to additional testing which examined any differences between class rank for TMD and between class rank for amount of weight fluctuated between matches.

An ANOVA was run examining class rank for TMD and the results of this test can be seen in Table 14. This test compared the TMD scores between freshman and sophomores (lower classmen) and juniors and seniors (upper classmen).

There was no significance difference found $F_{1,51} = .760$, $p > .05$).

Table 14. A One-Way ANOVA for TMD Scores Among Class Rank.

	Type III Sum of Squares	df	MS	F	P
Between Groups	683.693	1	683.693	.760	.387
Within Groups	45879.326	51	899.595		
Total	46563.019	52			

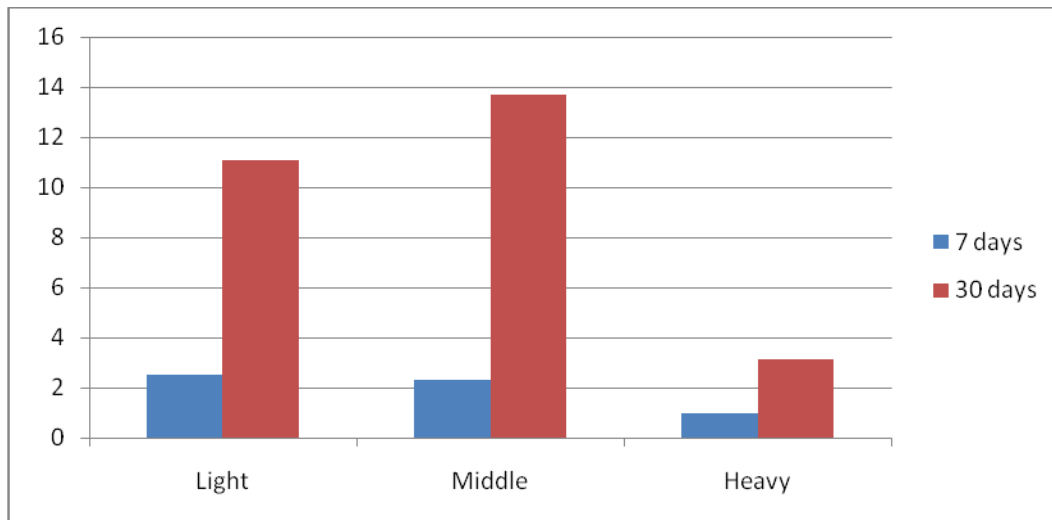
An ANOVA was run examining class rank for number of pounds fluctuated between matches and the results of this test can be seen in Table 15. This test compared the Number of Pounds Fluctuated between Matches between freshman and sophomores (lower classmen) and juniors and seniors (upper classmen). There was no significance difference found $F_{1,50} = .092$, $p > .05$).

Table 15. A One-Way ANOVA for Number of Pounds Fluctuated between Matches Among Class Rank.

	Type III Sum of Squares	df	MS	F	P
Between Groups	1.442	1	1.422	.092	.763
Within Groups	781.538	50	15.631		
Total	782.981	51			

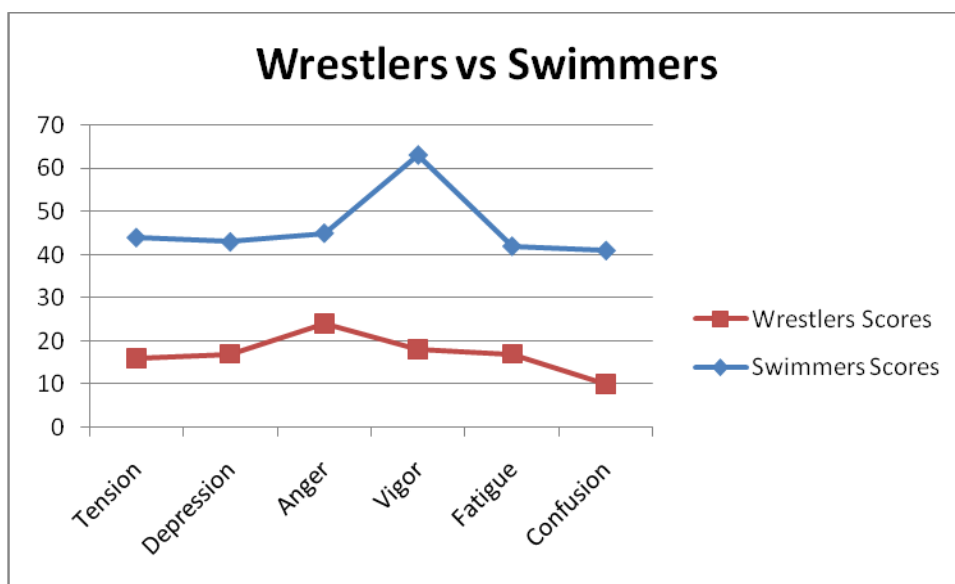
Mean scores were examined to observe the average number of days that were spent cutting weight as represented by each group of weight classes (lightweight, middleweight, and heavyweight). Figure 6 shows the average number of days spent by each group cutting weight over both 7 and 30 days.

Figure 6. Mean Scores for Number of Days Spent Cutting Weight



All subscales were evaluated and charted in Figure 7 representing the mean scores for each subscale. Specifically, the figure indicates that individuals expressed a higher degree of anger than any other mood, and confusion was the least reported emotion and closely representing a flattened mood profile which suggests a mood disturbance.²¹

Figure 7. Mood Profiles of Wrestlers Compared to Healthy Mood Profiles of Swimmers



DISCUSSION

Discussion of Results

The focus of this study was to determine the effect that cutting weight has on the overall mood states of collegiate wrestlers. The researcher evaluated Total Mood States, the number of days spent cutting weight in both a 7 day and 30 day period, certification weight class, and number of pounds lost fluctuated between typical matches. It is important to note that the higher the score for TMD, the more negative the mood of the subject.

Hypothesis 1 proposed that there would be a correlation between number of days per week cutting weight and mood state. There was a significant difference found between the two categories showing that the number of days in a 7 day period spent cutting weight has a significant effect on the overall mood scores of the athlete. These results agree with other findings^{10,11} that showed a negative change in mood states that is dependent on the period of time, such as early in the season, cutting weight.

Hypothesis 2 proposed that there would be a correlation between number of days per month spent cutting weight and mood state. The results showed a significant

relationship between the two variables showing that the higher the number of days in a 30 day period spent cutting weight, the higher the TMD and the more negative the effect on the overall mood state of the athlete.

These results coincide with other studies that showed the negative effects cutting weight has on the mood state of athletes.^{11,12} These results indicate that those athletes who spend a greater amount of time cutting weight, whether it be in a 7 day or 30 day period, will have a greater tendency to have an increased negative mood state. Athletes who display higher scores on the POMS should be monitored by the appropriate healthcare professionals as these athletes may tend to lean towards psychological dysfunction.

For example, athletes that are in weight restricting sports may benefit from completion of the POMS at the beginning of each season, such as with concussion testing, to formulate a baseline for each athlete's mood state. This baseline can then be used throughout the season if the coaches or athletic trainers notice a change in the athlete's attitude or personality. This testing can be performed in conjunction with the institute's counseling department to increase resources more readily available to the athlete.

Hypothesis 3 proposed that there would be a difference in mood scores between weight classes. The results showed no significant difference but what should be noted are the mean scores. The middleweight classes had a mean score that was about 7 points lower than the lightweight and heavyweight classes. This difference could be made more noticeable with a greater number of subjects. The results, as they are, show that regardless of weight class athletes have TMD. This is important for athletes, coaches, and athletic trainers to know because the more an athlete has to work to maintain a steady weight, such as those in the middle weight classes; the more likely they may be to resort to potentially unhealthy weight cutting methods. Additionally, they may be more likely to have mood disturbances that may require additional attention by the appropriate mental health care professional.

Coaches and athletic trainers should be aware that these athletes are under the most stress while cutting weight during the season. These athletes need to be monitored around match time to help avoid any problems that may arise such as improper weight loss and increased negative moods.

A positive, yet weak correlation was found to be significant between the TMD and the total weight loss

effort of an athlete. This correlation shows that the athletes that have to work harder to cut weight have more of a negative mood than those able to lose weight easily. These athletes are the ones who need to be monitored for complications arising from their attempts at weight loss. Not only are they more likely to have a greater instance of negative moods, but they also may be more likely to lean towards drastic and possibly unhealthy weight loss techniques. These athletes may also be at a greater risk of eating disorders, especially eating disorders not otherwise specified.

Correlations were also conducted between the amount of weight a subject fluctuates between matches and their main certification weight. A significant relationship was found which shows that as the certification weight class increases, the wrestlers need to lose less weight between matches.

Figure 1 depicts that those wrestlers who scored the lowest, on average, in TMD scores were those wrestlers in the 149 pound weight class. Those who scored highest, on average, were in the 141 pound weight class. The wrestlers who need to be most closely monitored for mood state

disturbances are those in the 141 pound weight class. These results can be seen in Figure 1.

When evaluating the differences between class rank for TMD scores, as seen in Table 14, Freshmen/Sophomores had a mean score of 138.28 ± 30.858 while juniors/seniors had a mean score of 146.43 ± 27.309 . The mean scores and standard deviations show a potentially large amount of overlap between the two groups which can explain the lack of significance.

When evaluating the differences between class rank for number of pounds fluctuated between matches, as seen in Table 15, the freshmen/sophomores had a mean score of 7.38 ± 3.984 and juniors/seniors had a mean score of 7.77 ± 3.855 . These mean scores along with the standard deviations help explain the lack of significance between groups because of the potential overlap of scores.

One other reason for the higher number of freshmen and sophomore responses may be due to natural attrition of sports. This means that as the athletes move through school, the chances of them not participating in a sport increase secondary to other scholastic responsibilities.

Figure 6 shows the mean scores for the number of days spent cutting weight in a set time period. It can be seen

that those wrestlers who most often cut weight are in what can be considered to be the middle weights (141-184). Over a seven day period, almost 39% of those who responded said that they spend zero days cutting weight, while almost 16% of them say they spend 5 days cutting weight in this same time frame. Over a 30-day period, the percentage of wrestlers who cut weight for zero days drops to 19.3% and almost 9% of them cut weight for 25 of thirty days. These changes in percentages indicate that as the time frame increases for cutting weight so does the number and frequency of the wrestlers who cut weight.

The average scores for each individual subscale are Anger (24), Vigor (18), Fatigue (17), Depression (17), Tension (16), and Confusion (10). Figure 7 is a visual representation of how the total scores for each mood subscale lie in comparison to each other. This representation shows that the subjects tend to feel higher anger while cutting weight. A normal iceberg profile shows a high Vigor score and lower scores in the other 5 subscales and is indicative of positive mental health. However, when there is increased amounts of stress, physical or mental, one's mental health can be challenged and is depicted with the flattening of the mood.

For example, the mood states of male and female collegiate swimmers measured and compared at early season, mid-season and late season. During mid-season evaluation of collegiate swimmers, a sample of swimmers showed a decrease in Vigor scores and an increase in Fatigue scores.²¹ This returned to normal during the post-season evaluation. Figure 7, showing elevated Anger and a marked decline in Vigor score would constitute continued monitoring by health care professionals and possibly mental health care professionals especially if the moods remain flattened. Additionally, further studies should be performed to check how long the negative mood states remain flattened.

Athletic trainers have an ethical responsibility to provide the best care possible to their athletes.²² In time they may encounter problems or situations that lie out of their scope of practice or personal knowledge background, because of this athletic trainers need to be able to know who to refer their patients to for further or advanced care. Athletic trainers often find themselves in the role of confidant and counselor to their athletes. This is an understandable position to be in given the amount of time spent with their athletes. This also means that athletic trainers need to be aware of potential psychological issues

they may encounter, know at least the basics of them, and understand who to refer the athlete to if the athletic trainer encounters something outside of their scope of practice. This is especially important amongst newly certified athletic trainers.

This research benefits other professions as well. Professional counselors and psychologists may be utilized by athletic trainers to help care for those athletes that are in weight restricting sports. One benefit can arise from completion of the POMS at the beginning of each season, such as with concussion testing, to formulate a baseline for each athlete's mood state. This baseline can then be used throughout the season if the coaches or athletic trainers notice a change in the athlete's attitude or personality that extends over a period of time. A baseline POMS score will also allow for any psychologists or counseling staff utilized by the athletic training staff to monitor the athletes progress during their rehabilitation process. Use of the POMS will help increase collaboration between the counseling and sports medicine departments and open up a wider variety of options for athletes who need treatment especially since many physical rehabilitation programs have mental aspects as well.

Conclusion

The results of this research showed that while wrestlers are affected by cutting weight, it is the amount of time spent cutting weight that is important. Wrestlers who spend a greater number of days focused on cutting weight on average have increased negative mood scores. This emphasizes the need to treat each wrestler individually and monitored for any changes in personality or attitude throughout the season.

Wrestling places a high demand upon the body, both physically and mentally. This demand is most evident amongst those wrestlers who need to maintain a strict mid-line weight. These wrestlers need to be monitored to make sure that they are properly cutting weight and not using unsafe methods to reach their weight loss goals or certification weight. Many wrestlers are aware of the changes in personality they undergo during the season, yet all seem to disregard these changes as no big deal. Taken at face value these changes may be nothing, but the reality of the matter is, the more an athlete needs to worry about cutting weight or making a lower weight class, the more

likely they are to engage in risky behaviors such as eating disorders.

The research shows that the effort to cut weight, as much as three-fourths of the subjects found losing weight to be fairly hard to extremely hard (Table 8), may have a greater psychological toll than the actual cutting weight itself. Athletic trainers, coaches, athletes, and those involved with the sports medicine team need to be aware of the effects of cutting weight. Athletes who spend more time worrying about cutting weight are more likely to have negative moods and these moods can transfer into other aspects of their life outside of the wrestling room. This stress can affect all aspects of the student-athletes life ranging from social changes, the athletes interaction with peers and friends may change, to academic, grades may suffer as may focus and concentration in the classroom. Athletic trainers and coaches need to be able to recognize which athletes are not only cutting the most weight, but which athletes have the hardest time cutting weight. The evidence of the negative effects that cutting weight has on mood states also identifies a potential need to include mental health care professionals in the evaluation and care of monitoring mood and its effects over time on both wrestlers and other athletic populations.

Recommendations

Those involved with the sport of wrestling, at all levels, should be aware of the changes that cutting weight has on the body. These changes may not be drastically obvious, but the smallest alteration in mood state can lead to a number of problems both in and out of the wrestling room.

The results of this study, while valuable, can be limited by the number of subjects involved. Future research could examine a broader range of athletes encompassing all three of the NCAA Divisions. Another aspect of the POMS that can be used is the ability to focus on specific moods themselves (anger, depression, vigor, confusion, tension, and fatigue). Additional research can further examine any differences between class rank and mood state scores.

Studies can also be conducted to evaluate other psychological alterations while cutting weight. Stresses outside of sport such as scholarship level, general health, and class load can also be examined to see what effects they have on the athlete. Studies can be conducted to examine the effect of cutting weight at various times during the season, especially closer towards important matches and the national championship tournaments and

following up post-season to examine long-term effects of cutting weight on TMD. Long-term effects research can be taken even further and examine the effects on a group over the course of multiple seasons. Effects of cutting weight may also be examined across both gender and sport.

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APPENDICES

APPENDIX A
Review of Literature

Review of Literature

This review of literature will look at previous literature that discusses the effects that rapid weight loss has on both the mental and physical state of wrestlers. Wrestling, along with other weight restricting sports, places a high metabolic demand on the body. Throughout a season a wrestler may undergo a wide range of weight fluctuation both gaining and losing weight. The rapid changing of weight, whether it is loss or gain, has an effect on the body. Physically, rapid weight loss can have drastic effects on the body. Mentally, rapid weight loss can affect the athlete's concentration, psychosocial development, and other cognitive processes.

An increased awareness of the negative effects of rapid weight loss resulted from events in the 1990's. In 1997, there were 3 wrestlers who died, within weeks of each other, because of improper weight-loss techniques. The first wrestler started the season at 233 pounds in August and was down to 210 only ten weeks later. The day that he passed away, he lost 9 pounds in eight and a half hours. The second wrestler started the season at 178 and was down to 157 only ten weeks later with 8 pounds lost in a three

day period. The day he died, he lost 3.5 pounds in three hours and his internal temperature was recorded at 108° F. The third wrestler started the season at 180 pounds and was down to 159 over thirteen weeks. Eleven of the 21 pounds lost were lost over a two day period. He lost 2 pounds in 75 minutes on the day he died. All three wrestlers were practicing while wearing outfits made of cotton and impermeable materials to maximize sweat loss.¹

This led to studies being performed on the negative effects on the body that originate from the sudden increases and decreases in weight. There were also important rule changes in the NCAA. Studies were done discussing and examining the effects of rapid weight gain and loss on both the physical and mental health of the athlete. These studies examined the moods and emotions of the wrestler, the body mass and incidence of injury while in season and fluctuating weight.

The intent of this review of literature is to discuss weight loss, the mental and physical effects of weight loss, and non-wrestlers. Weight loss will be broken down into the rules and techniques for cutting weight. The effects of weight loss will be broken down into the physical and psychological effects. A summary will also be provided.

Weight Loss

There are different styles of wrestling; Greco-Roman, Freestyle, Collegiate, and Submission. Each style of wrestling has different rules involving the types of moves allowed, how the matches are scored, and weight requirements for the athletes. The NCAA uses the collegiate form and has a set of rules in place to help maintain the health and safety of the athletes in the league.

Rules for Cutting Weight

Wrestling is a sport made up of ten different weight classes; 125 lbs., 133 lbs., 141 lbs., 149 lbs., 157 lbs., 165 lbs., 174 lbs., 184 lbs., 197 lbs., and heavyweight (183-285 lbs).² It is important to note that these weight classes apply to the collegiate level only, the weight classes in high school wrestling differ to accommodate for more weights. Many rules have been put into place regarding the practice of weight loss in wrestling which look to safeguard the well being of the athlete.

Some of the rules that affect how the athlete manages weight include: requirements for entering data about weight using the Optimal Performance Calculator, a weekly weigh-

in, the wrestlers are not able to lose more than 1.5 percent of their weight from the week before, and the athlete is limited to their certification weight class and the weight class above and below only. These rules have been studied to determine their effectiveness at keeping the athletes safe. The rules govern the amount of weight that is allowed to be lost in a period of time, the time frame in which this weight can be lost, the number of weight class changes allowed to be made, and time frames in which the athlete must be weighed in.²

Oppliger et al³ looked at how, if at all, the rule changes made by the NCAA helped decrease chance of injury due to rapid weight loss and gain. The study was two parts and took a look at all three divisions in collegiate wrestling. The first study examined the body composition and minimal weight during pre and post event weigh-ins, with a focus on three possible causes for weight differences. The causes were judged to be accuracy of assessment, the extent of weight loss to affect their minimal weight and changes in lean mass. The subjects were wrestlers at the national tournament with the breakdown by division as follows; Division I had 385 participants, Division II had 195 participants, and Division III had 231 participants. The wrestlers total body composition and

minimal body weight were assessed using skin fold calipers in accordance with the NCAA rules of assessment. The results for the first part of the test showed that the greatest differences in pre-match and post-match body fat were found in the heavy classes of wrestlers while the least difference was found in the lighter classes of wrestlers. This is to be expected as the body compositions in general lead to these outcomes.

The second part of the Oppliger study³ examined the rapid weight lost before the match compared to rapid weight gained after the match. This study consisted of 600 participants with the breakdown amongst divisions at 300 Division I, 108 Division II, and 192 Division III wrestlers. It only looked at wrestlers who progressed in the tournament past the first day as those who lost in day one no longer had to worry about cutting weight. No significant difference was seen among weight classes when looking at the rapid weight loss, but a significant difference was found amongst divisions with Division I averaging 1.4 ± 0.8 kg and Division II averaging 1.2 ± 0.8 kg. Division II wrestlers were put at 0.9 ± 0.9 kg loss which was a significant difference from both Divisions I and II.³

Another study was performed over two seasons from 1999-2000 and 2000-2001 by Ransone and Hughes.⁴ The study

involved a total of 78 male athletes. These athletes were asked to report for testing 24 hours prior, one hour prior, and 24 hours after their match. Their weights were recorded each time and the amount of fluctuation each time was noted. Significant differences were noted between 1 hour prior and 24 hours after. These results show that after a wrestler competes he increases his intake and this fluctuation in weight can cause problems.⁴

Seven main rule changes have been put in place since 1997 that affect different parts of the sport. These rules include establishing a weight class early in the season; making weigh-ins closer to the match time; establishing weigh-ins for each day of multi-day tournaments; having weigh-ins before and after each daily practice; eliminating tools that promote rapid hydration; encouraging CPR and first aid for coaches; and educating about the dangers, both acute and long term, of prolonged fasting and dehydration. These rules benefit the wrestler in various ways. Dr. Bryan Smith, medical consultant for the ACC, discussed how these rules affect the sport.⁵ Changing the weigh-in periods by moving them closer to match time and having the athletes weigh-in for each day of a tournament allows medical personnel and coaches to see which athletes are at risk of dehydration or other adverse affects of

cutting weight. Encouraging coaches to be CPR and first-aid certified and by educating the athletes themselves helps to make both parties aware of the dangers of rapid weight loss and dehydration while cutting weight. Scheduling weigh-ins before and after practice helps the athletes see where they are in regards to their hydration levels. This is especially important in younger athletes who may not have fully developed their ability to properly thermoregulate.

Techniques for Cutting Weight

The techniques for cutting weight are another variable that researchers have tried to study. There are many different ways that an athlete can cut weight including; gradual dieting, working out in a heated room, restricting food intake, restricting fluids, increasing exercise, and working out while wearing sweat impermeable suits (anything that interferes with the body's ability to thermoregulate properly). These techniques vary between the high school and college level.

The differences in weight classes and the need to maintain a strict weight lead to many different ways of cutting weight. The differences in weight classes and the need to maintain a strict weight lead to many different ways of cutting weight.

One study by Oppliger et al⁶ looked at the prevalence of ways that wrestlers cut weight and at their influences to engage in such acts. The researchers sent out a survey to 52 different schools in all three divisions of collegiate wrestling. The average response rate was 19.4 per team. Each survey was voluntarily completed. The survey examined four main areas including demographic information, weight loss methods, competitive performance/extent of weight loss, and assessment of eating behaviors. When analyzing methods for cutting weight in Divisions I, II, and III; Division II wrestlers showed a statistically significant higher prevalence for restricting food intake. The most prevalent methods of weight loss were gradual dieting and increased exercise at 79.5% and 75.2% respectively. Freshmen were more likely to participate in the more extreme forms of weight loss such as restricting food and working in heated wrestling rooms. Almost 50% did say they used fasting and other drastic methods at least once a month. These results showed that even though wrestlers know the proper ways to lose weight, they may use unsafe methods when they feel the need calls for them.⁶

Since wrestlers are under a constant stress of making weight and cutting weight, the prevalence of disordered eating has become a concern. These concerns lead to the

National Athletic Trainers' Association to construct a position statement setting up rules and guidelines to detect and treat eating disorders in athletics.⁷

Effects of rapid weight loss

Wrestling puts a great demand on the body in physical and mental ways. There is a delicate balance that needs to be maintained between muscular/physical demands and the need to keep weight restricted. This balance presents obvious physical challenges to the body along with having less obvious effects on the mental state of the athlete. Athletes who participate in weight restricted sports can compete in a class up to 10% below their normal body weight. These weight limitations can cause decreases in both mental and physical performances.

Physical Effects

One study by Buford et al⁸ examined if cutting weight had deleterious effects on the body such as decreased muscle mass or strength loss. They took 11 NCAA Division I volunteers, including two national champions, from various weight classes. Their average age was 19.45 ± 1.13 with an average height of 174.9 ± 10.9 cm. The athletes were tested

during the preseason period, a midseason test, and a postseason test which occurred two weeks after the conclusion of the national tournament. The mass of the athletes was determined through the use of a physician's scale and their body fat percentage was measured. They were then strength tested on a Biodex II dynamometer. Fifty concentric, isokinetic leg extensions were performed at 180° per second. The athlete's hip was set at 90° of flexion and the peak torque was computed using Newton meters divided by their body mass in kilograms.⁸ When looking at body mass, there was a significant increase in body mass from the midseason to postseason checks at 2.9% (2.38kg). There was a significant increase in weight of 3.8% (3.1kg) from preseason to postseason. This could mean that the athletes were aware of the demands on their body and adapted accordingly.⁸

A second study was performed by Karila et al⁹ at the Hospital Orton in Helsinki, Finland. The study wanted to see the effects that a rapid weight reduction program had on the body of 18 elite wrestlers. They studied the wrestlers using blood tests both before and after the regimen. The results of these tests showed a decrease in both luteinizing hormone and serum testosterone. These results, while not harmful in a short time period, can have

a negative effect on those athletes who are still growing, primarily youth and high school levels.⁹

As wrestlers lose weight and gain weight in short amounts of time, there are many negative effects on the body. These effects can predispose them to injury or even affect their growth if they are younger athletes. These changes need to be understood to help educate the athletes about the dangers of improper weight loss.

Psychological Effects

The psychological effects of cutting weight are less documented, yet hold equal value when looking at effects of rapid weight loss. The psyche of the athlete has a major effect on their ability to participate at their fullest potential.¹⁰ Only a few studies focused on the psychological effects of rapid weight loss, a majority focused on the physical effects.

One study performed by Landers et al¹¹ looked at the cognitive performance of high school wrestlers undergoing rapid weight loss. There were 45 males from 14-18 years of age (M = 16.45, SD = 1.28yrs). Of the 45 total, 31 were actively losing weight (the experimental group) and 14 were maintaining weight for various reasons (control group). Fourteen of the 31 were experiencing rapid weight loss,

losing more than 5% of their total body fat. They were asked to perform a battery of cognitive tests to test a wide range of skills. These tests included choice reaction time, Stroop tests, trail-making tests, Stroop color-word test, digit span subtest, and a two choice reaction-movement time test. The tests were given twice and lasted about 45 minutes each. The first session was held 5-10 days prior to competition when the athletes were at their normal weight and the second test was held 8-12 hours prior to weigh-ins. The experimental group lost an average of 4.68kg (6.34%) and the control group lost an average of .29kg (.36%). The study found no significant decreases in cognitive ability in the experimental group, but those wrestlers did display a decreased affective state.¹¹

Another study performed by researchers from the University of Northern Iowa used 15 wrestlers from the University's wrestling team. These athletes were asked to complete both mood surveys and three trials of arm workouts before weigh-ins, right after weigh-ins and up to one hour post weigh-ins after consuming a carbohydrate beverage or placebo. The results showed that mood states were negatively affected by the weight cutting while carbohydrate loading did not affect the scores.¹²

Additionally, two other studies looked at various affects of weight loss on both mood and cognitive functions. The studies used elite level athletes, amateur athletes, and collegiate wrestlers. The first study¹³ tested to see if there was a correlation between mood states and perfectionism. This correlation, if found, could explain the drive athletes have to succeed. The authors took 44 total subjects including 24 elite athletes and 20 recreational athletes. Both groups completed a Multidimensional Perfectionist Scale for Athletes (MPS-A) and the Profile of Mood States (POMS) surveys.¹³

The second study looked at collegiate wrestlers and the effects that rapid weight loss had on their cognitive functions. Twenty-nine wrestlers from Ithaca College were split into two groups, one research and one control. Both groups were tested at baseline, rapid weight loss, and dehydrated times. The control group was instructed to maintain a healthy weight while the experimental group performed rapid weight loss to ready for a competition. Both groups were tested using the POMS and the experimental groups showed transient mood reduction and memory impairment in the short term.¹⁴

While testing for changes in cognition level; capacity to focus, memory, concentration, and other mental domains

are important, it is equally important to realize that an athlete may be perfectly fine in these areas and still be affected psychologically by cutting weight. These concerns can carry over into the athlete's life outside of sport.

Something that can easily be overlooked is eating disorders. According to Carter,¹⁵ (p.304)

"professionals working with college student athletes need to be knowledgeable about disordered eating, because such professionals will undoubtedly face this issue." This is not limited to just the collegiate level athlete. Those health-care professionals, such as athletic trainers, who work in all sport settings including high school, youth, and professional may have to deal with eating disorders at some point during their career.¹⁵ Athletics are considered to be an interpersonal environment and these types of environments put increasing pressure on weight, body type, and appearances. These pressures can lead to higher risk factors for eating disorders¹⁶ Other risk factors for disordered eating (DE) can also be found in the world of athletics such as excessive discipline, high pain tolerance, and perfectionism.¹⁷ Athletes will often go to extremes to succeed in their sport.

When discussing eating disorders, it is important to be able to differentiate between the three main types;

Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Eating Disorder Not Otherwise Specified (EDNOS). These can be identified using the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*.¹⁸

According to the *Diagnostic and Statistical Manual of Mental Disorders*,¹⁸ Anorexia Nervosa can be identified using the following criteria; refusal to maintain body weight at or above a minimally normal weight for age and height, intense fear of gaining weight or becoming fat even when underweight, disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape of self-evaluation, denial of seriousness of current low body weight, or in post-menstrual females the absence of at least three consecutive menstrual cycles.

Bulimia Nervosa can be identified if the patient has recurrent episodes of binge eating, characterized by eating a larger than normal amount of food in about a two-hour time frame and a sense of lack of control over either amount eaten or duration of binging during these eating periods, compensatory behavior following these eating periods including but not limited to self-induced vomiting, laxatives or diuretics, and excessive exercise, self-evaluation is unjustly influenced by body shape and weight. Bulimia Nervosa can be defined in a purging (using

laxatives, diuretics, etc, or self-induced vomiting) and non-purging type (no self-induced vomiting, laxatives, etc).¹⁸

The third type of disordered eating, Eating Disorder Not Otherwise Specified, is the type that brings the most concern because the criteria to diagnose this disorder are very similar to anorexia nervosa and bulimia nervosa. These signs include; all criteria for AN are met except the patient is at a normal weight despite significant weight loss, females also have regular menses but the other signs of AN are present, all signs of BN may be present with the exception of the frequency of the binge eating or compensatory actions occur less frequently than twice a week or less than three months.¹⁸ This type of eating disorder is the most relevant to wrestlers as they have been shown to fast, use saunas, restricting food intake, and increasing exercise output.⁶ All of these techniques can lead to disordered eating if not properly monitored.

It is important for all involved with athletics from teammates, to the athletic trainer, to the coaches and athletic director to be aware of the causes, signs, symptoms, and ways to handle any cases of eating disorders that may arise. The National Athletic Trainers' Association (NATA) sets forth clearly defined, standardized educational

competencies that can help guide their work with athletes in the areas of DE, nutrition, and weight management.⁷ According to the NATA "Certified athletic trainers (ATC's) are to provide for psychosocial consultation and referral which means they are to identify potential psychosocial pathologies (e.g., disordered eating) frequently associated with ... athletes and refer them for appropriate diagnosis and management,"^{19(p.421)}

A survey of athletic trainers shows that amongst head athletic trainers in the Division IA and Division IAA settings, 78% felt their role was to identify and 97% to help athletes with eating disorders, but only 27% felt confident to identify and 38% felt confident enough to confront the athlete.²⁰ This lack of confidence makes it important for athletic trainers to build a line of communication not only with physicians and orthopedic doctors, but with counselors, sport psychologists, and psychiatrists if possible.

Non-Wrestlers

Wrestling is not the only sport which requires athletes to manage their weight. Gymnasts, boxers, martial artists, and jockeys are a few other types of athletes who

need to manage their weight carefully to compete and be successful at their sport. Each of these sports have different rules which dictate what an athlete is allowed to do to cut weight and how they are allowed to cut weight. They also have different rules which govern weigh-ins and time frames for weight loss.

Gymnasts need to be light, quick, limber, and tiny. These pressures can lead to increased psychological stress and disordered views on their appearance. According to a survey done in the NCAA in 1992, 51% of female gymnasts reported that they felt a teammate suffered from an eating disorder. This number was quite higher than other sports. According to USA today, a 2002 study showed that over half (55%) of 425 female college athletes reported that they felt pressure to achieve or maintain a certain weight while 43% reported they were terrified of being or becoming too heavy.²²

These stresses transfer to elite female athletes as well. A study by Skowron and Friedlander examined the preoccupation with weight using 55 elite female swimmers. The results of this study show that the percentage of swimmers who reported weight preoccupation was comparable to the general population of college women.²³

Judoists need to be quick, agile, and flexible. They also feel the effects that cutting weight has on the body and mind. A study performed in Japan under Yoskioka et al²⁴ examined differences between gender in response to weight loss. Twenty-two males and 8 females were studied while undergoing various forms of training. The changes in psychology were measured using POMS scores, anthropometric changes, and changes in nutritional intake. The POMS scores are important in measuring the athlete's mood state at a given time.²⁴

Jockeys are another class of athlete who need to worry about their weight. The lighter the jockey, the faster the horse can run. They are another athlete that can be affected both physically and mentally by weight loss. Caulfield and Karageorghis²⁵ took 41 professional jockeys and had them complete the Brunel Mood Scale (BRUMS) and the Eating Aptitudes Test-26 (EAT-26) at three main points in their season; minimal weight, optimal weight, and relaxed weight. The study wanted to look at the different effects that various stages of weight loss had on the mood states of the jockeys. The results of this study showed that while the jockeys were striving to get to their minimal weight, they scored more negatively on the BRUMS.²⁵

Boxers use a high amount of energy in a fairly short amount of time. They also face the demands of weight classes. A study conducted by Hall and Lane²⁶ also tested mood states after a weight loss period of one week. The authors took 16 boxers and asked them to make their competition weight within a week's timeframe. The boxer's underwent a vigorous workout and, at the end of the week's time, were asked to complete the POMS questionnaire. The results of the questionnaire showed a positive correlation between the rapid weight loss by the boxers and a negative mood state. This means that the more weight they had to lose or lost, the lower their mood score was.²⁶

The military contains some of the most physically fit men and women in the country. Their level of fitness is honed over time to allow them to perform at their optimal level for an extended period of time under any given circumstance. Their level of fitness is often attributed to their constant working and training, but some soldiers do worry about skipping meals to lose weight. This was examined in a study by Harrow et al²⁷; they surveyed soldiers' feelings towards weight loss. Out of the 100 soldiers surveyed, 62% were trying to lose weight during training and 25% skipped meals to help them lose weight. The authors examined other studies similar to theirs and

they found that this was a trend in many people who considered themselves to be overweight. This may be a problem that is encountered in weight restricted sports.²⁷

Summary

Cutting weight is necessary in many different sports. One of the most popular is wrestling. Wrestling places a high metabolic demand on the body and the athlete must balance the need for proper nutritional intake with the need for maintaining a certain weight. There is research showing that the effects of rapidly cutting and gaining weight have different effects on the body along with effects on the mind. Rapid weight loss has a negative effect on hormone production, muscle mass, and strength gains. Cutting weight in a short time frame also has a negative effect on moods and to some extent cognitive abilities such as short term memory. Wrestling isn't the only sport that suffers from the effects. Boxers, martial artists, even the military all have to worry about cutting weight and the negative effects it may have. Athletic trainers and other health care professionals need to be able to provide all types of care for their patients including psychological help to some extent.

APPENDIX B

The Problem

The Problem

Mood states can affect a person's physical and mental health. Wrestlers, along with other athletes in weight restricting sports, are under a constant pressure to cut weight and make weight for their next match. Not only do wrestlers have the constant mental stress of worrying about whether or not they will make the weight for their next match, they have the physical stress of trying to make that weight. During a season wrestlers may undergo a wide range of weight fluctuation of both weight loss and weight gain, often in a short period of time. The rapid changing of weight, whether it is loss or gain, has an effect on the body. Physically, rapid weight loss can have drastic effects on the body. Mentally, rapid weight loss can affect the athlete's concentration and cognitive performance.

Cutting weight has been shown to have a negative effect on both the physical aspects and mental aspects of a wrestler. Physically, rapidly cutting weight can decrease muscle mass and lead to strength losses^{7,8} leading to greater chance of injury. Mentally, the effects of rapid weight loss can be seen in the cognitive abilities, mood states, and affective state of the athlete.^{9,10,12,13}

The purpose of this study is to examine relationships between the number of days cutting weight and mood states and to see if there is a difference between weight classes for mood state scores.

Definition of Terms

To better understand this specific study, some terms must be operationally defined. The following definitions of terms will be defined for this study:

- 1) Cutting Weight - the process of losing weight to qualify for a weight class below the athlete's natural weight.⁶
- 2) Mood States - mild, pervasive, and generalized affective states that are perceived subjectively by individuals.²⁸
- 3) Profile of Mood States - a test designed to measure certain psychological traits. These traits are tension (anxiety), depression (dejection), anger hostility), vigor (activity), fatigue (inertia), and confusion (bewilderment).²⁹
- 4) Weight Class- defined by the main weight that the subject wrestles as set by the NCAA.² For the purpose of this study, lightweight includes 125 and 133 pounds. Middleweight includes 141, 149, 157, 165, 174,

and 184 pounds. Heavyweight includes 197 pounds up to 285 pounds.

Basic Assumptions

The following basic assumptions will be made for this study:

- 1) The subjects will understand all questions in the survey.
- 2) The subjects will answer all questions honestly and to the best of their ability.
- 3) The subjects will be able to accurately recall their weight cutting over the past 7 days.
- 4) The subjects will be able to accurately recall their weight cutting over the past 30 days.

Limitations of the Study

The following are possible limitations of the study:

- 1) The number of subjects may vary for each team.
- 2) Factors outside cutting weight may have an effect on mood state.
- 3) The results may not be easily generalized amongst all three divisions of wrestling.

Delimitations of the Study

- 1) Subjects are members of an NCAA competitive wrestling team.

- 2) All subjects participate at the NCAA Division III level.

Significance of the Study

Knowledge about how mood state changes affect athletes can help health care professionals. For example, it may help athletic trainers provide better care for athletes who may be at higher risk for illness or injury.

Many athletic trainers are the first line care for athletes. Athletes trust in their athletic trainers not only to help treat and rehabilitate any injuries they incur during their season, the athletic trainer can also be a friend and confidant. This relationship can lead to the athletic trainer finding themselves in a role of psychologist. This also means that the athletic trainer needs to be able to help the athlete with any psychological problems they may experience or know when the problems are outside their scope of practice and refer the patient for more advanced care.

The knowledge gained from this study will hopefully allow coaches, athletic trainers, athletes, counselors, sports psychologists, and other health care professionals to more closely monitor the health and well-being of those wrestlers who cut weight on a regular basis. These people

have an ethical responsibility to provide the best care to their patients as possible.

This information may also be valuable to those who deal with the student-athlete such as teachers, professors, principals, and school administrators. The relationship between weight loss and mental condition can bridge the gap into social and educational settings too. If an athlete is experiencing mood swings, lack of concentration, lack of focus, or other mental shortcomings during their season, the athlete may see negative effects on his relationships with family, friends, and associates.

APPENDIX C

Additional Methods

APPENDIX C1

Informed Consent Form



California University of Pennsylvania

Informed Consent Form

1. Neil G Matz, who is a Graduate Athletic Training Student at California University of Pennsylvania, has requested my participation in a research study at California University of Pennsylvania. The title of the research is *Mood States of Division III Collegiate Wrestlers*.

2. I have been informed that the purpose of this study is to examine relationships between the number of days cutting weight per 7 and 30 day period and the mood states of the wrestler. I understand that I must be 18 years of age or older to participate. I understand that I have been asked to participate along with 100 other individuals because I am active on my college/university wrestling squad.

3. I have been invited to participate in this research project. My participation is voluntary and I can choose to discontinue my participation at any time without penalty or loss of benefits. My participation will be answering a series of questions involving some demographic questions and the completing of the Profile Of Mood States (POMS) survey.

4. I understand there are no foreseeable risks or discomforts to me if I agree to participate in the study.

5. There are no feasible alternative procedures available for this study.

6. I understand that the possible benefits of my participation in the research may not affect me directly but that knowledge gained may benefit future athletes, especially wrestlers, by allowing health care professionals to better understand the effect of cutting weight on the wrestler's mental state.

8. I understand that the results of the research study may be published but my name or identity will not be revealed. Only aggregate data will be reported. In order to maintain confidentiality of my records, Neil G Matz will maintain all documents in a secure location on campus and password protect all electronic files so that only the student researcher and research advisor can access the data. Each

subject will be given a specific subject number to represent his or her name so as to protect the anonymity of each subject.

9. I have been informed that I will not be compensated for my participation.

10. I have been informed that any questions I have concerning the research study or my participation in it, before or after my consent, will be answered by:

Neil G Matz ATC
STUDENT/PRIMARY RESEARCHER
Mat2900@calu.edu
(570) 401-2759

Carol M. Biddington, EdD
RESEARCH ADVISOR
Biddington@calu.edu
(724) 938-4562

11. I understand that written responses may be used in quotations for publication but my identity will remain anonymous.

12. I have read the above information and am electing to participate in this study. The nature, demands, risks, and benefits of the project have been explained to me. I knowingly assume the risks involved, and understand that I may withdraw my consent and discontinue participation at any time without penalty or loss of benefit to myself. In signing this consent form, I am not waiving any legal claims, rights, or remedies. A copy of this consent form will be given to me upon request.

13. This study has been approved by the California University of Pennsylvania Institutional Review Board.

14. The IRB approval dates for this project are from: 02/26/2010-02/26/2011.

Subject's signature: _____
Date: _____

Witness signature: _____
Date: _____

APPENDIX C2

Profile Of Moods State and Demographic Information
Survey

Code: _____

Profile of Mood States Survey

Directions: Please complete the following questions. When an answer has a blank line after it, enter in an appropriate numerical value. When an answer has multiple choices, circle the most appropriate answer.

1. What is your age? _____
2. What is your class rank?
 - a. Redshirt Freshman
 - b. Freshman
 - c. Sophomore
 - d. Junior
 - e. Senior
 - f. Redshirt (other)
3. What is your certification weight class? _____
4. How many pounds do you fluctuate between matches? _____
5. At the time of this survey, what do you weigh? _____
6. Are you a normal starter at your certification weight class?
 - a. Yes
 - b. No
7. If no to question 6, are you the alternate wrestler for your weight class?
 - a. Yes
 - b. No
8. Are you currently cutting weight at the time of this survey?
 - a. Yes
 - b. No
9. Do you normally worry about cutting weight during your off season?
 - a. Yes
 - b. No

10. How many days, out of the past 7 days, did you cut weight? _____
11. How many days, out of the past 30 days, did you cut weight? _____
12. How hard do you typically work to cut weight?
- Not hard at all
 - A little effort
 - Fairly hard
 - Quite a bit of work
 - Extremely hard
13. What is your personal win/loss record for your career at your current school? _____

Directions: Please describe How You Feel RIGHT NOW by circling one number after each of the words listed below:

Feeling	Not at all	A little	Mod.	Quite a bit	Extremely
Friendly	1	2	3	4	5
Tense	1	2	3	4	5
Angry	1	2	3	4	5
Worn Out	1	2	3	4	5
Unhappy	1	2	3	4	5
Clear-headed	1	2	3	4	5
Lively	1	2	3	4	5
Confused	1	2	3	4	5
Sorry for things	1	2	3	4	5
Shaky	1	2	3	4	5
Listless	1	2	3	4	5
Peeved	1	2	3	4	5
Considerate	1	2	3	4	5
Sad	1	2	3	4	5
Active	1	2	3	4	5
On edge	1	2	3	4	5
Grouchy	1	2	3	4	5
Blue	1	2	3	4	5
Energetic	1	2	3	4	5
Panicky	1	2	3	4	5
Hopeless	1	2	3	4	5
Relaxed	1	2	3	4	5
Unworthy	1	2	3	4	5
Spiteful	1	2	3	4	5
Sympathetic	1	2	3	4	5
Uneasy	1	2	3	4	5

Restless	1	2	3	4	5
Unable to concentrate	1	2	3	4	5
Fatigued	1	2	3	4	5
Helpful	1	2	3	4	5
Annoyed	1	2	3	4	5
Discouraged	1	2	3	4	5
Resentful	1	2	3	4	5
Nervous	1	2	3	4	5
Lonely	1	2	3	4	5
Miserable	1	2	3	4	5
Muddled	1	2	3	4	5
Cheerful	1	2	3	4	5
Bitter	1	2	3	4	5
Exhausted	1	2	3	4	5
Anxious	1	2	3	4	5
Ready to fight	1	2	3	4	5
Good-natured	1	2	3	4	5
Gloomy	1	2	3	4	5
Desperate	1	2	3	4	5
Sluggish	1	2	3	4	5
Rebellious	1	2	3	4	5
Helpless	1	2	3	4	5
Weary	1	2	3	4	5
Bewildered	1	2	3	4	5
Alert	1	2	3	4	5
Deceived	1	2	3	4	5
Effacious	1	2	3	4	5
Trusting	1	2	3	4	5
Full of pep	1	2	3	4	5
Bad-tempered	1	2	3	4	5
Worthless	1	2	3	4	5
Forgetful	1	2	3	4	5
Carefree	1	2	3	4	5
Terrified	1	2	3	4	5
Guilty	1	2	3	4	5
Vigorous	1	2	3	4	5
Uncertain	1	2	3	4	5
Bushed	1	2	3	4	5

Approved by the California University of Pennsylvania IRB
on 2/26/2010.

APPENDIX C3

Letter to

Coaches

October 29, 2009

To Coach (coach's name here),

Hello, my name is Neil Matz and I am a graduate student at California University of Pennsylvania. Part of the requirements for graduation is the completion of a thesis. My thesis is titled, "The Mood States of Division III Collegiate Wrestlers". I would like to see if there is a relationship between the amounts of time spent cutting weight in a season and the mood state of a wrestler.

I am a former student at King's College where I graduated with my Bachelor's of Science degree in athletic training this past May. During my time at King's, I had the opportunity to work with both the King's College and Wilkes University wrestling teams.

I would like to survey your current wrestling team as part of my thesis. No harm would come to the athlete and all that is required of them would be to fill out a survey consisting of demographic questions and the Profile of Mood States or POMS survey. The POMS is a reliable survey often used in athletics to measure various effects on mood state.

The survey would be distributed by myself at a time and date agreed upon by you and myself. I would visit each school to distribute the survey. The survey should take no more than 20 minutes to complete and I would like to survey the entire team. I can meet either before or after a practice depending on what is convenient for you.

No personal information that can identify the athlete will be asked. There will be no direct benefit or consequence from your athlete's participation, but the information obtained will hopefully allow athletic trainers and other medical professionals to more easily identify athletes that are at risk of injury or illness during their season.

This email will be used to obtain final IRB approval at California University of Pennsylvania and I will be contacting you at a later date to set up a meeting time. I would like to note that by giving your permission to survey your teams, each athlete will have the individual ability to either answer or deny completion of the survey with no personal consequences.

By returning this email, you give your permission to survey your wrestlers at (school's name here) in my study. I look forward to hearing from you.

APPENDIX C4
Institutional Review Board -
California University
of Pennsylvania



California University
of Pennsylvania

Proposal Number

Date Received

PROTOCOL for Research Involving
Human Subjects

Institutional Review Board (IRB) approval is required before beginning any research and/or data collection involving human subjects

(Reference IRB Policies and Procedures for clarification)

Project Title Mood States of Division III Collegiate Wrestlers

Researcher/Project Director Neil Matz

Phone # 570-401-2759

E-mail Address mat2900@calu.edu

Faculty Sponsor (if required) Carol M. Biddington, EdD

Department Health Science

Project Dates 01/01/10 to 04/30/10

Sponsoring Agent (if applicable) _____

Project to be Conducted at California University of Pennsylvania, Wilkes University, Waynesburg University, Washington and Jefferson University, York College

Project Purpose: Thesis Research Class Project Other

Keep a copy of this form for your records.

Please attach a typed, detailed summary of your project AND complete items 2 through 6.

1. *Provide an overview of your project-proposal describing what you plan to do and how you will go about doing it. Include any hypothesis(es) or research questions that might be involved and explain how the information you gather will be analyzed. For a complete list of what should be included in your summary, please refer to Appendix B of the IRB Policies and Procedures Manual.*

The primary purpose of this thesis is to determine if there is a correlation between days spent cutting weight per 7 days and the mood state of collegiate wrestlers and to determine if there is a correlation between days cutting weight per 30 days and the mood state. This study will be conducted at Wilkes University, Washington and Jefferson University, Waynesburg University, and York College, all Division III colleges and universities surveying about ~113 athletes total.

An email introducing the researcher and explaining the purpose of the study was sent out to the head coaches for each of these schools. This email detailed the ideas behind the study including what will be expected from the athletes. Reply to this letter granted the researcher permission to survey the athletes on that team. The proposal of study along with each coach's reply email will be submitted to the California University of Pennsylvania Institutional Review Board (IRB) for approval. After IRB approval is received, a phone call will be made to each coach to schedule a time to meet with and survey each team. The researcher will then set up a meeting date with each team, grouping the schools based on location, during a week in February. When meeting with each team, the researcher will talk with the athletes and explain the purpose and idea of the study. The researcher will discuss how it will benefit them and answer any questions they have. Each subject being surveyed will fill out all necessary paperwork, including informed consent. The athletes will be given a packet containing an informed consent form, demographic questionnaire, and the POMS survey. The athletes will be asked to answer each question honestly and to the best of their ability. Following the completion of all required forms, packets will be sealed and held until all teams are surveyed. Once surveying of teams has been completed all paperwork will be sorted according to weight class.

The data will be analyzed using a Pearson product moment correlation provided by SPSS 16.0. It is hypothesized that there will be a correlation between number of days cutting weight, both 7 days and 30 days, and mood states according to the POMS survey. An ANOVA will also be used to examine any differences between weight classes.

The following are the hypotheses which will be looked at in this survey:

- 1) There is a correlation between number of days cutting weight in a seven day period and mood states and
 - 2) There is a correlation between number of days cutting weight in a thirty day period and mood states and
 - 3) There will be a difference in mood state scores amongst weight classes.
2. *Section 46.11 of the Federal Regulations state that research proposals involving human subjects must satisfy certain requirements before the IRB can grant approval. You should describe in detail how the following requirements will be satisfied. Be sure to address each area separately.*
 - a. *How will you insure that any risks to subjects are minimized? If there are potential risks, describe what will be done to minimize these risks. If there are risks, describe why the risks to participants are reasonable in relation to the anticipated benefits.*

There are no potential risks to the subjects involved in the survey. All research will be kept confidential. No research is to be conducted prior to obtaining IRB approval.
 - b. *How will you insure that the selection of subjects is equitable? Take into account your purpose(s). Be sure you address research problems involving vulnerable populations such as children, prisoners, pregnant women, mentally disabled persons, and economically or educationally disadvantaged persons. If this is an in-class project describe how you will minimize the possibility that students will feel coerced.*

3

Participants were chosen based upon division and state that they wrestle in. Athletes will volunteers and will be made aware that their participation is completely voluntary. They will also be made aware that they may refuse to finish the survey at any time with no consequence to them.

- c. *How will you obtain informed consent from each participant or the subject's legally authorized representative and ensure that all consent forms are appropriately documented? Be sure to attach a copy of your consent form to the project summary.*

An informed consent form (attached) will be completed and signed by all subjects before participating in this study on the day of surveying. Each signed consent form will be kept by the researcher.

- d. *Show that the research plan makes provisions to monitor the data collected to insure the safety of all subjects. This includes the privacy of subjects' responses and provisions for maintaining the security and confidentiality of the data.*

No question on the survey will ask the subjects name or any identifying information. The only people who will have access to the data is the researcher and the researcher's advisor.

3. *Check the appropriate box(es) that describe the subjects you plan to use.*

<input checked="" type="checkbox"/> <i>Adult volunteers</i>	<input type="checkbox"/> <i>Mentally Disabled People</i>
<input type="checkbox"/> <i>CAL University Students</i>	<input type="checkbox"/> <i>Economically Disadvantaged People</i>
<input checked="" type="checkbox"/> <i>Other Students</i>	<input type="checkbox"/> <i>Educationally Disadvantaged People</i>
<input type="checkbox"/> <i>Prisoners</i>	<input type="checkbox"/> <i>Fetuses or fetal material</i>
<input type="checkbox"/> <i>Pregnant Women</i>	<input type="checkbox"/> <i>Children Under 18</i>
<input type="checkbox"/> <i>Physically Handicapped People</i>	<input type="checkbox"/> <i>Neonates</i>

4. *Is remuneration involved in your project?* *Yes* or *No*. *If yes, Explain here.*

5. *Is this project part of a grant?* *Yes* or *No*. *If yes, provide the following information:*

Title of the Grant Proposal _____

Name of the Funding Agency _____

Dates of the Project Period _____

6. *Does your project involve the debriefing of those who participated?* *Yes* or *No*

If Yes, explain the debriefing process here.

7. *If your project involves a questionnaire interview, ensure that it meets the requirements of Appendix ___ in the Policies and Procedures Manual.*

California University of Pennsylvania Institutional Review Board
Survey/Interview/Questionnaire Consent Checklist (v021209)

This form MUST accompany all IRB review requests

Does your research involve ONLY a survey, interview or questionnaire?

YES—Complete this form

NO—You MUST complete the “Informed Consent Checklist”—skip the remainder of this form

Does your survey/interview/questionnaire cover letter or explanatory statement include:

(1) Statement about the general nature of the survey and how the data will be used?

(2) Statement as to who the primary researcher is, including name, phone, and email address?

(3) FOR ALL STUDENTS: Is the faculty advisor’s name and contact information provided?

(4) Statement that participation is voluntary?

(5) Statement that participation may be discontinued at any time without penalty and all data discarded?

(6) Statement that the results are confidential?

(7) Statement that results are anonymous?

(8) Statement as to level of risk anticipated or that minimal risk is anticipated? (NOTE: If more than minimal risk is anticipated, a full consent form is required—and the Informed Consent Checklist must be completed)

(9) Statement that returning the survey is an indication of consent to use the data?

(10) Who to contact regarding the project and how to contact this person?

(11) Statement as to where the results will be housed and how maintained? (unless otherwise approved by the IRB, must be a secure location on University premises)

(12) Is there text equivalent to: “Approved by the California University of Pennsylvania Institutional Review Board. This approval is effective nn/nn/nn and expires mm/mm/mm”? (the actual dates will be specified in the approval notice from the IRB)?

(13) FOR ELECTRONIC/WEBSITE SURVEYS: Does the text of the cover letter or explanatory statement appear before any data is requested from the participant?

(14) FOR ELECTONIC/WEBSITE SURVEYS: Can the participant discontinue participation at any point in the process and all data is immediately discarded?

**California University of Pennsylvania Institutional Review Board
Informed Consent Checklist (v021209)**

This form MUST accompany all IRB review requests

Does your research involve ONLY a survey, interview, or questionnaire?

YES—DO NOT complete this form. You MUST complete the “Survey/Interview/Questionnaire Consent Checklist” instead.

NO—Complete the remainder of this form.

1. Introduction (check each)

- (1.1) Is there a statement that the study involves research?
- (1.2) Is there an explanation of the purpose of the research?

2. Is the participant. (check each)

- (2.1) Given an invitation to participate?
- (2.2) Told why he/she was selected.
- (2.3) Told the expected duration of the participation.
- (2.4) Informed that participation is voluntary?
- (2.5) Informed that all records are confidential?
- (2.6) Told that he/she may withdraw from the research at any time without penalty or loss of benefits?
- (2.7) 18 years of age or older? (if not, see Section #9, Special Considerations below)

3. Procedures (check each).

- (3.1) Are the procedures identified and explained?
- (3.2) Are the procedures that are being investigated clearly identified?
- (3.3) Are treatment conditions identified?

4. Risks and discomforts. (check each)

- (4.1) Are foreseeable risks or discomforts identified?
- (4.2) Is the likelihood of any risks or discomforts identified?
- (4.3) Is there a description of the steps that will be taken to minimize any risks or discomforts?
- (4.4) Is there an acknowledgement of potentially unforeseeable risks?
- (4.5) Is the participant informed about what treatment or follow up courses of action are available should there be some physical, emotional, or psychological harm?
- (4.6) Is there a description of the benefits, if any, to the participant or to others that may be reasonably expected from the research and an estimate of the likelihood of these benefits?
- (4.7) Is there a disclosure of any appropriate alternative procedures or courses of treatment that might be advantageous to the participant?

5. Records and documentation. (check each)

- (5.1) Is there a statement describing how records will be kept confidential?
- (5.2) Is there a statement as to where the records will be kept and that this is a secure location?
- (5.3) Is there a statement as to who will have access to the records?

6. For research involving more than minimal risk (check each),

- (6.1) Is there an explanation and description of any compensation and other medical or counseling treatments that are available if the participants are injured through participation?
- (6.2) Is there a statement where further information can be obtained regarding the treatments?
- (6.3) Is there information regarding who to contact in the event of research-related injury?

7. Contacts (check each)

- (7.1) Is the participant given a list of contacts for answers to questions about the research and the participant's rights?
- (7.2) Is the principal researcher identified with name and phone number and email address?
- (7.3) FOR ALL STUDENTS: Is the faculty advisor's name and contact information provided?

8. General Considerations (check each)

- (8.1) Is there a statement indicating that the participant is making a decision whether or not to participate, and that his/her signature indicates that he/she has decided to participate having read and discussed the information in the informed consent?
- (8.2) Are all technical terms fully explained to the participant?
- (8.3) Is the informed consent written at a level that the participant can understand?
- (8.4) Is there text equivalent to: "Approved by the California University of Pennsylvania Institutional Review Board. This approval is effective nn/nn/nn and expires mm/mm/mm"? (the actual dates will be specified in the approval notice from the IRB)

9. Specific Considerations (check as appropriate)

- (9.1) If the participant is or may become pregnant is there a statement that the particular treatment or procedure may involve risks, foreseeable or currently unforeseeable, to the participant or to the embryo or fetus?
- (9.2) Is there a statement specifying the circumstances in which the participation may be terminated by the investigator without the participant's consent?
- (9.3) Are any costs to the participant clearly spelled out?
- (9.4) If the participant desires to withdraw from the research, are procedures for orderly termination spelled out?
- (9.5) Is there a statement that the Principal Investigator will inform the participant or any significant new findings developed during the research that may affect them and influence their willingness to continue participation?
- (9.6) Is the participant is less than 18 years of age? If so, a parent or guardian must sign the consent form and assent must be obtained from the child
 - Is the consent form written in such a manner that it is clear that the parent/guardian is giving permission for their child to participate?
 - Is a child assent form being used?
 - Does the assent form (if used) clearly indicate that the child can freely refuse to participate or discontinue participation at any time without penalty or coercion?
- (9.7) Are all consent and assent forms written at a level that the intended participant can understand? (generally, 8th grade level for adults, age-appropriate for children)

California University of Pennsylvania Institutional Review Board
Review Request Checklist (v021209)

This form **MUST** accompany all IRB review requests.
 Unless otherwise specified, **ALL** items must be present in your review request.

Have you:

(1.0) FOR ALL STUDIES: Completed ALL items on the Review Request Form?

Pay particular attention to:

- (1.1) Names and email addresses of all investigators
 - (1.1.1) FOR ALL STUDENTS: use only your CalU email address)
 - (1.1.2) FOR ALL STUDENTS: Name and email address of your faculty research advisor
- (1.2) Project dates (must be in the future—no studies will be approved which have already begun or scheduled to begin before final IRB approval—NO EXCEPTIONS)
- (1.3) Answered completely and in detail, the questions in items 2a through 2d?
 - 2a: NOTE: No studies can have zero risk, the lowest risk is “minimal risk”. If more than minimal risk is involved you **MUST**:
 - i. Delineate all anticipated risks in detail;
 - ii. Explain in detail how these risks will be minimized;
 - iii. Detail the procedures for dealing with adverse outcomes due to these risks.
 - iv. Cite peer reviewed references in support of your explanation.
 - 2b. Complete all items.
 - 2c. Describe informed consent procedures in detail.
 - 2d. NOTE: to maintain security and confidentiality of data, all study records must be housed in a secure (locked) location **ON UNIVERSITY PREMISES**. The actual location (department, office, etc.) must be specified in your explanation and be listed on any consent forms or cover letters.
- (1.4) Checked all appropriate boxes in Section 3? If participants under the age of 18 years are to be included (regardless of what the study involves) you **MUST**:
 - (1.4.1) Obtain informed consent from the parent or guardian—consent forms must be written so that it is clear that the parent/guardian is giving permission for their child to participate.
 - (1.4.2) Document how you will obtain assent from the child—This must be done in an age-appropriate manner. Regardless of whether the parent/guardian has given permission, a child is completely free to refuse to participate, so the investigator must document how the child indicated agreement to participate (“assent”).
- (1.5) Included all grant information in section 5?
- (1.6) Included ALL signatures?

(2.0) FOR STUDIES INVOLVING MORE THAN JUST SURVEYS, INTERVIEWS, OR QUESTIONNAIRES:

- (2.1) Attached a copy of all consent form(s)?
- (2.2) FOR STUDIES INVOLVING INDIVIDUALS LESS THAN 18 YEARS OF AGE: attached a copy of all assent forms (if such a form is used)?
- (2.3) Completed and attached a copy of the Consent Form Checklist? (as appropriate—see that checklist for instructions)

- (3.0) FOR STUDIES INVOLVING ONLY SURVEYS, INTERVIEWS, OR QUESTIONNAIRES:
- (3.1) Attached a copy of the cover letter/information sheet?
 - (3.2) Completed and attached a copy of the Survey/Interview/Questionnaire Consent Checklist? (see that checklist for instructions)
 - (3.3) Attached a copy of the actual survey, interview, or questionnaire questions in their final form?
- (4.0) FOR ALL STUDENTS: Has your faculty research advisor:
- (4.1) Thoroughly reviewed and approved your study?
 - (4.2) Thoroughly reviewed and approved your IRB paperwork? including:
 - (4.2.1) Review request form,
 - (4.2.2) All consent forms, (if used)
 - (4.2.3) All assent forms (if used)
 - (4.2.4) All Survey/Interview/Questionnaire cover letters (if used)
 - (4.2.5) All checklists
 - (4.3) IMPORTANT NOTE: Your advisor's signature on the review request form indicates that they have thoroughly reviewed your proposal and verified that it meets all IRB and University requirements.
- (5.0) Have you retained a copy of all submitted documentation for your records?

Project Director's Certification
Program Involving HUMAN SUBJECTS

The proposed investigation involves the use of human subjects and I am submitting the complete application form and project description to the Institutional Review Board for Research Involving Human Subjects.

I understand that Institutional Review Board (IRB) approval is required before beginning any research and/or data collection involving human subjects. If the Board grants approval of this application, I agree to:

1. Abide by any conditions or changes in the project required by the Board.
2. Report to the Board any change in the research plan that affects the method of using human subjects before such change is instituted.
3. Report to the Board any problems that arise in connection with the use of human subjects.
4. Seek advice of the Board whenever I believe such advice is necessary or would be helpful.
5. Secure the informed, written consent of all human subjects participating in the project.
6. Cooperate with the Board in its effort to provide a continuing review after investigations have been initiated.

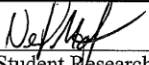
I have reviewed the Federal and State regulations concerning the use of human subjects in research and training programs and the guidelines. I agree to abide by the regulations and guidelines aforementioned and will adhere to policies and procedures described in my application. I understand that changes to the research must be approved by the IRB before they are implemented.

Professional Research

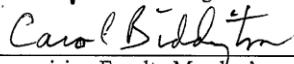
Project Director's Signature

Department Chairperson's Signature

Student or Class Research



Student Researcher's Signature



Supervising Faculty Member's
Signature if required



Department Chairperson's Signature

ACTION OF REVIEW BOARD (IRB use only)

The Institutional Review Board for Research Involving Human Subjects has reviewed this application to ascertain whether or not the proposed project:

1. provides adequate safeguards of the rights and welfare of human subjects involved in the investigations;
2. uses appropriate methods to obtain informed, written consent;
3. indicates that the potential benefits of the investigation substantially outweigh the risk involved.
4. provides adequate debriefing of human participants.
5. provides adequate follow-up services to participants who may have incurred physical, mental, or emotional harm.

Approved [_____]

Disapproved

Chairperson, Institutional Review Board

Date



**Certificate of
Completion**

The National
Institutes of Health
(NIH) Office of
Extramural
Research certifies
that **Neil Matz**
successfully



completed the NIH
Web-based
training course
"Protecting Human
Research
Participants".



Date of
completion:
06/29/2009

Certification
Number: 244978



**Institutional Review Board
California University of Pennsylvania
Psychology Department LRC, Room 310
250 University Avenue
California, PA 15419
instreviewboard@cup.edu
instreviewboard@calu.edu
Robert Skwarecki, Ph.D., CCC-SLP, Chair**

Neil Matz,

Please consider this email as official notification that your proposal titled “Mood States of Division III Collegiate Wrestlers” (Proposal #09-042) has been approved by the California University of Pennsylvania Institutional Review Board as amended.

The effective date of the approval is 2-26-2010 and the expiration date is 2-26-2011. These dates must appear on the consent form .

Please note that Federal Policy requires that you notify the IRB promptly regarding any of the following:

- (1) Any additions or changes in procedures you might wish for your study (additions or changes must be approved by the IRB before they are implemented)**
- (2) Any events that affect the safety or well-being of subjects**
- (3) Any modifications of your study or other responses that are necessitated by any events reported in (2).**
- (4) To continue your research beyond the approval expiration date of 2-26-2011 you must file additional information to be considered for continuing review. Please contact instreviewboard@calu.edu**

Please notify the Board when data collection is complete.

Regards,

**Robert Skwarecki, Ph.D., CCC-SLP
Chair, Institutional Review Board**

APPENDIX C5

IRB Requested Follow-up Letter to Coaches



California University of Pennsylvania

February 23, 2010

Dear Coach,

I would like to thank you for allowing me to talk to your team for my graduate thesis titled "Mood States of Division III Wrestler." I would like to emphasize that you as the coach are merely giving permission for your team to be asked to volunteer. I would like to be clear that you as the coach are not to be involved in recruiting/requiring/coercing potential subjects. Each athlete will be allowed to individually decide if they wish to participate or not and may choose not to participate with no consequence to them.

Once I talk to the athletes and explain the purpose of my study, those who wish to participate will be given a packet containing the survey itself and an informed consent form. Those who do not wish to participate will be allowed to head to practice as normal. No athlete shall be required by myself or your staff to participate.

If an athlete chooses midway through the completion of the survey that they no longer wish to complete it, again, no consequences will befall them and their survey will be torn up and thrown out to protect privacy.

Sincerely,
Neil Matz

APPENDIX C6

Letter to Meet

Coaches

December 11, 2009

Dear Coach,

Hello, my name is Neil Matz and I am a graduate student at California University of Pennsylvania. Part of the requirements for graduation is the completion of a thesis. My thesis is titled, "The Mood States of Division III Collegiate Wrestlers". I would like to see if there is a relationship between the amounts of time spent cutting weight in a season and the mood state of a wrestler.

I am contacting you as previously discussed to set up a meeting time during which I can survey your team. I would like to set up at time between DATE and DATE when most of the team can be there.

I would just like to remind you that no harm would come to the athlete and all that is required of them would be to fill out a survey consisting of demographic questions and the Profile of Mood States or POMS survey. The POMS is a reliable survey often used in athletics to measure various effects on mood state.

The survey would be distributed by myself and should take no more than 20 minutes to complete.

Please get back to me at your earliest convenience. I can be reached via email or telephone, both of which are attached.

Thank you for your time,
Neil G Matz ATC
Mat2900@calu.edu
570-401-2759

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ABSTRACT

Title: MOOD STATES OF DIVISION III COLLEGIATE WRESTLERS

Researcher: Neil G. Matz

Advisor: Dr. Carol Biddington

Date: April 2010

Research Type: Master's Thesis

Purpose: The purpose of this study is to examine relationships between the number of days cutting weight and mood states and to see if there is a difference between weight classes for mood state scores.

Problem: There is little research on the psychological effects of cutting weight.

Methods: A descriptive type of research was conducted. Fifty-six male collegiate wrestlers from four NCAA Division III schools volunteered for the study. The Profile of Moods States survey was used.

Findings: The number of days spent cutting weight had a significant relationship with the mood states of wrestlers. Additionally, the more effort a wrestler puts forward to cut weight the more negative the mood state.

Conclusions: Wrestlers who cut weight more frequently or who expend more effort losing weight have an increased negative mood state. This suggests that athletic trainers and health care professionals may need to develop further collaboration with mental health care professionals to assist with athletes showing mood disturbances from the weight loss that occurs during a wrestling season.

Word Count: 195