Relationship of Training Volume and Competitive Anxiety in Combative WMSU Varsity Athletes

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Abstract

This quantitative-correlational study investigated the relationship between training volume and competitive anxiety among 40 combative varsity athletes at Western Mindanao State University. The sample included balanced representation from Arnis, Judo, Karate-do, and Taekwondo. Descriptive results revealed that athletes maintain a highly consistent training regimen (M=2.95), with 65% training 4–7 days per week. Conversely, competitive anxiety levels were relatively low (M=2.25), though characterized by high individual variability. Pearson correlation analysis demonstrated a significant moderate positive relationship between the variables (r=.360, p = .023), indicating that increased training workloads are associated with higher psychological distress. Furthermore, simple linear regression revealed that training volume significantly predicts competitive anxiety, accounting for 13% of its variance ($R2$ = .130). The findings suggest that while physical preparation is standardized, psychological responses are highly individualized. The substantial unexplained variance (87%) highlights the influence of external factors. These results underscore the need for coaches to monitor training loads and for the university to implement holistic mental health support programs alongside physical conditioning.

Keywords: *Combative Sports; Competitive Anxiety; Inverted-U Hypothesis; Training Volume; Varsity Athletes*

Introduction

Training volume is essential in combative sports for developing physical readiness and enabling athletes to perform high-intensity movements; however, excessive or poorly managed training can create significant physical stress. This stress is reflected in physiological responses such as elevated cortisol levels, which are associated with poor sleep quality and increased physical anxiety (Gao et al., 2025), indicating the body's reaction to overtraining demands. In relation to physical activity participation, Martin and Cancio (2026) found that motor competence, grit, and physical literacy significantly predict active lifestyle participation among university students, suggesting that physical capability, perseverance, motivation, and confidence are important factors in sustaining engagement in physical activity.

This study is anchored on the Scissors Model of Stress and Recovery by Kellmann (2002) and

the Inverted-U Hypothesis by Yerkes and Dodson (1908). These theories explain that athletic performance depends on maintaining a proper balance between training stress, recovery, and arousal. Conceptually, training volume serves as the independent variable, while competitive anxiety serves as the dependent variable, suggesting that the amount of training athletes undergo may influence their psychological response to competition.

As physical stress increases, it may develop into competitive anxiety, particularly among athletes in sports such as Taekwondo, Judo, and Karate-do, where training demands often exceed recovery capacity. Studies show that excessive training duration and intensity are linked to higher levels of competitive anxiety (Garcia & Mendoza, 2020), while controlled training loads help maintain manageable anxiety levels.

This anxiety manifests in both psychological and physiological symptoms, including difficulty concentrating, muscle tension, and increased heart rate. Research such as Mojtahedi et al. (2023) highlights these symptoms among combat sports athletes, emphasizing the importance of psychological management within training programs. Nearly 50% of collegiate athletes experience debilitating competition-related anxiety (Edwards & Froehle, 2023), showing how widespread this issue is among competitive sports participants.

Ultimately, these combined effects may negatively impact athletic performance by reducing focus, confidence, decision-making ability, and overall competitive readiness. As a result, athletes may struggle to perform optimally during competitions, where both physical execution and mental stability are crucial for success. In view of these concerns, this quantitative-correlational study aims to determine the relationship between training volume and competitive anxiety among WMSU combative varsity athletes. Specifically, it seeks to determine the levels of training volume and competitive anxiety, examine whether a significant relationship exists between the two variables, and identify whether training volume significantly predicts competitive anxiety among WMSU combative varsity athletes.

Methods

Research Design

This study employed a quantitative research design, specifically a descriptive-correlational design, to examine the relationship between training volume and competitive anxiety among WMSU combative varsity athletes. This design was appropriate because the study involved the measurement of behavioral, physical, and cognitive constructs using numerical data. According to Creswell and

Creswell (2022), quantitative research relies on statistical procedures to analyze data objectively and draw precise conclusions about relationships among variables.

In the present study, the researchers aimed to determine the current levels of training volume and competitive anxiety among WMSU combative athletes and to examine whether a significant relationship exists between the two variables. The descriptive component allowed the researchers to describe the athletes' training volume and level of competitive anxiety, while the correlational component enabled the assessment of the direction and strength of the association between these constructs. Moreover, the cross-sectional nature of the design provided a snapshot of the athletes' existing conditions at a specific point in time, allowing the variables to be examined as they naturally occur without manipulation (Thomas, 2023).

Respondents and Sampling

The respondents of this study were forty (40) officially recognized combative varsity athletes of Western Mindanao State University in Zamboanga City, Philippines, for the academic year 2025–2026. They were members of the university's Taekwondo, Arnis, Judo, and Karate-do varsity teams and were selected because of their direct involvement in intensive training and competitive combat sports.

This study used purposive sampling with stratification. Purposive sampling ensured that only athletes who met the study criteria were included, while stratification provided balanced sex representation, consisting of twenty (20) male and twenty (20) female athletes.

To qualify, respondents had to be officially recognized WMSU varsity athletes, actively training or competing in combative sports during the 2025–2026 academic year, physically fit, willing to provide informed consent, and have at least one year of training or competition experience. Athletes were excluded if they were inactive, not official varsity members, had serious injuries or medical conditions that could affect their participation or responses, refused consent, or failed to complete the data collection process.

This sampling approach ensured that the selected respondents were suitable representatives of WMSU combative varsity athletes and could provide relevant data on training volume and competitive anxiety.

Research Instrument

The research instrument was administered through Google Forms and consisted of three sections. The first section gathered the demographic profile of the respondents, which was used only for descriptive purposes and was not included in the inferential analysis. The second section measured training volume using a 16-item rating scale adapted from the Training Evaluation and Performance Questionnaire (TEPQ)

developed by Toros (2011), which assessed athletes' training behaviors and personal performance goals. The third section measured competitive anxiety using a 15-item rating scale adapted from the Sport Anxiety Scale-2 (SAS-2) developed by Smith et al. (2006), which assessed the athletes' physical and mental responses commonly experienced before or during competition. The questionnaire was distributed online with the approval and assistance of the coaching staff, and respondents were provided with clear instructions to answer each item based on their actual training and competition experiences.

Data Gathering Procedure

Data were collected to examine the relationship between training volume and competitive anxiety among WMSU combative varsity athletes. Prior to data collection, permission was secured from the Office of Sports Development and the coaches of the officially recognized Taekwondo, Arnis, Judo, and Karate-do varsity teams. Eligible respondents were identified using purposive sampling with stratification, and informed consent was obtained after the purpose, procedures, voluntary nature, confidentiality, and anonymity of the study were explained.

After approval was granted, the adapted questionnaires on training volume and competitive anxiety were administered through Google Forms. The survey links were distributed to the selected athletes through approved online communication platforms. Respondents were instructed to answer honestly based on their actual training and competition experiences during the current season. Adequate time was provided for completion, and the researcher remained available to address clarifications without influencing the responses.

After data collection, the responses were reviewed, coded, encoded, and tabulated for analysis. Descriptive statistics, including mean and standard deviation, were used to determine the levels of training volume and competitive anxiety. Pearson's product–moment correlation coefficient was applied to examine the strength and direction of the relationship between the two variables, while the coefficient of determination was computed to determine the proportion of variance in competitive anxiety explained by training volume. All statistical tests were evaluated at the 0.05 level of significance, and the results were presented in tables to support interpretation, conclusions, and recommendations.

Statistical Analysis

The data were analyzed using descriptive and inferential statistics. Mean and standard deviation were computed to describe the levels of training volume and competitive anxiety among WMSU combative varsity athletes. Pearson's product–moment correlation coefficient was used to determine the strength and direction of the relationship between training volume and competitive anxiety. The coefficient of determination was also computed to identify the proportion of variance in competitive anxiety that could be explained by training volume. All statistical analyses were tested at the 0.05 level of significance. The

results were organized and presented in tabular form to support interpretation and discussion of the findings.

Ethical Considerations

This study followed ethical standards for research involving human participants, with emphasis on protecting the rights, privacy, and welfare of WMSU student-athletes. Before data collection, the researchers secured the necessary permission, explained the study's purpose and procedures, and obtained informed consent from all respondents. Participation was voluntary, and respondents were allowed to withdraw at any time without penalty. Confidentiality and anonymity were maintained, and all data were used solely for academic purposes. The study also holds social value by providing insights that may support better training management and mental well-being programs for combative varsity athletes.

Results

This chapter presents and explains the results of the study, focusing on the analysis and interpretation of the data gathered on the relationship between training volume and competitive anxiety among athletes at Western Mindanao State University.

Demographic Profile of the Respondents

The data in Table 1 present the demographic profile of the forty (40) WMSU combative varsity athletes who participated in the study. The respondents were evenly distributed across the four sporting events, namely Arnis, Judo, Karate-do, and Taekwondo, with ten (10) athletes from each sport. Each sporting event consisted of five (5) male and five (5) female athletes, resulting in a balanced representation by sex and sport. This distribution helped minimize the dominance of one sporting event or sex group in the overall sample.

Table 1

Demographic Profile of the Respondents

Demographic Profile	Category	Male	Female	Total
Sporting Event	Arnis	5	5	10
	Judo	5	5	10
	Karate-do	5	5	10
	Taekwondo	5	5	10

Demographic Profile	Category	Male	Female	Total
Years as an Athlete	1–5 years	14	17	31
	6–10 years	4	2	6
	11 years and above	2	1	3
Training per Week	1–3 days	8	6	14
	4–7 days	12	14	26

In terms of years as an athlete, most respondents had one to five years of athletic experience, comprising 31 athletes or 77.5% of the total sample. Meanwhile, six (6) athletes or 15.0% had six to ten years of experience, and three (3) athletes or 7.5% had been athletes for eleven years or more. This indicates that the majority of the respondents were in the early to intermediate stage of their athletic involvement.

Regarding weekly training frequency, 26 respondents or 65.0% reported training four to seven days per week, while 14 respondents or 35.0% trained one to three days per week. This suggests that most WMSU combative varsity athletes maintained a relatively high training frequency during the study period, reflecting consistent engagement in sport-specific preparation.

Levels of Training Volume and Competitive Anxiety

The results show that the respondents reported a usually high level of training volume with a mean score of M = 2.95 and a standard deviation of SD = 0.27. This indicates that the athletes generally engaged in regular and consistent training routines. The low standard deviation suggests that responses were closely clustered around the mean, implying that training volume was relatively similar across the respondents.

Table 2

Mean Score of Training Volume and Competitive Anxiety

Variable	N	Min.	Max.	Mean	Std. Dev.	Interpretation
TV	0	.25	.69	2.9545	274	Usually

Variable	N	Min.	Max.	Mean	Std. Dev.	Interpretation
CA	40	.27	.67	2.2540	683	A little bit

Meanwhile, competitive anxiety obtained a mean score of M = 2.25 with a standard deviation of SD = 0.68, interpreted as "A little bit." This suggests that the athletes experienced a generally low to mild level of competitive anxiety. However, the higher standard deviation indicates greater variation in anxiety levels among the respondents, meaning that some athletes experienced more anxiety than others.

Overall, the findings indicate that while the athletes demonstrated a relatively consistent level of training volume, their competitive anxiety levels varied more widely. This suggests that physical preparation among WMSU combative varsity athletes may be more uniform, whereas psychological responses to competition differ across individuals.

Relationship Between Training Volume and Competitive Anxiety

Table 3 shows a significant moderate positive relationship between training volume and competitive anxiety, r = .360, n = 40, p = .023. This indicates that athletes with higher training volume tended to report higher levels of competitive anxiety.

Variable	N	M	SD	p	1	2
Training Volume	40	2.9545	.274	—	—	
Competitive Anxiety	40	2.2540	.683	.023	.360*	—

Although the correlation was moderate, the significant result suggests that increased training demands may be linked to greater psychological strain among combative athletes. This finding emphasizes the need for coaches and trainers to monitor training loads carefully to ensure that physical preparation does not negatively affect athletes' emotional readiness before competition.

Influence of Training Volume on Competitive Anxiety

Prior to regression analysis, the assumptions for simple linear regression were examined and

found to be acceptable. A simple linear regression analysis was then conducted to determine the extent to which training volume predicts competitive anxiety among WMSU combative varsity athletes. The results are presented in Table 4.

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.360	.130	.107	.64562

The analysis showed a moderate positive association between training volume and competitive anxiety, R = .360. The model explained 13.0% of the variance in competitive anxiety, R^2 = .130, with an adjusted R^2 = .107. This indicates that training volume contributes to the prediction of competitive anxiety; however, most of the variance, approximately 87.0%, may be attributed to other factors not included in the model, such as coping skills, recovery quality, coaching style, prior competition experience, sleep patterns, and individual psychological characteristics.

Summary of Statistical Findings

The descriptive analysis of the 40 WMSU combative varsity athletes showed that their training volume had a mean score of M = 2.95, interpreted as "Usually," indicating regular and consistent training participation. Meanwhile, competitive anxiety obtained a mean score of M = 2.25, interpreted as "A little bit," suggesting generally low to mild anxiety levels among the athletes. Pearson's correlation analysis revealed a significant moderate positive relationship between training volume and competitive anxiety, r = .360, p = .023, indicating that higher training volume was associated with higher competitive anxiety. Furthermore, the regression analysis showed that training volume explained 13.0% of the variance in competitive anxiety, R^2 = .130. These findings suggest that while training volume is a meaningful predictor of competitive anxiety, other physical, psychological, and environmental factors may also influence athletes' anxiety responses.

Discussion

This study identified three major findings: the training volume of WMSU combative varsity athletes, their level of competitive anxiety, and the relationship between these two variables. Overall, the results suggest that training demands are not purely physical but are also connected to athletes' psychological responses. Although training is necessary for skill development, conditioning, and

competitive readiness, the findings indicate that higher training volume may be associated with increased competitive anxiety. This emphasizes the need to consider both physical preparation and mental readiness in designing effective training programs for combative sports athletes.

Level of Training Volume Among Combative Varsity Athletes

The descriptive results showed that WMSU combative varsity athletes generally maintained a high training frequency, with 65% of the respondents training four to seven days per week. This indicates that most athletes were exposed to regular and demanding training schedules. Such training frequency is expected in combative sports, where repeated practice is necessary to develop technical skills, endurance, strength, speed, and tactical readiness.

This finding is supported by Sant'Ana et al. (2021), who emphasized that repetitive and high-intensity training is essential for combat athletes to develop technical proficiency and sport-specific conditioning. Similarly, Vasconcelos et al. (2020) noted that demanding training programs contribute to the improvement of both aerobic and anaerobic performance. These studies support the present finding that high training volume is an important component of preparation in combative sports.

However, high training volume may become harmful if not balanced with adequate recovery. Kellmann and Kölling (2019) explained that excessive training loads without systematic recovery may contribute to fatigue, psychological stress, and emotional exhaustion. Thus, while frequent training is necessary for performance development, it must be carefully managed to prevent overtraining and protect athletes' physical and psychological well-being.

Relationship Between Training Volume and Competitive Anxiety

The results revealed a significant moderate positive relationship between training volume and competitive anxiety among WMSU combative varsity athletes. This means that athletes who reported higher training volume also tended to report higher levels of competitive anxiety. The finding suggests that increased training demands may contribute to psychological strain, particularly when athletes experience pressure to perform, fatigue, or insufficient recovery.

This result is consistent with studies suggesting that high training loads may increase psychological stress among athletes. Rice et al. (2022) emphasized that athletes' mental health is influenced by environmental and performance-related demands. When training becomes too demanding without adequate support, athletes may become more vulnerable to anxiety, stress, and reduced confidence. Similarly, high training expectations imposed to meet performance standards may

unintentionally heighten anxiety, especially when athletes feel physically or mentally overwhelmed.

However, the relationship between training volume and competitive anxiety may not always be negative. Nicholls et al. (2021) suggested that athletes' psychological responses depend not only on the amount of training but also on how they perceive and cope with training demands. Athletes with effective coping strategies, positive training perception, and strong emotional regulation may experience less anxiety even when exposed to high training loads. In the same way, Yu, Yang, and He (2024) found that training satisfaction and positive engagement may buffer the negative psychological effects of demanding training schedules. These findings suggest that training volume may increase anxiety for some athletes, but its effect can be reduced when athletes have adequate coping skills and psychological support.

Influence of Training Volume on Competitive Anxiety

The regression analysis showed that training volume explained 13% of the variance in competitive anxiety. This indicates that training volume contributes to competitive anxiety, but it does not fully explain why athletes experience anxiety. The remaining 87% may be influenced by other factors such as coping skills, self-confidence, personality traits, recovery quality, academic workload, coaching style, family support, and previous competition experience.

The finding supports the view that excessive physical demands may contribute to heightened anxiety when athletes are not given enough recovery or psychological preparation. Garcia and Mendoza (2021) reported that high-intensity training is associated with increased anxiety among athletes. Likewise, Gao et al. (2025) emphasized that demanding training can trigger physiological stress responses that may be linked to higher anxiety levels.

Nevertheless, other studies suggest that competitive anxiety may be more strongly influenced by psychological factors than by training volume alone. Leguizamo et al. (2021) emphasized that personality, coping strategies, and mental health status are important predictors of athletes' psychological outcomes. Similarly, Fortes et al. (2020) found that coping strategies significantly influence competitive anxiety. These findings suggest that while training volume is a meaningful factor, competitive anxiety is multidimensional and should be addressed through both physical and psychological interventions.

Conclusions

This study examined the relationship between training volume and competitive anxiety among WMSU combative varsity athletes. The findings showed that the athletes generally maintained a high

level of training volume while experiencing low to mild but varied levels of competitive anxiety. The results further revealed a significant moderate positive relationship between training volume and competitive anxiety, indicating that higher training demands are associated with higher levels of anxiety.

The regression analysis showed that training volume explained 13% of the variance in competitive anxiety. This suggests that while training volume contributes to athletes' anxiety levels, it is not the only factor involved. Competitive anxiety may also be influenced by psychological readiness, coping ability, recovery, self-confidence, coaching environment, and external pressures.

Overall, the findings highlight the importance of a balanced approach to athlete development. While training volume is necessary for physical and technical preparation, it should be managed carefully to prevent unnecessary psychological strain. Effective training programs for combative athletes should integrate structured workload monitoring, adequate recovery, and psychological support to promote both performance and well-being.

Limitations of the Study

This study has several limitations that should be considered in interpreting the findings. First, the study involved only forty (40) combative varsity athletes from Western Mindanao State University; therefore, the results may not be generalizable to all varsity athletes, non-combative athletes, or athletes from other universities. Second, the study used purposive sampling with stratification, which helped ensure appropriate respondent selection and balanced sex representation but may still limit the broader representativeness of the sample. Third, the data were gathered through self-reported questionnaires, which may be affected by response bias, social desirability, or differences in how athletes perceive their training volume and anxiety symptoms. Fourth, the cross-sectional correlational design only examined the relationship between training volume and competitive anxiety at one point in time; thus, causal conclusions cannot be made. Finally, training volume explained only 13% of the variance in competitive anxiety, indicating that other factors such as recovery quality, sleep, coping strategies, self-confidence, coaching style, academic workload, and social support may also influence athletes' anxiety levels but were not directly examined in this study.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

For coaches and trainers, training programs should be carefully planned through proper workload monitoring and periodization. While frequent training is necessary for skill development and

conditioning, coaches should also observe signs of fatigue, burnout, and anxiety among athletes. Recovery periods and mental preparation activities should be integrated into regular training plans.

For athletes, the findings emphasize the importance of understanding personal limits and recognizing signs of physical and psychological stress. Athletes should be encouraged to communicate openly with coaches when training demands begin to affect their confidence, focus, or emotional readiness.

For physical education teachers, lessons on emotional regulation, stress management, and mental toughness may be integrated into sports-related instruction. These topics can help student-athletes better manage the psychological demands of training and competition.

For parents and guardians, providing emotional support and understanding the demands of combative sports are important. A supportive home environment may help athletes manage pressure, maintain balance, and cope with competition-related anxiety.

For future researchers, further studies may examine other factors that influence competitive anxiety, such as self-confidence, coping strategies, recovery quality, academic workload, coaching behavior, social support, and previous competition experience. Future research may also use a larger sample size or include athletes from other universities to improve generalizability.

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