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Mental Toughness Profile After Ad-Menstren Model Training as a Psychological Basis for Facing Competitive Anxiety of Jambi University Gymnastics UKM Athletes

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Abstract. This study described the mental toughness profile of athletes after participating in Ad-Menstren Model training and discussed its relevance as a psychological basis for managing competitive anxiety among athletes of the Gymnastics Student Activity Unit at Jambi University. A descriptive quantitative survey was conducted with 15 athletes selected through purposive sampling from a limited population of 20 active members. The Ad-Menstren Model training was implemented as a short mental-training program integrated into routine gymnastics practice, emphasizing questioning, action, and internalization stages based on self-efficacy, self-esteem, and self-confidence. The instrument was a 35-item Likert-scale mental toughness questionnaire. Data were analyzed using validity testing, reliability testing, descriptive statistics, and score categorization. All items were valid, and reliability was very high, with Cronbach's Alpha of 0.967. The mean score was 115.27 with a standard deviation of 14.048. Category distribution showed 4 athletes in the very high category, 2 in the high category, 7 in the low category, and 2 in the very low category. The findings indicate that most athletes still require continuous mental coaching. Because competitive anxiety was not measured using a specific anxiety instrument, the findings should be interpreted as descriptive evidence of mental toughness readiness rather than causal evidence that the Ad-Menstren Model reduces competitive anxiety.

Keywords: Mental Toughness; Ad-Menstren Model; Competitive Anxiety; Gymnastics Athletes; Student Sports Club.

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1 Introduction

High-performance sports at the college level require athletes to master not only physical components, techniques, and tactics, but also stable psychological readiness when facing the pressures of training and competition. In the context of student activity units, athlete development often takes place in complex conditions because athletes must divide their time between academic activities, routine training, competitions, and the social demands of campus. This condition makes mental development a strategic aspect that cannot be separated from performance development. Hsieh et al., (2024) showed that mental toughness is an important predictor of athlete performance, while Demir et al., (2025) emphasized that mental toughness, imagery, and anxiety form a psychological relationship that influences the performance of elite athletes. Febriza et al., (2025) stated that community-based sports activities can be a medium for strengthening values, identity, and character; therefore, sports student units (UKM) are not merely spaces for physical training, but also spaces for developing discipline, self-resilience, and courage to perform. In gymnastics, these demands are even higher because athletes are required to perform a series of movements precisely, rhythmically, expressively, and with minimal errors in front of spectators and judges.

Competitive anxiety is a common psychological response experienced by athletes before and during competitions, particularly when athletes perceive the competition as a situation that threatens self-esteem, status, or achievement. Competitive anxiety can manifest itself in cognitive, somatic, affective, and motor symptoms, such as negative thoughts, worry about results, increased heart rate, muscle tension, nervousness, decreased concentration, and even movement errors that did not actually occur during the training session. Yu et al. (2024) found that competitive state anxiety is related to athlete training satisfaction, psychological resilience, and coping strategies. Yang et al., (2024) also showed that competitive anxiety can be related to burnout in college athletes through mechanisms of competence and autonomy. In gymnastics, competitive anxiety is a highly relevant issue because even small errors in timing, coordination, or movement memory can affect the quality of performance. Listiana et al., (2024) showed that mental toughness influences competitive anxiety in Indonesian athletes, while Islam et al., (2025) through a meta-analysis reported a negative relationship between mental toughness and athlete anxiety. Thus, mental development is an empirical necessity, not simply a supplement to training.

Mental toughness is generally understood as an athlete's psychological capacity to remain focused, confident, disciplined, courageous in the face of pressure, and able to bounce back from mistakes or failures. This concept not only describes an athlete's courage but also encompasses attention regulation, emotional control, persistence, commitment to goals, and the ability to transform pressure into productive challenges. Lochbaum et al., (2022) explain that self-confidence has a significant relationship with sports performance, while Zhang et al., (2025) show that mental toughness can function as a mediator between sports psychology skills and athlete burnout. These findings reinforce the view that mental toughness needs to be instilled through structured training, not simply assumed to develop naturally from competition experience. For gymnasts, strengthening mental toughness is crucial because performance pressure often arises before athletes enter the competition area, while waiting for their turn to perform, or when they are aware of the immediate assessment by judges and spectators.

Sports psychology literature over the past decade has shown that competitive anxiety can be reduced through systematic psychological intervention strategies, such as goal setting,

imagery, relaxation, positive self-talk, mindfulness, and psychological skills training. Park & Jeon (2023) demonstrated that psychological skills training is a growing topic in athlete development, while Ong & Griva (2017) demonstrated that mental skills training can reduce competitive anxiety in school athletes. Liang et al., (2021) also found that progressive relaxation training can contribute to pre-competition anxiety management. In this context, mental training in Gymnastics Student Activity Units (UKM) needs to be directed at models that are easy for athletes to understand, can be applied to routine training, and do not require complex facilities. A simple but consistent mental training program will be more realistic to implement in a sports UKM environment, especially when coaches must integrate physical, technical, and mental training within limited training time.

One approach relevant to these needs is the Ad-Menstren Model or Adrizal Mental Toughness Strength Model. This model emphasizes cultivating mental toughness through mind-regulation that focuses on personal strengths. Adrizal (2025) explains that the Ad-Menstren Model is built from a framework of self-efficacy, self-esteem, and self-confidence. Its stages include a questioning stage to identify personal strengths, an action stage to apply these strengths in training, and an internalization stage to instill positive thoughts so that athletes feel valuable, confident, and ready to face pressure. This model is suitable for the needs of gymnasts because gymnastic performance is greatly influenced by confidence in one's abilities, courage to perform, and the ability to maintain concentration when performing a series of movements. By guiding athletes to recognize and utilize their personal strengths, the Ad-Menstren Model has the potential to reduce the dominance of negative thoughts that are one of the sources of competitive anxiety.

Although research on mental toughness and competitive anxiety has been growing, studies specifically describing mental toughness development through the Ad-Menstren Model in student gymnastics athletes are still limited. Most studies place mental toughness as a predictor or correlate of anxiety in martial arts, volleyball, futsal, or other team sports (Algani et al., 2018; Darmawan & Susanto, 2021; Ikhrum et al., 2020; Ismail et al., 2023; Magfiroh & Jannah, 2022; Nurcahyadi & Trihandayani, 2024). Yet, gymnasts face unique pressures because their performance is judged on precision of movement, expression, sequence consistency, and courage to perform in open spaces. Based on this gap, this study aims to describe the mental toughness profile of athletes after participating in Ad-Menstren Model training and to discuss its relevance as a psychological basis for managing competitive anxiety in athletes from the Jambi University Gymnastics Student Activity Unit (UKM). The term "role" in this article is therefore interpreted descriptively and practically, not as a causal effect, because the study did not employ an experimental, correlational, or regression design.

2 Method

This study used a quantitative approach with a descriptive survey design. This design was selected because the study did not aim to test causal effects, differences before and after intervention, or statistical prediction between variables. Instead, the study focused on describing the mental toughness condition of gymnasts after they received Ad-Menstren Model training and on explaining the practical relevance of that mental condition for facing competitive anxiety. Therefore, the findings of this study should not be interpreted as experimental evidence that the Ad-Menstren Model directly reduces competitive anxiety.

The Ad-Menstren Model training was clarified as a structured mental-training activity integrated into routine gymnastics practice. The program was organized in four meetings over approximately two weeks, with each meeting lasting about 60-90 minutes. The facilitator had experience in sports psychology learning and athlete mental coaching, while the UKM coach assisted in integrating the activities into gymnastics practice. The first meeting introduced mental toughness, competitive pressure, and the basic concept of the Ad-Menstren Model. The second meeting focused on the questioning stage, where athletes identified personal strengths, sources of confidence, and positive experiences in training or competition. The third meeting focused on the action stage, where athletes were asked to apply their identified strengths during technical practice, movement repetition, and performance simulation. The fourth meeting focused on the internalization stage, where athletes practiced positive self-talk, reflection, emotional control, and concentration before performance. This clarification was added to strengthen the replicability of the intervention procedure.

The study was conducted at the Jambi University Gymnastics Student Activity Unit in 2026. The population consisted of all 20 active members of the UKM Gymnastics unit. The sample was determined using purposive sampling with the following criteria: active athletes of the Jambi University Gymnastics Student Activity Unit, students from the 2023, 2024, and 2025 cohorts, athletes who participated in the training process, and athletes who had experience participating in competitions. Based on these criteria, 15 athletes were included as research samples. The small sample size was a consequence of the limited population and the specific criteria used in this study; therefore, the results are context-bound and should not be generalized to all gymnastics athletes beyond the research setting.

The research instrument was a mental toughness questionnaire developed based on self-efficacy, self-esteem, and self-confidence indicators within the Ad-Menstren Model framework. The questionnaire consisted of 35 statements with a four-choice Likert scale: strongly agree, agree, disagree, and strongly disagree. The statement items covered confidence in completing difficult training, self-confidence during competition, ability to control emotions, focus under pressure, optimism when facing strong opponents, ability to bounce back after failure, and belief that mental training supports performance readiness. The instrument was tested using Pearson Product Moment validity and Cronbach's Alpha reliability. Validity criteria were determined by comparing the calculated r value and the r table value at a 5% significance level, while reliability was assessed through internal consistency.

Data were collected through observation, questionnaires, and documentation. Observation was used only to obtain an initial description of symptoms commonly associated with competitive pressure, such as pre-competition nervousness, decreased self-confidence, and difficulty maintaining focus under pressure. Competitive anxiety was not measured directly using standardized instruments such as CSAI-2, SCAT, SAS, or other sport anxiety scales. Consequently, the empirical results of this study refer specifically to mental toughness scores, while the discussion of competitive anxiety is presented as theoretical and practical relevance based on previous studies. Data analysis was conducted using descriptive statistics, including total score, mean, variance, standard deviation, minimum score, maximum score, and score categorization. Score categorization was performed using the mean and standard deviation, and the results were presented in tables, figures, and narrative descriptions.

3 Result

The research results are presented based on three main focuses: instrument test results, descriptive statistics of mental toughness scores, and the distribution of mental toughness categories of athletes in the Jambi University Gymnastics Student Activity Unit (UKM Gymnastics). Because competitive anxiety was not measured using a separate standardized anxiety scale, the results section is limited to empirical data obtained from the mental toughness questionnaire. Theoretical interpretation and relevance to competitive anxiety are placed in the discussion section.

Table 1. Total Score of Respondents

Respondent code	Total score
R1	106
R2	109
R3	93
R4	134
R5	103
R6	103
R7	130
R8	104
R9	131
R10	114
R11	111
R12	136
R13	104
R14	118
R15	133

Based on Table 1, the total scores of respondents ranged from 93 to 136. The highest score was obtained by respondent R12 with a score of 136, while the lowest score was obtained by respondent R3 with a score of 93. All respondents had scores above 90, but the wide range of scores indicates that the mental toughness condition of athletes is not at the same level. Some athletes showed very high scores, while others were still at lower scores.

Table 2. Validity and Reliability Test Summary

Test components	Number of items	Results	Information
Item validity	35 items	r calculated $>$ r table (0.514)	All items are valid
Reliability	35 items	Cronbach's Alpha = 0.967	Very reliable

The validity test results showed that all 35 statement items met the validity criteria because the calculated r value was greater than the r table value at a significance level of 5%. The reliability test results obtained a Cronbach's Alpha value of 0.967. This value indicates that the instrument had very high internal consistency and was suitable for measuring the mental toughness of athletes at the University of Jambi Gymnastics UKM.

Table 3. Descriptive Statistics of Mental Toughness Scores

Statistics	Value
Number of respondents	15
Number of items	35
Mean	115.27
Variance	197.352
Standard deviation	14.048
Minimum score	93
Maximum score	136

Table 3 shows that the average mental toughness score of respondents was 115.27 with a standard deviation of 14.048. A variance of 197.352 indicates variation among respondents. The minimum score of 93 and the maximum score of 136 demonstrate a considerable range of mental toughness scores among athletes. With 35 items, the data indicate that respondents' scores tended to be in the middle-to-high range, but the distribution was not even across all athletes.

Table 4. Mental Toughness Category Distribution

Category	Score interval	Frequency	Percentage
Very High	≥ 129.32	4	26.67%
High	115.27 - 129.31	2	13.33%
Low	101.22 - 115.26	7	46.67%
Very low	< 101.22	2	13.33%
Total	-	15	100%

Based on Table 4, the category with the highest frequency is the low category, with 7 athletes (46.67%). Four athletes (26.67%) are in the very high category, two athletes (13.33%) are in the high category, and two athletes (13.33%) are in the very low category. Thus, the number of athletes in the low and very low categories is 9 athletes (60.00%), while the number of athletes in the high and very high categories is 6 athletes (40.00%). This distribution indicates that most athletes still need more intensive and ongoing mental development.

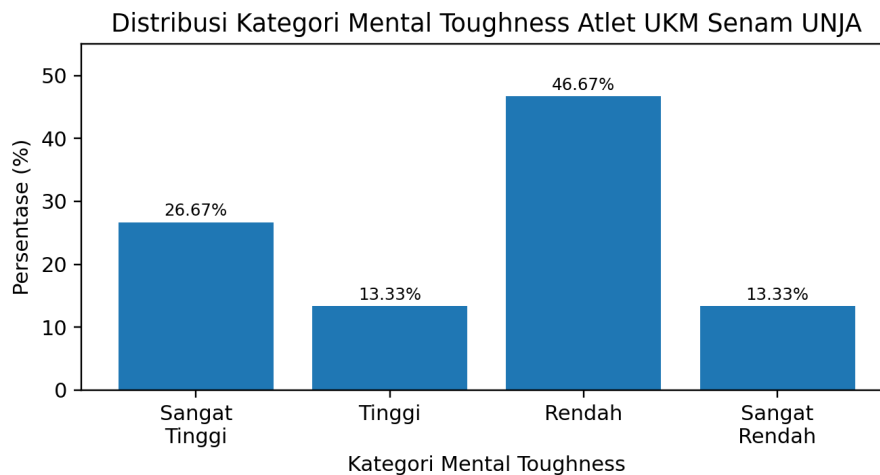


Fig. 1. Percentage distribution of mental toughness categories among gymnastics athletes

4 Discussion

The results of the study show that the Ad-Menstren Model is relevant as a structured mental-coaching framework for strengthening the mental toughness of athletes from Jambi University's Gymnastics Student Activity Unit (UKM). However, because the study used a descriptive design, the findings cannot be interpreted as evidence of causal effect. The main finding shows that most athletes were in the low category, although some had reached the high and very high categories. This condition indicates that athletes' psychological readiness has not developed evenly. From a mental toughness perspective, this inequality needs attention because mental readiness is associated with an athlete's ability to maintain focus, self-confidence, and emotional control under competitive pressure. Hsieh et al., (2024) emphasized that mental toughness is related to sports performance, while Listiana et al., (2024) showed that mental toughness influences competitive anxiety in Indonesian athletes. Therefore, the results of this study support the practical view that mental development needs to be placed as a core part of the training program, not merely as momentary motivation before competition.

The predominance of low scores among 7 athletes (46.67%) should be understood as a sign that mental development in the Gymnastics Student Activity Unit (UKM Senam) is not yet evenly distributed across all members. Athletes with low mental toughness scores may be more vulnerable to worry, somatic symptoms, and concentration disruption during competitions, although this study did not measure competitive anxiety directly. In gymnastics, these conditions are theoretically important because athletes must perform precise, rhythmic, and consistent movement sequences. When negative thoughts arise, athletes can lose focus on the movement sequence, doubt their abilities, or become overly concerned with judges' assessments. These interpretations align with Mojtahedi et al., (2023), who emphasized the importance of mental toughness in dealing with competitive anxiety, and Yu et al., (2024), who showed that competitive anxiety is related to psychological resilience and athlete coping strategies. Thus, mental development should be directed at concrete skills that help athletes identify, manage, and transform pressure into performance challenges.

The Ad-Menstren Model can be positioned as a mental development strategy that emphasizes transforming thinking from a focus on weaknesses to a focus on personal strengths. In the questioning stage, athletes are guided to recognize strengths recognized by those closest to them, strengths not yet recognized by others, and strengths not yet fully utilized. This process is relevant to self-efficacy because athletes build confidence in their abilities that can be used in training and competition. In the action stage, athletes apply these strengths in training activities so that their strengths become more than just statements but become real experiences. In the internalization stage, athletes internalize positive thoughts, thus forming more stable self-esteem and self-confidence. Adrizal (2025) places these three stages as the core of strengthening mental toughness. Theoretically, this mechanism supports Lochbaum et al., (2022) who demonstrated the relationship between self-confidence and sports performance, and Zhang et al., (2025) who viewed mental toughness as a psychological barrier against sports stress.

In the context of gymnastics, the need for mental training is particularly strong because athletes' performances are performed in a limited space, for a specific duration, and are judged on detailed technique and expression. Athletes who have mastered a sequence of movements can experience a decline in performance quality if anxiety interferes with motor memory, rhythm, and body control. Liang et al., (2021) demonstrated that progressive relaxation training can help manage pre-competition anxiety, while Park & Jeon (2023) demonstrated that

psychological skills training continues to be an important area of athlete development. This provides the basis for the need to combine Ad-Menstren Model training with other mental techniques such as relaxation, imagery, positive self-talk, and goal setting so that the mental strengthening process goes beyond recognizing one's strengths and also develops more comprehensive anxiety regulation skills.

The finding that 4 athletes (26.67%) were in the very high category and 2 athletes (13.33%) were in the high category indicates that some athletes already possess good mental capital. Athletes in this category are likely better able to maintain motivation, control emotions, and maintain confidence when facing competitive pressure. However, the presence of 2 athletes in the very low category suggests that coaches need to provide individual mentoring. The same mental training program may not necessarily have a uniform impact because each athlete has different competition experience, history of failure, social support, and coping patterns. Naden et al., (2023) showed that resilience and mental toughness can predict anxiety, depression, and mental well-being. Therefore, mental coaching in UKM Senam is not enough to be done collectively, but also needs to include personal reflection sessions that help athletes understand the sources of their own anxiety.

When compared with research in other sports, the results of this study follow a consistent pattern. Algani et al., (2018), Ikhrum et al., (2020), Darmawan & Susanto (2021), Ismail et al., (2023), Magfiroh & Jannah (2022), and Nurcahyadi & Trihandayani (2024) identified mental toughness as an aspect related to athletes' ability to cope with competitive anxiety. The difference is that this study emphasizes the Ad-Menstren Model as a self-strengths-based mental development approach for university gymnastics athletes. The practical novelty of this study lies in the use of a simple model that can be implemented in UKM training sessions and adjusted to the needs of beginner and junior athletes. Nevertheless, the descriptive design, the absence of direct competitive anxiety measurement, and the limited sample size require careful interpretation. Another limitation is that the mental toughness instrument was tested on a small sample, so the validity and reliability results should be interpreted cautiously and need further confirmation in a larger sample. Future studies should use experimental, quasi-experimental, pretest-posttest, correlational, regression, or mixed-method designs and include standardized anxiety instruments such as CSAI-2, SCAT, or SAS to test the effectiveness of the Ad-Menstren Model more robustly.

Overall, the research findings indicate that the Ad-Menstren Model can be used as a relevant psychological development framework for strengthening athletes' mental toughness. This model helps athletes recognize self-strengths, apply their strengths in training, and internalize positive thinking as a foundation for self-confidence and emotional control. For UKM Gymnastics coaches, the findings imply the need for a routine, measurable, and documented mental training program. Mental training sessions can be conducted before technical training, after performance evaluations, or before competitions. For athletes, this training can serve as a means of reflection to transform anxiety-related pressure into performance energy. For UKM institutions, the findings can serve as a basis for developing psychological development programs integrated with physical, technical, and tactical training, while still recognizing that direct claims about anxiety reduction require further empirical testing.

5 Conclusion

This study concludes that athletes from Jambi University's Gymnastics Student Activity Unit showed varied levels of mental toughness after participating in Ad-Menstren Model training. The instrument testing results showed that all questionnaire items were valid and that the instrument reliability was very high, with Cronbach's Alpha of 0.967. The average mental toughness score of athletes was 115.27 with a standard deviation of 14.048, indicating variation in psychological readiness among athletes. The category distribution showed that 4 athletes were in the very high category, 2 athletes in the high category, 7 athletes in the low category, and 2 athletes in the very low category. These findings indicate that some athletes already have strong mental toughness, but the majority still require more intensive and continuous mental coaching. The Ad-Menstren Model can be used as a practical psychological coaching strategy because it encourages athletes to recognize their strengths, apply them in training, and internalize positive thoughts to build self-confidence, focus, emotional control, and readiness to face competitive pressure. However, because this study used a descriptive design and did not directly measure competitive anxiety with a standardized anxiety instrument, the findings should not be interpreted as causal evidence that the Ad-Menstren Model reduces competitive anxiety. Future research is recommended to use experimental, quasi-experimental, pretest-posttest, correlational, regression, or mixed-method designs and to include CSAI-2, SCAT, SAS, or other sport anxiety instruments so that the effectiveness of the Ad-Menstren Model in reducing competitive anxiety can be tested more robustly.

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