

Profiling of Psychological States and Sports Performance among Competitive Karate Athletes

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Abstract

This study investigated the psychological states and sports performance of 155 competitive karate athletes (n=73 female, 82 male), exploring the influence of mood, motivation, and anxiety level on participation level. A cross-sectional research design was employed, utilizing the Brunel Mood Scale (BRUMS), Participation Motivation Questionnaire (PMQ), and Competitive State Anxiety Inventory-2R (CSAI-2R) to assess psychological factors. Results indicated a moderate positive mood (vigor $M = 2.72$, $SD = 0.93$; fatigue $M = 1.52$, $SD = 1.04$), generally positive motivation (friendship $M = 1.65$, $SD = 0.61$), and moderate anxiety levels (cognitive anxiety $M = 2.35$, $SD = 0.81$; somatic anxiety $M = 2.04$, $SD = 0.71$), although self-confidence was high ($M = 2.98$, $SD = 0.75$). The mean participation level (4.57, $SD = 1.49$, scale: 1=Inter-tournament, 6=International) indicated highly competitive involvement. The objective of this study was to determine the level of psychological states and to examine the relationship between psychological states and sports performance among competitive karate athletes. The results revealed significant positive correlations between all three variables. Mood was significantly positively correlated with motivation ($r = .569$, $p < .001$) and anxiety

level ($r = .569$, $p < .001$). This indicated that higher levels of positive mood were associated with greater motivation and higher levels of anxiety. Motivation was also significantly positively correlated with anxiety level ($r = 1.000$, $p < .000$). This strong positive correlation suggested that higher levels of motivation were directly associated with higher levels of anxiety. Maintaining optimal mental and physical well-being is crucial for athletic performance. Research has shown that factors such as mood, motivation, and anxiety can have a significant impact on an athlete's ability to perform at their best. These findings highlight the complex interplay of psychological factors influencing karate athletes and suggest avenues for interventions to optimize performance and well-being.

Keywords: Mood, Motivation, Anxiety Level, Sports Performance, Karate Athletes

Introduction

Sports psychology is a multidisciplinary field that combines elements of psychology and sports science to study the psychological factors that affect performance in sports and how participating in sports affects an individual's psychological state and overall well-being (Mehta, 2022). In competitive sports, an athlete's performance is not solely determined by physical capabilities. Psychological factors, such as mood, motivation, and anxiety level, are crucial in shaping an athlete's performance. This interplay between the mind and body is particularly evident in martial arts, such as Karate, where mental fortitude and resilience are as essential as physical strength and skill.

Karate, originating from Okinawa, Japan, is a martial art that demands both physical prowess and psychological strength (Yadav, 2023). Success in competitive karate requires not only technical proficiency but also a strong mental foundation. Athletes must learn to manage their psychological states effectively, balance emotions, maintain focus, and build the mental stamina required to excel in high-pressure tournament situations (Yudhistira et al., 2023). Karate fosters qualities like focus, perseverance, and humility, promoting mental and emotional well-being. It is not only a means of self-defence but also a competitive sport, recognized at the Olympic level, where athletes demonstrate their technical proficiency, timing, strategy, and control in both Kata and Kumite (Bagińska et al., 2022).

Psychological states refer to the mental and emotional conditions or feelings experienced by an individual at any given time. In the context of this study, psychological states can include self-confidence, mood, anxiety, motivation, and focus. Sports psychology and psychological states are crucial in enhancing athletic performance (Widhi Harita et al., 2022). Research has identified various psychological factors, such as motivation, self-confidence, anxiety, attention, and mood, that can influence an athlete's performance (Muniandy et al., 2023).

Research indicates that an athlete's mood plays a significant role in their performance outcomes. Mood refers to an athlete's overall emotional state or affective experience at or over time. It encompasses the athlete's subjective feelings, emotions, and attitudes, which can influence their performance, motivation, and overall well-being in sports (Selmi et al., 2023). Positive emotional states—such as happiness, excitement, and calmness—have been shown to enhance motivation and confidence, which are essential for optimal performance (Wong et al., 2006). An athlete experiencing a positive mood is likely to exhibit increased energy levels, improved concentration, and a proactive approach to challenges. This psychological advantage can be particularly beneficial during demanding competition phases,

allowing athletes to push their limits and maintain resilience against adversity (Brandt et al., 2021).

In addition to mood, Participation Motivation is a critical factor influencing an athlete's commitment and performance in Karate. This concept encompasses the myriad internal and external drivers that motivate individuals to engage in sports (Đurović et al., 2020). Factors such as enjoyment, skill development, social interaction, competitive spirit, health benefits, and personal aspirations contribute to an athlete's desire to participate. Understanding the diverse motivations behind athletes' engagement in Karate is essential for fostering sustained involvement and enhancing performance outcomes. Further, Đurović et al. (2020) stated that an athlete's motivation encompasses their desire, willpower, and drive to fulfil their potential and attain peak performance.

Anxiety in sports is multifaceted and plays a significant role in athletes' performance and well-being. Anxiety in sports refers to the intense fear, worry, uneasiness, and tension experienced by athletes before or during competitions, impacting their mental and physical states (Hasanah & Refanthira, 2019). Widhi Harita et al. (2022) competitive state anxiety in karate athletes has shown that it can significantly impact performance. Competitive state anxiety, a temporary emotional and physiological response experienced by athletes before or during a competition, can also have a significant impact on performance. It is characterized by apprehension, nervousness, tension, and worry specific to the competitive situation (Kuçuk Kiliç, 2020). These anxiety responses can manifest both psychologically, such as through negative thoughts or self-doubt, and physiologically, such as increased heart rate, sweating, or muscle tension. While some levels of anxiety can be beneficial for focus and arousal, excessive anxiety can hinder performance (Kusuma et al., 2020).

A comprehensive understanding of the psychological states of karate athletes and their impact on sports performance is of paramount importance. This knowledge can inform training methodologies, help athletes prepare mentally for competitions, and ultimately contribute to elevating the performance of karate athletes on the global stage. This study aims to contribute to this knowledge by profiling the psychological states of competitive karate athletes and examining the relationship between mood, motivation, anxiety, and participation levels.

Specifically, this study addressed the following research objectives:

1. To describe the background (age, gender, years of experience, training time per week, and level of participation) of Competitive Karate athletes.
2. To determine the level of psychological states (mood, motivation, and anxiety level) and sports performance among Competitive Karate athletes.
3. To determine the relationship between psychological states (mood, motivation, and anxiety level) among Competitive Karate athletes.

Methodology

Participants

This study comprised n=155 competitive karate athletes (n=73 female, 82 male). Participants were recruited based on their level of participation, ranging from inter-tournament to international levels. The participants were selected using a simple random sampling method.

Procedure

Participants completed three online questionnaires via a Google Forms link. The survey link was distributed through social media platforms, including WhatsApp, Facebook, and Instagram. These questionnaires assessed mood (Brunel Mood Scale), motivation (Participation Motivation Questionnaire), and anxiety (Competitive State Anxiety Inventory-2R). Interested participants were asked to provide specific demographic information before completing the survey. After completing the survey, participants submitted it to the researchers by clicking the "submit" button. Google Forms was chosen for its user-friendliness and efficiency in data collection. Data were collected anonymously to maintain confidentiality.

Instruments

A demographic information form was used to collect data on each participant's age, gender, years of karate experience, weekly training time, and level of participation.

Three validated questionnaires were utilized:

- I. Brunel Mood Scale (BRUMS): This 24-item scale (Terry & Lane, 2003, 2010) assessed six mood states: tension, depression, anger, vigor, fatigue, and confusion.
- II. Participation Motivation Questionnaire (PMQ): This 30-item questionnaire (Gill, Gross, & Huddleston, 1983) measured eight motivational factors influencing sports participation: achievement status, team atmosphere, fitness, energy release, skill development, fun, friendship, and motion being active.
- III. Competitive State Anxiety Inventory-2R (CSAI-2R): This 17-item scale (Cox et al., 2003) measured cognitive anxiety, somatic anxiety, and self-confidence.

Data Analysis

Data analysis was conducted using IBM SPSS Statistics version 27.0.1 (Armonk, NY: IBM Corp). Descriptive statistics (means, standard deviations) were calculated for each psychological variable and background characteristic (age, gender, years of experience, training time per week). The level of participation was measured on a 6-point scale (1 = Inter-tournament, 6 = International), and the mean participation level was calculated. The analysis aimed to determine the levels of and relationship between psychological states and sports performance of competitive karate athletes.

Results

Table 1 presented the percentage, mean, and standard deviation of the sample in terms of gender, age groups, duration of training per week, and level of participation. Table 2 presented the means and standard deviations of the measured variables, while Table 3 showed the Pearson correlations between the psychological variables. The results indicated significant positive correlations between mood, motivation, and anxiety levels among Competitive Karate athletes. Specifically, mood was significantly positively correlated with motivation ($r = .569$, $p < .001$) and anxiety level ($r = .569$, $p < .001$). Motivation was also significantly positively correlated with anxiety level ($r = 1.000$, $p < .001$).

Table 1

Background characteristics gender, age, years of experience, duration of training per week and level of participation

Variable	Frequency	Percent	Mean	SD
Gender			1.53	0.50
Female	73	47.1		
Male	82	52.9		
Age (years)			2.61	0.91
Below 17 years	25	16.1		
18-21 years	31	20.0		
22-25 years	79	51.0		
26 years above	20	12.9		
Years of Experience			3.08	1.17
1-3 years	27	17.4		
4-6 years	18	11.6		
7-9 years	26	16.8		
10 years	84	54.2		
Weekly training time			2.68	1.54
2 times	49	31.6		
3 times	35	22.6		
4 time	21	13.5		
5 time	17	11.0		
6-7 times	33	21.3		
Level of participation			4.57	1.49
Inter-tournament	5	3.2		
District	16	10.3		
University	15	9.7		
State	29	18.7		
National	30	19.4		
International	60	38.7		

As observed in Table 1, the descriptive statistics for the athletes' background characteristics revealed the following:

The sample consisted of 155 competitive karate athletes, with a relatively balanced gender distribution: 73 females (47.1%) and 82 males (52.9%). The mean gender score was 1.53 (SD = 0.50), reflecting this near-even split. This suggests that the study captured a representative sample of both male and female karate athletes.

The age of participants ranged from under 17 years to 26 years and above. The majority (51.0%) fell within the 22-25 years age category, followed by 20.0% aged 18-21 years, 16.1% below 17 years, and 12.9% aged 26 years and above. The mean age was 2.61 years (SD = 0.91). This suggests a concentration of athletes in their early to mid-twenties, potentially reflecting a peak performance period in karate, where athletes have developed significant skills and experience.

Regarding experience, a substantial proportion (54.2%) of athletes had 10 years of experience or more. Other experience categories included 17.4% with 1-3 years, 16.8% with 7-9 years, and 11.6% with 4-6 years. The mean experience score was 3.08 years (SD = 1.17). This

distribution indicates a mix of both experienced and newer athletes within the sample, suggesting a diverse range of skill levels and expertise within the group.

The frequency of training varied considerably. 31.6% trained twice a week, 22.6% trained three times a week, 13.5% trained four times a week, 11.0% trained five times a week, and 21.3% trained six to seven times a week. The mean training frequency was 2.68 times per week ($SD = 1.54$), suggesting a moderate level of training commitment across the sample. This indicates that while some athletes dedicated significant time to training, others maintained a more balanced approach, highlighting the diverse training regimens among competitive karate athletes.

Finally, the level of participation showed a significant proportion of athletes competing at the international level (38.7%). Other levels of participation included national (19.4%), state (18.7%), district (10.3%), university (9.7%), and inter-tournament (3.2%). The mean participation score was 4.57 ($SD = 1.49$), indicating a high level of competitive involvement overall. This finding suggests that the majority of athletes in the sample had achieved a considerable level of success in their karate careers, with a significant portion competing at the highest levels of the sport.

Table 2

The level of psychological states (mood, motivation, and anxiety level) and sports performance (participation level) among Competitive Karate athletes.

Variable	Mean	Std. deviation
Mood		
Anger	0.82	0.93
Confusion	0.98	0.90
Depression	0.98	0.94
Fatigue	1.52	1.04
Tension	1.53	1.02
Vigor	2.72	0.93
Motivation		
Achievement status	1.38	0.39
Team atmosphere	1.32	0.42
Fitness	1.19	0.38
Energy release	1.49	0.48
Skill development	1.15	0.37
Friendship	1.65	0.61
Fun	1.25	0.37
Motion being active	1.44	0.46
Anxiety level		
Cognitive anxiety	2.35	0.81
Somatic anxiety	2.04	0.71
Self-confidence	2.98	0.75
Sports performance (level of participation)		
Inter-tournament	4.57	1.49
District		
University		
State		
National		
International		

As analyzed in Table 2, the study aimed to determine the level of psychological states (mood, motivation, and anxiety level) and sports performance (participation level) among competitive karate athletes.

Mood: The Brunel Mood Scale (BRUMS) revealed a moderate level of positive mood among the athletes. Vigor ($M = 2.72$, $SD = 0.93$) showed the highest mean score, indicating a relatively high level of energy and enthusiasm. Fatigue ($M = 1.52$, $SD = 1.04$) and tension ($M = 1.23$, $SD = 1.02$) also had moderate mean scores, suggesting that some level of tiredness and stress was present. The negative mood states—anger ($M = 0.82$, $SD = 0.93$), confusion ($M = 0.98$, $SD = 0.90$), and depression ($M = 0.98$, $SD = 0.94$)—had lower mean scores, indicating that these negative emotions were less prevalent among the athletes. This suggests that while some level of stress and fatigue was experienced, the athletes generally maintained a positive mood, which could be attributed to the motivating nature of the sport.

Motivation: The Participation Motivation Questionnaire (PMQ) indicated a generally positive motivational state. Friendship ($M = 1.65$, $SD = 0.61$) had the highest mean score, suggesting that the social aspects of karate are highly motivating. Other motivational factors, such as achievement status ($M = 1.38$, $SD = 0.39$), team atmosphere ($M = 1.32$, $SD = 0.42$), energy release ($M = 1.49$, $SD = 0.48$), and motion being active ($M = 1.44$, $SD = 0.46$), also showed moderate scores, indicating that these aspects contribute to the athletes' motivation. Fitness ($M = 1.19$, $SD = 0.38$), skill development ($M = 1.15$, $SD = 0.37$), and fun ($M = 1.25$, $SD = 0.37$) had slightly lower scores. This suggests that the athletes are motivated by a combination of social connections, personal achievement, and the physical and mental benefits of the sport.

Anxiety: The Competitive State Anxiety Inventory-2R (CSAI-2R) showed moderate levels of anxiety. Cognitive anxiety ($M = 2.35$, $SD = 0.81$) and somatic anxiety ($M = 2.04$, $SD = 0.71$) had moderate mean scores, suggesting that athletes experienced a moderate level of worry and physical tension. However, self-confidence ($M = 2.98$, $SD = 0.75$) had a relatively high mean score, indicating that the athletes generally felt confident in their abilities. This suggests that while some level of anxiety is present, the athletes can manage it effectively and maintain a high level of self-confidence.

Sports Performance (Level of Participation): The mean level of participation was 4.57 ($SD = 1.49$) on a scale where 1.00 represents Inter-tournament and 6.00 represents International. This indicates that the majority of karate athletes participate at a relatively high level, with a significant proportion participating at the national and international levels. This finding suggests that the athletes in this study are highly committed to the sport and have achieved a significant level of success in their competitive careers.

Table 3

Pearson Correlations test between psychological states according to mood, motivation and anxiety level

		Correlations		
Variable		Mood	Motivation	Anxiety level
Mood	Pearson Correlation	1	.569**	.569**
	Sig. (2-tailed)		<.001	<.001
	N	155	155	155
Motivation	Pearson Correlation	.569**	1	1.000**
	Sig. (2-tailed)	<.001		.000
	N	155	155	155
Anxiety level	Pearson Correlation	.569**	1.000**	1
	Sig. (2-tailed)	<.001	.000	
	N	155	155	155

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3 presented the Pearson correlations between the psychological states of mood, motivation, and anxiety level. The results revealed significant positive correlations between all three variables. Mood was significantly positively correlated with motivation ($r = .569$, $p < .001$) and anxiety level ($r = .569$, $p < .001$). This indicated that higher levels of positive mood were associated with greater motivation and higher levels of anxiety. Motivation was also significantly positively correlated with anxiety level ($r = 1.000$, $p < .000$). This strong positive correlation suggested that higher levels of motivation were directly associated with higher levels of anxiety.

These findings suggested that there was a complex interplay between mood, motivation, and anxiety among competitive karate athletes. Higher levels of positive mood seemed to be associated with both greater motivation and higher levels of anxiety. This suggested that while a positive mood may enhance motivation, it may also contribute to increased anxiety in the context of competitive karate. Further research was needed to explore these relationships in more depth and understand the underlying mechanisms at play.

Discussion

The objective of this study is to determine the level of psychological states and to correlate the psychological states with the sports performance of competitive karate athletes. Maintaining optimal mental and physical well-being is crucial for athletic performance. Studies have shown that mood, motivation, and anxiety levels are psychological factors that are significant in determining how well athletes perform (Dongoran et al., 2020).

In the context of competitive karate athletes, understanding the interplay between these psychological variables is particularly important. The current study reveals a generally positive mood among competitive karate athletes, as indicated by moderate levels of positive affect across various mood dimensions (da Silva Duarte et al., 2022). However, the finding that fatigue and tension scores are higher than those for anger, confusion, and depression warrants further examination. This suggests that while athletes report a predominantly positive mood, they also experience some levels of fatigue and tension, which likely reflect

the physically demanding nature of the sport (Janelle et al., 2020). These findings align with previous research, which indicates that athletes in physically demanding sports often confront fluctuations in mood, with fatigue and tension being common experiences (Janelle et al., 2020). Such insights highlight the necessity of addressing fatigue and tension through proper training, recovery, and stress management strategies (Lew et al., 2023).

The current study also reveals a generally positive motivational state among competitive karate athletes. Athletes exhibit moderate levels of drive across various motivational factors, including achievement status, team atmosphere, fitness, energy release, skill development, fun, and active motion. Notably, friendship emerges as a significantly stronger motivational factor, receiving a higher mean score. This finding resonates with previous research that emphasizes the importance of social support and team cohesion in athletic success (Moradi et al., 2020). The presence of strong social bonds and a sense of belonging within a team contribute to increased motivation, commitment, and overall well-being (Panagiotis, 2020). This is particularly relevant in a sport like karate, where individual performance can be enhanced through a supportive team environment.

Furthermore, the current study finds that competitive karate athletes report moderate levels of both cognitive and somatic anxiety, indicating that they experience a mixture of mental and physical pre-competition stress. However, the finding that athletes also report high levels of self-confidence is noteworthy. This suggests a balance between experiencing some anxiety while maintaining a strong belief in their abilities. This insight is crucial, as it indicates that while anxiety is present, it does not necessarily detract from performance. Previous research highlights the complex relationship between anxiety and athletic performance (Ríos-Garit et al., 2024). While high levels of anxiety can be debilitating, moderate levels of anxiety can prove beneficial for performance by enhancing focus and arousal (Rosli et al., 2022). This balance illustrates the need for athletes to develop coping strategies that leverage their self-confidence while managing anxiety effectively (Sut Txi et al., 2020).

These findings highlight the intricate relationship between mood, motivation, and anxiety in shaping the performance of competitive karate athletes. By deepening our understanding of these psychological states, the study emphasizes the need to manage fatigue and tension, strengthen social connections, and regulate anxiety levels effectively. An interesting avenue for further research is the role of cultural influences on athletes' psychological states.

Comparing athletes from different cultural backgrounds could reveal unique differences in mood, motivation, and anxiety, offering valuable insights into how cultural factors shape mental resilience and performance. By applying these findings, coaches and sports psychologists can develop training and support programs that not only enhance physical skills but also promote mental and emotional well-being key components of success in competitive karate.

Conclusion

This study explored how the psychological states of competitive karate athletes impact their performance. The results paint a nuanced picture, showing that mood, motivation, and anxiety all play key roles in shaping how athletes perform in this demanding sport. Most athletes displayed positive moods and strong self-confidence, which are crucial for success.

However, many also experienced fatigue and tension likely a natural response to the intense physical and mental demands of karate. One interesting finding was the significant role of friendship as a source of motivation. This highlights just how important social support and team cohesion are in helping athletes stay motivated and perform at their best. Another key takeaway was the relationship between anxiety and confidence.

While the athletes had moderate levels of anxiety, their high self-confidence seemed to balance it out. A certain level of anxiety might even be beneficial, helping athletes stay focused and engaged rather than hindering their performance. These insights emphasize the need to consider psychological factors like mood, motivation, and anxiety in training and athlete development. By understanding and addressing these aspects, coaches and sports psychologists can create better strategies to support both individual and team success in competitive karate.

This research contributes to the existing body of knowledge in sports psychology, particularly within the context of competitive karate, by providing empirical evidence for the complex interplay of mood, motivation, and anxiety levels among athletes. Theoretically, the findings challenge a simplistic view of these psychological states as independent entities, revealing a more nuanced understanding of their interconnectedness. Specifically, the study demonstrates a significant positive correlation between positive mood and both higher motivation and increased anxiety. This suggests that a positive emotional state while promoting motivation, can also contribute to heightened anxiety in a competitive karate setting.

The study also highlights the importance of understanding how cultural influences can affect psychological states, suggesting further research into how different cultural backgrounds might shape mental resilience and performance in karate. Overall, this study enhances our understanding of the psychological dynamics at play in competitive karate, providing a more nuanced understanding of the relationship between mood, motivation, and anxiety. Its practical implications for coaching and athlete support make it a valuable contribution to the field of sports psychology and the broader context of karate training and performance.

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