

# Exploring the psychological profile of rock climbing athletes participating in the Pekan Olahraga Nasional (PON) in West Nusa Tenggara: A psychometric analysis

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## ABSTRACT

Psychological factors are important factors in sports achievement. Psychological training programs in sports have been used in various fields to improve skills. This study uses survey with a test and measurement approach, a type of quantitative descriptive research. The subjects of this study were 8 rock climbing athletes. The instruments used were concentration, anxiety, and confidence. The results of the analysis obtained from the calculation of the psychological profile of the NTB rock climbing athletes are concentration with an average of 10.87, anxiety with an average of 19.50, motivation with an average of 115.87, and confidence with an average of 120.50. The weakest psychological indicator was concentration, while anxiety and self-confidence were average indicators. On the other hand, motivation was a strong point and was categorised as good. There were several limitations to consider in this study. First, this study focused on four psychological factors, namely concentration, anxiety, motivation, and self-confidence, while potentially neglecting other significant aspects of the psychological profile of the athlete. Second, there were only nine participants in the sample, limiting the generalizability of the results. Future research should surmount these limitations by incorporating a broader range of psychological factors and increasing the sample size to produce more exhaustive and representative results. The findings of this study highlight the significance of continuous mental training to enhance the performance of rock climbers. In addition, this study provides practitioners and researchers with a valuable resource for addressing issues related to an athlete's psychological well-being.

**Keywords:** Sports psychology; concentration; anxiety; confidence

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## INTRODUCTION

Rock climbing, a complex sport, combines flexibility, strength, cleverness, and skillful equipment usage to conquer cliffs (Langseth & Salvesen, 2018). This thrilling outdoor activity has gained popularity in West Nusa Tenggara, leading to remarkable achievements in the region. While physiological aspects have been studied extensively, there is a strong argument that psychological variables play an even more crucial role in achieving success (Puletić & Stanković, 2014). The interplay between physical abilities and psychological attributes in rock climbing presents an intriguing terrain for exploration, offering valuable insights into peak performance in this challenging pursuit.

The scope of rock climbing includes understanding the psychological factors that affect athletes' performance and the relationship between exercise involvement and psychological development (Nam et al., 2022). In the context of sports psychology, one applied science is in sports training and performance (Wheatley, 2021). Engaging in sports activities contributes to shaping an individual's personality, promoting discipline, resilience, sportsmanship, competitiveness, high spirit, and decision-making bravery (Kozina et al., 2016).

Numerous studies provide evidence of psychology's role in determining athletes' performance and shaping their personalities. Personality, as described by Rahman (2015), sets individuals apart and makes them unique. Essentially, personality refers to a combination of characteristics contributing to a person's distinctiveness (Nam et al., 2022). Psychological traits reflect the true athlete, and the ability to mentally prepare is recognized as a crucial element for success in sports (Kleinstäuber et al., 2017).

According to Kozina et al. (2016), elite athletes utilise psychological characteristics, such as self-confidence and motivation, to improve their achievements, with self-confidence and motivation being the most prominent characteristics. The approach to identify psychological characteristics is based on psychological factors (Nam et al., 2022), aiming to investigate the interconnected relationship between psychological factors and performance factors (Villavicencio et al., 2021).

Rock climbing, as an outdoor sport, is closely related to mountaineering and involves navigating 45-degree cliffs (Aras & Ewert, 2016; Kozina et al., 2016). It has developed into a national and international sport that was once popular among nature lovers or rock climbing communities. Due to its high-altitude nature and the need for special equipment, many rock climbing enthusiasts participate in expeditions and competitions organised by nature lovers' organisations or climbing groups at regional and national levels (Michael et al., 2019).

Rock climbing fosters various abilities, including climbing higher, placing feet and hands strategically, determining paths, and making quick decisions to reach greater heights (Giles et al., 2014). In this sport, climbers encounter two types of cliffs: natural and artificial cliffs (Pramukti & Junaidi, 2015). The challenging environment of rock climbing requires athletes to rely not only on their physical strength but also on their psychological readiness and problem-solving skills, which are crucial for overcoming obstacles during climbs.

Rock climbing has become one of the sports featured in the Pekan Olahraga Nasional (PON) (Pramukti & Junaidi, 2015). This challenging activity is frequently used by rock climbing activists as a workout facility to train their physical condition and abilities (Villavicencio et al., 2021). Natural rock climbing sites are often found in the Citatah Padalarang Karst area, while artificial rock climbing involves wall climbing on specially designed structures (Nam et al., 2022). These diverse climbing environments demand not only physical prowess but also exceptional endurance to tackle the demanding terrains and conquer towering cliffs.

Endurance is a crucial factor in rock climbing, and athletes are required to possess excellent aerobic fitness to perform optimally during contests (Aras & Ewert, 2016; Giles et al., 2014; Kleinstäuber et al., 2017; Wheatley, 2021). Aerobic capacity is especially important in rock climbing, as it determines the body's resistance to high-intensity efforts (Aras & Ewert, 2016). Factors such as aerobic power, lactate threshold, movement efficiency, and muscle fiber type can significantly impact endurance performance (Tyshchenko et al., 2018). For successful performance, rock climbers need to maintain good cardiorespiratory endurance and the ability to move swiftly throughout a contest.

Numerous studies have established the pivotal role of psychology in shaping athletes performance and their unique personalities. Personality, as explained by Nam et al. (2022), is the amalgamation of characteristics that distinguish an individual, making them truly unique (Chen & li, 2021; Saul et al., 2019). Psychological traits provide a comprehensive description of athletes in the realm of sports, shedding light on their mental attributes (Villavicencio et al., 2021). Notably, mental preparation stands out as a key differentiating factor in determining athletes' success.

In the realm of sports psychology, researchers delve into human behaviour within the context of sports, focusing on the psychological factors that significantly impact athletic performance (Aras & Ewert, 2016; Ramis et al., 2015; Tangkudung & Tangkudung, 2021). The effective management of anxiety, motivation, and self-confidence is recognised as paramount to an athlete's triumph. In light of the crucial significance of comprehending the psychological aspects of rock climbing athletes, this study endeavours to analyse the psychology of rock climbers participating in the West Nusa Tenggara (WNT) Pekan Olahraga Nasional (PON). Through discerning the psychological profile of these athletes and predicting their capabilities, invaluable insights can be derived to optimise training programmes and overall development, thereby fostering triumph in the fiercely competitive sports world.

However, no other researchers have conducted specific research on the interaction between psychological factors and athlete performance in the sport of rock climbing, especially in the context of rock climbing competitions at Pekan Olahraga Nasional (PON) events in the West Nusa Tenggara region. Therefore, this study aims to fill this knowledge gap and present valuable insights into the role of psychology in achieving success in this challenging sport. The urgency of this study lies in the recognition that mental factors are often overlooked despite their impact on performance. By shedding light on psychological variables, this research aims to fill the existing gap in understanding and provide crucial data for effective strategies in athlete development. Ultimately, the goal is to support the growth and success of rock climbing athletes in West Nusa Tenggara and beyond, making mental preparation and resilience integral components in the pursuit of excellence in sports.

## METHOD

The type of approach used in this study was "One-shot" which is a design model that uses one data retrieval at a time (Mi, 2016). Furthermore, it is explained that this design pattern uses a descriptive survey approach which aims to find the position (status) of the phenomenon (symptoms). The research design is to determine motivation, concentration, positive thinking, anxiety and self-confidence. The samples used as subjects in the implementation were 8 people of rock climbing PON athletes. The instrument used to obtain data about rock climbing playing skills is a psychological test, instrument used: sport competition anxiety test. concentration test, achievement motivation test, confidence test and positive thinking test (Maksum, 2011).

The collection of research data was carried out by the method of documentation and test, namely the action test. The test method was used to obtain data about rock climbing psychology, while the documentation method was used to record data about the identity of the research subjects and the data on the results of the rock climbing playing skills test. The observation method in this study was intended to see whether the data collection process was carried out correctly or not. To obtain a conclusion on the problem that is studied, data analysis is an important step in research. In accordance with the problem formulation and research objectives, the data analysis used in this study was a descriptive analysis by determining the classification of players based on the scores obtained from the data from the rock climbing psychology test results.

## RESULTS AND DISCUSSION

This study used tests and measurements of the four psychological components used to support rock climbing achievement. The data analysis technique used to test the data in this study was descriptive analysis. Where the results of the research data are calculated in the number of percent how many athletes are in the category of very good, good, enough, less and very less. Achievements in sports can be achieved

not only by following a physical exercise program ordered by the coach, but also athletes must have positive thoughts that control their mind and behavior. The results of the descriptive analysis obtained used SPSS 26 are in the following Table 1.

**Table 1. Results Psychology for Rock Climbing in West Nusa Tenggara**

	N	Descriptive Statistics			
		Min	Max	Mean	Std. Deviation
Concentration	8	6.00	19.00	10.8750	4.85320
Anxiety	8	12.00	27.00	19.5000	4.10575
Motivation	8	105.00	129.00	115.8750	9.68707
Self-Confidence	8	108.00	129.00	120.5000	7.30949

This study aims to determine the psychological condition of rock climbing athletes at training centers in West Nusa Tenggara. The data taken in this study included concentration, anxiety, motivation, and self confidence. Based on the data above, the psychological test results for athletes at the West Nusa Tenggara Pekan Olahraga Nasional (PON) for concentration with an average of 10.87, anxiety with an average of 19.50, motivation with an average of 115.87, and confidence with an average of 120.50. While the details of the test results are described as follows.

**Table 2. Concentration Test Results**

	Frequency	Percent	Valid Percent	Cumulative Percent
6.00	2	25.0	25.0	25.0
7.00	1	12.5	12.5	37.5
8.00	1	12.5	12.5	50.0
12.00	1	12.5	12.5	62.5
14.00	1	12.5	12.5	75.0
15.00	1	12.5	12.5	87.5
19.00	1	12.5	12.5	100.0
Total	8	100.0	100.0	

**Table 3. Anxiety Test Results**

	Frequency	Percent	Valid Percent	Cumulative Percent
12.00	1	12.5	12.5	12.5
18.00	1	12.5	12.5	25.0
19.00	2	25.0	25.0	50.0
Valid 20.00	2	25.0	25.0	75.0
21.00	1	12.5	12.5	87.5
27.00	1	12.5	12.5	100.0
Total	8	100.0	100.0	

**Table 4. Motivation Test Results**

	Frequency	Percent	Valid Percent	Cumulative Percent
105.00	2	25.0	25.0	25.0
107.00	1	12.5	12.5	37.5
114.00	1	12.5	12.5	50.0
Valid 118.00	1	12.5	12.5	62.5
122.00	1	12.5	12.5	75.0
127.00	1	12.5	12.5	87.5
129.00	1	12.5	12.5	100.0
Total	8	100.0	100.0	

Table 5. Confidence Test Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	108.00	1	12.5	12.5
	114.00	1	12.5	25.0
	117.00	1	12.5	37.5
	120.00	1	12.5	50.0
	123.00	1	12.5	62.5
	124.00	1	12.5	75.0
	129.00	2	25.0	100.0
Total	8	100.0	100.0	

Based on the results in the table, the total number of respondents in this study was 8 athletes. The lowest score data for the aspect of concentration was 6, the highest score was 19, the lowest score for anxiety was 12, and the highest score was 27. Furthermore, the data for the lowest motivation score was 105 and the highest score was 129, the lowest score data for self-confidence was 108 and the highest was 129. From the results of the research above, there are still athletes who have psychological conditions that fall into the less and sufficient categories. One of the factors that influence the psychological condition of a rock climbing athlete is the training factor. Training is a process of practicing systematically which is done repeatedly and the training load is increasing day by day. Exercise is not only physical condition but mental training must really be considered by both of the coach and an athlete.

The psychological profile of the region as West Nusa Tenggara. Rock climbing athletes for the PON Papua 2021. The level of concentration of the rock climbing athletes were averagely in poor condition, where 1 person had good concentration, 3 people had moderate concentration, and 4 people had less concentration. The anxiety level was a moderate condition, where 1 person had low anxiety level, 6 people had moderate anxiety level, and 1 person had high anxiety level. The achievement motivation had an average of a good condition, where 5 people had good motivation level, and 3 people had moderate motivation level. The confidence level had an average of moderate condition, where as many as 2 people had a good level of self-confidence, 6 people had a moderate level of self-confidence. Therefore, the results obtained is a concern for all rock climbing stakeholders who will succeed in the region as West Nusa Tenggara. Papua in accomplishing wonderful achievements. The results by [Giles et al. \(2014\)](#) show that rock climbing places physiological and psychological factors as significant factors on athlete achievement.

The mental strength of sports psychology is critical if a person wishes to consistently improve his performance to a higher level ([Krüger & Seng, 2019](#)). Mental psychology in the form of thoughts acts as a controller ([Kleinstäuber et al., 2017](#); [Wheatley, 2021](#)). Athletes who want to enhance their sports performance must have a strong psychological foundation so that they may practice and compete in high spirits, with absolute concentration, never giving up, and not easily distracted by non-technical or personal issues. As a result, he will be able to take his workout regimen seriously. Sports psychology has the potential to improve athletic performance ([Delaporte, 2010](#); [Fan et al., 2020](#)). Sports psychology tries to help athletes better regulate their thoughts, emotions, and behavior so that they can perform at their best in every competition. Athletes with good psychology can help others feel more comfortable, calm, and focused when exercising. Sport encompasses not just physical activities, but also involves psychological elements ([Langseth & Salvesen, 2018](#)). Broadly speaking, mental understanding includes; thoughts, views, images and so on, which is essentially the empowering of the thinking function as a controller of the body's actions and responses ([Kulich et al., 2020](#)).

The research conducted confirms that the importance of psychological factors in sports achievement must be understood by rock climbing athletes. Psychological factors greatly support the achievement of athletes in rock climbing because players must be able to maintain motivation, concentration, and confidence when competing ([Kuloor & Kumar, 2020](#); [Mann & Narula, 2017](#); [Pal et al., 2021](#)). Various studies have indicated that psychological factors are strongly correlated with the abilities of rock climbing athletes ([Aras & Ewert, 2016](#); [Hrušová & Chaloupská, 2019](#); [Jones & Johnson, 2016](#); [Michael et al., 2019](#)). The research states that players with a low psychological profile tend to exhibit a lack of ability, while those with good

psychological factors perform better (Isnaini & Hasbi, 2021; Jones & Johnson, 2016; Pandurevic et al., 2019; Wheatley, 2021). Hence, understanding and nurturing psychological aspects are crucial for the success of rock climbing athletes.

## CONCLUSION

This study presents the results of an analysis of rock climbing athletes in West Nusa Tenggara, revealing strengths and weaknesses in their psychological factors. The findings show that concentration is the weakest psychological indicator, while anxiety and self-confidence levels are at an average level. However, on the other hand, motivation proved to be a strong point and was classified as good. Each athlete exhibits unique characteristics that affect their psychological factors differently. The results of this study successfully described the specific psychological profile of rock climbing athletes by identifying the psychological factors that are strengths and weaknesses for each individual.

The contribution of this research is valuable to the world of sport, particularly in understanding the psychological aspects that play an important role in the performance of rock climbing athletes. The emphasis on the importance of motivation as a major factor driving athlete performance opens up opportunities to develop more effective training programmes. Athlete coaches and coaches can use the information from this study to design a more targeted approach that focuses on improving concentration and addressing anxiety and confidence in athletes. In addition, this study provides valuable insights into how the psychological characteristics of individual athletes can affect their achievements. With a deeper understanding of psychological profiles, more appropriate coaching and individualised approaches can be implemented, helping athletes reach their full potential.

Although this study makes an important contribution to understanding the psychological factors of rock climbing athletes, there are some limitations that need to be noted. The focus on only four psychological factors, namely concentration, anxiety, motivation, and self-confidence, leaves out the potential for other aspects to also influence athlete performance. In addition, the limited sample size, which only involved nine participants, causes the results of this study to have limitations in generalising to the overall population of rock climbing athletes. Therefore, future research needs to expand the scope of psychological variables and involve more participants to produce more representative and relevant findings. By addressing these limitations, future research can provide deeper insights into the psychology of rock climbing athletes and play a role in improving their performance on an ongoing basis.

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## CONFLICT OF INTEREST

All authors declare that there is no conflict of interest whatsoever in this study.

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