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Analysis of Anxiety Levels in Archery Athletes (Comparison on 40-meter, 50-meter, 70-meter)

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Abstract

The purpose of this study was to analyze and compare anxiety levels in archery athletes when competing in the 40-meter, 50-meter, and 70-meter numbers. This type of research is quantitative with a descriptive survey method. The sample was 63 archery athletes, who were divided into 21 athletes in the 40-meter, 50-meter, and 70-meter numbers. The Competitive State Anxiety Inventory-2 Revised (CSAI-2R) serves as the research instrument, and data collection occurs prior to athletes entering the competition area. The results of the One Way ANOVA showed a sig. 0.622 or p>0.05. So there was no difference in anxiety scores in archery athletes in the 40-meter, 50-meter, and 70-meter numbers. Although, the average anxiety score in athletes in the 70-meter number is slightly higher than that of athletes in the 40-meter and 50-meter numbers. The conclusion is that while there is no significant difference between the numbers, these findings underscore that anxiety remains an important aspect of archery performance that needs to be managed. Therefore, anxiety management strategies, such as a combination of psychological skills training, are needed. Future research may consider longitudinal designs to track changes in anxiety over time or incorporate qualitative methods to gain a deeper understanding of athletes' perceptions of competitive pressures.

Keywords: *Competition Anxiety, Archery Competition, Sports Psychology*

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INTRODUCTION

Anxiety is a psychological phenomenon that is often encountered in various aspects of life, including in the world of sports. In the context of sports, anxiety is defined as an unpleasant emotional state (Yusup et al., 2024). Anxiety is characterized by feelings of tension, worry, and nervousness that are often accompanied by physiological activations such as increased heart rate, cold sweats, or muscle tension (Ahmedov & Abdulakhatov, 2023). For an athlete, anxiety can interfere with concentration, coordination, and decision-making, ultimately leading to decreased performance (Trpkovici et al., 2023). This phenomenon has been the subject of extensive research in sports, particularly archery, with many studies showing a significant correlation between anxiety levels and outcome scores in archery.

Archery is a sport that demands high concentration, mental calm, and precise accuracy (Tokmakci et al., 2023). Then, archery also relies heavily on the mental stability and ability of

athletes to maintain focus in stressful situations (Komarudin et al., 2021). Each shot involves a complex series of movements, from finger placement and bow pull to arrow release, all of which are highly susceptible to being affected by the athlete's psychological state (Setyawan et al., 2023). Therefore, the anxiety factor has a crucial role in determining the success of an archer. Based on previous research, archery athletes who are able to manage their anxiety well tend to show more consistent and accurate performance compared to those who do not (Tokmakci et al., 2023), (Saputra & Sepdanius, 2023).

In archery competitions, there are various match numbers that are differentiated based on the target distance, such as 40 meters, 50 meters, and 70 meters. Each of these numbers not only demands different technical adaptations from athletes but also has the potential to trigger varying levels of psychological distress (Komarudin et al., 2021). This difference in distance implicitly raises the question of whether there is variation in athletes' anxiety experiences when competing in different numbers (Isar et al., 2022). Although much research has been done on anxiety in athletes (Tokmakci et al., 2023 & Saputra & Sepdanius, 2023), there are still limitations in the literature that specifically compare anxiety levels in archery athletes in different match numbers.

Based on this background, this study aims to analyze and compare the level of anxiety in archery athletes when competing in the 40-meter, 50-meter, and 70-meter numbers. It is hoped that the results of this research can make a significant contribution to the development of sports psychology, especially in the context of archery, as well as become the basis for the development of a more adaptive and effective mental coaching program to improve the performance of archery athletes at various levels of competition.

METHOD

Study Organization

This type of research is quantitative with a descriptive survey method because the results of this study are to describe descriptively the anxiety of archery athletes and compare anxiety levels based on the numbers of 40-meter, 50-meter, and 70-meter shots. The instrument used is the Competitive State Anxiety Inventory-2 Revised (CSAI-2R), which was revised by Cox et al. (2003) from the CSAI 2 measuring tool developed by Martens et al. (1990). The CSAI-2R instrument has a good questionnaire model is CFI = 0.95, NNFI = 0.94, RMSEA = 0.054. The aspects are cognitive, somatic, and confidence, and the scale used in this instrument is 1–4.

Data collection was carried out at an archery competition in Central Java Province, Indonesia. Meanwhile, the procedure for data collection is carried out in the morning, before athletes enter the race arena, through a questionnaire. After the data is collected, the data continues to be analyzed and reported in the form of scientific research results.

Study Participants

The population of this study was all archery athletes competing in all competition numbers. While the sample selection was selected randomly (*random sampling*) in the 40-meter and 50-meter numbers, and athletes in the 70-meter number were involved as a whole as respondents. The reason archery athletes in the 70-meter number were involved as a whole, because in that number there were only 21 athletes, in contrast to the 40-meter and 50-meter numbers with the number of athlete participation of more than forty athletes. Therefore, the larger the sample size, the better and more accurate it will be in producing analysis in the research results. So the number of samples is 63 athletes, with 21 athletes in the 40-meter number, 21 athletes in the 50-meter number, and 21 athletes in the 70-meter number.

Statistical Analysis

The analysis in this study used the one-way ANOVA test to compare more than two paired samples with a significance value of $p<0.05$ or there was a difference between each number. If there is a difference between each group, then a post hoc test using LSD (Least Significant Difference) is required. The analysis of this study used SPSS software version 27 (George & Mallery, 2021).

RESULTS AND DISCUSSION

Result

The first analysis in this study was descriptive, to analyze the anxiety value in each number of the archery competition. Table 1 below presents the anxiety values.

Table 1. Descriptive Results of Anxiety Level

	N	Minimum	Maximum	Mean	Standar of deviation
40-meter	21	33	39	36,57	1,777
50-meter	21	33	40	36,71	2,053
70-meter	21	33	39	37,10	1,513

Based on the results of Table 1, the anxiety value in archery athletes is at the 40-meter number, the minimum is 33, the maximum is 39, and the average is 36.57. In archery, athletes in the 50-meter number have a minimum of 33, a maximum of 40, and an average of 36.71. In

archery, athletes in the 70-meter number drink 33, with a maximum of 39 and an average of 37.10.

In order to continue the one-way ANOVA analysis, a prerequisite test is needed, namely the normality test and the homogeneity test. The normality test in this study used Shapiro-Wilk because the number in each group was less than 30 respondents. The following table 2 below is the results of the normality test.

Table 2. Normality test on data

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
40-meter	0.214	21	0,103	0,926	21	0,114
50-meter	0,153	21	.200	0,931	21	0,142
70-meter	0,154	21	.200	0,907	21	0,149

Based on the results of table 2, the normality test, all anxiety questionnaire values on each number in 40 meters, 50 meters, and 70 meters showed significance values above 0.05. So all the data showed normal distribution through the Shapiro-Wilk test. Below is Table 3, which presents the results of the homogeneity test.

Table 3. Homogeneity test results on data

		Levene Statistic	df1	df2	Sig.
Anxiety	Based on Mean	1,840	2	60	0,168
	Based on Median	1,487	2	60	0,234

Based on the results of table 3, it shows that the value based on the mean is sig. 0.168 or p>0.05, then the data of this study came from the same or homogeneous population. Once the data met the assumptions of normality and homogeneity, the next analysis was the one-way ANOVA test as a parametric test. The following table 4 below is the difference test of two or more paired samples or the one-way ANOVA test.

Table 4. One-Way ANOVA test results

Anxiety					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3,079	2	1,540	0,478	0,622
Within Groups	193,238	60	3,221		
Total	196,317	62			

Based on the results of table 4, it shows the value of sig. 0.622 or p>0.05 then there was no difference in anxiety between the numbers in the 40-meter, 50-meter, and 70-meter archery athletes. So it is not necessary for post hoc tests.

Discussion

The results of this study indicated that there was no statistically significant difference in the average anxiety levels of archery athletes across the three distances tested. These findings indicate that, based on the data collected, variations in target distance in archery do not consistently trigger substantial differences in the level of anxiety experienced by athletes.

Based on previous research findings, we can interpret the absence of this significant difference. First, the sport of archery inherently demands high concentration, mental calm, and extreme precision on every shot, regardless of the distance. Thus, the core psychological distress that triggers anxiety may be more related to the nature of the sport itself than the specific variations between numbers (Tokmakci et al., 2023 & Ramalingam et al., 2021). The second analysis shows that archery athletes, especially those who have reached a competitive level, have often developed effective as a result, the main mental stress that causes anxiety might be more related to the nature of the sport itself rather than specific numerical differencestions (Hasyim et al., 2022).

Although the statistical results did not show a significant difference, the descriptive analysis of this study revealed a tendency where the average anxiety score of archery athletes in the 70-meter number was slightly higher than the average score of archery athletes in the 40-meter and 50-meter numbers. This tendency, although it does not reach statistical significance, still reveals the perceptions and subjective experiences of athletes in the face of various distances.

Several factors may explain why the 70-meter number tends to trigger slightly higher levels of anxiety. Based on previous literature, this 70-meter number often has a greater competitive weight and is associated with higher performance expectations, so athletes may feel more intense pressure (Lau et al., 2020). In addition, the technical demands to achieve precise accuracy at 70-meter distances are greater, with a very small fault tolerance, which can psychologically increase the anticipation of failure (Septiana et al., 2020). This perception of greater difficulty toward distance can also contribute to increased feelings of nervousness and worry before or during competitions.

Then, the importance of managing and overcoming anxiety in sports research. One of the main approaches is through psychological skills training (PST), which includes a variety of techniques. Some scientific evidence suggests that progressive relaxation can reduce anxiety by lowering heart rate and can improve performance (Rizal et al., 2019). The use of other psychological skills, such as meditation, also has a positive impact on mental toughness so that

it can reduce competition anxiety in archery athletes (Jagtap, 2021). Specific Physical Training (SPT) in combination with imagery can reduce the level of panic, which is part of anxiety in archery athletes (Priambudi et al., 2023). In addition, the method of combining imagery and self-talk can also reduce anxiety levels and improve performance (Isar et al., 2022). Therefore, the integration of these anxiety management methods into archery athletes' training programs can improve their mental resilience. Thus, while anxiety levels may not differ statistically significantly between distances, an athlete's ability to manage and respond to anxiety adaptively will be crucial in achieving peak performance in each number of games.

While this study offers preliminary findings regarding anxiety levels in archery athletes across a range of subjects, there are some limitations that need to be acknowledged and serve as a basis for future studies. The main limitations include the relatively limited sample size and the lack of detailed specifications of athlete characteristics. Therefore, the hope of the next study is to address these limitations by involving larger, homogeneous sample sizes, using more specific instruments to measure the type of anxiety, and integrating other relevant variables such as self-efficacy and social support. In addition, future research may consider longitudinal designs to track changes in anxiety over time or incorporate qualitative methods to gain a deeper understanding of athletes' subjective perceptions of competitive pressures.

CONCLUSION

The study found that there was no statistically significant difference in the average anxiety level between archery athletes in the three competitions. These findings indicate that, in the context of this study sample, the target distance of the competition did not significantly affect the level of anxiety experienced by the athletes. Nevertheless, the descriptive analysis showed a tendency in which the average anxiety score of archery athletes in the 70-meter number was slightly higher compared to the 40-meter and 50-meter numbers. This tendency, although it does not reach statistical significance, can be associated with athletes' perception of higher competition status, greater technical demands, and the potential for more intense pressure on international standard distances. Overall, while there was no statistically significant difference in anxiety between numbers, these findings underscore that anxiety remains an important aspect of archery performance that needs to be managed. So, using anxiety management techniques like relaxation, visualization, and positive self-talk, along with creating good pre-shot routines, is very important to help archery athletes perform their best at all competition distances.

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