



Characteristics of Physical Conditions of Surakarta *Petanque* Athletes: A Comparative Study

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Abstract. This study aims to analyze the characteristics of the physical condition of Surakarta petanque athletes and the benchmark for equalizing the application of physical training programs to beginner petanque athletes. This study used a quantitative descriptive research method, and a survey method was used as a data collection technique. The subjects in this study were 14 Surakarta petanque athletes divided into seven athletes who participated and seven who did not participate in the provincial championship in 2021. Data collection techniques were conducted with observation, case studies, documentation, and measurement test. The characteristic instrument for the physical condition of the Petanque athletes in Surakarta includes arm muscle strength, body balance, flexibility in the wrist, the strength of the hand squeeze, arm muscle strength, and hand-eye coordination. The data obtained were tested statistically by testing the significance of the difference with SPSS 26 to get $t_{\text{count}} = 32.216$, $db = 36$, and $p\text{-value} = 0.00 < 0.05$, which means that there is a substantial difference between the provincial and non-provincial athletes. In this study, increasing the physical condition training program is crucial in a sport and achievement.

Keywords: Physical Condition · Petanque

1 Introduction

Olahraga (sport) comes from two words: “*olah*,” which means processing the body, moving the body according to its function and not against the nature of body movement, and “*raga*,” which means body and human physical posture [1, 2]. The meaning of sports achievement is that sport develops and fosters a person in a systematic, planned, integrated, gradual and sustainable manner through competition, aimed at accomplishing achievement with the support of sports science. The process of fostering sports achievements cannot be separated from the role of a coach [3]. Coaching trains technique, physique, and tactics and educates someone with a winning mentality and without complacency and pessimism. As a provider or coach, one can improve athlete performance and have a sense of level in coaching by athletes aiming to achieve peak performance utilizing training programs.

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Petanque [4] is an iron ball game that requires maximum precision and accuracy when throwing, and every throw must be right on the target. Accuracy is crucial in the *petanque* [5–8]. At the level of achievement, physical factors become a determinant in *petanque*. Six variables refer to physical factors often used and dominant in the *petanque*, including athlete's height, arm muscle strength, wrist flexibility, arm length, body balance, and hand-eye coordination [9].

The Central Java Province Championship is held between Regencies/Cities in Central Java on December 16–19, 2021, in Kudus. FOPI Surakarta City is one of the contingents included in the 2021 Championship, sending seven athletes consisting of five male and two female athletes. This research was divided into athletes who did and did not participate in the 2021 provincial championship. They are athletes who meet the coach's selection requirements will participate in the 2021 provincial championship. This research analyzes aspects of the Surakarta *petanque* athlete's physical condition for test points, wrist flexibility, arm muscle strength, balance, hand grip strength, and hand-eye coordination.

According to [10, 11], physical activity means a person carries out sports activities conducted repeatedly every day.

This study aims to analyze Surakarta *petanque* athletes' physical condition characteristics in 2022 and the benchmark for equalizing the application of physical training programs to beginner *petanque* athletes in Surakarta.

2 Method

2.1 Research Methods

The analysis of the Surakarta *petanque* athlete's physical condition used survey research specifically including (1) balance, (2) arm muscle strength with push up, (3) wrist flexibility, (4) arm muscle strength with a medicine ball, (5) hand squeeze force with hand grip dynamometer tool, and (6) eye and hand coordination. The approach used in this research was a comparative correlational design [12].

2.2 Data Collection Techniques

Data collection in this study took 6 test techniques, including 1) balance, 2) arm muscle strength with push-ups, 3) wrist flexibility, 4) arm muscle strength with medicine ball media, 5) hand squeeze strength with hand grip dynamometer tool, and 6) hand-eye coordination. This test was intended to measure the characteristics of the physical condition of *Petanque* athletes during the study. This research was divided into two groups of athletes who did and did not participate in the 2021 provincial championship. The differences between the two sample groups of this research test will be known through this test.

2.3 Data Analysis Techniques

The data processing techniques used quantitative descriptive statistical analysis collected in a percentage [8]. This study used a quantitative approach, in which data analysis

Table 1. Assessment Category

No.	Normality	Category
1	$M + 1,5 S < X$	Very Good
2	$M + 0,5 S < X \leq M + 1,5 S$	Good
3	$M - 0,5 S < X \leq M + 0,5 S$	Moderate
4	$M - 1,5 S < X \leq M + 0,5 S$	Less
5	$< X \leq M + 1,5 S$	Very Less

Description:
M: Average value
X: Score
S: Standard Deviation

techniques can answer the formulation of the problem presented. The results of this study are with percentages, using the formula in Table 1.

3 Results and Discussion

The research results on physical condition tests for athletes who did and did not participate in the 2021 provincial championship in Central Java are described in a descriptive analysis, consisting of the Mean value and Standard Deviation, with an explanation in Table 2.

Table 2 shows a difference between athletes who did and did not participate in the 2021 provincial championship. This is evidenced by the average score for each physical

Table 2. Descriptive Analysis Results

Variable	Physical Condition	Mean	SD
Athletes who Participated in the Championship	Balance	12,23	2,71
	Pust Up	19,86	5,43
	Flexibility	85,71	4,50
	Medicine Ball	4,36	0,50
	Hand Grip	47,94	5,35
	Ball Throwing Agility	7,14	1,57
Athletes who Did Not Participate in the Championship	Balance	6,94	2,42
	Pust Up	16,57	2,76
	Flexibility	84,29	4,50
	Medicine Ball	2,77	0,94
	Hand Grip	31,93	15,99
	Ball Throwing Agility	6,00	2,16

condition test, one of which is 12.23 and 6.94, which has a 5.29 deficiency. Thus, there is a difference of 5.29 between one of the Surakarta petanque athletes' physical condition tests. This descriptive analysis can be continued to the next stage.

With the overall descriptive analysis results, a normality test was carried out on data that was useful for the prerequisites for testing the research hypothesis. The normality test results of the research data are presented in Table 3.

The normality test results are in Table 3 with the Kolmogorov-Smirnov Z (KS-Z) value in the entire group, which is greater than the value of $\alpha = 0.05$. At this value, the normality test results can be concluded with the sample in this study emerging from a normally distributed population. In conclusion, for this study, the implications of parametric statistical analysis can be used for hypothesis testing, which will be continued in this study so that the initial requirements for hypothesis testing have been fulfilled. Based on the second result of the analysis requirements test results, the analysis requirements used for the analysis of variance are said to be fulfilled so that it is feasible to carry out further analysis, with the results of tests on the physical condition characteristics of the Surakarta Petanque athletes. Furthermore, in the linearity test of variance in the two groups, the correlational design with the t-test for the level $\alpha = 0.05$ is shown in Table 4.

The analysis results of the t-test coefficients in Table 4 get an overall value smaller than $\alpha = 0.05$. With these results, it can be concluded that the correlation coefficient (t-test) between the Surakarta petanque athletes who did and did not participate in the 2021 provincial championship was significant, or H_0 was rejected, and H_1 was accepted.

The results of this study show that the physical condition characteristics of athletes who did and did not participate in the 2021 provincial championship are significant [13]. This study aims to determine the physical condition of the Surakarta petanque athletes, especially athletes who did and did not participate in the 2021 provincial championship.

Table 3. Results of the Kolmogorov-Smimov Normality Test

Variable	Physical Condition	N	Kolmogorov-Smirnov	Sig.
Athletes who Participated in the Championship	Balance	7	,275	,117
	Pust Up	7	,225	,200
	Flexibility	7	,258	,174
	Medicine Ball	7	,130	,200
	Hand Grip	7	,215	,200
	Ball Throwing Agility	7	,195	,200
Athletes who Did Not Participate in the Championship	Balance	7	,243	,200
	Pust Up	7	,269	,135
	Flexibility	7	,258	,174
	Medicine Ball	7	,310	,041
	Hand Grip	7	,190	,200
	Ball Throwing Agility	7	,108	,200

Table 4. Significance Test (t-test) Results

Variable	Physical Condition	<i>t</i> -count	Sig.	<i>t</i> -table	
				5% (0,05)	10% (0,1)
Athletes who Participated in the Championship * Athletes who Did Not Participate in the Championship	Balance	11,649	0,000	1,89	
	Pust Up	3,029	0,023		
	Flexibility	2,549	0,025		
	Medicine Ball	6,749	0,001		
	Hand Grip	3,858	0,008		
	Ball Throwing Agility	4,382	0,005		

This study concludes that the physical condition of the Surakarta petanque athletes in 2021 is in a good category. The athlete's physical condition is one of the important aspects to support the achievement of an athlete [14], so this is used as a benchmark or illustration by the coach that aspects of the athlete's physical condition must be added in order to achieve targeted achievements with the process flow of searching for prospective talented petanque athletes in Surakarta. The athlete's physical condition includes arm muscle strength, the flexibility of the wrist space, body balance in holding onto one leg, hand grip strength, coordination of hand movements and eyesight, which are used as points in the tests and measurements of this study.

4 Conclusion

This study concludes that there is a significant influence between athletes who did and did not participate in the 2021 provincial championship with the test requirements for the physical condition characteristics of Surakarta petanque athletes.

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