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ANALYSIS OF THE PHYSICAL CONDITION OF ARCHERY ATHLETES UKM UBBG

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ABSTRACT

This study aims to analyze the physical condition of UBBG UKM archery athletes based on five components of physical fitness, namely upper body muscle strength, core muscle endurance, flexibility, balance, and coordination. The study involved 20 athletes who underwent a series of physical tests, namely a push-up test for upper body muscle strength, a plank test for core muscle endurance, a sit-and-reach test for flexibility, a one-leg balance test for balance, and a throw-and-catch for coordination. The results showed that the majority of athletes were in good physical condition, although there were some areas that still needed more attention. In the push-up test, 50% of athletes were in the Good category, 25% in the Very Good category, and 25% in the Moderate category. In the core muscle endurance test, 45% of athletes were in the Good category, 30% in the Very Good category, and 25% in the Moderate category. In the flexibility test, 40% of athletes were in the Good category, 20% in the Very Good category, and 40% in the Medium category. In the balance test, 50% of athletes were in the Good category, 35% in the Very Good category, and 15% in the Medium category. Finally, in the coordination test, 75% of the athletes were in the Good and Very Good categories. Overall, the study shows that most athletes are in good physical condition, with some areas that need to be improved to support optimal archery performance..

Keywords: *Physical condition, archery athletes.*

INTRODUCTION

Archery is a sport that requires a combination of technical skills, mental concentration and prime physical condition.(Wattimena, 2018). As a sport that focuses on accuracy, archery athletes are required to have body stability,

endurance, and high focus during training and competition. This makes physical condition one of the main factors that affect athlete performance on the field. In archery, physical components such as strength, muscle endurance, balance, flexibility, coordination, and breathing control play an important role. Strength in the shoulder, arm, and back muscles The Student Activity Unit (UKM) Archery of Bina Bangsa Getsempena University (UBBG) has a strategic role as a forum for developing student potential in archery. In addition to being a place for skills development, this UKM also represents the university in various competitions. However, to achieve optimal performance, athlete development cannot only focus on archery techniques, but must also pay attention to physical condition as the main basis for supporting performance(Is et al., 2023). Lack of structured physical training programs, limited facilities, and variations in the level of athletes' physical condition are the main obstacles that need to be overcome.(Officer & Sukendro, 2021). Without comprehensive monitoring and analysis, it is difficult for coaches to design training programs that suit the individual needs of athletes, which can ultimately hinder achievement.(Sarwita et al., 2021).

This study aims to measure and analyze the physical condition of UKM UBBG archery athletes, including components such as strength, endurance, balance, flexibility, and coordination.(The Story of Ridatun Nisa, Muhammad Fiqri, 2023). The results of this study are expected to provide a comprehensive picture of the physical condition of athletes as well as being a reference in developing better coaching strategies. Thus, UKM Archery UBBG can improve the quality of athletes and contribute to achieving more brilliant achievements in the future.

Archery is a sport that requires precision and concentration in aiming at a target using a bow and arrow. This sport has strict rules, with targets that must be achieved in various conditions, both static and dynamic. Archery is also considered a precision sport, where success depends heavily on the athlete's physical and mental control.(Vanagosi & Dewi, 2019). According to the World Archery Federation, modern archery requires a combination of technical skills, strategic mastery, and physical abilities. At the competitive level, athletes must be able to maintain consistent performance in a variety of situations, including changing physical conditions due to fatigue or psychological stress. Therefore, training that focuses on improving the physical component is an important element in developing archery athletes.(Zulaika & Safitri, 2023).

Physical Condition is the optimal condition of the body that allows a person to carry out physical activities efficiently without feeling excessively tired. In the context of sports, Physical Condition includes physical abilities that support athlete performance, such as strength, endurance, flexibility, balance, and coordination.(Sarwita et al., 2021).

Various studies show that optimal physical condition is highly correlated with athlete performance in archery.(Is, 2023). The training program is designed based on the results of the physical condition evaluation.

The exercises performed include strength training, endurance training, flexibility training (stretching), and balance and coordination training (functional training).(Kusumo, 2020). This program is tailored to the specific needs of athletes to improve physical aspects that are still weak.(Akkase, 2023).

METHODS

This research uses a quantitative approach with a descriptive research type.(Sugiyono, 2015). This study was designed to identify physical conditions, such as strength, muscular endurance, flexibility, balance, and coordination.(I Gustie Citra Ary Wijaya et al., 2021). The population in this study were all archery athletes who were members of UKM UBBG, with a total of 20 people. The instrument used to measure the Physical Condition component.

RESULTS AND DISCUSSION

This study aims to analyze the physical condition of archery athletes at UKM UBBG using five main physical tests including upper body muscle strength, core muscle endurance, flexibility, balance, and coordination. Based on data obtained from 20 athletes. As follows.

Table 1. of average distribution of athletes' physical condition.

Statistics						
		Strength	**Durability**	**Flexibility**	**Balance**	**Coordination**
N	Valid	20	20	20	20	20
	Missing	0	0	0	0	0
Mean		33.70	1.60	21.25	27.05	16.65
Median		33.00	2.00	21.00	27.00	16.50
Mode		29a	2	20a	24a	16
Std. Deviation		5.212	.503	2.447	3,634	2.007
Variance		27,168	.253	5,987	13.208	4.029
Range		20	1	9	15	7
Minimum		25	1	17	20	13
Maximum		45	2	26	35	20
Sum		674	32	425	541	333
a. Multiple modes exist. The smallest value is shown						

The results of the study showed statistical analysis of the five components of physical fitness of UKM UBBG archery athletes. The average upper body muscle strength (Push-Up Test) was 33.70 repetitions, with a range of 25–45 repetitions. Core muscle endurance (Plank Test) had an

average of 1.60 minutes, with a range of 1–2 minutes. Flexibility (Sit-and-Reach Test) showed an average of 21.25 cm, with a variation of 17–26 cm. Balance (One-Leg Balance Test) averaged 27.05 seconds, with a range of 20–35 seconds. Coordination (Throw-Catch Ball) averaged 16.65 catches, with a range of 13–20 catches. Variations between athletes can be seen from the standard deviation in each test, which indicates differences in ability.

Arm Muscle Strength Test

The measurement results from the implementation of the push-up test, based on the test norms that have been analyzed, are as in the table below:

Table 2. Frequency Distribution of Push-Up Test

Category	Frequency (Athletes)	Percentage (%)
Very Good (≥40)	5	25%
Good (30–39)	10	50%
Medium (25–29)	5	25%
Total	20	100%

Upper body muscle strength test (Push-Up Test) showed 25% of athletes were in the Very Good category (≥40 repetitions), 50% in the Good category (30–39 repetitions), and 25% in the Fair category (25–29 repetitions). The majority of athletes have good muscle strength, although some need improvement.

Core Muscle Endurance (Plank Test)

The measurement results from the implementation of the Plank Test, based on the test norms that have been analyzed, are as in the table below:

Table 3. Frequency Distribution of Plank Test

Category	Frequency (Athletes)	Percentage (%)
Very Good (>2 minutes)	6	30%
Good (1 minute 30 seconds – 2 minutes)	9	45%
Medium (1 minute – 1 minute 29 seconds)	5	25%
Total	20	100%

Core muscle endurance test (Plank Test) showed 30% of athletes were in the Very Good category (>2 minutes), 45% in the Good category (1 minute 30 seconds–2 minutes), and 25% in the Moderate category (1 minute–1 minute 29 seconds). The majority of athletes have good to very good endurance.

Flexibility (Sit-and-Reach Test)

The measurement results from the implementation of the Sit-and-Reach Test, based on the test norms that have been analyzed, are as in the table below:

Table 4. Frequency Distribution of Sit-and-Reach Test

Category	Frequency (Athletes)	Percentage (%)
Very Good (≥26 cm)	4	20%
Good (20–25 cm)	8	40%
Medium (15–19 cm)	8	40%
Total	20	100%

The flexibility test (Sit-and-Reach Test) showed that 20% of athletes were in the Very Good category (≥26 cm), 40% in the Good category (20–25 cm), and 40% in the Moderate category (15–19 cm). These results indicate that the majority of athletes have good flexibility, although some still need improvement.

Balance (One-Leg Balance Test)

The measurement results from the implementation of the One-Leg Balance Test, based on the test norms that have been analyzed, are as in the table below:

Table 5. Frequency Distribution of One-Leg Balance Test

Category	Frequency (Athletes)	Percentage (%)
Very Good (≥30 seconds)	7	35%
Good (20–29 seconds)	10	50%
Medium (15–19 seconds)	3	15%
Total	20	100%

The One-Leg Balance Test showed that 35% of athletes were in the Very Good category (≥30 seconds), 50% in the Good category (20–29 seconds), and 15% in the Fair category (15–19 seconds). The majority of athletes had good balance, with some athletes showing very good performance.

Coordination (Throw-Catch Ball)

The measurement results from the implementation of the Coordination test (Throwing and Catching the Ball), based on the test norms that have been analyzed as in the table below:

Table 5. Frequency Distribution of Coordination Test (Throwing-Catching Ball)

Category	**Frequency (Athletes)**	**Percentage (%)**
Very Good (≥20 catches)	5	25%
Good (16–19 catches)	10	50%
Medium (12–15 catches)	5	25%
Total	20	100%

Coordination test (Throw-Catch Ball) showed 25% of athletes were in the Very Good category (≥20 catches), 50% in the Good category (16–19 catches), and 25% in the Moderate category (12–15 catches). The majority of athletes had good coordination, with some showing very good abilities.

CONCLUSION

Based on the research results, the majority of UKM UBBG archery athletes showed good physical condition in the upper body muscle strength test, core muscle endurance, flexibility, balance, and coordination. In the upper body muscle strength test (Push-Up Test), 50% of athletes were in the Good category (30–39 repetitions), 25% were in the Very Good category (≥40 repetitions), and 25% were in the Moderate category (25–29 repetitions). For core muscle endurance (Plank Test), 45% of athletes were in the Good category (1 minute 30 seconds–2 minutes), while 30% were in the Very Good category (>2 minutes). Flexibility (Sit-and-Reach Test) showed 40% of athletes were in the Good category (20–25 cm), and 40% were in the Moderate category (15–19 cm). In the balance test (One-Leg Balance Test), 50% of athletes were in the Good category (20–29 seconds), and 35% were in the Very Good category (≥30 seconds). In the coordination test (Throw-Catch Ball), 50% of athletes were in the Good category (16–19 catches) and 25% were in the Very Good category (≥20 catches). Although the majority of athletes showed good results, there are still areas such as flexibility and balance that need attention to improve overall archery performance.

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