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Analysis of Eye Coordination, Arm Power and Vo2max in Archery Athletes in Terms of Gender

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ABSTRACT: Archery is a sport that prioritizes endurance, strength, accuracy, coordination, flexibility and balance to form archery techniques. These factors must all be supported by training, excellent and long-lasting physical condition. Therefore, every archery athlete must have excellent physical condition when facing a competition or championship. In performance sports, a person or athlete needs good physical condition in addition to technical ability. The physical training provided must be in accordance with the characteristics of the number being developed and in accordance with the physical condition of the swimming athlete himself. Strength is an important basic element in supporting movement skills. Strength is required in all sports for all activities that depend on strength. The strength that works more in archery is muscle strength. Muscle strength refers to a muscle group that is capable of carrying out long contractions. Arm muscle strength is the ability of a muscle or group of muscles to contract dynamically or statically by pulling a weight for a relatively long time, to provide encouragement to create consistency of movement from the beginning to the end of archery. Therefore, the strength of the arm muscles and the physical condition of the archer are very important to achieve optimal results. Through this research, researchers are interested in conducting research with the title analysis of hand eye coordination, arm power and vo2max of archery athletes in terms of gender. After the results of the physical condition analysis are obtained, the researchers hope that archery coaches and athletes can further optimize competition preparation and achieve the best performance. The method in this research program is quantitative descriptive. With physical condition test instruments for archery athletes. This study aims to determine the results of the analysis of hand eye coordination, arm power and vo2max of archery athletes in terms of gender. The population in this study was the KONI archery athletes from Bantul Regency, totaling 24 athletes. Based on the research results, it can be concluded that arm length, eye-hand coordination and VO2max of KONI archery athletes in Bantul Regency are in the medium category.

KEYWORDS: Hand Eye Coordination, Arm Power, Vo2max, Performance, Athlete, Archery

INTRODUCTION

Combined sports are regular and planned physical movements that people do with the aim of achieving certain targets or goals. Sport is also a series of regular and planned physical movements to maintain movement (maintain life) and increase movement ability or improve quality of life (M. Agus Saputra1, 2019). Like eating, exercise is a periodic necessity of life, meaning that exercise as a form of maintaining and maintaining health cannot be abandoned (Ari Y & Indriyaniastuti, 2009). Sports activities are not only to improve the quality of life, but sports also pervade all human culture, such as exercise, entertainment, profession, business, politics and achievement. It depends on the goals you want to achieve through sport. Achieving achievements in sports is something that is quite complex, because many factors influence it. Coaching in the sport of archery is one of the efforts to increase maximum achievement, namely through coaching and developing sports for the younger generation from an early age (Septian et al., 2017). Archery is an activity using a bow to shoot arrows. Archery or archery is a sport that requires skills such as strength, endurance, flexibility, accuracy to reach the target (Jannah, 2017). Archery is a sport that prioritizes endurance, strength, accuracy, coordination, flexibility and balance to form archery techniques. These factors must all be supported by training, excellent and long-lasting physical condition (Arisman & Noviarini, 2021). Therefore, every archery athlete must have excellent physical condition when facing a competition or championship. In performance sports, a person or athlete needs good physical condition in addition to technical ability.The physical training provided must be in accordance with the characteristics of the number being

developed and in accordance with the physical condition of the swimming athlete himself. Strength is an important basic element in supporting movement skills (Prasetyo et al., 2020). Strength is required in all sports for all activities that depend on strength. The strength that works more in archery is muscle strength. Muscle strength refers to a muscle group that is capable of carrying out long contractions. Arm muscle strength is the ability of a muscle or group of muscles to contract dynamically or statically by pulling a weight for a relatively long time, to provide encouragement to create consistency of movement from the beginning to the end of archery (Windasari, 2021). Therefore, the strength of the arm muscles and the physical condition of the archer are very important to achieve optimal results (Putri & Cahyani, 2019). The muscles involved in pulling the bowstring must receive special attention in the sport of archery because these muscles work extra hard in pulling and holding the weight of the bow which is quite heavy and occurs repeatedly in a series of archery movements (Roy Try Putra & Fajar Rizki Pambudi, 2021). Therefore, these muscles must have strength and endurance to be able to carry out the movement of pulling the bowstring so that it remains consistent and steady in accordance with the movement process (axis) (Wicaksono, 2014). The main muscles that must be trained and developed in archery are the muscles that work, including the triceps, biceps, deltoids and trapezius muscles, palmar aponerosis, biceps, triceps, deltoids and subscapularis (Saparuddin, 2019).Therefore, it is necessary to analyze hand-eye coordination, arm power and vo2max of archery athletes in terms of gender. This is to determine the physical condition in optimizing match preparation and to achieve maximum performance. Through this research, the researcher intends to do this with the research title "analysis of hand eye coordination, arm power and vo2max of archery athletes in terms of gender".

METHOD

The method in this research program is quantitative descriptive. With physical condition test instruments for archery athletes. This study aims to determine the results of the analysis of hand eye coordination, arm power and vo2max of archery athletes in terms of gender. The population in this study was the KONI archery athletes from Bantul Regency, totaling 24 athletes.Research activities in the community consist of three main steps. These three steps are, pre-activity, during the activity and post-activity. The details of each step are as follows:

a. Pre-activity.

Pre-activity is the planning stage of the activities to be carried out. Prepare materials and tools for physical condition test instruments. Licensing for research sites and conditioning of archery athletes who are the target of the program.

b. During activities

Implementation is the main stage of this activity, namely providing physical condition test instruments, namely tests of hand eye coordination, arm power and vo2max for archery athletes in terms of gender.

c. Post-activity (monitoring and evaluation.)

Post-activity is the final activity in this series of activities, these activities include, reflecting on activities that have been carried out together with team members, compiling reports and preparing materials for output publication.

RESULTS AND DISCUSSION

Table 1. Achievement Targets

Number	Target	Achievement Indicators
1	Researchers can find out the results of the analysis of hand eye coordination, arm power and vo2max of archery athletes in terms of gender.	V
2	Archery coaches and athletes can find out the results of hand eye coordination tests, arm power and vo2max of archery athletes in terms of gender.	V
3	The emergence of athletes who excel is because all athletes are able to maintain their physical condition in competing and get maximum results	V

Table 2. Test and measurement results

Number	Name	Sports	Arm Length (cm)	Hand-eye Coordination Test	Vo2max
1	Endang Suminarti	Archery	73	7	2.3
2	Fairuzzahra Prajna N	Archery	74	4	7.1
3	Luthfia Annisa Surya	Archery	69	4	4.2
4	Elvina Ika Fitriana	Archery	76	11	6.2
5	Alif Lukmanul Hakim	Archery	80	5	8.1
6	Sardilaily Ulfah	Archery	69	5	2.4
7	M Syawal I	Archery	69	12	6.9

8	Nadifa Qotrunanada	Archery	72	12	7.1
9	Nurul Andriyani	Archery	67	12	6.2
10	Arkana Azalia T	Archery	78	10	5.7
11	Biru Laksita	Archery	70	2	3.2
12	Azzahra Musya Setyaji	Archery	69	10	4.9
13	Zahra Sabrina S	Archery	67	2	3.4
14	Supatmi	Archery	67	1	3.4
15	R. Retno Widuri	Archery	71	10	3.1
16	Hanafi	Archery	69	8	4.1
17	Agung Budiantoro	Archery	75	8	4.3
18	Kumoro Agung Samudro	Archery	79	16	4.9
19	M. Nesa Putra Ardian	Archery	80	10	8.1
20	Esha Andira Callita	Archery	72	10	4.5
21	Bintang Danes Suara	Archery	76	8	9.7
22	Ivan Nurhidayat	Archery	71	13	9.1
23	Alvino Choirul Azhar	Archery	80	11	7.4
24	Baihaqi Mustafa Surya	Archery	84	6	6.6

From the table above, the results can be obtained that arm length, eye-hand coordination and VO2max of KONI archery athletes in Bantul Regency are in the medium category.Archery is a sport that uses bows and arrows in its application, where arrows are released along a certain trajectory towards a target at a certain distance. Archery requires its own expertise or skills (Arisman & Okilanda, 2020). Archery is a sport that requires good skills, this sport is familiar to all levels of Indonesian society. This sport knows no age, social layer of society, from adults and teenagers even to early childhood and elementary school. In carrying out good archery skills, it must be accompanied by good technical movements, each player must be able to release his arrow precisely on the predetermined target (Arisman, 2018). This archery sport is a target sport with a point count, the highest points are 10 and the lowest is 5, if the arrow deviates from the target you get points (Yachsie et al., 2021).Archery is a sport that is quite popular in the current era. So there are many archery schools found and they are spread in almost all big cities in Indonesia. Archery is not a type of sport that is easy to learn in a short time. However, it takes time to master it properly. Mastering the correct technique is one of the keys to achieving maximum performance. Achieving maximum results requires patience, expertise and tenacity (Retnoningsasy, 2020). Therefore, if someone wants to learn archery, they must first learn about archery stance (shooting form). The correct archery stance must apply biomechanical rules (Eka et al., 2020). This means that every movement made by an archer must not violate the applicable rules or laws of movement mechanics. When studying archery techniques, one must apply the principles of motion mechanics (Irfan, 2018).

CONCLUSION

Based on the research results, it can be concluded that arm length, eye-hand coordination and VO2max of KONI archery athletes in Bantul Regency are in the medium category.

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