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Physical Condition Profile of Badminton Athletes Pre-Porprov 2025 in Banyumas Regency

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Abstract

The purpose of this study is to analyze the physical condition profile of badminton athletes in the 2025 Banyumas Regency Pre Porprov through physical tests. This study is a quantitative study with a cross-sectional survey. The sample was 17 athletes aged 18 to 21 years with total sampling. The instruments for data collection used were 30-meter sprint (speed), 60 second sit-ups (abdominal muscles), 60 second push-ups (arm muscles), 30 second handball throwing and catching (coordination), Vertical Jump (leg muscle power), Illinois Agility Run (agility), Multistage Fitness Test (endurance). The results are that speed in male athletes is in the good category and in female athletes is in the poor and very poor category, abdominal muscles in male and female athletes are the same in the poor category, arm muscles in male athletes are in the sufficient category and in female athletes are in the good category, coordination in male athletes is in the poor and very poor category and in female athletes is in the very poor category, leg muscle power in male athletes is in the sufficient category and in female athletes is in the good category, agility in male athletes and female athletes is both in the good category. In the sufficient category, endurance in male athletes is in the very good category and in female athletes is in the good category. In conclusion, many factors influence physical conditions such as environment, level of motivation, recovery process, nutrition, and physical activity. It is hoped that future research can expand the research sample and data collection methods so that they can analyze, compare and study physical conditions in depth.

Keywords: physical condition, badminton, sports performance, sports evaluation

INTRODUCTION

Badminton is a highly sought-after competitive sport, as evidenced by the large number of clubs, both large and small, spread across Indonesia and even the world. As a competitive sport, it requires competent coaches to guide and educate athletes to achieve championships (Hambali et al., 2023). This is also explained by the fact that competitive sports require coaches who can manage the training process to achieve the highest possible performance for each player (Chandrika et al., 2024). Training is a crucial component for athletes because it is one way to improve their abilities. Training is a sporting activity

carried out systematically over a long period of time, gradually (progressively) and individually, focusing on physiological and psychological functions to achieve agreed-upon targets (Falah et al., 2022).

Achieving success in the sport of badminton requires good physical condition with the aim of supporting the application of good techniques and mentality when practicing and competing (Lisdiantoro & Utomo, 2022); (Abbdilah et al., 2023). Physical fitness is a crucial factor in improving a player's performance, and it can even be considered a crucial factor. To reach the top, physical fitness must be developed from an early age, from childhood to juniors, beginners, teenagers, cadets, and even adults (Hidayat et al., 2021); (Simanjuntak et al., 2024). The basic components of physical condition seen from the muscular concept include endurance, strength, power, speed, flexibility, agility, balance, coordination (Yundarwati & Soemardiawan, 2023); (Sunjoyo et al., 2024).

Performance in badminton is determined by the interaction between speed, agility, flexibility, shoulder strength, explosive power, and muscular endurance, all of which are strongly correlated with playing ability (Indora et al., 2022); (Putra et al., 2023). The physical condition elements that influence the sport of badminton today are endurance, leg power, arm muscle power, speed and agility (Imam et al., 2023). This physical condition component is a benchmark or basis for a player to achieve success, furthermore the dominant physical condition can be measured with a series of tests including: 1) 60 second sit-ups as a measure of abdominal muscle power; 2) 60 second push up as a measure of arm muscle power; 3) vertical jump as a measure of leg muscle power; 4) Illinois agility run test as a measure of agility; 5) 30 meter sprint as a measure of speed; 6) multistage fitness test (MFT) run as a measure of cardio pulmonary endurance; and 7) 30 second handball throwing and catching as a measure of hand-eye coordination. (Lisdiantoro & Utomo, 2022); (Simanjuntak et al., 2024); (Sunjoyo et al., 2024).

Considering the importance of an athlete's physical condition in badminton performance, researchers will analyze the physical condition profiles of badminton athletes for the 2025 Banyumas Regency pre-Porprov badminton competition by conducting objective selection through physical tests. The basis for this research was conducted in Banyumas, where, apart from the pre-Porprov athlete selection process, athlete selection has never been conducted objectively. Selection is only done through appointments from PBSI Banyumas coaches without any standardized criteria. It is hoped

that this research can serve as a benchmark for PBSI in selecting competent athletes according to the data.

METHOD

This research is a quantitative survey study aimed at describing current events. It was conducted in a planned manner, and data disclosure was based on facts obtained from the field. This study also used a cross-sectional approach to collect data in the form of physical tests at a single point in time. Therefore, the research conclusions will be in the form of a report of results in accordance with the test's provisions and procedures. The data analysis used SPSS 27.

The population in this study was all players in the Banyumas Regency Pre Porprov selection, with a sample size of 17 players aged 18 to 21. Total sampling was used, a sampling technique in which all members of the population are included in the sample. This sampling was carried out to ensure greater homogeneity and ensure that the tests used in the study were consistent. Therefore, the data collection method in this study employed direct testing and measurement. The test items used included : 1) 30 meter sprint to measure speed; 2) 60 second sit-ups to measure abdominal muscle strength; 3) 60 second push-ups to measure arm muscle strength; 4) 30 second handball throwing and catching to measure hand-eye coordination; 5) Vertical jump to measure leg muscle power; 6) Illinois Agility Run to measure agility; 7) Multistage Fitness Test (MFT) to measure cardiorespiratory endurance.

RESULT AND DISCUSSION

The results of this research report were analyzed by gender, then grouped to show frequencies, percentages, and conclusions. The following is an analysis based on male badminton athletes.

Table 1. Analysis Results of Male Badminton Athletes

Gender	Test Category	Frequency	Percentage	Conclusion
Male	*Speed Test (30 meter Sprint)*			
		1	10%	Very Good
		9	90%	Good
				Enough
				Less
				Very Less
	Abdominal Muscle Power (Sit up 60 second)			

			Very Good
			Good
			Enough
	6	60%	Less
	4	40%	Very Less
Arm Muscle Power (Push up 60 second)			
	1	10%	Very Good
	2	20%	Good
	5	50%	Enough
	1	10%	Less
	1	10%	Very Less
Coordination (Throwing and Catching Handball)			
			Very Good
			Good
			Enough
	5	50%	Less
	5	50%	Very Less
Leg Muscle Power (Vertical Jump)			
			Very Good
	1	10%	Good
	8	80%	Enough
	1	10%	Less
			Very Less
Agility (Illinois Agility Run)			
			Very Good
			Good
	7	70%	Enough
	2	20%	Less
	1	10%	Very Less
Endurance (Multi Fitness Test)			
	2	20%	Exellent
	4	40%	Very Good
			Good
	3	30%	Enough
	1	10%	Less
			Very Less

Based on the results of table 1.1 of the physical condition test on male badminton athletes in the Banyumas Regency Pre-Porprov, the results based on the Speed Test (30 meter Sprint) show that 1 athlete is in the very good category (10%) and 9 athletes are in the good category (90%), while the sufficient, less and very less categories were not

achieved with a percentage of (0%). The results of the Abdominal Muscle Power (60 second sit up) show that there are 6 athletes in the less category (60%) and 4 athletes in the very less category (40%), while none of the very good, good, and sufficient categories were achieved with a percentage of (0%).

The results of the Arm Muscle Power (Push up 60 seconds) show that there is 1 athlete in the very good category (10%), 2 athletes in the good category (20%), 5 athletes in the sufficient category (50%), 1 athlete in the less category (10%) and 1 athlete in the very less category (10%). The results for Coordination (Handball Throwing and Catching) show that there are 5 athletes in the poor category (50%) and 5 athletes in the very poor category (50%), while none of the very good, good and sufficient categories were achieved with a percentage of (0%). The results for Leg Muscle Power (Vertical Jump) show that there is 1 athlete in the good category (10%), 8 athletes in the sufficient category (80%), and 1 athlete in the less category (10%), while the very good and very less categories were not achieved with a percentage of 0%.

The results of the Agility (Illinois Agility Run) show that there are 7 athletes in the sufficient category (70%), 2 athletes in the less category (20%), and 1 athlete in the very less category (10%), while the very good and good categories were not achieved with a percentage of (0%). The results of the Endurance (Multi Fitness Test) show that there are 2 athletes in the very good category (20%), 4 athletes in the very good category (40%), 3 athletes in the moderate category (30%), and 1 athlete in the poor category (10%), while the good and very poor categories were not achieved with a percentage of (0%).

Following the analysis based on the physical condition tests for male athletes, the next analysis is based on the female athletes. The following are the results of the physical condition tests for female athletes.

Table 2. Analysis Results of Female Badminton Athletes

Gender	Test Category	Frequency	Percentage	Conclusion
Female	*Speed Test (30 meter Sprint)*			
				Very Good
				Good
		1	14%	Enough
		3	43%	Less
		3	43%	Very Less
	Abdominal Muscle Power (Sit up 60 second)			

			Very Good
			Good
	1	14%	Enough
	6	86%	Less
			Very Less
Arm Muscle Power (Push up 60 second)			
			Very Good
	3	43%	Good
	2	29%	Enough
	1	14%	Less
	1	14%	Very Less
Coordination (Throwing and Catching Handball)			
			Very Good
			Good
	2	29%	Enough
	1	14%	Less
	4	57%	Very Less
Leg Muscle Power (Vertical Jump)			
			Very Good
	3	43%	Good
	2	38%	Enough
	2	29%	Less
			Very Less
Agility (Illinois Agility Run)			
			Very Good
			Good
	4	57%	Enough
	2	29%	Less
	1	14%	Very Less
Endurance (Multi Fitness Test)			
			Exellent
	1	15%	Very Good
	4	57%	Good
	1	14%	Enough
	1	14%	Less
			Very Less

Based on the results of table 1.2 of the physical condition test on female badminton athletes in the Banyumas Regency Pra Porprov, the results based on the Speed Test (30 meter Sprint) show that 1 athlete is in the sufficient category (14%) and 3 athletes

are in the less category (43%), 3 athletes are in the very less category (43%), while no one was in the good and very good categories with a percentage of (0%).

The results of the Abdominal Muscle Power (60 second sit up) show that there is 1 athlete in the sufficient category (14%) and 6 athletes in the less category (86%), while the very good, good, and very less categories were not achieved with a percentage of (0%). The results of Arm Muscle Power (Push up 60 seconds) show that there are 3 athletes in the good category (43%), 2 athletes in the sufficient category (29%), 1 athlete in the less category (14%), 1 athlete in the very less category (14%) while no one achieved the very good category with a percentage (0%).

The results for Coordination (Handball Throwing and Catching) show that there are 2 athletes in the sufficient category (29%), 1 athlete in the less category (14%), 4 athletes in the very less category (57%), while the very good and good categories were not achieved with a percentage of (0%). The results of the Leg Muscle Power (Vertical Jump) show that there are 3 athletes in the good category (43%), 2 athletes in the sufficient category (38%), and 2 athletes in the less category (29%), while the very good and very less categories were not achieved with a percentage (0%).

The results of the Agility (Illinois Agility Run) showed that there were 4 athletes in the sufficient category (57%), 2 athletes in the less category (29%), and 1 athlete in the very less category (14%), while the very good and good categories were not achieved with a percentage of (0%). The results of the Endurance (Multi Fitness Test) show that there is 1 athlete in the very good category (15%), 4 athletes in the good category (57%), 1 athlete in the moderate category (14%), and 1 athlete in the poor category (14%), while the very good and very poor categories were not achieved with a percentage (0%).

Based on the analysis data above, the overall physical condition of the Pre Porprov athletes in Banyumas Regency is considered poor. Achieving the highest performance requires good physical condition to facilitate the development of athletes' abilities, as physical condition is a crucial element in supporting optimal performance and success in badminton. Speed is a crucial component of a badminton athlete's performance. Factors influencing speed include leg muscle strength, muscle elasticity, motor coordination, and a nervous system capable of responding quickly to stimuli (Ardhia et al., 2022). Apart from that, footwork technique and body position also determine the speed in moving from one point to another on the field (Mahmoud, 2022). The benefits of speed for badminton

athletes are enormous, because this game demands quick reactions to the shuttlecock coming at high speed (Hülsdünker et al., 2021). Athletes who have good speed can reach the ball faster, anticipate the opponent's attacks, and increase their effectiveness in attacking and defending.

Abdominal muscle power is greatly influenced by core muscle strength, postural stability, and the balance between the abdominal muscles and the lower back (Sun & Shao, 2023). Nutritional intake, weight training techniques, and training frequency are also important factors in developing abdominal muscle power (Babu et al., 2022). In badminton, abdominal muscle power is useful for producing strong body rotation when hitting, maintaining balance when changing direction quickly, and helping transfer energy from the lower body to the upper body (Koloway et al., 2021). With strong abdominal muscles, athletes can maintain body stability in dynamic and fast-paced game situations. Arm muscle power is influenced by muscle mass, shoulder and wrist muscle strength, and the ability of the nervous system to recruit muscle fibers efficiently (Akbari et al., 2021). Exercise patterns such as push ups, weight training, and explosive training can increase arm muscle power (Siregar & Endriani, 2020). In badminton, arm muscle power plays an important role in producing hard, sharp, and accurate shots such as smashes, drives, and clears (Chandrika et al., 2023). Athletes who have good arm muscle power can control the speed and direction of the shuttlecock more effectively so they can put pressure on their opponents with aggressive attacks.

Eye hand coordination is influenced by the ability of the central nervous system to integrate visual perception and motor responses (Chaeroni et al., 2023). Factors such as playing experience, specific training, and concentration levels also have a big influence on this coordination ability (Astuti et al., 2022). In badminton, hand eye coordination functions to regulate the right timing between the sight of the shuttlecock and the swinging movement of the racket (Donie et al., 2023). Athletes with good hand-eye coordination are able to hit the shuttlecock accurately, anticipate the direction of the opponent's shot, and react quickly to changes in the direction of the ball in the air. Leg muscle power is greatly influenced by the strength of the thigh, calf and gluteus muscles, as well as the muscle's ability to produce explosive contractions (Hermawan et al., 2023). Plyometric exercises, squat jumps, and sprints are effective methods for increasing leg muscle power (Pratama et al., 2024). In the context of badminton, leg muscle power plays a big role in

jumping when smashing, closing space quickly, and maintaining balance when changing direction (Rasyid et al., 2023). Athletes with good leg muscle power can move faster and more stably throughout the field.

Agility is influenced by the body's coordination ability, leg muscle strength, balance, and reaction to external stimuli (Susiono et al., 2024). Exercises that emphasize rapid changes of direction such as the zig-zag run or Illinois Agility Run are very effective in improving agility (Arnando et al., 2024). In badminton, agility is needed to move efficiently to various sides of the court, both forward, backward and sideways (Rahmat & Cahyadi, 2024). Agile athletes are able to quickly adjust their body position to the direction the shuttlecock is coming from and are able to maintain a high tempo throughout the match. Cardiopulmonary endurance is influenced by aerobic capacity, respiratory efficiency, heart function in pumping blood, and the body's ability to use oxygen optimally (Tuan et al., 2022). Exercises such as middle distance running, interval training, and the Multistage Fitness Test can improve cardiorespiratory endurance (Liu et al., 2024). In badminton, endurance is very important because the match takes place with high intensity and long duration (Nugroho et al., 2022). Athletes with good cardiorespiratory endurance are able to maintain optimal performance without experiencing decreased concentration and excessive fatigue until the end of the match.

Based on the discussion, the physical condition of the badminton athletes of the 2025 Banyumas Regency Pre Porprov is not optimal due to the inability to implement training with the right frequency, intensity, and load. The factors that cause this less than optimal physical condition are also influenced by environmental factors in Banyumas which are less supportive for athletes who are already 17 years old and lack of attention in their respective clubs, this triggers a lack of motivation for athletes in training. In addition, lack of rest and irregular eating patterns affect the results of the athletes' physical condition. Factors that are used as a reference in the process of improving the physical condition of badminton athletes include regular eating patterns, rest, and physical activity. Some limitations of this study include the use of data collection instruments directly adapted from a physical test manual, which meant that no further validity and reliability tests were conducted. Furthermore, the limited timeframe for data collection led to a lack of in-depth interview analysis of barriers and factors influencing physical condition during training. Future research is expected to expand the sample size and data collection methods to allow

for more in-depth analysis, comparison, and study of physical condition.

CONCLUSION

Based on the results of the research that has been done, it can be concluded that the physical condition profile of badminton athletes for the 2025 Banyumas Regency Pre Porprov is The results of the speed test (30-meter sprint) for male athletes are in the good category and for female athletes are in the less and very less categories. The results of the abdominal muscle power ability test (sit up) for male and female athletes are both in the less category. The results of the arm muscle power ability test (push up) for male athletes are in the sufficient category and for female athletes are in the good category. The results of the eye and hand coordination ability test (throwing and catching a handball) for male athletes are in the less and very less categories with a percentage of 50% each, while for female athletes are in the very less category. The results of the leg muscle power ability test (vertical jump) for male athletes are in the sufficient category and for female athletes are in the good category. The results of the Illinois Agility Run Test for both male and female athletes were in the adequate category. The results of the multi-fitness test for the male athletes were in the very good category, while the results of the female athletes were in the good category. Factors influencing physical condition include environment, motivation, recovery process, nutrition, and physical activity. Future research is expected to expand the sample size and data collection methods to enable in-depth analysis, comparison, and study of physical condition.

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