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Analysis of anthropometric profile and physical condition of PON Female soccer athletes of east kalimantan

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Abstract

This study aims to determine the anthropometric characteristics and physical condition of female soccer athletes at the East Kalimantan PON. This study uses quantitative descriptive research using the survey method. The research sample was 15 athletes. The instruments used in this study were height and weight measurements for anthropometry. for physical conditions using several tests for flexibility, speed, agility, hand muscle strength, abdominal muscle strength, and endurance. The results of anthropometric measurements, most athletes are in the normal category with a percentage of 67%. physical conditions based on the tests carried out obtained results, namely athlete flexibility with an average value of 39.20, sufficient category. athlete speed with an average value of 3.39, sufficient category. athlete agility with an average value of 6.22, sufficient category. athlete hand muscle strength with an average value of 24.67, sufficient category. athlete abdominal muscle strength with an average value of 45.87, sufficient category. And athlete endurance with an average value of 40.41, sufficient category.

Keywords: Anthropometry, physical condition, football

Introduction

Football is one of the most popular sports in Indonesia. In almost all regions, football is a sport that is often played by all groups. Football is a sport that really requires good physical condition, because it is played for a fairly long time, namely 2x45 minutes ^[1]. Football is a sport that relies heavily on the physical abilities and technical skills of its players. According to ^[2]. Soccer is a team sport that demands a high level of physical fitness from players, including muscular strength, sprint speed, and speed of change of direction, all of which are essential for optimal performance. Soccer is considered an intermittent high-intensity team sport due to its irregular nature and the many changes in intensity during play. (Toro-Román *et al.*, 2023). Physical condition is one of the important factors in improving football performance. According to Several factors influence football performance, such as physical, technical, tactical and mental conditions ^[4].

Football is currently starting to develop in Indonesia. As one of the most popular sports, it certainly makes it a sport that must be prepared to participate in competitions such as the National Sports Week (PON). In East Kalimantan itself, one proof of the development of football is the success of the East Kalimantan women's football team in qualifying for the 2024 PON for the first time. This is an achievement that must be maintained so that football in East Kalimantan can continue to excel, especially in the Women's group. Paying attention to factors that can improve the performance and condition of athletes is certainly something that is done so that athlete performance during competitions can be optimal. One way is to deepen knowledge about the importance of knowing the physical condition of players as a supporter of performance by analyzing anthropometry and physical conditions related to athlete skills ^[5]. By identifying the anthropometry and physical condition of athletes, it certainly helps coaches in compiling training programs ^[6].

Anthropometry and the physical condition of athletes are important components to determine the performance of athletes in competitions.

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According to ^[7] with good and ideal anthropometry, the physical condition will also be good. According to (Toró-Román *et al.*, 2023). Anthropometry is an important element in knowing the performance of athletes, such as body composition, fat distribution, or muscle mass. Especially in soccer, anthropometric profiles and body condition analysis are important tools in preparing soccer athletes to face competition ^[9]. According to ^[10] Anthropometry and body composition are important in preparing athletes for competition. Meanwhile, according to ^[11] Anthropometric characteristics such as weight, height, and body composition are important factors in supporting the physical performance of athletes. Anthropometry is a methodology for measuring the human body that can provide an overview of a person's growth, which means that anthropometry can help in understanding body composition that can affect athlete performance ^[12].

Based on the description above, it can be seen that knowing the anthropometric conditions and conditions of athletes is very important to improve athlete performance in order to achieve achievements. Therefore, it is important to conduct anthropometric tests and measurements and the physical condition of female soccer athletes in East Kalimantan PON. The results of this study can be a picture of the condition of the athletes and can be used as material for coaches to determine future training programs that are appropriate and can improve the condition of athletes in order to achieve optimal performance and can help to achieve the desired achievements.

Materials and Methods

This study uses quantitative descriptive research using a survey method. The population in this study were all female soccer athletes who were included in the 2024 PON team. The sample in this study were 15 players registered in the 2024 PON team. The survey method in this study used tests and measurements that collected data related to anthropometry and physical conditions with various tests and measurements such as:

- Height.
- Weight.
- Flexibility using sit and reach.
- Speed using 20m sprint.
- Agility using shuttle run.
- Arm muscle strength using push up.
- Abdominal muscle strength using sit ups.
- Durability using balke run test.

Results and Discussion

Based on the research that has been conducted from the 8 tests and measurements above, the following results were obtained.

Table 1: Anthropometric

No	Interval	Frequency	%	Category
1	< 18.5	3	20%	Not enough
2	18.5-22.9	10	67%	Normal
3	23-29.9	2	13%	Overweight
4	> 30	0	0%	Obesity
Total		15	100%	

The results of anthropometric measurements of female soccer athletes at the East Kalimantan PON showed that there were 3 athletes in the thin category with a percentage of 20%, 10 athletes in the normal category with a percentage of 67%, 2

athletes in the overweight category with a percentage of 13% and 0 athletes in the obese category.

Table 2: Flexibility

No	Interval	Category	Frequency	%
1	$X > 45$	Very good	2	13%
2	$41 < X \leq 45$	Good	2	13%
3	$37 < X \leq 41$	Enough	7	47%
4	$33 < X \leq 37$	Not enough	3	20%
5	$X < 33$	Very less	1	7%
Total			15	100%

The results of the flexibility test using sit and reach for women's soccer athletes at the East Kalimantan PON showed that 2 athletes were in the very good category with a percentage of 13%, 2 athletes in the good category with a percentage of 13%, 7 athletes in the sufficient category with a percentage of 47%, 3 athletes in the less category with a percentage of 20%, and 1 athlete in the very less category with a percentage of 7%.

Table 3: Speed

No	Interval	Category	Frequency	%
1	$X < 3.18$	Very good	2	13%
2	$3.18 < X \leq 3.32$	Good	1	7%
3	$3.32 < X \leq 3.46$	Enough	7	47%
4	$3.46 < X \leq 3.60$	Not enough	5	33%
5	$X > 3.60$	Very less	0	0%
Total			15	100%

The results of the speed test using the 20m sprint of women's soccer athletes at the East Kalimantan PON showed that 2 athletes were in the very good category with a percentage of 13%, 1 athlete in the good category with a percentage of 7%, 7 athletes in the sufficient category with a percentage of 47%, 5 athletes in the less category with a percentage of 33%, and 0 athletes in the very less category.

Table 4: Agility

No	Interval	Category	Frequency	%
1	$X < 5.86$	Very good	0	0%
2	$5.86 < X \leq 6.10$	Good	6	40%
3	$6.10 < X \leq 6.33$	Enough	4	27%
4	$6.33 < X \leq 6.57$	Not enough	3	20%
5	$X > 6.57$	Very less	2	13%
Total			15	100%

The results of the agility test using the shuttle run of women's soccer athletes at the East Kalimantan PON showed that 0 athletes were in the very good category, 6 athletes were in the good category with a percentage of 40%, 4 athletes were in the sufficient category with a percentage of 27%, 3 athletes were in the less category with a percentage of 20%, and 2 athletes were in the very less category with a percentage of 13%.

Table 5: Arm Muscle Strength

No	Interval	Category	Frequency	%
1	$X > 38$	Very good	1	7%
2	$29 < X \leq 38$	Good	3	20%
3	$20 < X \leq 29$	Enough	7	47%
4	$12 < X \leq 20$	Not enough	3	20%
5	$X < 12$	Very less	1	7%
Total			15	100%

The results of the arm muscle strength test using push-ups for female soccer athletes at the East Kalimantan PON showed that 1 athlete was in the very good category with a percentage of 7%, 3 athletes were in the good category with a percentage of 20%, 7 athletes were in the sufficient category with a percentage of 47%, 3 athletes were in the poor category with a percentage of 20%, and 1 athlete was in the very poor category with a percentage of 7%.

Table 6: Abdominal Muscle Strength

No.	Interval	Category	Frequency	%
1	$X > 69$	Very good	1	7%
2	$54 < X \leq 69$	Good	4	27%
3	$38 < X \leq 54$	Enough	5	33%
4	$23 < X \leq 38$	Not enough	5	33%
5	$X < 23$	Very less	0	0%
Total			15	100%

The results of the abdominal muscle strength test using sit-ups for female soccer athletes at the East Kalimantan PON showed that 1 athlete was in the very good category with a percentage of 7%, 4 athletes were in the good category with a percentage of 27%, 5 athletes were in the sufficient category with a percentage of 33%, 5 athletes were in the poor category with a percentage of 33%, and 0 athletes were in the very poor category.

Table 7: Endurance

No	Interval	Category	Frequency	%
1	$X > 43.2$	Very good	0	0%
2	$41.3 < X \leq 43.2$	Good	7	47%
3	$39.5 < X \leq 41.3$	Enough	2	13%
4	$37.6 < X \leq 39.5$	Not enough	6	40%
5	$X < 37.6$	Very less	0	0%
Total			15	100%

The results of the endurance test using the Balke test for women's soccer athletes at the East Kalimantan PON showed that 0 athletes were in the very good category, 7 athletes were in the good category with a percentage of 47%, 2 athletes were in the sufficient category with a percentage of 13%, 6 athletes were in the poor category with a percentage of 40%, and 0 athletes were in the very poor category.

Discussion

This study aims to determine the anthropometric characteristics and physical condition of female soccer athletes from the East Kalimantan PON in facing the National Sports Week in Aceh and Medan in 2024. Several tests and measurements were carried out namely height and weight measurements for anthropometry, for physical conditions using several tests namely sit and reach for flexibility, 20m sprint for speed, shuttle run for agility, push up for arm muscle strength, sit up for abdominal muscle strength, and balke test for endurance.

The results of anthropometric measurements of female soccer athletes in East Kalimantan PON, most athletes are in the normal category with a percentage of 67%. For physical conditions based on the tests carried out, the results obtained are that for athlete flexibility with an average value of 39.20 is in the sufficient category. For athlete speed with an average value of 3.39 is in the sufficient category. For athlete agility with an average value of 6.22 is in the sufficient category. For athlete hand muscle strength with an average value of 24.67 is in the sufficient category. For athlete abdominal muscle

strength with an average value of 45.87 is in the sufficient category. And athlete endurance with an average value of 40.41 is in the sufficient category.

Based on the explanation above, it can be seen that the anthropometry and physical condition of the female soccer athletes of East Kalimantan PON are in sufficient condition to face the match. Anthropometry and physical condition are greatly influenced by the training that has been undertaken^[13]. With these results, it can be a reference for coaches to be able to improve the physical condition of athletes towards better results in order to support the athlete's performance when competing. In addition, factors that can affect physical conditions include nutritional factors, recovery factors, training load factors and training intensity, as well as the athlete's own environmental factors^[14].

Football athletes are required to have prime physical condition so that the performance displayed when competing can be maximized and can help the team to get the desired results. With these results, it is hoped that it can be a reference or something that continues to be done by all football administrators, especially the East Kalimantan PON women's Football Team In Improving The physical condition of athletes.

Conclusion

Anthropometry and physical condition are important for soccer athletes. With good physical condition, athletes can give their best performance when competing. From the results of this study, the physical condition of female soccer athletes in East Kalimantan PON must increase their physical training to prepare themselves for the tournament in order to improve and support performance on the field.

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