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Physical Conditions Analysis of Professional Women Footbal Player in Malang City

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ABSTRACT

This study aims to analyze physical performance, which is one of the dominant factors that will affect elite football athletes in Malang city, namely endurance, speed, agility, strength, and flexibility. This research includes research that is carried out systematically by raising existing data in the field. Meanwhile, the object of this study is the level of physical fitness of professional female footballers who are members of the Arema FC club, totaling 23 people. The tests that will be used to see the physical fitness of Arema Women FC athletes consist of (1) the Yo-Yo Test to measure endurance, (2) Arrowhead Agility to measure agility, and (3) Speed 30 meters to measure speed. (4) Standing Long Jump Test to measure explosive power; (5) Hip and Trunk Flexibility Test to measure flexibility Based on the results of the study after analyzing research data regarding the physical fitness level of the Arema Women FC football players, it can be inferred that they are in the medium category based on the aggregate results of all test components, which include endurance, agility, speed, explosive power, and flexibility.

Keywords: *Physical Condition, Woman Player, Football*

Analisis Kondisi Fisik Pemain Sepakbola Wanita di Kota Malang

ABSTRAK

Penelitian ini bertujuan untuk menganalisis performa fisik yang merupakan beberapa faktor dominan dan akan mempengaruhi atlet sepakbola elit di kota Malang yaitu daya tahan, kecepatan, kelincahan, kekuatan dan kelentukan. Penelitian ini termasuk penelitian yang dilakukan secara sistematis dengan mengangkat data yang ada di lapangan. Sedangkan objek dalam penelitian ini adalah tingkat kebugaran jasmani para pesepakbola wanita profesional yang tergabung dalam klub Arema FC yang berjumlah 23 orang. Tes yang akan digunakan untuk melihat kebugaran jasmani atlet Arema Women FC yaitu terdiri dari (1) Yo-yo Test untuk mengukur daya tahan, (2) Arrowhead Agility untuk mengukur kelincahan, (3) Speed 30 meter untuk mengukur kecepatan (4) Standing Long Jump Test untuk mengukur daya ledak, (5) Flexibility Test Hip and Trunk untuk mengukur kelentukan. Berdasarkan hasil penelitian setelah dilakukan analisis data penelitian mengenai tingkat kebugaran jasmani pemain sepakbola Arema Women FC maka dapat diambil kesimpulan bahwa tingkat kebugaran jasmani pemain sepakbola Arema Women FC dilihat dari hasil keseluruhan setiap komponen tes meliputi: daya tahan, kelincahan, kecepatan, daya ledak dan kelentukan masuk dalam kategori sedang.

Kata Kunci: Kondisi Fisik, Pemain Wanita, Sepakbola

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INTRODUCTION

Football is a very popular sport in the world that involves around 265 million players and 5 million referees who actively participate; this is quite a large number with an estimated 4% of the world's population (Hammerschmidt et al., 2021; Haugen & Seiler, 2015; Kirkendall & Krustrup, 2022). While the number of women involved in this sport has grown very rapidly, with around 26 million participants worldwide (Lago et al., 2022; Mohr et al., 2023; Pfister et al., 1996; Saavedra, 2003; Villaseca-Vicuña et al., 2021; Williams, 2007), the quality of female footballers is certainly getting better over time (Bell, 2012; Hong, 2012), and this participation rate is expected to increase to 60 million by 2026 (*FIFA Survey*, 2021). Joseph S. Blatter, former president of the Fédération Internationale de Football Association (FIFA), also said that "the future of football is feminine", This statement reflects the growing popularity of women's football worldwide and highlights one of FIFA's goals to continue to provide full support to growth in women's football (Dutta et al., 2021; Engh, 2010; Harris, 2005; Krech, 2020).

Along with the rapid development of women's football, various studies on women's football have also increased significantly in the last two decades (Datson et al., 2014; Milanović et al., 2017). Football professionals and sports scientists analyze various key factors that contribute to optimizing the performance of elite female players both in training and in competition (Manson et al., 2014; Ramos et al., 2019). It is very clear that the performance required in this sport depends on several factors, including technical, tactical, psychological, and physical factors (Benítez-Sillero et al., 2021; Bradley et al., 2013; F. Martins et al., 2022; Modric et al., 2020; Otero-Saborido et al., 2021). However, it is contradictory to various studies that have considered that technical and tactical skills are the determining factors in performance; on the other hand, several studies show that physical condition has a very large influence during this sporting competition (26–28).

From a physical point of view, football is primarily characterized by an intermittent need to use sequences of actions covering a variety of different skills, the most dominant of which is running. In addition, jumping is also one of the dominant physical components, which is also considered to play a major role in this sport. An interesting phenomenon regarding the professionalization of women's

football in the last decade has changed perceptions and created more stringent demands to make women's football adapt to the demands of the game. The high and varied physical demands placed on all court positions during a competitive women's elite match highlight the importance of proper physical preparation and recovery strategies to be able to cope with these demands (Datson et al., 2014; Vescovi & Mcguigan, 2008). The coach must pay particular attention to the specific physical demands of individual positions in relation to the team's tactical plan and secure the appropriate training stimulus in relation to the movement patterns of the individual players. Football players must receive training in a variety of physical conditioning skills, such as aerobic capacity, speed, strength, power, and agility, due to the physiological demands placed on the game. Consequently, it has been determined that evaluating physical condition in all of its aspects plays a significant role in choosing players for team sports. (Risso et al., 2017). Implementation of appropriate, valid, and reliable aptitude tests is important to describe a profile that is in accordance with the demands of the game (Turner et al., 2011).

There are several aspects that cause poor physical and technical appearance on the football team, especially for women's football athletes in the city of Malang. It is clear that there are many aspects that influence it, but physical and anthropometric factors are factors that can be seen clearly and are easy to assess. Unfortunately, until now, there have been very few studies that try to explore the factors that affect female soccer players, especially soccer players in the city of Malang, including the absence of data on the skill performance of female soccer players. The evaluation of a player's physical performance can assist coaches in several aspects, such as identifying individual physical strengths and weaknesses, evaluating the effectiveness of certain training programs, setting individual and team physical fitness standards, and identifying and developing talent (Martínez-Lagunas et al., 2014; Svensson & Drust, 2005a). Very high physical fitness in female footballers can provide a competitive advantage that helps players survive in games with high intensity and longer playing duration and is more resistant to fatigue, especially towards the end of the match (Andersson et al., 2008; Krustrup et al., 2005). This study will analyze the components of physical fitness that will affect elite soccer athletes in Malang city, namely endurance, speed, agility,

strength, and flexibility.

METHOD

Quantitative approaches are employed in this study. The goal of this observational, testing kind of research is to find a remedy or an explanation for the issues that arise. The object of this study is to determine the level of physical fitness of the Arema Women FC players. To collect data on the physical fitness of the athletes, what you want to know is: a) endurance is measured by the yo-yo test (Grgic et al., 2019); b) agility is measured by arrowhead agility (Rago et al., 2020); c) speed is measured by the 30 meter speed test (P. C. Martins et al., 2021); d) explosive power is measured by the standing test long jump (Brumitt et al., 2020); and e) flexibility is measured by the hip and trunk flexibility tests (Lopes et al., 2021; Vernetta et al., 2020).

The research subject is everything related to the data that will be used as an object in a study. In this study, the subjects were Arema Women FC players, totaling 23 athletes. Respondents in this study were professional football players in East Java, namely, Arema Women FC. Therefore, this research was conducted in Malang City. Data collection will be carried out at the Arema Women FC mess by implementing strict health protocols. This research is planned to be conducted from June to October 2022.

The research data was obtained through tests and measurements on each variable, which is a measure of endurance, agility, speed, explosive power, and flexibility. The tests that will be used to see the physical fitness of Arema Women FC athletes consist of (1) the Yo-Yo Test to measure endurance, (2) Arrowhead Agility to measure agility, and (3) Speed 30 meters to measure speed. (4) Standing Long Jump Test to measure explosive power, (5) Hip and trunk flexibility test to measure flexibility.

The data analysis technique used in this research is descriptive quantitative; the researcher will first analyze the quantitative research data, after which he will describe the results and produce qualitative data. Each test's evaluation standards are created from the raw data for each physical condition component once it has been acquired. The next step is to convert the raw data from each component of the

test into a T-score value. According to (Arikunto S., 2006) the T-Score formula is as follows.

$$T - score = 50 + \left(\frac{X-M}{SD}\right) 10 \qquad (1)$$

Description:
T = T-Score Value
X = raw data value
M = Average value of raw data
SD = Standard Deviation

After the data has been converted into a T-Score, then proceed with categorizing the data, the data that has been collected is grouped into five categories, namely: excellent, above average, average, below average, poor. This categorization uses the following formula (Sudijono, 2018).

Table 1. Calculation of Categories and Class Intervals

Category	Formula
Excellent	> Mean + 1.5 SD
Above Average	Mean + 1.5 SD
Average	Mean + 0.5 SD
Below Average	Mean – 0.5 SD
Poor	< Mean – 1.5 SD

After the data is obtained from the five test categories, the score classification is percentaged by dividing the number of frequencies obtained by the total number of samples using the following formula:

$$P = \frac{F}{N} \text{ x } 100\% \qquad (2)$$

Description:
P = Percentage
N = Number of subjects
F = Frequency (score obtained)
100% = Fixed number

RESULTS

The following is a table and discussion of data from research test results related to the level of physical fitness of Arema Women FC football players.

Table 2. Explosive Power Test Results for Standing Long Jump

No.	Interval Class	Category	Frequency	Percentage
1	> 50.22	Excellent	12	52.17%
2	50.7 – 50.21	Above Average	0	0%
3	49.93 – 50.6	Average	0	0%
4	49.78 – 49.92	Below Average	0	0%
5	< 49.77	Poor	11	47.83%
Total			23	100%

Based on the results of the descriptive data analysis and the percentage obtained from the results of the data or categories of the explosive power level of Arema Women FC football players, 12 players entered the very good category with a percentage of 52.17%, 0 players entered the good category with a percentage of 0%, 0 players entered the medium category with a percentage of 0%, 0 players fell into the less category with a percentage of 0%, and 11 players fell into the very less category with a percentage of 47.83%.

Table 3. Results of The 30 Meter Speed Test

No.	Interval Class	Category	Frequency	Percentage
1	> 50.67	Excellent	5	21.74%
2	50.33 – 50.66	Above Average	0	0%
3	49.67 – 50.32	Average	1	4.35%
4	49.33 – 49.66	Below Average	2	8.69%
5	< 49.32	Poor	15	65.22%
Total			23	100%

Based on the results of the descriptive data analysis and the percentage obtained from the results of the data or speed category of Arema Women FC football players, 5 players fall into the very good category with a percentage of 21.74%, 0 players fall into the good category with a percentage of 0%, 1 player enters the medium category with a percentage of 4.35%, 2 players fall into the less category with a percentage of 8.69%, and 15 players fall into the very less category with a percentage of 65.22%.

Table 4. Arrowhead Agility Test Results

No.	Interval Class	Category	Frequency	Percentage
1	> 50.52	Excellent	11	47.83%
2	50.26 – 50.51	Above Average	0	0%
3	49.74 – 50.25	Average	0	0%
4	49.48 – 49.73	Below Average	1	4.35%
5	< 49.47	Poor	11	47.83%
Total			23	100%

Based on the results of the descriptive data analysis and the agility level category of Arema Women FC football players, 11 players entered the very good category with a percentage of 47.83%, 0 players entered the good category with a percentage of 0%, 0 players entered the medium category with a percentage of 0%, 1 player is in the less category with a percentage of 4.35%, and 11 players are in the very less category with a percentage of 47.83%.

Table 5. Yo-yo Test Results for Endurance Tests

No.	Interval Class	Category	Frequency	Percentage
1	> 54.65	Excellent	8	34.78%
2	51.55 – 54.64	Above Average	0	0%
3	48.45 – 51.54	Average	4	17.39%
4	45.35 – 48.44	Below Average	1	4.35%
5	< 45.34	Poor	10	43.48%
Total			23	100%

Based on the results of the percentage descriptive data analysis, the data results or categories of the endurance level of Arema Women FC football players show that 8 players fall into the very good category with a percentage of 34.78%, 0 players fall into the good category with a percentage of 0%, 4 players fall into the medium category with a percentage of 17.48%, 1 player is in the less category with a percentage of 4.35%, and 10 players are in the very less category with a percentage of 43.48%.

Table 6. Shows The Results of a Hip and Trunk Flexibility Test

No.	Interval Class	Category	Frequency	Percentage
1	> 56.25	Excellent	5	21.74%
2	52.08 – 56.24	Above Average	1	4.35%
3	47.92 – 52.07	Average	7	30.43%
4	43.75 – 47.91	Below Average	6	20.09%
5	< 43.74	Poor	4	17.39%
Total			23	100%

Based on the results of descriptive data analysis, the percentage obtained is the result of the data or category level of flexibility of Arema Women FC football players: 5 players are included in the very good category with a percentage of 21.74%, 1 player is included in the good category with a percentage of 4.35%, 7 players are included in the medium category with a percentage of 30.43%, 6 players fall into the less category with a percentage of 20.09%, and 4 players fall into the very less category with a percentage of 17.39%.

DISCUSSION

This research identifies the physical condition of female soccer players who are members of the Arema Women FC club. The field test is used to explore the quality of the physical conditions possessed by female footballers, consisting of endurance, speed, agility, strength, and flexibility, which are the dominant physical

conditions and are close to the demands of competition in this sport (Svensson & Drust, 2005b). Therefore, the identification carried out can help coaches, physical trainers, and even management optimize player performance (Aquino et al., 2018; Buchheit et al., 2010). Evaluation of physical conditions is therefore important to be able to apply the results to individual planning (Comfort et al., 2014; Faude et al., 2013). However, it is necessary to choose a test that evaluates the performance factors that actually differentiate the likelihood of success during competition.

The average level of explosive physical condition of Arema Women FC football players is in the very good category; this may be the result of their routine training. Leg muscle explosive power is an important component of the game of football. The physical condition of explosive power is very necessary when a player takes a kick, either in the form of a short pass to a friend or a short pass to feed at close range, and a long pass to feed long distance, also when shooting at goal. (Afrinaldi et al., 2021). Based on the research conducted by (Mahardika, 2020), it shows that the results of the physical condition test for explosive power are in the very good category. This is in line with research conducted by researchers showing that the level of explosive physical condition of the Arema Women FC players is also included in the very good category. According to the results of the research that has been done, the average speed level of Arema Women FC football players is in the very poor category. In this case, the speed level of the Arema Women FC football players needs to be improved because, in the game of football, speed is needed. According to (Elkadiowanda, 2019) speed is the conditional ability to produce body movements in the shortest possible time. In recent years, there has been a lot of interest in measuring physical fitness for soccer, particularly in relation to aerobic fitness and vertical leap. Consequently, there are a lot of research that deal with this problem. To the best of our knowledge, nevertheless, the majority of these studies have been carried out on senior and U19 male elite player samples.important (Aziz et al., 2005; Sporis et al., 2009). There are several studies that analyze the results of younger players with a lower competitive level. In addition, few studies have studied the physical conditioning of female soccer players (Castagna & Castellini, 2013), and even fewer have included a sample of women with a non-professional competitive level.

Based on research that has been conducted by (Musrifin & Bausad, 2020) shows that the results of the speed physical condition test are in the very poor category. This is in line with research conducted by researchers showing that the speed level of Arema Women FC players is also in the very poor category. According to the results of the research that has been carried out, the average level of physical condition and agility of Arema Women FC football players are in the very poor category. This could possibly happen due to the lack of activity of the Arema Women FC football players during the COVID-19 pandemic. With this pandemic, there is a lack of movement activity because the government has advised them to keep their distance and reduce outdoor activities, and maybe the mentality of the Arema football players This women's football team is still unstable, so it can affect performance when going to do the test. Good agility is needed in the game of soccer. For example, in dribbling or messing with the opponent's defense, The players must have good agility so that the game can be mastered to the maximum (Maliki et al., 2017). Based on research that has been conducted by (Purnomo & Irawan, 2021), the results of the physical condition agility test are in the very poor category. This is in line with research conducted by researchers showing that the level of physical agility of Arema Women FC players is also in the very poor category. There are few works that study the physical condition of female soccer players, and even fewer include samples of women with non-professional competition levels.

According to the results of the research that has been done, the average level of physical endurance of Arema Women FC football players is in the moderate category. In this case, Arema Women FC football players can still be said to maintain their physical fitness because the physical condition of each player is different. Therefore, it is important for coaches to be able to control the physical condition of their players because endurance is needed to play soccer because football games take a long time. Endurance is one of the most important biometric components of physical activity (Surohmat & Yudi, 2020). Based on research that has been conducted by (Ramadhan, 2017), the results of the physical condition test of endurance are in the medium category. This is in line with research conducted by researchers showing that the level of physical endurance of Arema Women FC

players is also included in the moderate category.

According to the results of the research that has been done, the average level of physical condition and flexibility of Arema Women FC football players is in the moderate category. Flexibility is a component of physical condition, which is also important in physical condition because, in certain situations, the football players of Arema Women FC need flexibility. According to (Pelana et al., 2022) Every sport needs limb flexibility to perform different moves. Therefore, having strong flexibility will help people learn a fundamental technique in the sport they desire to play. The capacity to move the body or its parts as broadly as possible without causing strain to joints or injuries to muscles is known as flexibility. Based on research that has been conducted by (Sandria & Arwandi, 2018) show that the results of the physical condition test of flexibility are in the medium category. This is in line with research conducted by researchers showing that the level of physical condition and flexibility of the Arema Women FC players are also included in the moderate category.

After calculating each physical fitness test on the components of explosive power, speed, agility, endurance, and flexibility by the researchers, it can be seen that the overall test results show that the physical fitness or physical condition of Arema Women FC football players is in the moderate category. Players' physical capacity should be regularly tested through objective and standardized performance appraisals to identify their strengths and weaknesses. Setting fitness goals for both individuals and teams, assessing the success of specific training plans, and spotting and nurturing potential can all benefit from it. This information should be used to tailor physical training to each player's positional role, level of competition, and current fitness level. Players will be able to handle the demands of the game more skillfully as a result. Working with female athletes requires coaches and practitioners to recognize their unique qualities and gender variances, particularly if they have exclusively dealt with male athletes in the past. Understanding menstruation and pregnancy, as well as how they could affect a football player's performance, is essential. The data in this paper offers an unbiased point of reference for the traits of female players and their playing requirements. The resulting studies can assist sports coaches and scientists in designing more effective

science-based training programs and strategies for the further improvement of players' football performance, health, playing standards, and a positive image of the sport (Martínez-Lagunas et al., 2014).

CONCLUSION

According to the study's findings, which were derived from an analysis of research data on the physical fitness level of Arema Women FC football players, the players' level of physical fitness can be inferred from the medium category overall results of each test component, including endurance, agility, speed, explosive power, and flexibility.

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