JCCE
Journal of Community Capacity Empowerment
THE FACULTY OF AGRICULTURE
Universitas Tunas Pembangunan Surakarta (UTP)

# Condition Survey Of Badminton Enthusiasts In Sragen Regency In 2023

Muchhamad Sholeh[1], Satrio Sakti Rumpoko[1] , Sunjoyo[1*], Vera Septi Sistiasih[2], Titin Kuntum Mandalawati[3], Anwar Rasyid[1]

1, Universitas Tunas Pembangunan Surakarta
2, Universitas Muhammadiyah Surakarta
3, Universitas PGRI Madiun
*e-mail: sunjoyo57@gmail.com

***Abstract***

*Physical fitness is one of the important physical components and must be owned by athletes to support in the game of badminton.*
*This study aims to determine Physical Conditions which include Arm Muscle Strength, Flexibility, Leg Muscle Power, and Speed of Sragen Regency Badminton Athletes in 2023.*
*The research method used is the Survey method. The study population numbered 60 people. Sampling using purposive sampling technique. Data collection techniques using Tests and Measurements. Data analysis techniques use descriptive statistical techniques.*
*The results of the study were obtained that: Physical Condition Survey of Badminton Athletes in Sragen Regency in 2023 in the "Less Once" category of 3.33% (1 athlete), "Less" category of 30.00% (9 athletes), "Enough" category of 40.00% (12 athletes), "Good" category of 20.00% (6 athletes), and "Very Good" category of 6.67% (2 athletes) Based on physical condition data, Sragen Regency Badminton Athletes are included in the "sufficient" category.*
***Keywords****: physical fitness, badminton, athletes*

## 1. INTRODUCTION

The essence of sports is a physical activity that encompasses characteristics involving self-struggle, competition against others, or confrontation with elements of nature. Sports can include various competitive styles, and therefore, the activities must be carried out with high spirits and sportsmanship. In team sports, individuals encourage each other to compete in an atmosphere of joy and honesty, fostering mutual understanding and solidarity beyond personal interests. Additionally, sports contribute to the physical and mental well-being of individuals, shaping them into quality human beings. Recognizing the crucial role of sports in human life and the advancement of quality individuals in Indonesia, the government conducts developmental coaching in the field of sports, often participated in by athletes. To achieve good health and fitness levels, engaging in sports from an early age through formal and non-formal education is essential.

Regarding the organized system for sports development, the Indonesian government has established a national organization, KONI, overseeing various sports disciplines, including badminton. Special attention must be given to the physical condition factor, as it significantly supports achieving success in any sports branch, including Taekwondo. Physical condition should be meticulously addressed early on to support the development of basic technical skills, a crucial factor determining an athlete's victory or defeat in a competition. In addition to basic techniques, an athlete must be equipped with good physical condition to compete maximally.

As posed in the stated problem, the aim of this research is to assess the physical condition of badminton athletes in the Sragen district in the year 2023.

1. Badminton Game

Badminton is an individual game that can be played one-on-one or two-on-two. It involves using a racket as a hitting tool and a shuttlecock as the object to be hit. The game takes place on a rectangular court divided by a net, separating one's playing area from the opponent's. The objective is to drop the shuttlecock in the opponent's playing area and prevent the opponent from hitting it into one's own area. The game uses a rally point scoring system, with a player or team winning when reaching 21 points, or in the case of a tie at 20-20, a two-point margin is required. Mastery of various basic badminton techniques is essential for effective play.

2. Basic Badminton Techniques
   Mastering basic badminton techniques is crucial for skillful play and supports overall badminton proficiency. The basic techniques, as classified by Soemarno et al. (2002:164), include grip technique, footwork coordination, stroke mastery, and patterned stroke mastery.
3. Essence of Physical Condition
   Physical condition is a vital element serving as the foundation for developing techniques, tactics, and strategies in Taekwondo. According to Sajoto (1988: 57), physical condition is a prerequisite for enhancing an athlete's performance, acting as a starting point for athletic achievements. Sugiyanto (1996:221) defines physical ability as the capacity to use body organs in performing physical activities, crucial for supporting psychomotor activities. Proficient movements can be executed when physical abilities are adequate.

Physical condition comprises interconnected components, and its improvement or maintenance requires the development of all these components. Mochammad Sajoto (1988: 57) identifies physical condition components as:

a) Strength: The ability to use muscles to bear a load during work.
b) Endurance: General endurance involves the effective use of the cardiovascular and respiratory systems, while muscle endurance is the ability to continuously use muscles for an extended period with a specific load.
c) Muscle power: The ability to use maximum force in the shortest possible time.
d) Speed: The ability to perform balanced movements in the same form in the shortest time.
e) Flexibility: The effectiveness of self-adjustment for various activities with a wide body range.
f) Agility: The ability to change positions in a specific area.
g) Coordination: The ability to perform various different movements into a single effective movement pattern.
h) Balance: The body's ability to maintain positions during various movements.
i) Precision: The ability to control free movements towards a target.
j) Reaction: The ability to act immediately in response to stimuli through senses, nerves, or other feelings.

Djoko Pekik Irianto (2004: 9) adds factors influencing physical condition, including nutrition, sleep, and rest, healthy lifestyle habits, environment, exercise, and others.

Based on the opinions of experts above, it can be concluded that factors influencing physical condition include nutrition and food, sleep and rest, healthy lifestyle habits, environment, exercise, and others. To have good physical condition, individuals must consider these factors.

## 2. METHODOLOGY

This research adopts a descriptive approach, collecting data through survey methods using testing and measurement techniques. Instruments used to measure physical condition in badminton include Arm Muscle Strength, Flexibility, Leg Muscle Power, and Speed. Raw data from each test item are converted into T-Scores using the T-Score formula.

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

View :
T = Mark Score-T
M = Average value of rough data
X = rough data values
SD= standard deviation of raw data
(Source : Sutrisno Hadi, 1991: 46)

After the data has been transformed into T scores, it is then interpreted by categorizing the data into five categories: excellent, good, moderate, poor, and very poor. Meanwhile, the categorization is based on five norm boundaries, as shown in Table 1 below:

**Table 6. Physical Condition Assessment Norms**

| No | Interval | Category |
|---|---|---|
| 1 | M + 1,5 S <X | Very well |
| 2 | M + 1,5 S < X ≤ M + 1,5 S | Good |
| 3 | M - 0,5 S < X ≤ M + 0,5 S | Enough |
| 4 | M - 1,5 S < X ≤ M - 0,5 S | Not enough |
| 5 | X ≤ M - 1,5 S | Very less |

(Saifuddin Azwar, 2010: 163)

View :
*M* : mean
*X* : score
*S* : standard deviation
The next step involves analyzing data to draw conclusions from the conducted research. The data analysis employed in this study utilizes quantitative descriptive analysis techniques with percentages. According to Anas Sudijono (2006: 245), the formula used is as follows :

$$P = \frac{F}{N} \times 100\ \%$$

View:
P = The percentage sought
F = frequency
N = number of respondents

## 3. RESULT AND DISCUSSION

### 1. Description of Abdominal Muscle Strength Test Data (Sit Ups)

Data tes kekuatan otot perut terdapat 2 kategori baik sekali, 7 kategori baik, 6 kategori cukup, 8 kategori kurang dan 7 kategori kurang sekali. Deskripsi hasil analisis data tes Kekuatan Otot Perut disajikan sebagai berikut:

**Table 1. Data on abdominal muscle strength test results.**

| Tes | Statistik | Test Results |
|---|---|---|
| Abdominal Muscle Strength | N | 30 |
| | Amount | 1500 |
| | Mean | 21 |
| | Median | 47 |
| | Mode | 45 |
| | SD | 5.84 |
| | Highest Yield | 70 |
| | Lowest Results | 31 |

From the table above, it can be observed that the average result of the Abdominal muscle strength test is 21, with a median of 47, a mode of 45, and a standard deviation of 5.84. The description of the abdominal muscle strength test results is as follows:

**Table 2. Norms for Abdominal Muscle Strength Tests**

| Mark | Norm | Frequency | Presentace |
|---|---|---|---|
| >30 | Very well | 2 | 6.67% |
| 26 - 30 | Good | 7 | 23.33% |
| 20 - 25 | Enough | 6 | 20.00% |
| 17 - 19 | Not Enough | 8 | 26.67% |
| < 17 | Very less | 7 | 23.33% |
| **Amount** | | 30 | 100% |

The table above illustrates that, overall, the abdominal muscle strength test shows the following categories: "Very Poor" at 23.33% (7 athletes), "Poor" at 26.67% (8 athletes), "Fair" at 20.00% (6 athletes), "Good" at 23.33% (7 athletes), and "Excellent" at 6.67% (2 athletes). When represented in a bar chart, the abdominal muscle strength data is visualized as depicted in the following image:

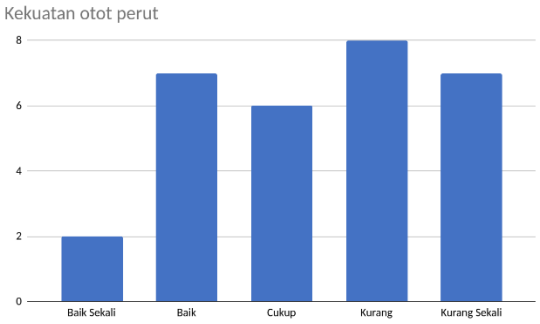


Figure 1. Histogram depicting abdominal muscle strength.

**1. Deskripsi Data Tes Kekuatan Otot Lengan (Push Up)**

The data from the arm muscle strength test is categorized into 5 excellent categories, 2 good categories, 16 fair categories, 7 poor categories, and 0 very poor categories. The description of the analysis results of the Arm Muscle Strength test data is presented as follows:

**Table 3. Data of forearm muscle strength test results.**

| Tes | Statistik | Test Results |
|---|---|---|
| Strength of Arm Muscles | N | 30 |
| | The number | 1500 |
| | Mean | 41 |
| | Median | 48 |
| | Mode | 49 |
| | SD (Standard Deviation) | 8.66 |
| | Highest Result | 70 |
| | Lowest Result | 37 |

From the table above, it can be observed that the average result of the Arm muscle strength test is 41, with a median of 48, a mode of 49, and a standard deviation of 8.66. The description of the arm muscle strength test results is presented in the following table:

**Table 4. Norms for Arm Muscle Strength Test**

| Mark | Norm | Frequency | Percentage |
|---|---|---|---|
| >54 | Very well | 5 | 16.67% |
| 45 - 54 | Good | 2 | 6.67% |
| 35 - 44 | Enough | 16 | 53.33% |
| 20 - 34 | Not enough | 7 | 23.33% |
| < 20 | Very less | 0 | 0.00% |
| **Amount** | | 30 | 100% |

In the table above, it can be observed that the overall results of the arm muscle strength test indicate the following categories: "Very Poor" at 0.00% (0 athletes), "Poor" at 23.33% (7 athletes), "Fair" at 53.33% (16 athletes), "Good" at 6.67% (2 athletes), and "Excellent" at 16.67% (5 athletes).
If represented in a bar chart, the arm muscle strength data is illustrated in the following figure:
Table 4. Norms of Arm Muscle Strength Test

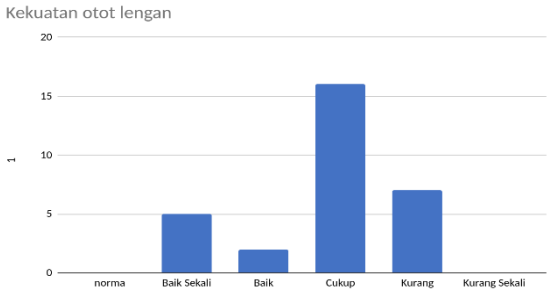


Figure 2. Histogram of arm muscle strength.

## 2. Description of Flexibility Test Data (Sit and Reach)

The flexibility test data is categorized into 5 excellent, 15 good, 9 fair, 1 poor, and 0 very poor categories. The description of the flexibility test data analysis results is presented as follows:

**Table 4. Flexibility test results data**

| Test | Statistics | Test Results |
|---|---|---|
| Flexibility | N | 30 |
| | The number | 1500 |
| | Mean | 12 |
| | Median | 49.5 |
| | Mode | 57 |
| | SD (Standard Deviation) | 3.15 |
| | Highest Result | 67 |
| | Lowest Result | 29 |

From the information above, it can be observed that the average flexibility test results for the athletes are 12, with a median of 49.5, a mode of 57, and a standard deviation of 3.15. The flexibility test results provide the following data description:

**Table 16. Flexibility Test Norms**

| Mark | Norm | Frequency | Percentage |
|---|---|---|---|
| >14 | Very well | 5 | 16.67% |
| 11.0 - 14.0 | Good | 15 | 50.00% |
| 7.0 - 10.9 | Enough | 9 | 30.00% |
| 4.0 - 6.9 | Not enough | 1 | 3.33% |
| < 4.0 | Very less | 0 | 0.00% |
| **Amount** | | 30 | 100% |

In the table above, it is evident that overall flexibility test results indicate the following categories: "Very Poor" at 0.00% (0 athletes), "Poor" at 3.33% (1 athlete), "Fair" at 30.00% (9 athletes), "Good" at 50.00% (15 athletes), and "Excellent" at 16.67% (5 athletes). If represented in a bar chart, the flexibility data is illustrated in the following figure:

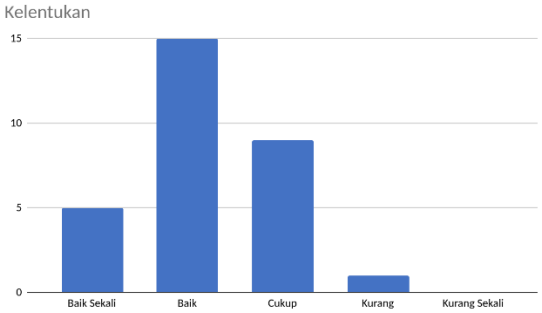


Figure 3. Flexibility Histogram.

### 3. Description of Lower Limb Power Test Data (Vertical Jump)

The leg muscle power test data consists of 0 categories excellent, 5 categories good, 21 categories fair, 4 categories poor, and 0 categories very poor. The description of the leg muscle power test data analysis results is presented as follows:

**Table 5. Data Result of Leg Muscle Power Test**

| Test | Statistics | Test Result |
|---|---|---|
| Flexibility | N | 30 |
| | The number | 1500 |
| | Mean | 26 |
| | Median | 49 |
| | Mode | 54 |
| | SD (Standard Deviation) | 5.02 |
| | Highest Result | 68 |
| | Lowest Result | 26 |

From the above, it can be observed that the average result of the leg muscle power test for the athletes is 26, with a median of 49, a mode of 54, and a standard deviation of 5.02. The description of the leg muscle power test results is presented in Table 6: Norms for Leg Muscle Power Test.

| male | Female | Norm | Frekuensi | Presentase |
|---|---|---|---|---|
| >38 | >38 | Very well | 0 | 0.00% |
| 30 - 37 | 29 - 37 | Good | 5 | 16.67% |
| 22 - 29 | 22 - 28 | Enough | 21 | 70.00% |
| 13 - 21 | 13 - 21 | Not enough | 4 | 13.33% |
| < 12 | >12 | Very less | 0 | 0.00% |
| **Amount** | | | 30 | 100% |

The table above shows that, in general, the lower limb muscle power test indicates the following categories: "Very Poor" at 0.00% (0 athletes), "Poor" at 13.33% (4 athletes), "Fair" at 70.00% (21 athletes), "Good" at 16.67% (5 athletes), and "Excellent" at 0.00% (0 athletes).

If displayed in a bar chart, the lower limb muscle power data would appear as shown in the following image:

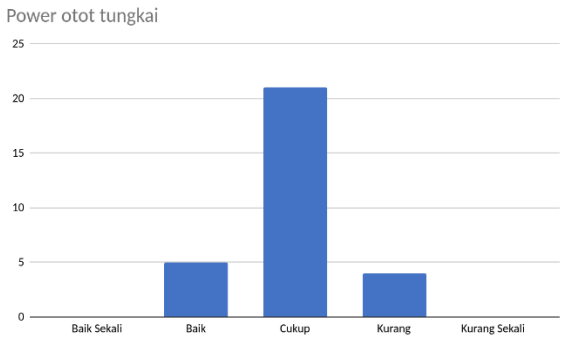


Figure 4. Histogram of leg muscle power.

**4. Speed Test Data Description (30m Sprint)**

The speed test data consists of 2 categories excellent, 20 categories good, 8 categories satisfactory, 0 categories poor, and 0 categories very poor. The description of the speed test data analysis results is presented as follows:

**Table 7. Speed Test Results Data**

| Test | Statistics | Result Test |
|---|---|---|
| | N | 30 |
| | The number | 1500 |
| | Mean | 6.2 |
| Flexibility | Median | 50 |

| | |
|---|---|
| Mode | 51 |
| SD (Standard Deviation) | 0.4 |
| Highest Result | 68 |
| Lowest Result | 32 |

Dari di atas, dapat diketahui rata-rata hasil tes Kecepatan Atlet adalah 6.2, mediannya 50, modenya 51, dan standar deviasinya 0.4.
Dari hasil tes kecepatan lari dapat dilihat deskripsi data sebagai berikut:

**Table 8. Running speed test norms**

| male | Female | Norm | Frekuensi | Presentase |
|---|---|---|---|---|
| >5,5 detik | > 5,8 detik | Very well | 2 | 6.67% |
| 5,6 - 6,1 detik | 5,9 - 6,6 detik | Good | 20 | 66.67% |
| 6,2 - 6,9 detik | 6,7 - 7,8 detik | Enough | 8 | 26.67% |
| 7,0 - 8,6 detik | 7,9 - 9,2 detik | Not enough | 0 | 0.00% |
| < 8,7 detik | < 9,3 detik | Very less | 0 | 0.00% |
| **Amount** | | | 30 | 100% |

The table above shows that overall, the running speed test indicates the following categories: "Very Poor" with 0.00% (0 athletes), "Poor" with 0.00% (0 athletes), "Fair" with 26.67% (8 athletes), "Good" with 66.67% (20 athletes), and "Excellent" with 6.67% (2 athletes).

When represented in a bar chart, the running speed test data is illustrated in the following diagram:

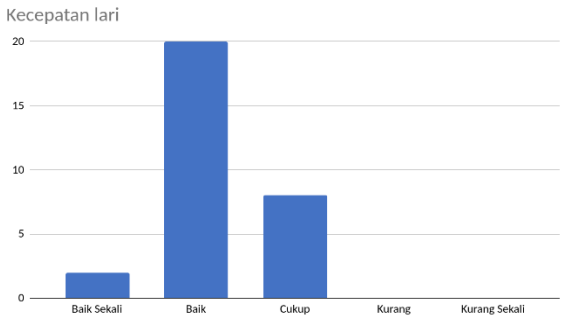


Figure 5. Running speed histogram.

## DISCUSSION

The physical fitness test data is categorized as follows: 2 categories are classified as very good, 6 categories as good, 12 categories as fair, 9 categories as poor, and 1 category as very poor. Please refer to Appendix 16 for details. The description of the physical fitness test data analysis results is presented as follows:

**Table 9. Data on Physical Condition Test Results**

| Test | Statistics | Result Test |
|---|---|---|
| Physical condition | N | 30 |
| | The number | 7480 |
| | Mean | 249 |
| | Median | 249,5 |
| | Mode | 258 |
| | SD (Standard Deviation) | 17,7 |
| | Highest Result | 301 |
| | Lowest Result | 208 |

From the table above, the average score of the physical fitness test is 249, with a median of 249.5, a mode of 258, and a standard deviation of 17.7. Next, a brief description of the research data on the components of physical fitness, including arm muscle strength, abdominal muscle strength, running speed, leg power, and flexibility, will be presented. The results of the Physical Fitness test reveal the following data description:

**Table 10. Physical Condition Test Norms**

| Mark | Norm | Frequency | Percentage |
|---|---|---|---|
| > 276 | Very well | 2 | 6.67% |
| 258 < X ≤ 276 | Good | 6 | 20.00% |
| 240 < X ≤ 258 | Enough | 12 | 40.00% |
| 223 < X ≤ 240 | Not enough | 9 | 30.00% |
| X ≤ 223 | Very less | 1 | 3.33% |
| **Amount** | | 30 | 100% |

The table above shows that, in general, the physical condition test indicates the "Very Poor" category at 3.33% (1 athlete), the "Poor" category at 30.00% (9 athletes), the "Fair" category at 40.00% (12 athletes), the "Good" category at 20.00% (6 athletes), and the "Excellent" category at 6.67% (2 athletes).
If represented in a bar chart, the physical condition test data is illustrated in the following diagram:

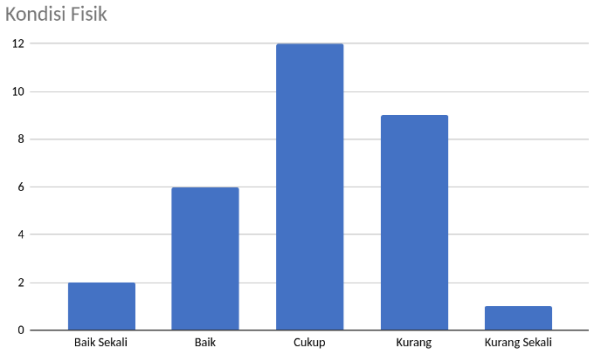


Figure 11. Histogram of Physical Condition Test

## 4. CONCLUSION

Based on the research findings and data analysis, it can be concluded that the physical fitness survey test for badminton athletes in Sragen Regency in 2023 falls into the following categories: "Very Poor" at 3.33% (1 athlete), "Poor" at 30.00% (9 athletes), "Fair" at 40.00% (12 athletes), "Good" at 20.00% (6 athletes), and "Excellent" at 6.67% (2 athletes).

The conclusion drawn from this research implies that, in the process of physical fitness training, coaches or trainers need to pay attention to abdominal muscle strength, arm muscle strength, flexibility, leg power, and running speed during training to maintain and improve the athletes' physical condition. Therefore, when participating in competitions, athletes can demonstrate their maximum capabilities with the support of good physical fitness.

## REFERENCES

Anas Sudijono. (2006). *Pengantar Statistik Pendidikan*. Jakarta: PT Grafindo Persada.

Arma Abdoelah dan Agus Manaji. (1994). *Evaluasi Dalam Pendidikan Olahraga*. Yogyakarta: IKIP Yogyakarta.

Didik Zafar, Paulus Pesurnat dan Luky Afari. (2019). *Pelatihan Kondisi Fisik*. Penerbit PT Remaja Rosdakarya. bandung.

Djoko Pekik Irianto. (2004). *Pedoman Praktis Berolahraga Untuk Kesegaran dan Kesehatan*. Yogyakarta: Andi Offset.

Harsono. (2018). *Latihan Kondisi Fisik*. Bandung: PT Remaja Rosdakarya.

Leane Suniar. (2002). *Praktis Berolahraga*. Jakarta: Andi Offset.

M. Sajoto. (1988). *Peningkatan dan Pembinaan Kekuatan Fisik dalan Olahraga*. Semarang : Dahara Price.

Saifuddin Azwar. (2010). *Fungsi dan Pengembangan Pengukuran Tes dan Prestasi*. Yogyakarta: Pustaka Pelajar.

Sugiyanto . 1996. Belajar Gerak I. Surakarta: UNS Press.

Sutrisno Hadi. (1991). *Statistik II.* Yogyakarta: Yayasan Penerbitan Fakultas Psikologi UGM.