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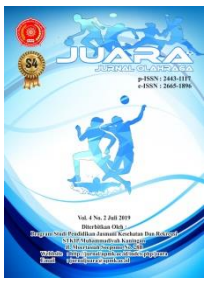

PROFILE OF PHYSICAL CONDITION OF INDONESIAN JUNIOR BADMINTON ATHLETES

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Abstrak

The purpose of this study was to reveal the profile of the physical condition of Indonesian junior badminton athletes. Participants in this study were 40 badminton athletes (age = 14-18 years, Man = 31, Women = 9). Research instruments on physical conditions are endurance, strength & conditioning, speed, flexibility, and coordination. Data analysis with descriptive statistics. This study concludes the condition profile as follows; 1) Endurance in male athletes when viewed from an average of 60.29, then falls into the "good" category, then female athletes when viewed from an average of 54.86, then falls into the "good" category; 2) Strength & conditioning in male athletes when viewed from an average of 5.70, then it is included in the "enough" category, then female athletes if viewed from an average of 4.78, it is in the "good" category; 3) Speed for male athletes when viewed from the average of 3.30, is in the "very good" category, then for female athletes if viewed from the average of 3.71, it is in the "excellent" category; 4) Flexibility in male athletes when viewed from an average of 21.42, is in the "good" category, then female athletes when viewed from an average of 14.22, is in the "enough" category; 5) Coordination for male athletes when viewed from an average of 11.46, is included in the "good" category, then for female athletes when viewed from an average of 13.49, it is included in the "good" category. Suggestions for future research are related to the test instruments used.

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INTRODUCTION

Badminton or badminton is a racket sport played by two opposing people (for singles) or two pairs (for doubles). Badminton is played with the player on one side aiming to hit the shuttlecock over the net so that it falls on the opponent's designated playing field, and must also try to prevent his opponent from doing this to him (Escudero-tena et al., 2020) Since February 1 2006, all parties have used the best of three system, each of which is achieved by achieving 21 points in rally points. (Escudero-tena et al., 2020)

Regarding badminton physical training programs and applications, they must be designed through stages (PBSI, 2016). General physical preparation which aims to improve the working capacity of the body's organs, thereby facilitating coaching efforts and improving all aspects of training at the next stage, (2) Special physical preparation aims to improve physical ability and better movement towards the competition. In sports, achieving the desired achievements of an athlete cannot be separated from what is called physical condition. Good physical condition and being able to compete in achieving the best performance is not obtained easily and instantly but through coaching from an early age.

There are four types of equipment that need to be possessed, if someone is to achieve optimal performance, these equipment include physical build-up, technical build-up, mental build-up, and maturity of champions (Bompa & Haff, 2019). In terms of terminology, physical conditions can include before (initial abilities), during and after experiencing a training process. Physical condition is an ability that includes strength, endurance, flexibility, coordination.

Physical condition must be improved so that you can play badminton well. Every coach must improve and develop the physical condition of his players. If a badminton player is to achieve optimal performance, he must have complete physical, technical, mental development and champion maturity. Thus, to achieve optimal performance in the world of sports, these four supporting aspects must be carried out well, according to the sport in which one is involved. Physical condition will decline faster than it improves if no exercise is given at all (Lloyd & Oliver, 2020).

The importance of an athlete's physical condition should be recognized by coaches and athletes themselves. Coaches should always control the athlete's physical condition, so that it can be known early on if the player is experiencing problems which will later affect the player's performance and performance in competition. The development of the badminton world today has shown a lot of progress, this can be seen from the number of various badminton organizations or clubs that have been formed, both at the internal level of certain countries and at the international level at the world level.

Some factors that support the physical condition of badminton athletes are power, agility and endurance (Cinthuja et al., 2015). Power is one of the supporting factors in the physical condition that supports an athlete to excel. Power is used when doing a jump smash. The higher the reach when performing a jump smash, the more angles you will choose to launch the shuttlecock. Jump smash is done when the shuttlecock is in a position above the head so that with a jump smash you can reach the shuttlecock to be launched into the opponent's area.

Badminton players must also have strong arm muscles, because with strong arm muscles the shuttlecock will hit the target harder and faster, making it difficult for the opponent to react. The wide reach and sharp angle of the jump smash can also be done well if supported by body height. The determining factors for achieving maximum performance are endogenous factors and exogenous factors (Akbari, Dlis, & Widiastuti, 2017). Part of the athlete's factors include: body shape, body proportions that are in harmony with the sport

they are participating in, each sport requires different body weights and body shapes.

It is realized that efforts to achieve achievement in sports are complex, because they involve many factors, including internal factors such as: physical and mental athletes and external factors such as: the natural environment and equipment (Millar, Clutterbuck, & Doherty, 2020). Internal factors actually originate from the quality of the athlete himself, where a quality athlete means having talent potential that meets the demands of the sport and is ready to be developed to achieve peak performance. Experience shows that only athletes who are talented and willing to train well can achieve peak performance. Peak performance is the result of all coaching program efforts within a certain period of time which is a combination of training processes that are designed systematically, tiered, continuous, repetitive, and increasingly increasing over time.

Sports branches have their own characteristics and specifications, so there needs to be a combination of general and specialized tests in making selection. The role of testing tools is felt to be lacking if they are not combined with the observations of experienced trainers. According to observations, so far many clubs have not paid careful attention to the issue of identifying physical abilities. Recruitment of athletes is still based on natural selection, not yet based on a talent identification system using scientific methods based on science and technology. The training process carried out at the club is still far from real coaching knowledge. As one example, the evaluation process using tests and measurements is still rarely carried out.

A person's physical condition can be improved only through good, measurable, continuous and programmed training. The importance of physical condition, a club or badminton athlete development program really needs a data base or profile of the athlete's physical condition as a barometer for improving performance in training. The importance of an athlete's physical condition should be recognized by coaches and athletes alike, so that it can be detected early if the athlete experiences a disorder which will later hinder the athlete's achievement or performance in a competition. Apart from that, the test results in the form of athlete data can be used by coaches to direct or provide information to athletes about the athlete's physical condition, and can be used as a tool in designing the next training program.

The main weakness of a coach in Indonesia is that they do not always have records of children's growth and development, so data on anthropometry, health, physical abilities and mental development of athletes is not available. (Pasaribu & Yudhaprawira, 2020). It is said that a coach is good and professional if he has prepared athlete data (Ulfian, 2019). Thus, from the athlete's performance profile data that they have from an early age, coaches can use it as a reference to develop training programs that suit the athlete's needs. So coaches can easily predict the abilities and golden age of the athletes they coach.

This is possible because a coach has not properly monitored the physical condition of his athletes and there is no data on the athletes' physical conditions. In providing physical conditioning exercises, emphasis must be placed on developing the body regularly and carefully, taking into account the athlete's level. This process must be carried out patiently. Without serious physical preparation, an athlete will experience difficulties in achieving optimal performance during competitions.

Based on the Badminton World Federation (BWF) world ranking data update before the pandemic dated March 3 2020, it is known that Indonesia still ranks its athletes in the top 25 in all norms. The details are as follows: 1) Men's singles, there are 4 athletes; 2) Women's singles has 1 athlete; 3) Men's doubles there are 4 pairs; 4) Women's doubles there are 2 pairs; 5) Mixed doubles has 4 pairs (BWF, 2020). Even though the athletes are

ranked in the top 25, only the Men's doubles number is Indonesia's first seed. This shows the importance of improving various aspects to increase performance in athlete development. One aspect of performance development is the physical condition profile of badminton athletes which is developed from junior level or as early as possible.

Category	Man	Women
Very well	>27	>30
Good	17 − 27	21 − 30
Enough	6 − 16	11 − 20
Not Enough	0 − 5	1 − 10
Very less	<0	<0.9

Based on the gap in theoretical problems and conditions in the field regarding the importance of the physical condition of Indonesian junior badminton athletes, the research question asked is "What is the profile of the physical condition of Indonesian junior badminton athletes?".

METHODS

The research method used in this research is a descriptive method. The use of this descriptive method is to create a factual description or picture and measure the facts carried out in a research from which conclusions can then be drawn (Fraenkel, Wallen, & Hyun, 2020). This research describes the profile of the physical condition of Indonesian junior badminton athletes.

This research was conducted at the SGS PLN Club, Indonesia. Participants in this study were 40 badminton athletes consisting of 9 female athletes and 31 male athletes with an average age of 14-18 years. The reason for choosing junior athletes is because at that age athletes need to develop basic physical condition components in the form of strength, speed and endurance. To support athlete performance in badminton.

RESULT

The test instrument used is a standard test instrument and is in accordance with the criteria of the Indonesian Badminton Association (PBSI) to measure physical conditions, namely endurance, strength & conditioning, speed, flexibility and coordination. (PBSI, 2016).

1. Endurance

Endurance measurements are used to determine an athlete's vital lung capacity or Vo2Max. The instrument or test used is the beep test (PBSI, 2016).

Table 1. Norms for endurance score categories using the beep test

Category	Man	Women
Very well	>63.50	>54.50
Good	59.30 − 63.49	52.80 − 54.49
Enough	58.80 − 59.29	51.40 − 52.79
Not Enough	57.90 − 58.79	50.80 − 51.39
Very less	<57.89	<50.79

2. Strenght & Conditioning

Strength & conditioning measurements are used to determine an athlete's power (PBSI, 2016). The instrument or test used is the medicine ball throw.

Table 2. Norms for strength & conditioning score categories using medicine ball throws

Category	Man	Women
Very well	>8.8	>6.0
Good	7.6 − 8.7	4.5 − 5.9
Enough	5.6 − 7.5	3.5 − 4.4
Not Enough	4.6 − 5.5	3.0 − 3.4
Very less	<4.5	<2.9

3. Speed

Speed measurements are used to determine an athlete's speed (PBSI, 2016). The instrument or test used to measure speed is the 30 meters sprint test.

Table 3. Norms for speed score categories using the 30 meters sprint test

4. Flexibility

Flexibility measurements are used to determine the level of flexibility of an athlete's body (PBSI, 2016). The instrument or test used is the sit and reach.

Table 4. Norms for flexibility score categories using sit and reach

Category	Man	Women
Very well	<4.00	<4.50
Good	4.01 – 4.20	4.51 – 4.60
Enough	4.21 – 4.40	4.61 – 4.70
Not Enough	4.41 – 4.60	4.71 – 4.80
Very less	>4.61	>4.81

5. Coordination

Coordination measurements are used to determine the level of coordination of an athlete (PBSI, 2016). The instrument or test used is the hexagonal obstacle test.

Table 5. Score category norms for coordination results using the hexagonal obstacle test

Category	Man	Women
Very well	<11.2	<12.2
Good	13.3 − 11.3	15.3 − 12.3
Enough	15.5 − 13.4	18.5 − 15.4
Not Enough	17.8 − 15.6	21.8 − 18.6
Very less	>17.9	>21.9

Data collection techniques use tests and measurements. Before carrying out the test, the subject is expected not to be involved in activities that are too tiring, with the aim of obtaining maximum results during the test.

The instruments used in this research to measure physical conditions include endurance, strength & conditioning, speed, flexibility, and coordination. Before athletes carry out the test, athletes are required to warm up for 10 minutes. The data analysis technique used is descriptive statistical techniques. These statistics aim to collect data, present data, and determine values. Furthermore, interpretation can be carried out as a discussion of the problems raised by referring to the physical condition standards that have been standardized to obtain the physical condition status of badminton players.

FINDDING AND CONCLUSSION

1. Descriptive Statistical Data

Descriptive statistical results relating to the physical profile of badminton athletes are described based on gender, namely male and female athletes.

a. Male athlete

Descriptive statistical results relating to the physical profile of male badminton athletes (n=31) can be seen in table 6.

Table 6. Statistical Results Description of the Physical Profile of Male Athletes

Statistik Deskriptif	E	S&C	S	F	C
Mean	60.29	5.70	3.30	21.42	11.46
Median	64.00	5.50	3.33	23.00	11.13
Mode	68.25	5.10	3.38	30.00	10.30
Std. Deviation	14.94	1.44	0.35	7.07	1.197
Minimum	23.00	3.00	2.53	2.00	10.02
Maximum	82.00	9.00	4.20	30.00	15.16

Note: E = Endurance; S&C = Strength & Conditioning; S = Speed; F = Flexibility; C = Coordination

b. Female athlete

Descriptive statistical results relating to the physical profile of male badminton athletes (n=9) can be seen in table 7.

Table 7. Descriptive Statistics Results of Physical Profiles of Female Athletes

Statistik Deskriptif	E	S&C	S	F	C
Mean	54.86	4.78	3.71	14.22	13.49
Median	60.50	4.60	3.69	14.00	13.60
Mode	25.00	4.60	3.53	2.00	12.11
Std. Deviation	13.91	0.67	0.18	9.00	0.79

Minimum	25.00	3.80	3.53	2.00	12.11
Maximum	68.00	5.70	4.13	30.00	14.91

Note: E = Endurance; S&C = Strength & Conditioning; S = Speed; F = Flexibility; C = Coordination

2. Physical Profile of Junior Badminton Athlete

The Physical Profile of Junior Badminton Athlete includes endurance, strength & conditioning, speed, flexibility, and coordination.

2.1. Endurance

The endurance data results for junior badminton athletes are divided into two genders, namely men and women. Data for men (n=31) and women (n=9) were broken down into five categories, namely very good, good, fair, poor and very poor. Results can be seen in tables 8 and 9.

Table 8. Endurance results for male badminton athletes

Category	Skor	Frequency	%
Very well	>63.50	16	51.61
Good	59.30 – 63.49	3	9.68
Enough	58.80 – 59.29	0	0
Not Enough	57.90 – 58.79	0	0
Very less	<57.89	12	38.71
Total		31	100

Based on the endurance results (table 8) for male badminton athletes, it can be seen that the highest frequency was in the "very good" category with 16 athletes (51.61%). Then if you look at the average of 60.29, it is in the "good" category.

Table 9. Endurance results for female badminton athletes

Category	Skor	Frequency	%
Very well	>54.50	5	55.56
Good	52.80 – 54.49	0	0
Enough	51.40 – 52.79	1	11.11
Not Enough	50.80 – 51.39	0	0
Very less	<50.79	3	33.33
Total		9	100

Based on the endurance results (table 9) for female badminton athletes, it can be seen that the highest frequency was in the "very good" category with 5 athletes (55.56%). Then if you look at the average of 54.86, it is in the "good" category.

2.2. Strength & Conditioning

The results of the strength & conditioning data for junior badminton athletes are divided into two genders, namely men and women. The data for men (n=31) and women (n=9) was then broken down into five categories, namely very good, good, fair, poor and very poor. Results can be seen in tables 10 and 11.

Table 10. Strength & conditioning results for male badminton athletes

Category	Skor	Frequency	%
Very well	>8.8	2	6.45
Good	7.6 – 8.7	3	9.68
Enough	5.6 – 7.5	10	32.26
Not Enough	4.6 – 5.5	7	22.58
Very less	<4.5	9	29.03
Total		31	100

Based on the results of strength & conditioning (table 10) for male badminton athletes, it can be seen that the highest frequency was in the "sufficient" category with 10 athletes (32.26%). Then if you look at the average of 5.70, it is in the "sufficient" category.

Table 11. Strength & conditioning results for female badminton athletes

Category	Skor	Frequency	%
Very well	>6.00	0	0
Good	4.5 – 5.9	6	66.67
Enough	3.5 – 4.4	3	33.33
Not Enough	3.0 – 3.4	0	0
Very less	<2.9	0	0
Total		9	100

Based on the strength & conditioning results (table 11) for female badminton athletes, it can be seen that the highest frequency was in the "good" category, 6 athletes (66.67%). Then if you look at the average of 4.78, it is in the "good" category.

2.3. Speed

The results of the speed data for junior badminton athletes are divided into two genders, namely men and women. The data for men (n=31) and women (n=9) was then broken down into five categories, namely very good, good, fair, poor and very poor. Results can be seen in tables 12 and 13.

Table 12. Speed results for male badminton athletes

Category	Skor	Frequency	%
Very well	<4.00	29	93.55
Good	4.20 – 4.01	2	6.45
Enough	4.40 – 4.19	0	0
Not Enough	4.60 – 4.39	0	0
Very less	>4.61	0	0
Total		31	100

Based on the speed results (table 12) for male badminton athletes, it can be seen that the highest frequency was in the "very good" category with 29 athletes (93.55%). Then if you look at the average of 3.30, it is in the "very good" category.

Table 13. Speed results for female badminton athletes

Category	Skor	Frequency	%
Very well	<4.50	9	100
Good	4.60 – 4.51	0	0
Enough	4.70 – 4.61	0	0
Not Enough	4.80 – 4.71	0	0
Very less	>4.81	0	0
Total		9	100

Based on the speed results (table 13) for female badminton athletes, it can be seen that the highest frequency is in the "very good" category with 9 athletes (10.00%). Then if you look at the average of 3.71, it is in the "very good" category.

2.4. Flexibility

The flexibility data results for junior badminton athletes are divided into two genders, namely men and women. The data for men (n=31) and women (n=9) was then broken down into five categories, namely very good, good, fair, poor and very poor. Results can be seen in tables 14 and 15.

Table 14. Flexibility results for male badminton athletes

Category	Skor	Frequency	%
Very well	>27	8	25.81
Good	17 – 27	14	45.16
Enough	6 – 16	8	25.81
Not Enough	0 – 5	0	0
Very less	<0	1	3.22
Total		31	100

Based on the flexibility results (table 14) for male badminton athletes, it can be seen that the highest frequency was in the "good" category, 14 athletes (45.16%). Then if you look at the average of 21.42, it is in the "good" category.

Table 15. Flexibility results for female badminton athletes

Category	Skor	Frequency	%
Very well	>30	1	11.11
Good	21 – 30	1	11.11
Enough	11 – 20	5	55.56
Not Enough	1 – 10	2	22.22
Very less	<0.9	0	0
Total		9	100

Based on the flexibility results (table 15) for female badminton athletes, it can be seen that the highest frequency was in the "sufficient" category with 5 athletes (55.56%). Then if you look at the average of 14.22, it is in the "sufficient" category.

2.5. Coordination

The results of the coordination data for junior badminton athletes are divided into two genders, namely men and women. The data for men (n=31) and women (n=9) was then broken down into five categories, namely very good, good, fair, poor and very poor. Results can be seen in tables 16 and 17.

Table 16. Coordination results for male badminton athletes

Category	Skor	Frequency	%
Very well	<11.2	17	54.84
Good	13.3 – 11.3	12	38.72
Enough	15.5 – 13.4	1	3.22
Not Enough	17.8 – 15.6	1	3.22
Very less	>17.9	0	0
Total		31	100

Based on the coordination results (table 16) for male badminton athletes, it can be seen that the highest frequency was in the "very good" category, 17 athletes (54.84%). Then if you look at the average of 11.46, it is in the "good" category.

Table 15. Coordination results for female badminton athletes

Category	Skor	Frequency	%
Very well	<12.2	1	11.11
Good	15.3 – 12.3	8	88.89
Enough	18.5 – 15.4	0	0
Not Enough	21.8 – 18.6	0	0
Very less	>21.9	0	0
Total		9	100

Based on the coordination results (table 17) for female badminton athletes, it can be seen that the highest frequency is in the "good" category with 8 athletes (88.89%). Then if you look at the average of 13.49, it is in the "good" category.

DISCUSSION

One important aspect in achieving achievements in sports, especially badminton, is physical condition. Badminton as a very tough sport requires players to display speed, agility, flexibility, endurance and strength above the athlete's limits (Chen et al., 2015). Research was carried out on several components of physical condition, namely endurance, strength and conditioning, speed, flexibility and coordination (Manikandan). Athletes who have perfect physical condition, mental attitude, courage, intelligence, and technical skills and tactical efficiency will win the game (Gabana et al., 2019)

The development of physical conditions in the game of badminton needs to be improved or training methods developed in order to achieve encouraging achievements. The general similarities in physical conditions for sports that control skill and direct the power of large muscles are strength and speed. Nowadays, badminton matches require careful preparation. Players must be able to read their opponent's strengths, not only in the maturity of their shots but also where their weaknesses lie. A badminton player who wants to progress and maintain his achievements, apart from having to practice technique, must also train regularly physically.

Physical condition is an important requirement that a player must have in improving and developing optimal sporting performance, so that all component factors of physical condition must be developed and improved according to the needs of each sport. Badminton is a sport that requires overall endurance, in addition to showing characteristics as a physical activity that requires anaerobic ability, if you look at it from the aspect of executing one stroke at a time. However, the overall series of activities carried out in a game shows characteristics as a dominant anaerobic-aerobic branch. This characteristic is inferred from the nature of the sport of badminton based on physical condition requirements.

This research reveals the profile of the physical condition of Indonesian junior badminton athletes. The condition profile revealed is endurance, strength & conditioning, speed, flexibility, and coordination.

1. Endurance

Endurance is an important component in supporting the physical appearance of athletes, especially junior athletes. Endurance is a very important fitness component for badminton. Badminton players cover a lot of ground during a match with little rest. Aerobic fitness is not only important for play on the field, but athletes must be fit for long technical training sessions and to recover well between games during extended tournament play.

Previous research conducted on junior athletes at PPLP South Kalimantan stated that aerobic endurance was 37.12 ml/kg/minute for male athletes and 26.10 ml/kg/minute for female athletes. Miao and Wang reported (Abdullaev, 2020). that the average maximum oxygen volume values for male and female athletes in China who took part in the Thomas and All England Cups were 63.4 and 53.3 ml/kg/minute. Meanwhile, Riley et al., stated that the average maximum oxygen volume for badminton players in England was 68 ml/kg/minute. Endurance is related to the nutritional intake or dietary pattern provided. Nutritional status plays an important role in improving athlete performance, health, body composition, and maintaining athlete stamina (Guest et al., 2019)

A study conducted on endurance in athletes stated that energy and carbohydrate needs had not been met in some subjects (Anstiss et al., 2018). Energy, protein and fat intake is very important for body endurance. Insufficient energy intake causes athletes to quickly experience weakness and increases the risk of injury, adequate protein intake will help build and repair muscle, and insufficient fat intake can affect the quality of performance which is less than optimal (Papadopoulou, 2020) Apart from nutritional intake, one thing that can increase and maintain endurance is physical exercise.

2. Strength & Conditioning

Strength & conditioning involves increasing strength and stability, increasing mobility, and increasing power (Wong et al., 2019). Power is a combination of speed and strength; therefore, strength alone does not lead to improved performance. The athlete's program will include explosive power strength training, and plyometric training. strength & conditioning often takes a progressive approach (Wong et al., 2019). For example, a program would start with a high volume, low intensity regime and progress to a low volume, high intensity regime.

Strength is a component of a person's physical condition regarding his ability to use muscles to receive loads during work (Bompa & Buzzichelli, 2019). Arm strength in question is the ability of the arm muscles to contract optimally during an exercise. Players perform movements such as jumping forward, backward, to the side, hitting while jumping, taking sudden steps, all of these movements require strength with efficient movement qualities.

Resistance exercises should focus on areas that are actively involved in playing badminton, such as the wrists, elbows, shoulders, neck, chest, abdomen, back, thighs, knees and ankles. Badminton players need to have a variety of fitness abilities to be successful. Cardiovascular fitness, flexibility, agility, strength and power are desirable traits that can be developed with regular training. Strength training for badminton should be as specific as possible, and the athlete's program should reflect the demands of the athlete's sport while leaving sufficient time and energy for playing practice.

3. Speed

Speed is the ability to carry out similar movements in succession in the shortest possible time or the ability to cover a distance in the shortest time. (Bompa & Haff, 2019). Speed in badminton is very important, especially when making attacking shots (Wong et al., 2019). For example, a smash during a singles match, usually the speed of the player will be visible. With the ability to run quickly, it is hoped that

players will be able to make movements in a short time during the match. Players must move quickly to cover every corner of the court while reaching or hitting the shuttlecock. The way to move quickly is to train the speed of your legs or feet.

It cannot be denied that the sport of badminton requires speed and mobility of movement with agility which is usually used to cover the court, or to chase the shuttlecock in all directions. The movement is fast and followed by a change of direction, either to the front of the right side of the net, the front of the left side of the net, the right side, the left side, the back of the right side, and the left.

Movement around the badminton court is very short distances, so movement speed training must focus on reaction time, acceleration and agility (change of direction). There are exercises to increase foot speed, such as the quick foot ladder exercise. Training should also focus on strength and power development.

4. Flexibility

Flexibility is the ability to stretch within a high range of motion (Bompa & Haff, 2019). Apart from the range of motion of the joints, flexibility is also determined by the elasticity of the muscles and ligaments. Badminton also requires good flexibility. For example, this can be seen in taking a long ball which requires wide strides, so the player must be able to make a 'split' movement.

Badminton players use their flexibility to reach, dive and spin to cover all parts of the court (Wong et al., 2019). Flexibility is something that can be improved with regular stretching. Badminton players should stretch before each activity (practice and competition), plus other stretches, such as Proprioceptive Neuromuscular Facilitation (PNF) and active stretching, to increase the flexibility of certain muscle groups.

If flexibility impacts everything we do in our daily lives, athletes can imagine it being especially important in badminton. This not only affects actions such as the ability to stretch to reach the shot in a deep lunge, but also the ability to play overhead shots requires flexibility. The speed at which badminton players move and change direction (agility) implies that athletes need a high level of flexibility to cope with these movements as they place a lot of stress on the muscles and joints. More inflexible players will be susceptible to injury under this pressure.

Having a more flexible lower body also affects an athlete's footwork on the field. If the body is flexible, the athlete can take larger strides and therefore fewer strides on the field. This is good for the diagonal range of motion of the court.

Flexibility in the upper body is also important. Players manage to contort athletes' bodies into all sorts of shapes to play around head shots. It also contributes to a more powerful shot through efficient body rotation and arm action through the shoulder and elbow joints.

5. Coordination

In badminton “coordination” is mostly used to denote muscle interactions during movement. Good coordination is required to perform good techniques such as punches and footwork (Wong et al., 2019). Coordination is also a combination of time and place (Bompa & Haff, 2019) This kind of coordination ensures that the blow is applied precisely at the right time and in the right place. A technically well-coordinated shot must also be executed on the court in the right place at the right time to hit the shuttle.

Coordination is also the right positioning at the right moment on the field because of tactics. That will allow for tactically efficient movement to the shuttle or shot (Gabana et al., 2019) Actually, coordination is also important when placing the shuttlecock into the other half of the field. Good coordination is then the right shuttle flight to the right place. Coordination is

also needed between partners in a drama. Coordination then is the efficient positioning on the court of both partners and the hitting of the shuttle by one of the athletes. When coordination is regular, maintained through contact, it is clear to the athlete where the athlete is on the field and who can pick up the shuttlecock at that moment.

CONCLUSION

This research concludes the condition profile of Indonesian junior athletes as follows; 1) Endurance in male athletes, if seen from the average of 60.29, is in the "good" category, then female athletes, if seen from the average of 54.86, is in the "good" category; 2) Strength & conditioning for male athletes, if seen from the average of 5.70, is in the "fair" category, then for female athletes, if seen from the average of 4.78, then is in the "good" category; 3) Speed for male athletes, if seen from the average of 3.30, is in the "very good" category, then for female athletes, if seen from the average of 3.71, then is in the "very good" category; 4) Flexibility for male athletes, if seen from the average of 21.42, is in the "good" category, then for female athletes, if seen from the average of 14.22, then is in the "fair" category; 5) Coordination in male athletes, if seen from the average of 11.46, is in the "good" category, then for female athletes, if seen from the average of 13.49, then it is in the "good" category.

Suggestions for future research relate to the test instruments used. Strength & conditioning measurements are used to determine the strength, endurance, maximum strength and power of badminton athletes. The instruments or tests used can be more detailed, namely: 1) Strength endurance with sit up, push up and skipping rope tests; 2) Maximum strength with squad and bench press tests; 3) Power with vertical jump and medicine ball throw tests. Instruments or badminton speed tests can use the RAST test. Instruments or tests used for flexibility can use sit and reach and shoulder flexibility. The instrument or test used to measure coordination can use the agility court test with six points court.

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