



## Measurement of The Physiological Condition of Cricket National Athlete

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### Abstract

This study aims to determine the physiological condition of Cricket national athletes. The method used in this study is the quantitative descriptive method. The population in this study is national cricket athletes totaling 30 people consisting of 15 women and 15 men. The sampling technique with the total sampling technique is that all members of the population are sampled, which is as many as 30 people. This research was conducted at the Jakarta cricket field with measurements of the physiological condition of athletes. The results of the study on male athletes showed the average results of measuring the physical fitness component of flexibility with a V-sit and reach test of 33cm, balance of 28 seconds, speed of 20meter which is 3 seconds, agility with shuttle run 5x8 which is 11 seconds, MBT 4.8 meters; THJ 6 meters, 1 minute push up 52 times, 2-minute sit ups 76 times, 1-minute squat 57 times, core 12 level 11 and cardiopulmonary endurance with bleep test get VO2Max of 44 ml. kg/minute. The female athletes showed the average result of measuring the physical fitness component of flexibility with the V-sit and reach test of 31.1cm; balance of 19.4 seconds; the speed of 20 meters is 3.6 seconds; agility with a 5x8 shuttle run of 13.7 seconds; 0meter MBT (for female athletes do not take the MBT test); THJ is 4.9meter; 1-minute push up 31.7 times; 2-minute sit-ups 61.7 times; 1-minute squats 45.3 times; core 12 level 11 and cardiopulmonary endurance with bleep test get VO2Max of 41.3 ml. kg/minute. So it can be concluded that from the average test results of the draining of physiological conditions of cricket national athletes are included in the good category. If displayed in the average performance, male athletes have 87.59% performance and female athletes have 86.40% performance.

**Keywords:** *Physiological Condition, Measurement, National Athlete, Cricket Sport*

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## INTRODUCTION

Sport is very close to humans at any time because sport is one of the needs that must be met by every human being. Exercise has been found in all aspects of life (Juliandra & Yendrizal, 2018) Exercise will keep the body fit and not quickly experience a decline in performance (Haryanto & Welis, 2019). In human life that is said to be as modern as it is today, menus cannot be separated from sports activities both as health, education and also as a place for the formation of achievements. Community sports can also get achievements according to the sports they are involved in (Dayani & Yenes, 2020).

This is explained in (*Law of the Republic of Indonesia No. 3 of 2005. About the National Sports System, 2005*) Chapter II Article IV on the National Sports System as follows "National Sports aims to maintain and improve health, fitness, achievement, human quality, instill moral values of noble morals, spotifity, discipline, strengthen and foster national unity and unity, strengthen national resilience, and raise the dignity of the nation". People in the region and the city can develop and foster sports, the government also supports sports activities carried out to foster the spirit of the nation's children who have talent and interest in sports achievement (Setiawan et al., 2018). Based on the explanation above, it can be concluded that one of the goals of national sports is to increase achievements in the field of sports. The purpose of sports achievement is to be able to produce athletes who excel both at the regional level (PERKOTA, PORPROV, PORWIL) and the national level (PON, POPNAS, KEJURNAS).

*Cricket* is a game sport that has been known by the world community, especially in countries with historical backgrounds that adopt the culture and traditions of the British nation such as India, Pakistan, Australia, and so on. The basic essence of this sport is the spirit and harmony between healthy competition and solid and compact teamwork. This sport which is almost similar to caste has existed in Indonesia since the 1880s.

*Cricket* is a game sport consisting of three techniques, namely, batting, bowling, and fielding, these three techniques have their uses. And in the sport of cricket itself uses batts, helmets (head protection), stumps, bails, pads (leg protectors), glyphs (hand protection), and cricket balls. The goal of this sport is to score more runs (points) than the other team. The game of cricket can last up to five days and can last six hours or more each day, depending on the amount of over (displacement) of each match.

*Cricket* is the 2nd most popular sport in the world, cricket is also an important sport in England, Wales, Australia, Zealand, South Africa, Zimbabwe 2 and the Caribbean region whose population speaks English (called West Indies or West Indies) (James Tangkudung, 2007). Sport is very close to humans at any time because sport is one of the needs that must be met by every human being. Sport has been present in all aspects of life.

The sport of cricket which is growing in Indonesia very rapidly has made pretty good achievements. In addition, athletes with the potential to win are also produced. Such as athletes at the regional and national levels. These outstanding athletes need to improve their physical condition so that they perform better to support their achievements on the field. Physical conditions are usually closely related to a person's physiology or can be said to be the same. For this reason, it is necessary to measure the physiological condition of cricket national athletes so that they can be known to what extent their physiological condition is.

Physical exercise and sports activities are systematic activities over a long time, progressively and individually enhanced that lead to the characteristics of human physiological and psychological functioning to achieve predetermined goals. From this, it is revealed that the process of reaching the level of ability and peak achievement requires a long time and an uphill battle, in accordance with the guidance of the sports pursued to achieve a predetermined standard. Through practice a person prepares himself to achieve certain goals. In physiological terms, a person pursues the goal of improving the organism's systems and functions to optimize the level of physical freshness so as to positively impact his sports performance and performance. Physical exercise and sports activities can provide changes to all functions of body systems. Changes that occur during exercise are called responses, while changes that occur due to regular and programmed training according to training principles are called adaptations. The occurrence of changes in physiological ability improvement due to physical exercise, related to the use of energy by muscles, forms and methods and principles of exercise carried out. Physical exercise and sports activities can provide changes to all functions of body systems. Changes that occur during exercise are called responses, while changes that occur due to regular and programmed training according to training principles are called adaptations. The occurrence of changes in physiological abilities due to physical exercise, related to the use of energy by muscles, the form and method, and principles of exercise carried out.

In 2012 Cricket began to be introduced in West Sumatra marked by the decision of PCI (Indonesian Cricket Association) precisely at Padang State University with the establishment of a Cricket regional board in West Sumatra chaired by (Mardela et al., 2019). In 2019 Cricket began to be introduced at the official collegiate championship in Indonesia National Student Sports Week (POMNAS) held in Jakarta (Mardela et al., 2019). In the game of Cricket, the batter must get points with as many runs as possible and when on duty as a guard the team must kill the opponent by catching or stopping the ball. The physical condition of the player must remain excellent to stay focused and be able to catch the ball hit by the opponent so as not to pass or concede. Good coaching is done by doing programmed exercises. Relatively long exercises require relatively large amounts of energy. At the beginning of Exercise glucose use will be very high exercise energy (Lesmana & Broto, 2018). Glucose is also an important part of recovery because it aims to prepare athletes for the next exercise (Lesmana & Padli, 2019).

To achieve good sports achievements, in addition to regular, directed, and consistent coaching and training efforts, the coaching should also be directed to coaching physical condition as the most dominant factor for success in achieving peak athlete achievement (Sepriadi et al., 2019). The performance of playing cricket is also highly dependent on the

ability of physical condition (Darshan et al., 2014). Success in playing Cricket requires a wide range of physical abilities and techniques (Veness et al., 2017). To achieve the desired achievement, of course, it cannot be separated from the exercises carried out by athletes. A good exercise is programmed according to one's needs (Veness et al., 2017). Physical condition is a basic component that must be formed so that techniques and tactics are well realized (Putra, 2019). Based on the observations that the author made on West Sumatra Women's Cricket athletes, in matches or games held every Saturday from over 1 to over 10 the athlete's physique is still considered excellent but starting to enter over 11 until the end the athlete has begun to decline, even though there are still 10 more overs that will be continued when changing batsmen. The element of physical condition of speed plays a role in the game of Cricket when being a fielder (fielding) and batsman (batsman).

When being a guard, Cricket athletes tend not to be able to chase the ball hit by the opponent. The ball that is chased always escapes or concedes and leaves the field because it cannot be stopped the pace of the ball so that it is easy for the opponent to add points and when becoming a batter tends to be slow in running to the stamp so that the batter cannot get the maximum point and last a long time, even faster die (out). The element of aerobic endurance condition is a very influential factor in the sport of Cricket. Endurance is one of the biomotor components that are needed in physical activity, is one of the most important components in physical freshness (Spautra & Yenes, 2019). Someone who has a high VO<sub>2</sub>max is not only able to perform endurance activities well but more than that, they will be able to recover their physical condition more quickly than people who have low VO<sub>2</sub>max. So that the athlete's ability to do the next activity faster and able to last for a long amount of time (Busyairi & Ray, 2018). The element of physical condition of strength in the sport of Cricket is also very important for a pitcher and batter. Muscle strength determines throwing speed (Freeston et al., 2016). Power is beneficial for the sport of cricket (Kruger et al., 2009). Strength is defined as the ability to use force in the form of lifting or holding a load (Irawadi, 2011).

Training given to increase explosive power that depends on the speed and motor ability of athletes (Sabatini et al., 2019). The factors that affect explosive power are speed and power (Hermanzoni, 2020). Thus, the power of the limbs, an athlete will be able and able to improve his physical abilities which can directly support the mastery of techniques during match situations (Ariansyah et al., 2017).

## METHOD

The method used in this study is a quantitative descriptive method, which is a method that aims to make an image or descriptive about a situation objectively using numbers, starting from data collection, interpretation of the data and appearance and results (Arikunto, 2006). The research was conducted at the Jakarta cricket ground. The population in this study was 30 national cricket athletes consisting of 15 men and 15 women. Sampling technique with *total sampling technique* where all populations are sampled. The reason for taking the total sampling is because the population size is less than 100. So the sample in this study was as many as 30 people. Data collection techniques by measuring physiological conditions in national cricket athletes.

## RESULTS AND DISCUSSION

### Result

From the test and measurement results, the data can be described with a sample characteristics table and an average table of measurement results of the physical fitness component of cricket national athletes. The data can be seen in the table below:

**Table 1. Sample Characteristics of National Cricket Athletes**

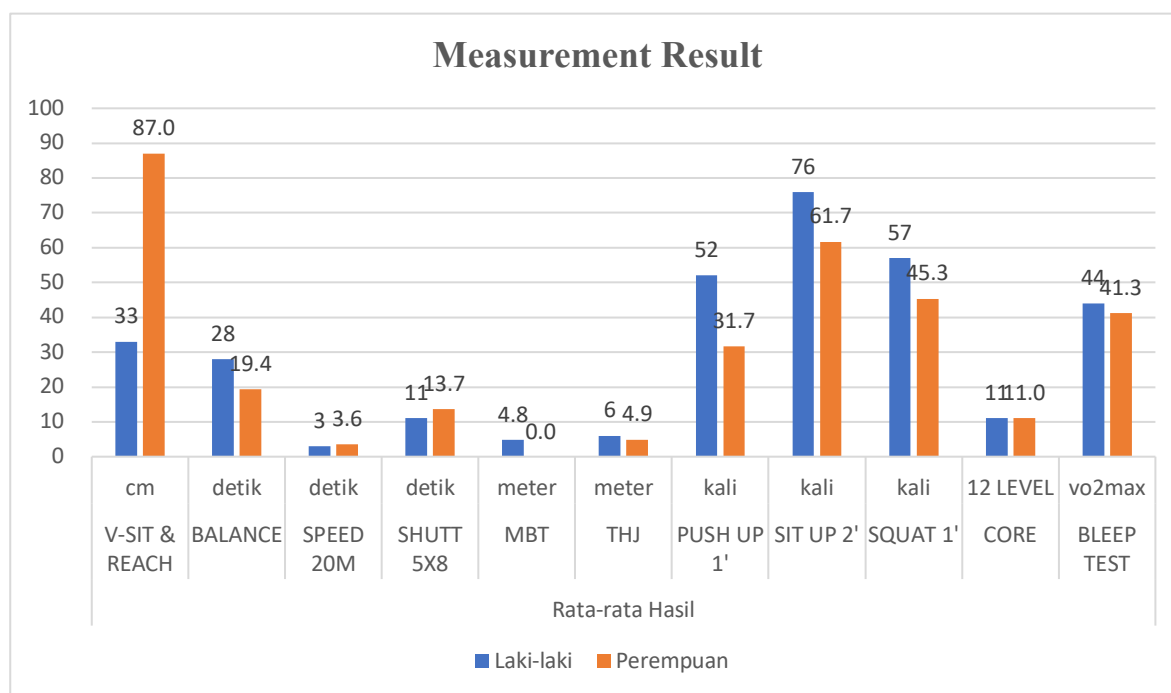
Gender	Qty	Age	IMT
Man	15	29.6	24.71
Woman	13	24.7	23.36

In table 1. above it is stated that the sample consists of 30 people consisting of 15 men or male athletes and 15 women or female athletes. with the average age of male athletes is 29.6 years and female athletes are 24.7 years. With a body mass index of male athletes of 24.71 kg / m<sup>2</sup> with normal categories and body mass index of female athletes of 23.36 kg / m<sup>2</sup> with normal categories.

**Table 2. Average Results of Physical Fitness Component Measurement of National Cricket Athletes**

Gender	Average Results										
	V-Sit & Reach	Balance	Speed 20m	Shutt 5x8	MBT	THJ	Push Up 1'	Sit Up 2'	Squat 1'	Core	Bleep Test
	Cm	Second	Second	Second	Meter	Meter	River	River	River	12 Levels	Vo2max
Man	33	28	3	11	4.8	6	52	76	57	11	44
Woman	87.0	19.4	3.6	13.7	0.0	4.9	31.7	61.7	45.3	11.0	41.3

Based on Table 2. above, the average of the result tests and measurements of physical fitness components for men's athletes, including V-sit and reach tests of 33cm, balance of 28 seconds, speed of 20 meters which is 3 seconds, agility with shuttle run 5x8 which is 11 seconds, MBT 4.8 meters; THJ 6 meters, 1 minute push up 52 times, 2 minutes sit up 76 times, 1-minute squat 57 times, core 12 level 11 and cardiopulmonary endurance with bleep test get  $VO_{2Max}$  of 44 ml.kg/minute. The female athletes showed the average result of measuring the physical fitness component of flexibility with the V-sit and reach test of 31.1cm; balance of 19.4 seconds; the speed of 20 meters is 3.6 seconds; agility with a 5x8 shuttle run of 13.7 seconds; 0meter MBT (for female athletes do not take the MBT test); THJ is 4.9meter; 1-minute push up 31.7 times; 2-minute sit-ups 61.7 times; 1-minute squats 45.3 times; core 12 level 11 and cardiopulmonary endurance with bleep test get  $VO_{2Max}$  of 41.3 ml.kg/minute. So, it can be concluded that from the average test results of the draining of physiological conditions of cricket national athletes are included in the good category. More details can be seen in the chart below:



**Figure 1. Bar Chart of Average Results of Physical Fitness Component Measurement of National Cricket Athletes**

Based on the diagram above, it can be seen the difference in the average result of measuring the physical fitness component in cricket national athletes. It can be clearly seen the

difference between men and women. However, there are some results that are not much different such as measuring balance, agility, 12-level core training and measuring maximum oxygen volume with bleep test.

## **Discussion**

From the results that have been obtained and have been sorted out, it provides a physical fitness profile for Indonesian national cricketers, which when compared with normative data, identifies that this group of national cricketers has several fitness parameters that are superior compared to other professional athletes. National cricketers have superior levels of physical fitness and strength, and conditioning coaches should work to improve these physical parameters and further identify position-specific physical requirements to advance the modern game.

This is in line with research conducted by (Johnstone & Ford, 2010) which says that The data provided the physical fitness profile for each player, which, compared with normative data, identified that this cohort of professional cricketers had some superior fitness parameters compared with the general population, and where applicable, were comparable with other professional athletes. In addition, after effect size calculations, the results showed that some physical fitness differences existed between playing positions. Cricket professionals possess a superior level of physical fitness and strength, and conditioning coaches should seek to progress these physical parameters and further identify position-specific physical requirements to progress the modern game.

Another study conducted on cricket athletes in West Sumatra with a sample of 20 people showed data that the results of all physical conditions of West Sumatra Women's Cricket athletes with an average of 49.27 were sufficient. The results of the aerobic endurance data level test with an average of 24 are categorized as Medium. The speed level test result with an average of 4.31 (seconds) is categorized as Less. The results of the eye-hand coordination test with an average of 20.36 (times) were categorized as Medium. The results of the limb muscle explosive level test with an average of 174 (cm) are categorized as good (Kurnia et al., 2020).

From some of the relevant studies above, it can be concluded that the physiological condition of national cricket athletes is indeed better than other professional cricketers. This is supported by existing measurement data and carried out with appropriate data retrieval procedures.

## CONCLUSION

Based on the results of research and data processing that has been carried out, it can be concluded when viewed from the average test results of draining the physiological condition of cricket national athletes are included in the good category. If displayed in the average performance, male athletes have 87.59% performance and female athletes have 86.40% performance.

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