

# Profile of the Physical Condition of North Sumatra Hockey Athletes in 2023

Syahputra Manik<sup>1</sup>, Ibrahim<sup>2</sup>

{[putramanik@unimed.ac.id](mailto:putramanik@unimed.ac.id)<sup>1</sup>, [ibrahimhoki@unimed.ac.id](mailto:ibrahimhoki@unimed.ac.id)<sup>2</sup>}

Department of Sport Coaching Education, Faculty of Sport Sciences, Medan State University<sup>1,2</sup>,  
North Sumatra, Indonesia

**Abstract.** The purpose of this study is to analyze the physical condition of the North Sumatra hockey team in preparation for PON XXI Aceh-North Sumatra in 2024. This type of study uses a quantitative, descriptive approach methodology. The endurance test results using the bleep test instrument were 5.66% medium category, 50% good category and 44.44% very good category. Using the shuttle run instrument, the agility results were as follows: 22.22% in the medium category, 44.44% in the good category, and 33.33% in the very good category. Using the grip strength test tool, 17 individuals, or 94.66%, scored well in the good category and 5.66% in the medium category. The sit and reach tool was used to test flexibility. The results showed that 22.22% of the medium category, 44.44% of the good category, and 33.33% of the very good category met the criteria. Using the vertical jump test apparatus, the leg muscle power results were 44.44% in the good category and 54.56% in the very good category.

**Keywords:** Profile, condition, physical, athlete, hockey, North Sumatra

## 1 Introduction

Sport is a physical activity where the purpose of exercising is to achieve the highest possible achievement for those both in individuals and teams. To get achievements in the field of sports involved, it is expected to get science and technology whose use is right. The achievement of achievements in sports is an effort made through coaching at an early age, both from the ability of techniques, tactics and strategies and through a scientific approach. Getting the highest achievement is needed in the name of effort and hard work whose training has been planned and measured in accordance with the sport undertaken.

Hockey is a team sport where it is played by two teams played on a rectangular court where each player holds a stick in order to play the ball. <sup>1</sup>The goal of this game is to score as many balls as possible into the opponent's goal and keep your own goal so as not to concede the ball though. Hockey games are basically attempting to control the ball, grab the ball and avoid opponents when the ball is in possession. When basic techniques are mastered, the ball will take longer in possession. That way the players will be easier to master the course of the match and score as many balls as possible into the opponent's goal. Learning the basic techniques in order to play the ball and be aware of the movement of the ball will be mastered by doing exercises in a planned, measured and continuous manner repeatedly.<sup>2</sup>

The sport of hockey has a greater chance of achieving achievements in the present. It can be seen that there have been many championships held in Indonesia, ranging from regional championships to national championships. It is very necessary to socialize hockey so that hockey is better known in the wider community in order to produce talented and competent young athletes to raise achievements in the sport of hockey. Hockey has also now been competed in the Sea games, Asian games and even the Olympics. Physical condition is the main thing needed in hockey because hockey has 4 rounds with each half 15 minutes and intervals. According to Konarski and Strzelczyk The average player travels about 10,000 m in one match, defenders travel as far as 9,300 m, midfielders cover 10,300 m and players who position as attackers cover 10,870 m. Meanwhile, the total distance traveled during the match for female hockey athletes in Indonesia is 3021.7 meters with 42:18 minutes of walking time and 27:42 minutes of running<sup>3</sup>.

Physical condition plays a very important role in the exercise program. Physical condition is the foundation or beginning in the formation of techniques, tactics, strategies and mental development of an athlete<sup>4</sup> (Bafirman & Wahyuri, 2018). Physical preparation or technique is always prepared before the competition begins, so that the physique and technique in athletes before the competition is average good. But when competing often the results in the match are not satisfactory.

Physical condition is a major factor for every athlete in achieving achievements. Physical condition is a prerequisite needed in improving athlete performance, it can even be said to be the basis or foundation to support athlete performance in order to bring out the maximum potential of

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<sup>1</sup> Ten, Helen and MP Haridas (2006). Series Dawn Popular Sports Dedication : Hockey. Kuala Lumpur: Publisher dawn devotion Sdn .Bhd,

<sup>2</sup> Mitchell- Taverner , Claire (2004). Field Hockey Techniques & Tacticsm

<sup>3</sup> Konarski, J., R. Strzelczyk. 2009. Characteristics Of Differences In Energy Expenditure And Heart Rate During Indoor And Outdoor Field hockey Matches. Journal Studies In Physical Culture And Tourism, 16(2), 185-189

<sup>4</sup> Bafirman dan Asep Sujana Wahyuri, 2018. Pembentukan Kondisi Fisik. Rajawali Pers, Depok. Hal. 3

an athlete.<sup>5</sup> Physical condition is the basis of the starting point of a sports achievement and one of the full efforts to improve the performance of an athlete (Sajoto, 2003)<sup>6</sup>. The components of physical condition that are indispensable in hockey are endurance, speed, agility, strength and power).

Speed is a bio motor component that is needed in every sport that is a race or game, for that speed is one of the elements trained in hockey for the achievement of sports achievements (Sukadiyanto and Muluk, 2011: 116)<sup>7</sup>. The game of hockey requires a good level of endurance because hockey is included in sports that have high intensity and are included in the weight category.

Muscle strength is an important element in hockey, especially for hockey athletes who need arm muscle strength to be able to move the stick and ball to get maximum results during the game. According to Sajoto (2003) muscle strength is a person's ability to perform maximum strength at high speed in a whole and coordinated movement.<sup>8</sup>

In every sport, good physical condition is certainly needed to support the movements carried out in hockey such as running, rolling the ball, passing the ball to friends, grabbing the ball, scoring goals and others. Just like other sports, hockey also has a special physical component needed in competing, some of the physical components needed are strength, speed, agility, endurance and power.<sup>9</sup>

## 2 Method

This research method uses quantitative research. The research method used is a descriptive research method. According to Sriundy, (2015) Description Provides research methods and results designed to study situations, or other problems in the form of research reports. Furthermore, Sriundy (2015) stated that this type of quantitative research can be interpreted as a research method used to select data collected by certain populations or research tools<sup>10</sup>. The population and

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<sup>5</sup> Afsharnezhad, T., Sefatian, A., & Burbur, A. 2011. The relationship among flexibility, aerobic fitness, leg extension power and agility with lower extremity injuries in footballers. *International Journal of Sports Science and Engineering*, 5(02), 105-111.

<sup>6</sup> Sajoto. 2003. *Peningkatan dan Pembinaan Kekuatan Kondisi Fisik Dalam Olah Raga*. Semarang : Dahara prize.

<sup>7</sup> Sukadiyanto & Muluk, D. 2011. *Pengantar teori dan metodologi melatih fisik*. Bandung: Lubuk Agung

<sup>8</sup> Sajoto. 2003. *Peningkatan dan Pembinaan Kekuatan Kondisi Fisik Dalam Olah Raga*. Semarang : Dahara prize.

<sup>9</sup> Kusnanik, N. W., Rahayu, Y. S., & Rattray, B. 2018. Physiological demands of playing field hockey game at sub elite players. In *IOP Conference Series: Materials Science and Engineering* (Vol. 288, No. 1, p. 012112). IOP Publishing.

<sup>10</sup> Sriundy, M. I. Made. 2015. *Metodologi Penelitian*. Universitas Negeri Surabaya.

sample of this study are a total of 18 male hockey players Long-Term Regional Training for PON XXI 2024 Aceh-Sumatra Preparation.

The place of research and sampling is at the hockey field of Medan State University. As for data collection techniques, namely through Tests and Measurements, including: 1. Endurance using Multi Fitness Test (MFT), 2. Agility using Shuttle Run, 3. Speed using the 20m Sprint test, 4. Grip Strength using grip Strength test, 5. Flex using the sit and reach test, and leg power used the vertical jump test. The test used in this study is an important part of the physical component of hockey conducted by KONI North Sumatra.

### **3 Results and Discussion**

The following conclusions can be drawn from the study and data analysis that has been done:

a. Endurance (Multi Fitness Test)

To determine the endurance of this study, an MFT test was used which aimed to determine the endurance of North Sumatran hockey players. From the test results of this study obtained) as many as 1 person or 5.66% medium category, 9 people or 50% good category and 8 people or 44.44% very good category.

Endurance is a very important physical condition in sports because endurance can support athletes' performance to be better in competing. In the endurance test, the North Sumatra hockey team using *bleep* tests had the highest score of 59.8 ml/kg/min and the lowest score of 49.9 ml/kg/min with an average of 54.00 ml/kg/min.

b. Speed (20 Meter Sprint)

A 20-meter sprint test was used in this study to gauge the running speed of North Sumatran hockey players. One person, or 5.56% of the less category, twelve people, or 66.67% of the good category, and five people, or 27.78% of the very good category, achieved the fastest results using a 20-meter sprint instrument.

c. Grip Strength

A grip strength test designed to evaluate the grip strength of North Sumatran hockey players was employed to ascertain the grip strength in this investigation. One individual placed in the medium category, seventeen persons, or 94.66%, in the good category, and one person, or 5.66%, in the medium category were the strength results obtained using the Grip Strength test apparatus

d. Sit and Reach

In order to assess the muscle flexibility of North Sumatran hockey players, a sit-and-reach test was employed in this investigation. Four persons, or 22.22% of the medium group, eight individuals, or 44.44% of the good category, and six people, or 33.33% of the very good category, were the findings of the flexure test using sit and reach instruments.

#### e. Power (Vertical Jump)

To determine the explosive power of the limbs in this study, a vertical jump test was used which aimed to determine the power of North Sumatra hockey players. The results of limb muscle explosive power using vertical jump test instruments were 8 people or 44.44% in the good category and 10 people in the very good category.

## 4 Conclusion

The conclusion of this research is that all components of the physical condition of the North Sumatra hockey team that were examined, namely endurance, strength, speed, flexibility and explosive power, are included in the good category.

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## References

- [1] Ten, Helen and MP Haridas. Series Dawn Popular Sports Dedication : Hockey. Kuala Lumpur: Publisher dawn devotion Sdn .Bhd, 2006
- [2] Mitchell- Taverner , Claire. Field Hockey Techniques & Tacticsm, 2004
- [3] Konarski, J., R. Strzelczyk. 2009. Characteristics Of Differences In Energy Expenditure And Heart Rate During Indoor And Outdoor Field hockey Matches. Journal Studies In Physical Culture And Tourism,
- [4] Bafirman dan Asep Sujana Wahyuri, 2018. Pembentukan Kondisi Fisik. Rajawali Pers, Depok.
- [5] Afsharnejhad, T., Sefatian, A., & Burbur, A. (2011). The relationship among flexibility, aerobic fitness, leg extension power and agility with lower extremity injuries in footballers. International Journal of Sports Science and Engineering, 5(02), 105-111.
- [6] Sajoto. 2003. Peningkatan dan Pembinaan Kekuatan Kondisi Fisik Dalam Olah Raga . Semarang : Dahara prize.
- [7] Sukadiyanto & Muluk, D. 2011. Pengantar teori dan metodologi melatih fisik. Bandung: Lubuk Agung
- [8] Kusnanik, N. W., Rahayu, Y. S., & Rattray, B. (2018). Physiological demands of playing field hockey game at sub elite players. In IOP Conference Series: Materials Science and Engineering (Vol. 288, No. 1, p. 012112). IOP Publishing.
- [9] Sriundy, M. I. Made.2015. Metodologi Penelitian. Universitas Negeri Surabaya.