

Physical Condition Analysis Report for NPCI West Kalimantan Province Athletes Rahmat Putra Perdana*

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Abstract

Objectives. The primary objective of this study is to assess the level of explosive power and leg strength among the athletes who have undergone training under the Indonesian National Paralympic Committee (NPCI) in the West Kalimantan Province. The research aims to provide an in-depth analysis of the physical abilities of these athletes, with a particular focus on their lower body strength and explosive power.

Materials and Methods. In this particular study, a total of 26 male and female athletes were selected, who were being coached by NPCI West Kalimantan. These selected individuals were then subjected to leg explosive power testing, while 27 of them underwent leg strength testing. To ensure the accuracy of the results, a quantitative descriptive research method was employed. The researchers utilized two different data collection techniques, including Standing Long Jump and Back and Leg Dynamometer tests, which allowed them to accurately measure and evaluate the physical abilities of the athletes.

Results. According to the findings of a recent study, the explosive leg strength ability of 26 male and female disabled athletes has been evaluated, and the results indicate that the average value of such ability is categorized as Poor. Similarly, the study also evaluated the leg strength ability of 27 male and female disabled athletes, and the average value of this ability was found to be in the Poor category as well. These results suggest that there is significant room for improvement in terms of developing leg strength among disabled athletes.

Conclusions. Sports organizations, coaches, and athletes can benefit significantly by knowing the explosive power and leg strength of an athlete. This information can serve as a valuable benchmark and evaluation material to assess an athlete's physical abilities and identify areas where they need improvement. Additionally, such knowledge can help in designing training programs that focus on specific areas of an athlete's body that require strengthening. This approach is especially valuable in the case of athletes with disabilities, as it can help them improve their sports performance and achieve their full potential. By incorporating data on explosive power and leg strength in their training plans, coaches and sports organizations can help athletes with disabilities enhance their skills, overcome limitations, and achieve their athletic goals.

Keywords: Analysis, Physical Condition, NPCI West Kalimantan

Introduction

Sports achievement coaching aims to develop athletes' potential through physical training, tactics, and techniques in sports. According to (Kardiyanto & Angga, 2020), sports coaches play a crucial role in developing the interests and talents of prospective athletes. Indonesia has a great opportunity to compete in sports competitions both nationally and internationally. Thus, sporting events must continue to be held to develop sports athletes and achieve high performance (Bangun, 2019).

Achieving a high performance in sports is the dream of every athlete, but it requires serious training. Good physical condition is essential for an athlete to win matches. Attaining sports achievements can be easier with good physical condition both in training and competing. According to (Kuswoyo & Dongoran, 2019) physical condition is the fundamental basis that supports sports achievements. Physical condition is the initial foundation that supports an athlete's development in technique, strategy, and mentality (Corbin, 2021). Physical condition refers to a person's ability to perform physical work, including strength, endurance, agility, balance, and speed of the body (CRISTEA-MIC et al., 2021). A coach plays an important role in improving the physical condition of each athlete, without which it is difficult for athletes to achieve their best performance

Every coach needs to have the ability to train athletes' leg strength to support their sporting achievements, especially in sports that require strong legs. Leg muscle strength is a crucial component that athletes must train, particularly in sports that require strong legs to achieve high performance (Razak et al., 2023). Roziandy and Budiwanto (2018) revealed that training leg muscles is important to support volleyball performance. Good leg abilities are necessary to maximize volleyball smashes (Julian et al., 2020). In soccer, leg muscle strength affects the ability to kick the ball (Apriantono et al., 2013) (Kuswoyo, 2017). In futsal, agility and leg strength impact speed, especially when performing dribbling techniques (Nurkadri & Kholil, 2021). Tetikay and Lolangluan (2020) found that there is a high correlation between leg power and shooting accuracy in futsal. Nazzala (2016) also stated that in the sport of futsal, leg power has a significant influence on coordination, shooting, and balance. In summary, developing leg strength is crucial to support sporting achievements in sports that require strong legs during training and competition.

Explosive power refers to the muscle's ability to overcome a load in a single movement (Rahail et al., 2022). This physical component is crucial in many sports, such as volleyball, karate, football, basketball, and athletics. In volleyball, the smash technique heavily relies on explosive power from the arm and leg muscles. The leg muscles' explosive power also plays a

significant role in blocking movements. Similarly, karate techniques require explosive power to execute each move correctly. In football, leg muscles' explosive power is essential for heading the ball. Explosive power also greatly influences basketball players' jump shots and athletes' performance in the 100-meter race. Research indicates that explosive power ability significantly affects the shooting skills of both male and female futsal athletes.

Sports are not limited to those with normal body conditions. In Indonesia, sports for people with disabilities have equal policy attention. Modern facilities have been created to support their activities in sports (Liao et al., 2023). Parents play an active role in educating their children with disabilities to support their achievements in sports. Fulfilling the rights of children with disabilities is included in the aspect of sports development for children with special needs. Coaching for people with disabilities requires measurable and regular planning and implementation. Special mentoring and coaching programs for athletes with disabilities help better development in disability sports (Pochstein et al., 2023). NPCI is useful for developing sports achievements for athletes with disabilities in Indonesia (Haris et al., 2020).

The physical condition of an athlete has a significant impact on their performance in almost every sport (Triansyah et al., 2023). According to research conducted by S. M. Pratama and Wiyaka in 2021, creating a talented athlete requires training to improve technique, psychology, and physical condition. An athlete's physical abilities and fitness directly affect their productivity and capabilities in sports (Hidayat et al., 2021). An athlete's physical condition is essential to support their fundamental technical skills and achievements (Ridhwan & Hariyanto, 2021). Based on the research findings mentioned above, it is crucial to understand that physical condition is a critical factor in developing sports achievements. When participating in sports competitions, every athlete aims to win a medal, and to do so, they must improve their quality.

Materials and Methods

Study Participants.

In this study, we will be sharing the findings of our data collection in the field, where we used a sample of NPCI Athletes from West Kalimantan Province. Research instruments are an essential element of any research project and cannot be overlooked (Awwaabiin, 2021). A research instrument is a tool that researchers use to measure different phenomena that occur during research (Sugiono, 2015).

Study Organization.

This study is a quantitative descriptive research that utilizes a survey method to measure the strength and explosive power of the legs of NPCI West Kalimantan athletes. The main

objective of this research is to determine the leg muscle strength and explosive power ability of NPCI West Kalimantan athletes. The research was conducted by a team of five individuals, each assigned with a different test, which were carried out over two days. A dress rehearsal was conducted on May 17, 2023, while data collection was carried out on May 18, 2023, by creating a circuit model for each test component to ensure efficient and effective data collection. The instrument used in this research is the Leg Dynamometer Test, which measures leg muscle strength, and the Standing Long Jump Test, which measures the explosive power ability of the legs.

Statistical Analysis.

The following report presents the findings of a research study that aimed to assess the strength and explosive power of the legs of NPCI Athletes in West Kalimantan. The results have been presented in a tabular format, showcasing key metrics such as Mean, Median, and Mode values. Additionally, the report provides a detailed explanation of the results obtained. The study also aimed to establish the norms and assessment categories, which were determined using the Normal Curve. The data collected through this research is expected to provide valuable insights and help in enhancing the overall performance of NPCI Athletes in West Kalimantan.

Results

The findings of the research conducted on Explosive Power and Leg Strength Analysis of NPCI West Kalimantan Athletes will be presented in the form of tables and graphs. These will demonstrate the results of the Explosive Limb Power test, which was conducted using the Standing Long Jump Test. Additionally, tables and graphs will be used to represent the results of Leg Strength Test, which was undertaken using the Leg and Back Dynamometer Test.

Table 1. Description of Mean, Median, Mode, Minimum, and Maximum Values

Categories	Mean	Median	Modus	Min	Max
Male's Explosive Power	2.05	2.15	2.2	1.23	2.6
Female's Explosive Power	1.6	1.5	1.5	1.3	2
Male's Leg Strength	66.88	66	80	40	111
Femele's Leg Strength	51	55	62	32	67

Table 1 presents data for Male's and Female's Explosive Power categories. The mean, median, mode, minimum and maximum values are given for each category. Men's Explosive

Power category has a mean value of 2.05, median 2.15, mode 2.2, min 1.23, and max 2.6. Women's Explosive Power category has a mean value of 1.6, median 1.5, mode 1.5, min 1.3, and max 2. Both categories have a Poor rating based on the norms. Table 1 presents data for Men's and Women's Leg Strength categories. The mean, median, mode, minimum and maximum values are given for each category. Men's Leg Strength category has a mean value of 66.88, median 66, mode 80, min 40, and max 111. Women's Leg Strength category has a mean value of 51, median 55, mode 62, min 32, and max 67. Both categories have a Poor rating based on the norms.

1. The results of West Kalimantan athlete's leg explosive power test by NPCI

Table 2. Male's Standing Long Jump Test results description.

Male's Norms & Results			
Categories	Value Range	Frequency	Percentage
Very good	> 3.19	0	0.00%
Good	2.81 - 3.18	0	0.00%
Medium	2.43 - 2.80	2	13.33%
Poor	2.05 - 2.41	7	46.67%
Very Poor	1.67 - 2.04	6	40.00%
Total		15	100.00%

According to the data presented in Table 2, a total of 15 male athletes were able to perform the Standing Long Jump Test. Out of these athletes, 6 were classified as having "Very Poor" explosive power ability, 7 were classified as "Poor," and 2 were classified as "Medium."

Table 3. Female's Standing Long Jump Test results description

Female's Norms & Results			
Categories	Value Range	Frequency	Percentage
Very good	> 2.26	0	0.00%
Good	2.04 - 2.25	0	0.00%
Medium	1.82 - 2.03	2	18.18%
Poor	1.6 - 1.81	4	36.36%
Very Poor	1.38 - 1.5	5	45.45%
Total		11	100.00%

Table 3 shows that 11 female athletes were able to perform the same test. Among these athletes, 5 were classified as having "Very Poor" explosive power ability, 4 were classified as "Poor," and 2 were classified as "Medium."

2. The results of the leg explosive power test for the West Kalimantan NPCI athlete

Table 4. Male's leg and back dynamometer test results description.

Male's Norms & Results			
Categories	Value Range	Frequency	Percentage
Very good	> 125.23	0	0.00%
Good	105.78 - 125.22	1	6.25%
Medium	86.33 - 105.77	1	6.25%
Poor	66.88 - 86.33	6	37.50%
Very Poor	47.43 - 66.87	8	50.00%
Total		16	100.00%

Table 4 displays data on the participation of 16 male athletes in the Leg and Back Dynamometer Test, which was used to measure the leg strength of the West Kalimantan NPCI athletes. The results indicate that 8 athletes have very poor explosive power, 6 athletes fall in the poor category, 1 athlete's performance is categorized as medium, and 1 athlete has been classified as good.

Table 5. Female's leg and back dynamometer test results description

Female's Norms & Results			
Categories	Value Range	Frequency	Percentage
Very good	> 87.33	0	0.00%
Good	75.22 - 87.32	0	0.00%
Medium	63.11 - 75.21	2	18.18%
Poor	51 - 63.10	4	36.36%
Very Poor	38.89 - 50	5	45.45%
Total		11	100.00%

According to the data presented in Table 5 of the women's test results, it is evident that a total of 11 female athletes were able to complete the test. The Leg and Back Dynamometer Test was used to assess the leg strength of West Kalimantan NPCI athletes, and the results indicate that 5 athletes had power abilities in the Very Poor category, 4 athletes in the Poor category, and 2 athletes in the Medium category.

Discussion

Good leg muscle explosive power is crucial for athletes whose sport requires it. Recent studies have shown that having good leg muscle explosive power can enhance an athlete's performance in competitions, increase motivation, self-confidence, balance, concentration, and achievement motivation. In many sports, having good explosive power is essential to master basic techniques. Moreover, it can minimize injuries. Developing an athlete's explosive power ability can improve knowledge about their physical condition. Good leg explosive power can support increased performance for normal and disabled athletes.

Leg strength is also important for an athlete's performance. Having good leg muscle strength can help athletes master basic techniques and increase concentration. It can also

improve an athlete's physical condition and training process. Leg muscle strength can improve reaction, smash accuracy in badminton, shooting in football, eye-foot coordination, speed, and agility of both normal and disabled athletes. Good leg muscle strength is necessary for every athlete whose sport requires leg muscle strength, whether they are normal athletes or athletes with disabilities.

Conclusions

After analyzing research results and conducting discussions, it can be concluded that NPCI West Kalimantan athletes have poor explosive power ability and leg strength. This was found in 26 male and female athletes with disabilities, whose results were adjusted to the norm. Similarly, the leg strength capabilities of 27 male and female NPCI West Kalimantan disabled athletes were adjusted to the norm with an average rating in the Poor category. However, it's worth noting that disabled athletes can still improve their physical abilities by doing measurable and regular exercise, despite their abnormal physical limitations.

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