



# Exploring the Impact of Dominant Physical Condition on the Playing Ability of Futsal Athletes from Jabal Ghafur University for the XVIII National Student Sports Week (Pomnas) in 2023

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## ABSTRACT

Dominant physical ability, basic techniques and skills are key factors that need to be mastered in the futsal game. Physical ability is highly decisive for technical, tactical, and mental development. This research aims to obtain an overview of the physical condition of futsal athlete club players of Jabal Ghafur University for National Student Sports Week (POMNAS) XVIII in 2023, in terms of leg muscle strength, running speed, and flexibility. The population in this study included all POMNAS XVIII futsal athlete club players of Jabal Ghafur University in 2023. Meanwhile, the samples involved 20 students of Jabal Ghafur University, which are all members of the Futsal Athlete Club for POMNAS XVIII, chosen by the total sampling technique. Data was collected by measuring the dominant physical components of the student players by conducting squat, leg-dynamometer, vertical jump, 50-meter sprint, and sit and reach test. The results showed endurance of 34.10, average strength of 195.12, explosive power of 42.95, speed element of 7.27 and flexibility of 15.85. These results have answered the question on the level of leg muscle strength, running speed, and flexibility of futsal athletes for the POMNAS XVIII.

**Keywords:** *Physical condition, athletes, and student sports week.*

## 1. INTRODUCTION

Futsal, a term in Spanish, consists of the words *futbol* which means football and *sala* which means indoors; thus, futsal is a football match taking place indoors. Futsal is a type of game played more simply compared to football in various aspects [1]. Basically, futsal was first played by British; however, as time goes by, it was developed and accepted by wider communities. Futsal is played by two teams in a field and each team consists of five players. The futsal matches are guided by the referee and line judges. The normal time for a futsal match is 2 x 10 minutes. Nowadays, in Indonesia, futsal is a highly popular sport compared to others [2].

Futsal is a game with high speed, played in a short time, and on a relatively narrow field. The match is

carried out at a highly short tempo, where all players must always engage with various skills including attacking tactics and defensive tactics. As such, it is required that athletes' endurance abilities must be trained perfectly [3]. Therefore, the motor skills of a futsal athlete are strongly needed to apply good playing technique in a match, both in levels and controlling futsal playing techniques without partners. With high physical abilities, a player can perfectly enter the ball into the goal. In the futsal match, an athlete's physical condition must be ascertained before playing futsal. Body weight can be a benchmark in determining a player's physical condition [4].

There are several benchmarks related to physical condition so that athletes can perfectly master game movement techniques. In the futsal game, physical

condition is highly important and determine the quality of the players in a match. It is clearly visible when applying game techniques, athletes with good physical education and motor skills will support and ease them to master various movements they have learned during training. [5].

Nowadays, the futsal matches tend to be fast-paced, and the smaller number of participants circle the field more often. Besides, in the futsal game, athletes need to learn a more thorough way of playing regarding various basic game techniques, for example, passing, control, dribbling, and shooting. Futsal athletes need ball movement training, like an attacking technique and highly quick survival patterns, conducting player rotation without calculation or good timing. Futsal game currently have more complete regulations, gameplay and competition. Therefore, basic techniques in playing futsal are highly prominent. According to Dendy Sugono, futsal is one of a sport branch with a relatively small goal and five players [6].

Athletes who carry out training activities with careful training rules will be able to master the basic methods or patterns of playing futsal. However, there are also players who have a natural talent for handling the ball. If this basic talent is formed and developed in such a way, then when athletes learn the basics of playing futsal, they will be able to easily accept the various theories presented by the coaches and apply them in matches [7].

Every futsal athlete should master the basic techniques of perfect futsal playing, namely: passing, dribbling, control, shooting, and chipping. To do this, athletes need strength, endurance, acceleration, and fast and agile footwork. Physical development must prioritize skills and technique training, especially speed, endurance and strength [3]. Physical strength is a key factor in the training process to achieve high performance.

Physical development is the main program for athletes to develop superior performance in every sport. According to Sajoto, "Fitness is one of the prerequisites needed in every effort to improve an athlete's performance, and is even considered a basic starting point to achieve sport achievements" [7].

Knowledge about how to play futsal keeps increasing. Many brilliant ideas emerged related to futsal tactics or strategies. The model of futsal playing patterns is starting to follow the current futsal game model; the basic techniques for playing futsal are more creative, which is highly different from the previous futsal which only used basic strategic models. Currently, futsal matches are a bit dynamic because they have short movements in a narrow field with a smaller number of players. Thus, there are many challenges that must be resolved well.

Furthermore, in the futsal games, athletes also need to learn how to play more carefully, especially regarding basic technical abilities such as passing techniques, control techniques, dribbling techniques and shooting techniques. Futsal athletes learn movement with the ball, attacking techniques and defensive tactics in a short time, as well as rotating players without calculation or precise timing. Futsal is becoming increasingly complex in terms of rules, gameplay and competition. Therefore, basic techniques in playing futsal are highly necessary. Every futsal athlete must also be able to master the basic futsal movements perfectly and have good intelligence. All of this will be useful for athletes to quickly take necessary action during the match[1].

## 2. METHOD

The current research is descriptive research which aims to explore and describe a condition. This research constitutes quantitative descriptive research which involves describing, studying, and stating what has been observed and inferring the symptoms observed using numbers [8].

In this study, the researchers studied merely physical condition of players or athletes from the Jabal Ghafur University Futsal Club participating in National Student Sports Week (POMNAS) XVIII in 2023. Population were all athletes in the Jabal Ghafur University Futsal Club, which were 20 players. Since this study took all population as the samples, the total sampling technique was used. Data was collected by measuring the dominant physical components of futsal players from the Jabal Ghafur University Futsal Club participating in POMNAS XVIII in 2023. Prior to that, all research subjects were given an explanation about the test procedure to gain objective and accurate results. The procedures for measuring the physical abilities of futsal players are given below.

### 2.1. Leg Muscle Endurance Test

To determine the value of leg muscle endurance, measurements are carried out using squat-jump. The implementation is given as follows:

- a. The test starts from a squatting position, namely with the heel of one foot touching the buttocks and the other foot in front.
- b. Both hands are intertwined at the back of the head, and eyes are looking straight ahead.
- c. Participants perform a jumping movement upwards as high as their height and when they land, the foot position has changed, namely the initial foot position before jumping, the left foot is behind, now the left foot is in front, and vice versa. The position is still in a half squat position.
- d. This is done repeatedly, always alternating positions when landing

until the participant is no longer able to carry out the movement correctly.

- e. Score is counted based on the number of participants' ability to perform squat jumps well and correctly.

## 2.2 Leg Muscle Strength Test

To measure leg muscles, the test tool used is a Leg-dynamometer. The implementation is described below:

- a. Participants stand on a leg-dynamometer, both feet parallel and back flat and looking straight ahead.
- b. Both arms straight, hands facing the body holding both ends of the leg-dynamometer stick.
- c. The two legs standing on the base of the leg-dynamometer are bent according to the measurement angle until they form an angle of 15 degrees, and the chain on the stick is connected to the leg-dynamometer.
- d. Then, the participant pulls the leg-dynamometer chain by trying to straighten both knees, and the leg-dynamometer automatically works until it shows the score of the leg muscle strength test.

## 2.3 Calf Muscle Strength Test

To assess the explosive power of the leg muscles, vertical jump test equipment was used. The technique is depicted as follows:

- a. Upright Jump Board (LT) hangs on the wall at the height desired. Chairs or tables are placed on next to the supervisor.
- b. Stand sideways, right or left foot together to the wall.
- c. Left/right hand is raised as high as possible and put in on the vertical wall (LT). This high value represents peak achievement.
- d. Then, the participants perform and get ready to jump.
- e. After that, the participants jump high by swinging both arms and fingers right/left hand touches the LT board. This execution was carried out twice in a row.
- f. The supervisor records the jump height and uses chalk to remove the mark.
- g. The end result of the two selected jumps is the explosive power calculated as the difference between the height of the highest jump minus the height achieved (in cm). If one reaches with hand right, so leap must be done with the right hand and vice versa.

## 2.4 Speed Test

Speed measurements are carried out using a 50 meter (65 yard) sprint speed test. The instructions are given below:

- a. Participants stand behind the line with squat as the initial position.
- b. When signal "Yes" is given, the examiner tries to run as fast as possible until he arrives at finish line. Every examiner can conduct the test twice, the best time trip of two attempts.

## 2.5 Flexibility Test

Flexibility can be measured using Sit and Reach. The implementation instructions are listed as follows:

- a. Participants sit on the floor, legs apart wide, foot naked leaning on the box.
- b. After that, body bent with both hands stretched straight to the bar and hold this position for three seconds; player have two chances. Evaluation: Score is the furthest of the two attempts recorded as points (in cm). (9)

## 3. DATA ANALYSIS

Data were analyzed using the following formula.

**Average test (mean)**

$$M = \frac{\sum X}{N}$$

Where, X = The average

N = Number of samples

**Percentage test**

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

Where, P = Percentage

f = Frequency

N = Number of Samples (10)

## 4. RESULT AND DISCUSSION

Level of Dominant Physical Condition of Jabal Ghafur University Futsal Club Athletes for POMNAS XVIII 2023 in each category is illustrated in Table 1.

**Table 1.** Short cut keys for the template

No	Endurance (Squat Jump)	KT	Strength (Leg- dynamometer)	KT	Explosive Power (Vertical Jump)	KT	Speed (Run 50m)	KT
1	36.00	C	95.50	K	40.00	C	7.38	B
2	32.00	C	226.00	B	41.00	C	8.00	BS
3	40.00	C	261.00	B	52.00	C	7.13	B
4	25.00	C	107.50	K	40.00	K	7.72	B
5	37.00	C	253.00	B	38.00	K	6.93	B
6	30.00	C	156.00	B	36.00	K	6.88	BS
7	61.00	C	154.00	B	61.00	B	6.68	BS
8	41.00	C	271.50	B	45.00	K	6.85	B
9	35.00	C	196.50	C	42.00	K	6.66	B
10	26.00	C	226.00	B	35.00	K	7.37	BS
11	28.00	C	146.50	C	40.00	K	7.15	B
12	26.00	C	182.50	C	40.00	K	6.88	C
13	34.00	C	165.50	C	43.00	K	7.36	C
14	30.00	C	131.50	C	38.00	K	7.46	C
15	30.00	C	285.50	BS	35.00	K	7.86	BS
16	30.00	C	192.00	C	50.00	C	7.42	B
17	30.00	C	251.50	B	37.00	K	7.13	B
18	30.00	C	21.00	C	58.00	B	8.35	B
19	37.00	C	247.00	B	53.00	B	6.78	S
20	34.00	C	145.00	K	35.00	K	7.41	B

Based on the research results, the level of the main physical components in futsal athletes, namely endurance, strength, explosive power, speed and flexibility, among futsal players from the Jabal Ghafur University Futsal Athletes Club for POMNAS XVIII in 2023 is described below:

- a) Endurance. The Jabal Ghafur University Futsal Athlete Club players for POMNAS XVIII are considered in the sufficient category with an average score of 34.10 times or 100% have sufficient physical endurance (20 players).
- b) Strength. The players reached the sufficient category with an average value of 195.12 kg. The level of strength with the very good category is 5% (1 player), the very good category is 45% (9 players), the fair condition is 35% (7 players) and the poor category is 15% (3 players).
- c) Explosive power. The players are considered in the low category with a value of 42.95 cm. The level of explosive power in the good category is 15% (3 people), the sufficient category is 20% (4 people) and the sufficient category is 20% (4 people) and the poor category is 65% (13 people).
- d) Speed. The players are considered in the fair category with an average score of 7.27 seconds. Three players obtain good category (15%), 15 players reach fair category (75%), and two players are in poor category (10%).
- e) Flexibility. The players are in the good category with an average score of 15.85 cm. The perfect category is 5% (1 player), the very good category is 25% (5 players), and the fair category is 15% (3 players).

Futsal is the most popular game and loved by all people in villages, regions, nationally and internationally. This sport branch is classified as a tough sport in terms of energy as the players have to keep moving for 20 minutes to try to score the opponent's goal.

This research was carried out to prove several theories that have been presented by sports scientists. Apart from that, it is expected that this research can provide various meaningful contributions to improve sports science and to develop levels of achievement in futsal games. Ideally, a futsal player has endurance, speed, strength and explosive power in leg muscles and good body flexibility, where these elements are part of the components of a person's physical abilities. The explosive power of the leg muscles also plays a role in increasing the ability to head the ball far because heading the ball requires jumping as high as possible to reach the ball. Good jumping power gives the body the ability to freely flex the body upwards before heading the ball.

Highly flexible body is important when kicking the ball. It is better that bend the body backwards to the

furthest point before strongly shaking the body and head to hit the ball as far as possible. The higher a person's level of flexibility, the better the results they will achieve when making defensive headers. It turns out that this research has proven that endurance of muscle limbs, speed and explosive power, as well as body flexibility contribute to playing ability and improving certain skills.

## 5. CONCLUSION

Based on the research results, we conclude that:

1. Index fitness of futsal club players for POMNAS XVIII includes explosiveness of 42.95, speed factor of 7.27, and flexibility of 15.85.
2. The fitness level of Jabal Ghafur futsal club players for POMNAS XVIII are considered sufficient.

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