

**Measurement Of Athletic Physical Tests Of Shot Put Numbers On Junior High School 2 Indralaya Utara Students Using Outdoor Laboratories At The Education Park****Maryani¹✉, Hartati²✉, Ahmad Richard Victorian³**Physical and Health Education, Faculty of Teacher Training and Education, Sriwijaya University, Indralaya 30662. Ogan Ilir, South Sumatra, Indonesia¹²³**Article History**

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Abstract

The research entitled the measurement of athletic physical tests of shot put numbers on students of Junior High School 2 Indralaya Utara using outdoor laboratories in educational parks. Sports are very important in our lives, therefore it is very necessary to do physical tests in improving physical fitness. Measurement of physical tests is the process of collecting data from the measurement process. The purpose of this study is to determine the physical level. This research is a quantitative study with the design of research subjects of Junior High School 2 Indralaya Utara students with a total of 30 students consisting of 20 boys and 10 girls. Data collection using tests, with the instruments used as follows: endurance test using bleep test, speed test using 40 meter run, arm muscle strength using push up test, abdominal muscle strength using 30 second sit up test, leg muscle explosiveness using vertical jump test. The research was conducted in the outdoor laboratory of the education park. For data analysis techniques using descriptive analysis, which is expressed in percentage form. The results of the five tests were obtained in the sufficient category and there were 3 players (10%) in the excellent category, 5 players (20%) in the good category, 12 players (37%) in the sufficient category, 9 players (30%) in the less category, 1 player (3%) in the very poor category. It can be concluded that the physical test of athletics in the shot put number of Junior High School 2 Indralaya Utara is in the sufficient category. After this research is carried out, it is hoped that awareness for coaches and students can increase and maintain physical activity so that they have good physical quality.

How to Cite

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INTRODUCTION

Sports are very important in our lives, especially in times like today where we are not fully given the freedom to gather, therefore in times like today it is very necessary to do physical tests, by doing a good physical test it will be very beneficial for our lives, according to (Maizan, 2020), Bullet shot athletes need good physical conditions, components of physical conditions such as: Explosive power (power), speed (speed), strength (strength), endurance (endurance), flexibility (flexibility), agility (agility), and coordination (coordination) ”.

Athletics is a physical activity that is competitive in nature and has several separate competition numbers based on basic human movement abilities such as walking, running, jumping and throwing.

Flexibility is one of the physical components that everyone has to realize movements that are flexible, smooth and not rigid, so this element of physical condition is developed into a movement ability that supports the mastery of sports skills (Ambarwati, Widiastuti, & Pradiyana, 2017).

Throwing bullets is a throwing number in athletics which is implemented by rejecting a round tool made of metal, copper or brass which has a certain weight that must be rejected from the shoulder to reach the furthest distance. The purpose of the throwing number is to measure the maximum throwing distance of the bullet repulsion itself ”.(Dikdik Zafar Sidik. 2017: 89)

The shot put is a round object that has a different weight for each category, namely in the junior women’s category 3 kg, while for senior women 4 kg. Meanwhile, the junior men’s category weighs 5 kg and the senior category 7.25 kg (Sari, 2017). Leg muscle explosiveness and arm muscle explosiveness contribute to the sport of shot put and arm muscle explosiveness is one of the important physical components in the sport of shot put (Mardius, Astuti, & Kibadra, 2019).

Based on the observations of researchers conducted at Junior High School 2 Indralaya, there are problems, namely most of the students who are less fond of athletic sports, especially the shot put number so that in terms of physical condition it can still be said to be not good. During this time, the PE teacher at school focuses on theories such as techniques, prefixes, repulsion, and the length of the throw during training so that the bullet shot sport at Junior High School 2 Indralaya is less developed. The form of bullet shot practice. If it does not receive special attention, the physical tests of students who are fond of this

bullet shot sport become low and later become not good health and physical tests of students in the athletic sport of bullet shot numbers.

Based on research conducted by Ilma Research, Brilian shows that the level of physical activity of extracurricular soccer participants at MTs Hasyim Asy’ari Piyungan is in the ”very poor” category with a percentage of 0% (0 students), the ”poor” category has a percentage of 0% (0 students), the ”moderate” category has a percentage of 65% (13 students), the ”good” category has a percentage of 35% (7 students), and the ”excellent” category has a percentage of 0% (0 students).

The formulation of research problems based on the background, problem identification and problem boundaries, the problem formulations in this study are: ”How good is the physical test of athletic sports of shot put numbers on students of Junior High School 2 Indralaya Utara using outdoor laboratories in educational parks”. ”How is the measurement of the physical test of athletic sports of shot put numbers on students of Junior High School 2 Indralaya Utara using outdoor laboratories in educational parks?”.

Hypotheses are conjectures or temporary answers to the formulation of research problems. The hypothesis in this study is as follows:

Ha: Identified athletic physical tests of shot put numbers of students of Junior High School 2 Indralaya Utara who use outdoor laboratories in educational parks.

METHODS

This type of research is descriptive quantitative. According to (Nurmalasari & Erdiantoro, 2020) Descriptive research is research that aims to explain, and describe current problems, and serves to solve problems that arise regularly, coherently, and factually based on accurate data. The purpose of descriptive research is to solve problems systematically and factually regarding the facts and properties of the population. This study aims to determine how good the physical level of athletic students in the shot put number of Junior High School 2 Indralaya Utara.

According to (Sugiyono, 2014) a research instrument is a tool used to measure the value of the variables under study. The instruments used in this study are tests and measurements. Tests are tools that are measured to measure skills, knowledge, intelligence, abilities that individuals have.

The instruments/measuring tools in this study are: 40 meter running speed, Bleep Endurance test, 30 second abdominal muscle strength

sit up test, vertical jump test leg muscle explosiveness and 30 second push up arm muscle strength.

40 meter running speed

Purpose: to measure the speed of bullet throwing athletics athletes.

Equipment: running track, whistle, stop watch, chest number.

Implementation

- a. the testee is ready to stand behind the starting line;
- b. with the signal "ready" the testee is ready to run with a standing start;
- c. with the signal "yes" the testee runs as fast as possible by covering a distance of 40 meters until crossing the finish line;
- d. running speed is calculated from the "yes" signal;
- e. time recording is carried out up to one tenth of a second (0.1 seconds), if possible recorded up to one hundredth of a second (0.01 seconds);
- f. the testee is carried out twice, the runner performs the next test after an interval of at least one runner. The best running speed is counted;
- g. the testee is declared a failure if he passes or crosses another track.

Assessment: record the results of the sprint run according to the time taken.

Table 1. 50 Meter Run Test Norms

Norms	Male
Very Good	≥ 4.4
Good	4.6 - 4.5
Fair	4.8 - 4.7
Less	5.0 - 4.9
Very poor	< 5.0

Bleep Endurance test

Purpose: to measure the athlete's endurance

Tools: Flat track, Meter, Cassette and tape recorder,

Cone, Stopwatch; Officer: Distance measurer, starting officer, track supervisor, scorekeeper;

Implementation:

- a. bleep test is done by running a distance of 20 m back and forth,
- b. which starts with a slow run gradually which gets faster and faster until the athlete is unable to keep up with the rhythm of running time,
- c. means his maximum ability at the alternating level.

Assessment: Record the results of running back and forth taken by students.

Table 2. Bleep Test Norms

Kategori (Male)	Age (year)					
	10-14	15-19	20-29	30-39	40-49	50-59
Very Good	≥ 52	≥ 48	≥ 43	≥ 36	≥ 31	≥ 26
Good	46-51	42-47	37-42	31-35	26-30	22-25
Fair	41-45	38-41	33-36	27-30	22-25	18-21
less	35-40	33-47	29-32	22-26	17-21	13-17
Less poor	≤ 36	≤ 32	≤ 28	≤ 25	≤ 16	≤ 12

30 second sit up test abdominal muscle strength

Purpose: to measure the abdominal muscle strength of an athlete

Equipment: A flat floor can use a mat or carpet and two stopwatches, a partner to hold the feet and count.

Implementation:

- a. Lie down with knees bent, feet flat on the floor and hands folded across the chest.
- b. Start sit ups with your back on the floor.
- c. Raise yourself to a 90-degree position and return to the floor.
- d. Your feet can be held by your partner.

Assessment: Record the number of sit-ups done for 60 seconds.

Table 3. 30-Second Sit-Up Test Norms

Norms	Male
Very Good	20 - on top
Good	18 - 19
Fair	13 - 14
Less	14- 15
Very poor	downward - 13

Vertical jump test leg muscle explosiveness

Objective: To measure leg explosive power (power)

Equipment: Scale board, scale board eraser, chalk powder.

Implementation:

- a. The board is hung on the wall as high as the testee's reach.
- b. The testee is ready to stand under the scale board and the hand reaches as high as possible upwards and is attached to the scale board.
- c. Jumping does not use a prefix
- d. Previously the testee's hand was sprinkled with chalk powder, the testee was ready

to stand under the scale board and the hand reached as high as possible up and attached to the scale board,.

- e. so that the former hand that was given chalk powder was read on the scale on the scale board (point A), after which the testee took the board hung on the wall as high as the testee's reach,

Assessment: Value see on the tool. The best value is taken.

Table 4. Vertical Jump Test Norms

Norms Usia	Male				
	12	13	14	15	16
Very Good	≥55"	≥55"	≥55"	≥60"	≥60"
Good	48"	48"	48"	57"	57"
Fair	41"	41"	41"	47"	47"
Less	34"	34"	34"	40"	40"
Less Poor	34>	34>	34>	40>	40>

30 second push up arm muscle strength

Purpose: to measure the strength of the athlete's arm muscles

Tools: carpet or flat floor, stop watch

Implementation:

- a. Participants lie on the carpet, after there are instructions the participants are welcome to adjust the most comfortable position when carrying out push ups
- b. take the distance in the hand position, place it on the floor with a wider distance. In this case, make sure the position of the thumb on the floor is straight with the chest. Position the fingers of the hand facing up and wide.
- c. The movement is counted if the participant at the time of lifting the body must pass through the bar and at the time of going down the arms must be straight.

Assessment: Record the number of push up movements for 60 seconds

Table 5. 30 Second Push-up Test Norms

Norms	Male
Very Good	20 - on top
Good	18 - 19
Fair	13 - 14
Less	14- 15
Very poor	downward - 13

The analysis technique used by researchers in this study is the T (test) test, which includes the data normality test, and the distribution distribution test. Normality test is a procedure used to

determine whether the distribution of data in a data group or variable is regularly distributed or not. The decision makes the process. Residual values are regularly distributed if the Significance value is > 0.05. 32 b. The residual value is not normally distributed if the significance level is 0.05. The data for each measurement item is obtained from the results of each measurement that has been taken by the students.

If all the data is collected, the next stage is to analyze the data so that the data from the research can be drawn conclusions. The data analysis technique in this study uses a percentage descriptive data analysis technique quoted based on (Sugiyono, 2014). The formula for finding percentages is as follows (Arikunto, 2006: 245-246):

$$P = (F/N) \times 100\%$$

Description:

P = Percentage sought (Relative Frequency)

F = Frequency

N = Number of Respondents

RESULTS AND DISCUSSION

Based on the results of the data normality test, with the Homogeneity test, it is known that the speed test data (40 m run) is (0.09), the slope value of the curve for the endurance test data (bleep test) is (0.05), the slope value of the arm muscle strength test data (bleep test) is (0.05), the slope value of the abdominal muscle endurance test data curve (sit up) is (0.04), the slope value of the leg muscle strength test data curve (vertical jump) of (0.05), the slope value of the abdominal muscle strength test data curve (sit up) (0.8), the slope value of the leg muscle explosiveness test data curve (vertical jump) (0.04), the slope value of the arm muscle strength test data curve (push up) (0.05). Based on these values, the data is normally distributed, which lies between 0.05

Speed test (40 Meter Run)

The results of data analysis from the 40 meter running speed test indicator obtained data in the form of values. Below will be presented a table of measurement tests of Junior High School 2 Indralaya Utara students in the 40 meter running test.

1 person (5%) is included in the very good category for the men's shot put of Junior High School 2 Indralaya Utara, 7 people (35%) are included in the good category, 7 people (35%) are measured in the sufficient category, 4 people (20%) are measured in the less category, and 1

person (5%) is measured in the very less category. The two categories with the highest frequency are good and sufficient, namely the good category of 7 people and the less category of 7 people.

Endurance Test (Bleep Test)

The results of data analysis from endurance indicators obtained data in the form of values. Below will be presented a table of physical measurement tests of futsal students of Junior High School 2 Indralaya Utara in the endurance test.

1 person (5%) passed the endurance test in the "very good" category, 2 people (10%) passed in the "good" category, 14teen people (70%) passed in the "sufficient" category, 3 people (15%) passed in the "less" category, and in ". The sufficient category amounted to 14 people, and the less frequent category amounted to 3 people.

Abdominal Muscle Strength Test (Sit up)

The results of data analysis from the abdominal muscle strength indicators obtained data in the form of values. Below will be presented a table of physical measurement test results for athletic students in the shot put number of Junior High School 2 North Indralaya in the sit up test. 3 people (15%) were in the very good group for abdominal muscle strength, 5 people (25%) in the good category, 5 people (25%) in the moderate category, 7 people (35%) in the poor category, and 0 people (%) in the very poor category. 7 people fell into the rare category.

Limb Muscle Explosiveness Test (Vertical Jump)

The results of data analysis from indicators of leg muscle explosive power obtained data in the form of values. Below will be presented a table of the results of the physical measurement test of athletic students in the bullet shot number of Junior High School 2 Indralaya Utara in the Vertical jump test. Vertical jump results obtained as many as 1 person (5%) in the excellent category, 3 people (15%) in the good category, 10 people (50%) in the sufficient category, 6 people (30%) in the less category, and 0 people (0%) in the very poor category. The most categories are in the moderate category, namely 10 people and less, namely 6x people.

Arm Muscle Strength Test (Push up)

The results of data analysis from the arm muscle strength indicator obtained data in the form of values. Below will be presented a table of physical measurement test results of Junior High School 2 Indralaya Utara futsal students in the Push Up test. 2 people (9%) scored very good for

the arm muscle strength test, 3 people (14%) in the good category, 12 people (64%) in the moderate category, 3 people (14) % in the poor category, and 0 people (%) in the very poor category.

Results of Physical Test Measurements of athletic shot put numbers

Based on the results of the entire series of tests which include 40 meter run, bleep test, 30 second sit up, vertical jump and push up in accordance with the research tested. The overall results of measuring the athletic physical test for the Junior High School 2 North Indralaya shot put number were 3 people (10%) in the very good category, 6 people (20%) in the good category, 11 people (37%) in the fair category, 9 people (30%) in the poor category, 1 person (3%) in the very poor category. The most results were in the sufficient category with 11 players and the insufficient category, namely 10 players. Physical test measurements for Junior High School 2 Indralaya Utara.

Based on the results of the measurement of speed carried out in the shot put sport at Junior High School 2 Indralaya Utara which is measured using the 40 meter run test according to Harsuki's theory (2017) and measured based on gender, there are research results that show the level of speed of the shot put sport at Junior High School 2 Indralaya Utara for men on average showing good and sufficient categories. The cause of the lack of speed in shot put sports at Junior High School 2 Indralaya which can be influenced by the lack of training such as running because it only focuses on technique is speed according to Simbolon (2020) is the ability to perform similar movements in sequence in the shortest possible time or the ability to cover distance in a fast time, According to (Syamsuramel et al, 2019), speed is the ability to move certain limbs or move places in the shortest possible time.

Based on the data from the measurement of the endurance of Junior High School 2 Indralaya Utara students measured through the bleep test, the results show that the average is good. According to (Warni et al., 2017) endurance is used during the match from the beginning to the end of the match, if a team has less endurance it will certainly have difficulty facing a team with good endurance. The cause of the lack of endurance in Junior High School 2 Indralay Utara students can be caused by the lack of exercises that can increase endurance such as jogging and others.

Based on the understanding put forward by Nur Hidayat (2018), based on research, the

abdominal muscle strength test uses a sit up test tool for 30 seconds. In connection with the sit up implementation technique described by Harsuki (2017), data were obtained that the North Indralaya State Junior High School 2 male bullet throw athletes had arm muscle strength which was classified in the sufficient category. According to (Piyana et al., 2020), argue that strength is the ability of the body's skeletal muscles to contract or stress in receiving loads during activity, arm muscle strength according to Dwijayanti, K. (2017) is the ability of the arm muscles to perform movements related to the arm. Abdominal muscle strength if it is still in the low category because it has not been maximized and of course this has an impact on the repulsion effect in addition to contributing to athlete performance.

Based on the results of the leg muscle explosive power test research using the vertical jump instrument in accordance with the Sovensi theory (2019). According to Harsuki (2017), the vertical jump implementation technique is detailed, and based on the research conducted, it is known that the men's bullet repulsion sport of Junior High School 2 Indralaya Utara has moderate to moderate leg muscle explosiveness. This means that the results of work done with strength or speed can indicate the ability of muscle explosiveness. According to Utama Bandi (2017), explosive power is the ability of muscles to direct energy quickly in a given moment.

Based on the results of research on arm muscle strength using the push up test instrument for 30 seconds carried out on the shot put sports branch of Junior High School 2 Indralaya Utara in accordance with Harsuki's theory (2017) which explains the implementation of push ups so that the results of the arm muscle strength of male shot put players of Junior High School 2 Indralaya Utara are on average in the sufficient category. According to (Nashir & Kumaat, 2022), the methods used to measure the physical condition of bullet shot sports include, tests for namely push up for 30 seconds, explosive power tests with vertical jump and agility tests According to Strength is explained as a force that can be produced by muscles in maximum contraction. Strength is an ability of a muscle or group of muscles to overcome the load and resistance caused when doing an activity or activity (Fahrizqi et al., 2021).

CONCLUSION

Based on the findings of this study, it can be concluded that 3 athletes (10%) are in the very good category, 5 athletes (20%) are in the good

category, 12 athletes (37%) are in the sufficient category, 9 athletes (30%) are in the less category, and 1 athlete (3%) is in the very less category for the bullet shot at SMPN 2 Indralaya Utara. Thus it can be said that the average physical test of athletic sports in the shot put number of Junior High School 2 Indralaya Utara is included in the sufficient category.

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