

THE RELATIONSHIP OF SOME PHYSICAL MEASUREMENTS TO THE DISTINCTIVE STRENGTH, SPEED, AND ACHIEVEMENT OF YOUNG LONG JUMPERS

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Abstract

There is no doubt that the scientific progress that is taking place in most fields, especially the field of sports, has witnessed a significant and noticeable development in recent times in various sports, achieving a qualitative leap in achieving very high achievements in some sports, specifically athletics, and that today we are in dire need of More giving to achieve a bright future that guarantees broad scientific progress and development for the sport of athletics and its various competitions. Strength, which is characterized by speed, plays a major role in most athletics competitions and is of great importance for motor notes, which result from the link between muscular strength and speed to produce a good harmonious movement pattern. The current research aimed to identify the relationship between height and strength characterized by speed among long young jumpers. The researcher assumed the existence of a significant correlation between height and strength characterized by speed and achievement among long jumpers. The researchers adopted the descriptive survey method because it is the closest research method to solving the research problem by the scientific method, as the method is one of the main and basic methods in research. The research population was players from the Middle Euphrates clubs, and the research sample was long jump players, and they divided into two groups, the first of which was players whose height exceeded (180) cm, and the second was players whose height was less than (171) cm. The researchers reached the most important conclusions, which is that there is a significant relationship between height. The long jump and achievement. The most important recommendations made by the researchers was the preference for choosing players with long bodies, especially the lower extremities, for many competitions, especially jumping and jumping competitions. Strength, characterized by speed, is considered one of the physical abilities that has a strong impact on movements, as it combines two basic characteristics and plays an important role in achieving sporting achievements.

Keywords: *Physical measurements, strength, speed, and long jumpers.*

INTRODUCTION

There is no doubt that the scientific progress that is taking place in most fields, especially the field of sports, has witnessed a significant and noticeable development in recent times in various sports, achieving a qualitative leap in achieving very high achievements in some sports, specifically athletics, and that today we are in dire need of More giving to achieve a bright future that guarantees broad scientific progress and development for the sport of athletics and its various competitions. Strength, which is characterized by speed, plays a major role in most athletics competitions and is of great importance for motor notes, which result from the link between muscular strength and speed to produce a good harmonious movement pattern.¹

Through reviewing a number of scientific studies and research that included physical measurements, the researchers noticed that every physical activity requires the possession of special physical measurements that qualify them to reach the high level and achieve in the championship. The researchers decided to identify the relationship between height and strength, characterized by speed, achievement, and the long jump, and from here. The importance of current research comes.

RESEARCH PROBLEM

During the researchers' review of a number of studies, research and tests that included physical measurements, they noticed that each physical activity has special physical measurements that qualify the majority of players to reach the high level in the tournament. So, researchers set out to study the problem and delve into it to learn about the relationship between height and strength characterized by speed and achievement. Long jump through tests that researchers will develop in their research.

RESEARCH OBJECTIVES

1. Identifying the relationship between height, strength, and speed for youth long jumpers.
2. Determine the relationship between body size, strength, speed, and performance of adolescent long jump athletes.

RESEARCH HYPOTHESIS

1. There is a significant correlation between height, strength and speed for youth long jumpers.
2. There is a significant correlation between height, strength characterized by speed, and long jump achievement for young men.

FIELD OF RESEARCH

- Human field: Middle Euphrates club long jump players.
- Time range: 1/5/2024 to 2/10/2024.
- Spatial field: Middle Euphrates athletics stadiums.

RESEARCH METHODOLOGY

The nature of the problem posed by the researchers is what determines the nature of the method, as the methodology is important in scientific research because the value of the research and its results are strongly linked to the method followed by the researchers. Therefore, the researchers adopted a descriptive approach, which is "the closest and most truthful to solving many scientific problems practically and theoretically."²

POPULATION AND RESEARCH SAMPLE

The things that must be taken into account in the field of research is choosing a sample that represents a true representation of the research community, as it is the part that represents the community of origin or the model upon which the researchers conduct the entirety and focus of their work,³ and the number of the research community consists of middle Euphrates club jumpers for the youth long jump competition (Five clubs) who officially participated in the championships held by the Central Athletics Federation, numbering (8 jumpers), and the researchers chose in a simple random way their research sample (6 jumpers), and they were divided in the same way into two groups, the first with a height of 180 cm and the second with a height of 171 cm, and (2 jumpers) were excluded. For several reasons, including distance from the testing location, difficulty in adhering to the testing location and time, and trainers not allowing them.

METHODS, DEVICES AND TOOLS USED IN THE RESEARCH

- Testing and measurement.
- Note.
- The questionnaire.
- Laptop device (hp).
- Measuring tape.
- Legal penalty for the long jump competition.

FIELD RESEARCH PROCEDURES

Determine the tests and variables for the research

The researchers surveyed many sources, research and scientific tests, and in addition to their modest experience and presented a questionnaire to experts and experts in the field of athletic training athletics, the following tests were determined:

1. Arm flexion and extension test for 15 seconds.
2. Partridge's test for the greatest distance in 10 seconds.
3. Long jump achievement test.

DESCRIPTION OF TESTS

First, Walk and stand still for 15 seconds (from a standing position)⁴

1. Objectives of the test: to assess the magnitude and velocity of the legs.
2. Help: Electronic stopwatch - Whistle.
3. Descriptive performance: The tester stands with the legs apart, having a typical starting position (chest depth). After hearing the signal, the tester bends and extends the legs as quickly as possible in a period of (15) seconds.
4. The set-up:
 - Ceasing is forbidden.
 - It's forbidden to help any member of the body on their feet or anything else.
 - The experimenter is permitted to attempt two attempts after receiving sufficient rest.
 - The most successful attempt is documented.

Second, Partridge's test for the greatest distance in 10 seconds ⁵

1. Test name: Jumping the maximum distance in (10) seconds.
2. Objectives of the test: to assess the magnitude and velocity of the legs.
3. Tools: open track, stopwatch, whistle, and measuring tape.
4. Performance description:
 - The player moves to the rear of the starting line, and when he hears the whistle, he jumps on one of his legs to cover the longest possible distance within (10) seconds.
 - Two attempts are given to each player and the best one is taken.
 - Ensure that the other leg does not touch the ground while performing the test.
 - Registration: The distance traveled is measured with a tape measure, to the nearest meter and its parts.

Third, Long jump completion test

- Purpose of the test: to measure achievement.
- Test requirements: legal equipment for the long jump competition, measuring tape, recorder, two referees, flags.
- Description of the test: The test begins with the athlete taking his place at the beginning of the approximate run, which is a distance (25 - 45 m) from the take-off board. When the referee gives permission to start, the white flag is raised. Then the jumper takes off at the highest speed from the mark that he will place at the beginning of the approximate run to reach the take-off board. At the highest gradual speed, then the jump leads to recording the highest possible distance.
- Recording: The achievement achieved is calculated from the take-off board until the last part that the jumper touches with his body when landing in the jump pit, for the best attempt out of three attempts.

Exploratory experiment

It is a scientific method to reveal the obstacles that researchers may face while carrying out the experiment, and to prepare in advance the requirements of the experiment in terms of sufficient time for the test, the financial cost, auxiliary personnel, the suitability of the devices and tools, etc.⁶

The researchers conducted the experimental exploration on (Thursday), which is relevant to (1/18/2024), at exactly 2:30 p.m., with (2 people) from the research community and from outside the research sample, in the Najaf Stadium in the Najaf Governorate, and its purpose was:

1. Identify the difficulties and obstacles that will appear during the implementation of the tests
2. Know the appropriate time to conduct tests and how long this procedure will take
3. Identify the necessary devices and tools and test their suitability to determine their dimensions to carry out the tests.

Scientific foundations of tests

1. Honesty

A test is considered valid if it “measures what it was designed to measure, that is, it measures the function that it claims to measure and does not measure something else instead of it or in addition to it.” In extracting the validity of the test,

the researchers relied on the validity of the content by presenting the tests to a group of experts and specialists in The field of testing, measurement and sports training science / the specialty of athletics. The validity of the tests was proven after the experts agreed that they achieve the purpose for which they were developed and are appropriate for this age group. Then the researchers extracted the validity of the tests using the self-validity method through the square root of the test’s reliability coefficient as shown in Table (1).

Table 1. Shows the self-validity coefficient of the tests

Tests	Self-honesty coefficient
Knee flexion and extension test in 15 seconds (from a standing position)	94%
Measuring the strength and speed of the legs	91%
Long jump completion	93%

2. Test stability

“The test was repeated and gave the same results every time.” The reliability coefficient was calculated using the reliability coefficient. “The test method was chosen and the test was re-applied to a sample of (2) jumpers from outside the research sample, and the test was repeated seven days after the first test.”⁷

The researchers tried as much as possible to conduct the two tests under the same conditions, and after obtaining the results of the two tests, the researchers found the correlation coefficient between them using the simple correlation law (Pearson), as in Table (2).

Table 2. Shows the reliability coefficient of the tests

Tests	Stability coefficient	Tabular value
Knee flexion and extension test in 15 seconds (from a standing position)	0.86	0.58
Measuring the strength and speed of the legs	0.83	
Long jump completion	0.87	

* Below the degree of freedom (11) and the level of significance (0.05)

3. Objectivity

One of the important duties that must be met in good tests is the condition of objectivity, which means that the arbitrators do not differ in their judgment on something or on a specific topic.

Therefore, the tests carried out by the researchers are simple, clear, understandable, and far from personal judgments, as the recording is done using units of time, meters, and the number of successes carried out by the laboratory, so the tests are of very high objectivity.

Pretests

The researchers conducted pre-tests for their research sample on 1/22/2024 at the Olympic Stadium in the Holy Governorate of Karbala, after the researchers recorded the private data of the testers in terms of age, weight, and height, After creating the conditions for the test, which included time, place, instruments, and method, and they divided the testers into two groups. The first is 180 cm tall and the second is 171 cm.

Posttests

The researchers conducted post-tests and measurements on their research sample for the first and second research groups on (2/10/2024) in the same way in which the pre-tests and measurements were conducted for the research.

Results and discussion

The table below represents the means of the jumpers who were segregated into two classes:

- The first group: jumpers whose height is 180 cm and above.
- The second group: jumpers whose height is 171 cm.

Table 3. Shows the means and the and tabular values for the two jumping groups

Somatic variable	mean	STD	Calculated T value	Tabular T at 0.05	0.01
Jumpers whose height is 180 cm and above	83-232	4.63	3.385	2.228	3.169
Jumpers whose height is 171 cm	222.91	8.56			

Through Table (3), it is clear that the means and standard deviations are for jumpers whose heights range from 180 cm and above. The table also shows the calculated (T) value (3.385) and the tabulated (T) value (2.228). When comparing the calculated value with the tabulated value, we notice that there is a strong correlation between the lengths. Jumpers with strength distinguished by speed and achievement, as jumpers whose height is 180 cm are able to achieve the highest distance in achievement, as well as the best distances and times in tests of strength distinguished by speed. Here, the hypothesis of the research has been fulfilled, which is the existence of a moral correlation between height and strength distinguished by speed and achievement. This confirms that strength is distinguished by speed and achievement. Monterey refers to speed as the ability of the muscular and nervous system to overcome resistance through the speed of muscle contraction. Clark refers to it as the individual’s ability to release the maximum muscle force in the shortest possible time. Larson and Herman agree that it is the ability to exert the maximum force in the maximum time and in movements. The trilogy considers the value of height or distance as a measure of developing strength characterized by speed.⁸

Also, jumpers whose height ranges from 180 cm and above means that their center of gravity is higher, or the center of gravity of their bodies, and this in turn makes it better than the jumpers whose height ranges from 171 cm. This is what we notice in the long jump competition, where the long jumper is better than the short jumper due to the difference in the center of gravity of their bodies. Mahdi Shalash's success confirmed that the increase in muscle fiber length is directly proportional to muscle strength.⁹

CONCLUSION

1. There is a strong relationship between body lengths and force characterized by speed.
2. There is a strong relationship between strength characterized by speed and the achievement of the long jump.
3. There is a strong relationship between strength, speed, and long jump achievement for jumpers whose height ranges between 180 cm and above.

RECOMMENDATIONS

1. The preference is to choose jumpers with long bodies, especially the lower extremities, for many athletics competitions, including jumping and jumping competitions.
2. The strength characterized by speed is considered one of the motor abilities that has an effective impact on the impact of movements because it combines two basic characteristics, which are strength and speed, and plays an important role in achieving the best achievements.
3. Researchers recommend that trainers and scholars in jumping competitions should conduct tests for jumpers who have long bodies, especially the lower limbs, as well as tests of strength and speed on a periodic basis in order for the jumpers to reach the highest possible achievement.

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