

The muscular ability of the two legs and its relationship to some basic skills of handball

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ABSTRACT

The aim of this study was to identify the relationship between the muscular abilities of the two legs and the performance of those skills among the research sample. The researchers used the descriptive approach to suit the nature of the problem to be investigated. As for the research sample, it was represented by 16 handball players of the Beish Merka Handball Club. The data was processed through the Statistical Package for the Social Sciences (SPSS). The results of the study showed that there is a statistically significant relationship between the muscular abilities of the two legs, the strength speed of the legs and Sargent's vertical jump test ($p < 0.05$). The relationship obtained from the results of the research is direct, that is, whenever the muscular capabilities of the two legs are high, the performance in the skill tests is also high and vice versa. Therefore, the researchers recommend the development of exercises specific for the muscular abilities of the two legs to develop the basic skills of handball.

KEYWORDS

Muscular Ability; Basic Skills; Handball.

1. INTRODUCTION

Our contemporary world witnessed a real revolution in the sports field, which is reflected in the achievements and tournaments in the stadiums and halls of the world, so that countries are vying to organize international tournaments, prepare their athletes and allocate a lot of money for the benefit of this field, as this field represents the largest segment of societies in order to achieve its goals that transcend it.

Research and studies have played a key role in the development of sports movement, including studies on sports training and sports achievement in recent times. The occupation of coaches and all those who work in the sports field has become a study that contributes to the field of training and sports achievement (Hussein & Nassif, 1987).

The muscular abilities of the two men are among the basic requirements in the game of handball. They are credited in the execution of the basic skills of handball to achieve the goals of the execution of these skills, especially those that require extreme or close to maximum intensity in their performance (Nahida, 2008).

The importance of research has emerged in studying the new reality of these requirements using modern practical methods, and in the light of these studies, tests have been developed for some of the muscular abilities of the two legs special men in the research sample and to identify the relationship between them and some basic skills of handball.

Through the follow-up of the researchers, who are among the followers of the handball game in Iraq, the trainers working in Iraq and the teachers of handball in the College of Muscular Education for legs, they noticed the importance of muscular ability as a result of skillful performance in handball, as the skill performance in modern handball is characterized by reaction in various forms. This prompted the researchers to study the relationship between the muscular ability of the two legs with some basic handball skills. So, the aim of this study is to identify the relationship between the muscular abilities of the two legs and the performance of some basic handball skills in the research sample.

The research hypothesis of this study was that there would be a statistically significant relationship between some of the muscular abilities of the two legs and the performance of some basic skills in handball.

2. METHODS

2.1. Study Design and Participants

The researchers used the descriptive approach to suit the nature of the problem. They chose a sample of their research in a deliberate way, namely, 20 players of the Beish Merka Sports Handball Club. There were 4 players excluded that the researcher had selected for the exploratory experiment, and thus the sample included 16 players, which was the main research sample.

2.2. Tests used in the Study

2.2.1. Partridge test for maximum distance (10 seconds) (Salman, 2013)

- Objective of the test: to measure the speed characteristic of the legs.
- Tools used: stopwatch, whistle, tape measure, registration form.
- Test description: the tester stands behind a marked mark on the ground and after hearing the beep, performs the partridge in a marked straight line as quickly as possible and allows the tester to continue the partridge when it falls.
- Registration: the distance traveled by the laboratory during a period of (10 seconds) is recorded, and the laboratory is given only one attempt.

2.2.2. Sargent's vertical jump test (Salman, 2013)

- Objective of the test: to measure the explosive power of the legs.
- Tools used: a ruler or tape measure, a wall and a piece of chalk.
- Test description: the ruler is fixed on the wall or the measuring tape in order to measure the distance of the vertical jump between two marks. The tester stands aside next to the wall, barefoot, holding a piece of chalk in his hand against the wall and spreads his hand out as far as he can to make a mark on the wall with chalk. The tester bends the knees while keeping his arm up and the head and back in one straight line. The laboratory starts in the vertical jump as far as it can to make a mark with chalk at the highest point it reaches.
- Calculation of test scores: the laboratory is given three attempts and its best attempt is recorded and the measurement is carried out from the first mark to the second mark.

2.2.3. Continuous dribbling in multiple directions (Hamid & Hassanein, 1980)

- Objective of the test: to measure the dribbling skill.
- Tools: five bars-stopwatch-handball-rectangular shape (5×3) m.
- Test description: fixing four pillars on the ground in the four corners of the rectangle and fixing the fifth pillar in the middle of the rectangle.
- Registration: registration of the time that the player travels in the three rounds.

2.2.4. Passing-receiving and its accuracy (30 seconds) on the wall (Aziz, 2003)

- Objective of the test: to measure the ability of players to pass the ball with a double vision.
- Test description: the player stands in front of a double-walled wall with a distance of 4.5 m and carries a ball inside a square whose sides are 1 square m by taking 0.5m from the

estimated distance, the test begins when the coach gives the signal to start with the timing of 30 seconds, the player handles the ball continuously without the ball falling on the ground and on both sides of the wall once and right on the left until the end of the 30 seconds period, and the coach gives an extra ball when any ball falls to the ground when handling on the wall.

- Registration: the number of consecutive manipulations is counted on the double-walled wall for a period of 30 seconds and continuously.

2.2.5. Shooting from a distance of 9m in one step (Ali, 2004)

- Objective of the test: to measure the accuracy of long-range shooting.
- Tools: indoor handball court, handball goal (5), iron squares (50 x 50cm) (2) hanging from the two corners of the goal.
- Performance description: shoot the balls from the 9 area, taking one step, trying to get the ball into the right square once and into the left square once.
- Registration: each ball that enters the right and left square is counted and given five attempts.

2.3. Scientific Coefficient of the Tests

2.3.1. Validity of the Tests

The researchers relied on the apparent validity of the tests to determine their validity, as they are standardized tests used by more than one researcher, and repeated through many specialized sources in the field of the game.

2.3.2. Reliability of the Tests

The researchers used the re-test method to find the reliability coefficient, as the tests were applied to the participants in the pilot experiment, and the test was repeated after 5 days under the same conditions. The results showed that all the tests had excellent and good reliability (Table 1).

2.3.3. Objectivity of the Tests

The researchers hired arbitrators for the purpose of giving a real evaluation of the tests, and through the application of Pearson's law, it became clear that all the tests were of high objectivity as shown in Table 1.

Table 1. The reliability and objectivity coefficients of the muscular tests of the legs and functional skill applied to the research sample.

N	Tests	Reliability	Objectivity
1	Strength speed for legs	0.90	0.95
2	Sargent	0.87	0.85
3	Passing	0.869	0.912
4	Dribbling	0.862	0.940
5	Shooting	0.903	0.893

2.4. Exploratory Experience

The researchers conducted the exploratory experiment on 2/8/2017 with 4 players from the original community who were excluded from the research sample. The experiment aimed to know the efficiency of the devices and tools used in the research, the appropriateness of the tests for individualizing the research sample, the period of time that the tests take during their implementation, the efficiency of the assistant work team and to know and identify the most important negatives that accompany the experiment in order to avoid them when conducting the main experiment.

2.5. Main Experience

The researchers conducted the experiment on the main research sample by performing all the tests, and all data were recorded in a special form in order to be processed statistically.

2.6. Statistical Analysis

The search data was processed through the Statistical Package for the Social Sciences (SPSS). Cronbach's Alpha was used to find the reliability of the research variables. Descriptive statistics were used to find mean and standard deviation of the variables and Pearson's correlation coefficient was used to find the relationship between the study variables. For all statistical tests, a p-value of ≤ 0.05 was considered statistically significant.

3. RESULTS

We start the presentation of this section by showing the results of the descriptive analysis (mean and standard deviation) of the research variables (Table 2).

Table 2. The results of the descriptive analysis of the research variables

Tests	Measuring unit	Mean	Standard Deviation
Strength speed for legs	Second	3.45	1.45
Sargent	Cm	95.23	2.65
Passing	Number	45.50	1.67
Dribbling	Second	8.45	2.76
Shooting	Number	4.65	0.99

The following table (Table 3) shows the results of the relationship between the muscular abilities of the two legs and basic skills in handball.

Table 3. The relationship between the muscular abilities of the two legs and basic skills in handball.

Legs Muscular abilities	Passing	Dribbling	Shooting	p value
Strength speed of the legs	1.35	0.45	0.67	0.05
Sargent	0.56	0.53	0.50	0.05

As we can see from the results of Table 3, there is a statistically significant relationship between the muscular and functional tests of the legs, the strength speed of the legs and the Sargent ($p < 0.05$).

4. DISCUSSION

The findings of the present study revealed that there was a statistically significant relationship between the tests of muscular abilities of the two legs, the strength speed of the legs and the Sargent

By reviewing the value of the significance level of the correlation coefficient, it is clear that that a high level of correlation was achieved between the tests of the muscular abilities of the two legs and the functional with the skill of shooting, which indicates the motor transfer of the stage of advancement. Thus, achieving the best level of motor transfer for the stage of advancement depends mainly on the efficiency of the nervous system in achieving a high level of functional efficiency to achieve the highest degree of muscular ability, which is one of the basic requirements for the stage of advancement with the aim of reaching the largest amount of mechanical energy for this stage and thus achieving good motor transfer to advance to the best level.

Since the jump to perform the skill of shooting with handball is a non-recurring motor activity based on the nature of its motor structure, and is characterized by getting close to a degree

of difficulty that lies in achieving motor coordination, through which the movement of a repetitive nature (approaching steps) is converted into a single movement (jump), achieving strength at high rates of speed is one of the basic requirements for jumping movements, as jumping is linked to the automatic movements of the nervous system (Ahmed, 2000).

Also, the performance of movements that require speed in movement and a sudden and rapid change of direction depends mainly on the efficiency and high ability of the nervous muscular system in terms of correct direction and appropriate timing to perform the movement, which shows the extent of neuromuscular compatibility of the player, and this is what is achieved in performance during the stage improving the skill of shooting by jumping high.

As the processes of control and direction carried out by the nervous system are among the important factors on which the individual's ability to speed up the performance of various movements is based at maximum speed, and the flexibility of nervous processes which lies in the speed of change from states of palm to states of excitement of neurons is the basis of the individual's ability to quickly perform different movements, we find that the complete compatibility in the multiple functions of the different nerve centers is one of the factors that contribute significantly to the development of motor speed (Allawi & Abdel-Fattah, 1997).

5. CONCLUSIONS

In conclusion, there is a statistically significant relationship between the muscular abilities of the two legs, the strength speed of the legs and Sargent's vertical jump test. The relationship obtained from the results of the research is direct, that is, whenever the muscular capabilities of the two legs are high, the relationship between skill tests is also high and vice versa. Therefore, we suggest to prepare specific exercises for the muscular and functional capabilities of the legs to develop basic handball skills, as well as to conduct studies about the effects of the muscular abilities of the two legs on the performance of basic skills at the level of experimental research.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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