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Predicting creative thinking in terms of some physical abilities among track and field competitors

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Abstract

The study aimed to prepare a measure of creative performance among junior athletics players in the Middle Euphrates, as well as knowing the correlation between creative performance and physical abilities and deriving a prediction equation to identify creative performance according to physical abilities among junior athletics players in the Middle Euphrates. As for the research community, it was represented by players of athletics clubs in the Middle Euphrates, category (junior), and the number of clubs was (5) clubs with players who reached (110) players representing the research community. The study reached the possibility of predicting creative thinking in improving the physical abilities in the future among athletics players. Sports.

Keywords: Predicting creative thinking, track and field

1. Introduction

Predictive studies are one of the forms of selection that can be relied upon. Likewise, in any game, prediction can be used, as prediction is one of the most important basics of the selection process, which must rely on purely scientific methods to ensure the success of the training process, as prediction is one of the basic methods. The essence of selection is a scientifically proven method based on standards that are subject to specific analyzes and evaluations. It is a future prediction of what change may occur in a phenomenon or behavior. It is the science of probability supported by scientific observation of the current situation and directed to forming a specific future expectation.

Athletics is a sport that relies on cognitive, psychological, and mental processes, as it includes integrated systems for physical preparation. It is a competitive physical activity that includes several separate competitions based on natural movements performed by humans (such as running, jumping, and throwing).

Athletics players deal according to the information they obtain from training processes and the method of competition, which is appropriate or inappropriate for the situation. As for the problems they face, solutions may be developed for them and are affected by the creative side, which requires the player's preferred performance. This is what many studies have confirmed that creative performance has an impact on abilities. Physically, and here lies the importance of the research that it is possible to identify the level of the player's physical capabilities and achieve the player's preferred performance by predicting creative performance using the predictive equation, which can contribute greatly to selecting players.

1.1 Research problem

Determining the aspect of creative performance that characterizes athletics players and its relationship to physical abilities, as studies and research have indicated that creative performance affects the physical abilities of players, and according to each event, helps those concerned in the field of training provide better training conditions for them, in addition to knowing the method that It is followed by individuals and the features of each style help to predict during performance, in addition to predicting the physical capabilities of the players. Therefore, the importance of the problem of the study lies in asking how useful the prediction equation is in knowing the creative performance according to the physical capabilities of the

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junior strong players.

1.2 Research objectives

1. Preparing a measure of creative performance among junior athletics players in the Middle Euphrates.
2. Identifying the correlation between creative performance and physical abilities among junior athletics players in the Middle Euphrates.
3. Deriving a prediction equation to identify creative performance according to the physical capabilities of junior athletics players in the Middle Euphrates.

1.3 Research hypotheses

1. There is a statistically significant relationship between creative performance and physical abilities among junior athletics players in the Middle Euphrates.
2. The possibility of predicting creative performance according to the physical abilities of junior athletics players in the Middle Euphrates.

1.4 Research fields

1.4.1 Human field: Junior athletics club players in the Middle Euphrates for the year 2022-2023.

1.4.2 Time field: From 5-7-2023 to 4-11-2023.

1.4.3 Spatial field: Middle Euphrates Club Stadiums.

2. Research methodology and field procedures

2.1 Research Methodology

The descriptive survey method was used (using standard studies and correlational methods) to suit the nature of the research and achieve the existing research objectives.

2.2 Community and sample research

The research community was identified as represented by players from athletics clubs in the Middle Euphrates, category (junior), and the number of clubs was (5) with 110 players representing the research community.

2.3 Tools, devices and auxiliary means

2.3.1 Interview

The researcher conducted personal interviews with a number of experts and specialists to collect information about the creative performance measure and the research problem.

2.3.2 Questionnaire

"The questionnaire or survey is an appropriate tool for obtaining information, data, and facts related to a specific reality" (Dhouqan Obaidat & others, 1988, p. 88) [1]. The researcher prepared a creative performance questionnaire.

2.4 Field research procedures

For the purpose of achieving the first goal of the research, which is to prepare the creative performance of athletics players, the following steps were followed:

2.4.1 Preparing the creative thinking scale

We used the scale created by scientist Bernstein in 1989 to create this one. The original scale had seventy-four items that measured people's creative thinking. The answers to these items were three-point ratings: agree, disagree, and undecided. Nadia Hail Sorour Arabized the scale, tested it in Jordan, and suggested adapting it to the Arab context. The researcher used it (Zahra Jamil Saleh, 2006, p. 77) [3], and it included 35 components.

2.5 Scientific foundations of the scale

2.5.1 Validity of the scale

A prerequisite for scale instruments to be useful in quantifying the phenomenon being evaluated is the test's validity. The validity of the test means "that the test measures what it was designed to do. In other words, what is meant by the validity of the test is the extent to which the test is valid to measure a specific goal and aspect, and this validity appears in multiple forms." (Farouk Al-Rousan, 2000, p. 210) [2].

Apparent validity was achieved by presenting the scale items before applying it to a group of experts, who are characterized by experience that enables them to judge the validity of the test items in measuring the characteristic to be measured, as well as its instructions and answer alternatives, to a group of experts specialized in motor learning, who demonstrated the validity of the scale items in a percentage 100%.

2.5.2 Reliability of the scale

For the scale to be accurate, reliability is one of the requirements that must be satisfied. "That the test gives the same results if it is re-applied to the same individuals in the same circumstances" is the definition of reliability." (Muhammad Sobhi Hassanein, 1995, p. 193) [4]. In order to verify the reliability of the creative thinking scale, the following methods were used:

First: Split-half method

Because it saves time and effort, the split-half approach is one of the reliability techniques that is most frequently utilized. As a result, the researcher used the questionnaires of a sample of people who were (100) students in the creative thinking scale sample. The elements on the scale were split into two categories: single and even pairs. The test was split into two equal halves, the first including the odd items and the second containing the even ones, after the scale was applied to the research sample. A hypothetical item was added to the even items because the existing scale contains 35 items total. The scores were then tallied. Every player had two scores, and the Pearson method was used to obtain the correlation coefficient between the total of the two halves' values. The correlation value was attained (0.957). The Spearman-Brown equation was used to achieve total test stability, and as a result, the test reliability coefficient reached (0.978), a strong stability indicator.

Second: Cronbach's Alpha coefficient

After applying this equation to the sample members, which consisted of 100 players, it was observed that the dependability coefficient's value was equal to (0.833), a dependable measure of stability.

2.6 Test description

First - physical tests

1- 30 m running test: (Hassanein, Muhammad Sobhi, 1998, p. 123) [5].

Purpose of the test: (Measuring maximum speed).

Necessary tools: A football field, 4 signs, flags, referees' flags for the start of kick-off, a stopwatch.

Performance specifications: The tester takes a ready position behind the starting line and takes the signal when the flag is lowered from the flying position and proceeds at full speed towards the finish line.

Register: The time taken by the tester is register from the moment the flag descends, i.e. the start signal, to the end of the 30 m line, the figure shows the test diagram.

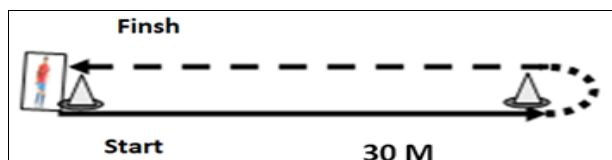


Fig 1: The time taken by the tester is register from the moment the flag descends

2. Coordination test: (Hassanein, Muhammad Sobhi, 2001, p. 329).

The aim of the test: To measure the coordination of the legs and eyes

Tools used: A stop watch. Eight circles are drawn on the ground, each of which should be sixty (60) centimeters in diameter.

Description of the test: The tester stands inside circle No. (1). Upon hearing the start signal, he jumps with his feet together to circle No. (2), then to circle No. (3), then to circle No. (4)... until circle No. (8). This is done at full speed

Register: The laboratory records the time it takes to move through the eight circles.

3. Testing the strength and speed of the legs: (Dakhel, Ihab, 2004, p.35) [7].

Testing three steps on the form and mutual reliability of invariance

Purpose of the test: To measure the speed-specific strength of the leg muscles in the triple jump.

Unit of measurement: (m/cm)

Necessary tools: A suitable place for jumping, a running field, a measuring tape and markers.

Description of the performance: The athlete stands behind the starting line, with his feet spaced with an appropriate gap. The athlete begins by swinging his arms backwards with his knees bent and leaning forward slightly. Then the athlete proceeds to jump forward with one leg, push, rise, and land with the second leg, and again with the other leg. Jump forward, then land in the hole. Two attempts are given to each player

2.8 Exploratory experience

Ten players participated in the exploratory experiment, which took place at ten in the morning on Sunday, August 7, 2023.

2.9 Main experiment

The main experiment was conducted during the period from (10-20/7/2023) in order to conduct the test for the players, each in their governorate, through the presence of the assistant staff, and then collect data in order to process it statistically.

2.10 Statistical methods

1. Arithmetic mean.
2. Standard deviation.
3. Standard error.
4. Prediction equation.
5. Correlation coefficient.

3. Presentation, analysis and discussion of the results

The results were presented as tables because they make it simple to extract scientific information, serve as a suitable explanatory tool for research, help to achieve the study's aims, and validate its hypotheses.

Table 1: Shows the arithmetic mean, standard deviation, standard error, and skewness coefficient for the variables under study

N	Variables	Measurement units	Mean	Std. Deviation	Standard error	Skew ness
1	Maximum speed	Second	3.9418	0.12549	0.01255	-0.392
	Coordination	Second	4.7249	1.03767	0.10377	-0.233
	Strength distinguished by speed	Meter	5.0651	0.69031	0.06903	-0.255
2	Creative thinking	Degree	85.99	5.549	0.554	0.425

Table 2: Shows the correlations between physical fitness and creative thinking:

Variables	Maximum speed	Coordination	Strength distinguished by speed
Creative thinking	0.383	0.251*	0.262**
	0.000	0.012	0.008

Below the significance level (0.05).

It is clear from Table (2) that there is a significant correlation between creative thinking and maximum speed, as the correlation coefficient reached (0.383) with a significance level of (0.000), which is less than (0.05). As for compatibility, the correlation coefficient reached (0.251*) with a significance level (0.012) which is less than (0.05), while the speed characteristic (0.262**) has a significance level of (0.008) which is less than (0.05).

By observing Table (2), it was found that there is a direct correlation between creative thinking and physical abilities, as a result of creativity, innovation, developing mental and physical competence, and arousing motivation through the thinking process, which requires organizing and adapting stored information in a way that enables one to focus on performing physical abilities. Hence, we conclude that acquiring knowledge through mental processes is an effort,

and it explains how to obtain it through developing the mental and scientific skills necessary for that. (Al-Hashhoush, Khaled Muhammad, 2012, p. 41) [8].

4.1 Presentation, analysis and discussion of the results of prediction equations

Prediction equations were extracted through the use of the statistical program SPSS. The stepwise method was used to achieve the goal and arrive at the prediction equations for the research, as it deals with variables with significant significance only. It is the method most used in predictive studies because it involves reaching more results. Accuracy "(Al-Zoghbi, Muhammad Bilal & Al-Talafha, Abbas, 2000, p. 307) [9]. Prediction equations for physical abilities were extracted using the raw data method.

Table 3: Shows the relationship of creative thinking to the variables investigated

Sample	The variables are normal to the coefficient	Coefficient value	Beta correlation coefficient	Calculated T value	Sig level	Sig type
1	Constant	156.398		9.104	0.000	Sig
	Maximum speed	-18.068	-0.383	-4.101	0.000	Sig
2	Constant	141.489		8.040	0.000	Sig
	Maximum speed	-17.390	-0.368	-4.059	0.000	Sig
	Strength distinguished by speed	2.489	0.240	2.648	0.009	Sig

Below the significance level (0.05).

Table 4: Shows the predictive value of the research sample members in creative thinking

Variables	Correlation coefficient R	Coefficient of variation R2 or contribution ratio	Adjusted ratio	F value	First freedom degree	Second freedom degree	Sig level
Maximum speed	0.383	0.146	0.138	16.814	1	98	0.000
Strength distinguished by speed	0.452	0.204	0.188	12.429	2	97	0.000

Below the significance level (0.05).

When these factors are present, both the contribution rate and the correlation coefficient rise. Note the information in Table (3) to get the creative thinking predictive equation.

According to the table above, the predictive equation for creative thinking is:

According to the table above, the predictive equation for creative thinking is:

$$Y = w + m x \text{ so that}$$

Y = The variable to be predicted and represents creative thinking

w = constant quantity

M x = coefficient of the contributing variable x scores of the independent variable

In this way, the predictive equation for creative thinking is:

$$Y = A + B1S1 + B2S2 + B3S3$$

$$\text{Example: } Y = 156,398 + (18,067 \times 3,6) + (17,390 - \times 7,5) = 114,4468.$$

Note that the arithmetic mean of the maximum speed = 3.9818. We understand from this that the coefficient value for the physical abilities (maximum speed and force characterized by speed) was respectively (-0.02, 2.498). The tests of physical abilities (maximum speed and force characterized by speed) have made an effective contribution to Creative thinking, as maximum speed is one of the important physical characteristics in athletics because it contributes effectively to the success and improvement of the level of motor performance, which requires high efficiency and which has an effective role in the process of successful performance during the performance of the event, which must be characterized by strength to carry out the motor duty. (Al-Wazzan, Saad Bassem Jamil Ismail, 2000, p. 132) [10].

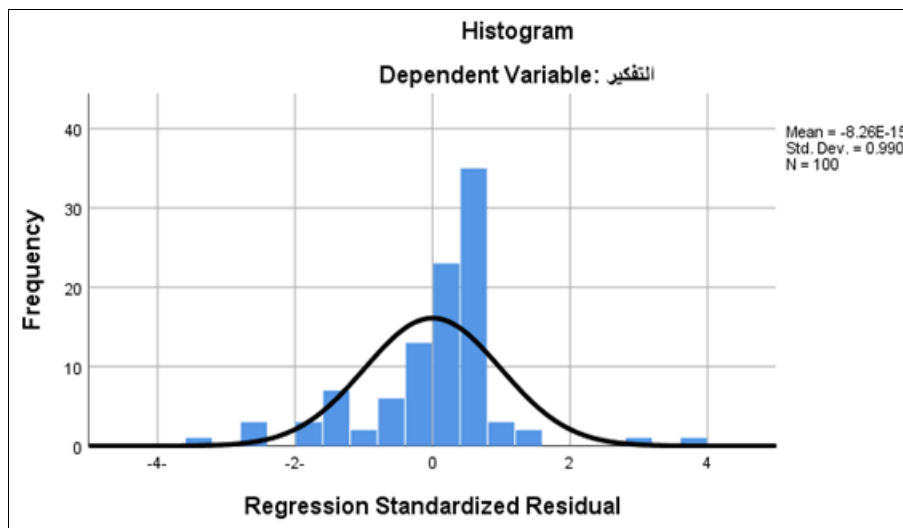


Fig 2: Shows the histogram of the data according to the moderate distribution of creative thinking. From the figure above it is clear that the data is distributed according to the moderate distribution

From the above, athletics requires creativity and concentration in thinking because these games provide physical requirements in order to reach high levels. Therefore, the more broad horizons there are in creative thinking, the more predictable there is in improving performance in athletics, as these races are also divided into races. One is Olympic and has approved numbers, another is non-Olympic and has approved numbers as well, and a third is non-Olympic and does not have approved numbers. There are also competitions for women and others for men, and a third in which both

sexes participate and represents most of the known Olympic races (Al-Arabi, Muhammad Shamoun, 1999, p.17) [11].

Conclusions and recommendations

Conclusions

1. There is a correlation between physical abilities and creative thinking among athletics competitors.
2. Deriving prediction equations for creative thinking in terms of the investigated variables (physical abilities) among track and field competitors.

Recommendations

1. Paying attention to physical abilities because of their role in raising the level of a player's performance in athletics and all sports
2. Paying attention to mental skills, the first of which is creative thinking, because it is closely linked to the level of performance, especially athletics.
3. The necessity of benefiting from predictive equations because of their importance in predicting what the player's performance level will be in the future.

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