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## Creative thinking patterns and their relationship to the most important motor abilities and some offensive handball skills for students

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### Abstract

The importance of the research crystallizes in the preparation of a measure of creative thinking in handball for students to be a tool in the hands of specialists to measure the important mental abilities that are one of the important pillars in the psychological and mental variables after that, try to identify the correlation between the scale and the motor variables and some offensive skills in handball, and the data that we get from the research sample It helps in explaining many tactical and skill phenomena that occur in the lesson of the lesson, which helps specialists to solve and overcome them in order to serve the plan set in learning the basic skills of handball for students. Therefore, the researcher decided to study the relationship between creative thinking patterns and motor abilities and some offensive skills in handball for students. The research hypothesis is the existence of a significant relationship between the patterns of creative thinking and the most important motor abilities and some offensive skills in handball for students. The sample of preparation and application included (70) students from the research community (46.66%). The research conclusions were that students possess a good level of creative thinking and there is no significant correlation between creative thinking patterns and motor abilities (Agility, motor flexibility, compatibility) and also there is no significant correlation between creative thinking patterns and some skills. Offensive (Passing and shooting) handball for students.

**Keywords:** Creative thinking styles, motor abilities, offensive skills

### 1. Introduction

Handball is one of the sports that require advanced motor abilities and offensive skills. To win this sport, it is necessary to develop students' abilities in creative thinking, as it is one of the most important factors that contribute to the development of their abilities in different fields and handball from these fields.

Creative thinking is the ability to find new and unconventional solutions to various problems and challenges. Creative thinking requires a different perception and creativity in dealing with changing situations and circumstances. Creative thinking can have a significant impact on students' handball abilities, helping them devise new strategies and develop effective offensive skills.

Without a doubt, handball requires diverse and advanced motor abilities. Players need good physical strength, flexibility, and speed in the execution of movements. Creative thinking is known to directly affect motor development. Creative thinking can push players to push their boundaries and explore new ways to move and interact with the ball and other players.

The importance of research crystallizes in the preparation of a measure of creative thinking in handball for students in the form of a tool in the hands of specialists to measure the important mental abilities that are one of the important pillars in the psychological and mental variables and then try to identify the correlation between the scale and motor variables and some skills. The data we get from the players helps explain many tactical and skill phenomena that occur in the world, which helps specialists to solve and overcome them in order to serve the plan set in learning basic handball skills for students.

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### 1.1 Research problem

The basic skills of handball are an important part of the performance of handball in the faculties and departments of physical education and sports sciences, so these skills require sufficient proficiency in order to obtain the best results and thus achieve the lesson in proficiency and learning these skills as well as the development of motor abilities accompanying and associated with these skills accordingly, it was necessary to pay attention to these skills by specialists and researchers in accordance with the conditions and creative principles to raise the level of the best technical performance, so the researcher decided to study the relationship between creative thinking patterns and motor abilities and some offensive skills in handball For students.

### 1.2 Research Objectives: The research aims to

1. Preparing a scale of creative thinking patterns with handball for students of the fourth stage.
2. Learn about the relationship between creative thinking patterns and the most important motor abilities and some offensive skills of students in handball.

### 1.3 Research Hypotheses

#### The researcher's Hypotheses

The existence of a significant relationship between the patterns of creative thinking and the most important motor abilities and some offensive skills in handball for students.

### 1.4 Research Areas

#### 1.4.1 Human field

Students of the fourth stage in the Faculty of Physical Education and Sports Sciences / University of Babylon for the academic year 2022-2023.

#### 1.4.2 Time field

For the period from (2/1/2023) to (1/3/2023)

#### 1.4.3 Spatial field

Indoor sports hall at the Faculty of Physical Education and Sports Sciences / University of Babylon

## 2. Research Methodology

The nature of the studied problem is what determines the nature of the method used, so the researcher used the descriptive approach in the survey method and correlation relationships, which is appropriate to the nature of the research problem.

### 2.1 The research community and its appointment

By research community, we mean "all the vocabulary of the phenomenon that the researcher is studying, and we also mean all individuals, persons or things who are the subject of the research problem" (Salman Akaband Haider Naji 2015) [4].

Therefore, the research community was limited to the fourth-stage students in the Faculty of Physical Education and Sports Sciences at the University of Babylon for the academic year (2022-2023), which numbered (150) students, and the sample "that part of the community that is being selected according to rules and methods so that it represents the community correctly" (Raysan Khuraibit Majeed, 1988) [1], and that the main purpose of determining the research sample is to represent the results of this research on the total community chosen by the researcher according to the objectives of the research and the research samples were selected as follows.

### 2.2 Sample of the poll

The sample of the survey included (5) students from the research community selected by simple random method.

#### 2.2.1 Sample preparation and application

The sample of preparation and application included (70) students from the research community by (46).66%.

### 2.3 Means of gathering information, devices and tools used

For the purpose of obtaining information and data that enrich the study, the following was used.

1. Arab and foreign scientific references and the Internet.
2. Questionnaire for the opinion of specialists on the validity of the paragraphs of the scale used in the research.
3. Arab and foreign sources and various studies
4. Personal interviews for experts.
5. A device (DELL laptop)
6. Rectangles of handball goals of various sizes.
7. Handballs number 10.
8. Electronic clock number 2.

### 2.4 Field research procedures

#### 2.4.1 Scale of creative thinking patterns

After informing the researcher of a number of tests related to creative thinking. It was found that the scale of the world Bernston (1989) is the most appropriate for research, as the world designed this scale, which originally consists of (74) items aimed at measuring the creative thinking of individuals and be answered through three alternatives are (Agree, hesitant, do not agree), and the t (Nadia Hayel pleasure) Arabization of the scale mentioned and experimented in Jordan and recommend circulating it to the Arab environment, It was applied by the researcher (Zahra Jamil Saleh, 2006) in a master's thesis in 2006 at the University of Mosul/College of Physical Education after he modified the paragraphs to suit the sports field, which consisted of (48) paragraphs three alternatives are (agree, hesitant, disagree) as the highest possible value obtained by the laboratory (144) and the lowest degree (48) degrees.

#### 2.4.1.1 Preparation of instructions for the scale of creative thinking patterns

The researcher identified the instructions for the paragraphs of the scale in the same manner and the instructions based on the scale of thinking that explain to students how to answer the paragraphs, as the instructions were easy, clear and understandable and fit with the capabilities of students and to find out how to answer, the researcher developed a form showing the answer to the paragraphs and the name of the scale was not referred to ensure the validity of the answer the paragraphs objectively and the dimensions of the scale were triple and answer the paragraphs with a scale consisting of (agree, hesitant, disagree).

#### 2.4.1.2 Psychometric characteristics of the scale

##### First: Validity scale

Validity is one of the important basic indicators and concepts in the evaluation of measurement tools, and the researcher has relied on apparent honesty in finding the validity of the scale.

- **Validity:** The virtual validity of the test was calculated by presenting it to experts and specialists, and all the axes of the scale and its phrases obtained the approval of most

of the arbitrators through the statistical significance of the chi-box between the approvers and non-approvers.

### Second: Reliability of the scale

#### The researcher relied in calculating the reliability of the scale on the method of half segmentation:

The half-fractionation method is one of the most used methods in educational and psychological research to find the stability coefficient because it requires the application of the test only once, and is characterized by economical effort and time.

This method is based on the segmentation of the test whose stability is required to be set to C two equivalent after applying it to one group, and there are several ways to segment the test. The first text of the test may be used against the second half, or odd-number questions may be used versus even-numbered questions. (Saad Abdel Rahman, 1983) [3]. The researcher relied on the data of the members of the basic sample of (70) students, as the paragraphs of the scale were divided into two halves, odd paragraphs and even paragraphs, and then extracted the correlation coefficient between the total degrees of the two halves for the paragraphs of the scale consisting of (48) using the method of Pearson and Bossastatistical bag (spss), As the correlation coefficient extracted means stability for half of the test only, and in order

to obtain the stability of the entire test applied equation Spearman - Barra and N, has been shown that the test is characterized by a high degree of stability with regard to the scale of patterns of creative thinking, has been shown through the values of the coefficient of stability that they are high indicators of the stability of the test.

Thus, the scale consists of (48) items and is ready for application.

### 2.4.2 Identification of motor aptitude tests

After identifying the most important motor abilities affecting handball students, namely (agility, motor flexibility, compatibility), it is necessary to determine the appropriate tests for them. The researcher has resorted to the use of scientific references through which a questionnaire form has been identified for motor abilities tests, to survey the opinions of experts and specialists in testing, measurement and sports training as well as Specialists in handball, after collecting the forms that were distributed to (12) experts, unloading the data and extracting the relative importance of each of the candidate tests, the tests that obtained the relative importance (65) or more and (54.16%) or more of the percentage were accepted, as shown in Table (1).

**Table 1:** Shows the relative importance and percentage of tests nominated for application

t	Motor abilities	t	Auditions	Measurement Unit	Materiality	Percentage	Specific test
1		1	Multi-sided running with the ball (rolling) for four signs distance of one and another (6 m)	second	78	65%	
		2	Shuttle Running (4×10) m	second	119	99%	Acceptable
		3	Barrow Test	second	29	24%	
2	Motor flexibility	1	Bending the torso forward from standing	number	98	81.5%	Acceptable
		2	Bending the torso behind the stand	number	78	65%	
		3	Bottom and side touch (30) s	number	93	77.5%	
3	coordination	1	Jump rope	degree	59	49%	
		2	Crawling in the form of (8) distance between the posts (4 m)	second	58	48%	
		3	Numbered circuit test for coordination measurement	degree	96	80%	Acceptable
		1	Stand on one leg	M	99	82.5%	Acceptable
		2	Cross-foot test on the crossbar	second	91	75.5%	
		3	Move over tags	second	35	29%	

#### 2.4.2.1 Selected tests of motor abilities in handball:

##### Agility

Shuttle Running Test (4×10 m) (Mohamed Sobhi Hassanein, 2000).

##### Objective of the test: Measurement of agility

**Tools used:** stopwatch and two parallel lines, 10 m apart

##### Performance Description

The tester stands behind the starting line and when hearing the start signal, he runs at full speed to the opposite line to exceed it with both feet, then turns around to return again to cross the starting line in the same manner and then repeats the work again, that is, the laboratory travels a distance of (40) meters back and forth.

##### Registration

The time traveled in running the specified distance is recorded (4×10) m from the moment of the start signal until it exceeds the starting line after covering a distance of (40) meters back and forth.

##### Mobility Flexibility

Test of bending the trunk forward from standing.

- **Purpose of the test:** Measurement of the elasticity of the spine on the horizontal axis
- **Tools:** Bench without a back height of (50) cm. A non-flexible ruler divided from zero to one hundred (100) cm is fixed perpendicular to the seat so that the number (50) is parallel to the surface of the ruler and the number (100) is parallel to the lower edge of the seat.
- **Performance specifications:** The tester stands above the seat with the feet bandaged with the toes fixed to the edge of the seat while keeping the knees straight. The tester bends its torso forward and down so that it pushes the pointer with its fingertips as far as possible, holding it at the last distance it reaches for two seconds.
- **Guidance**
- The knees should not be bent during the performance.
- The laboratory has two attempts to record the best of them.
- The trunk should be bent slowly.
- Hold on to the last distance reached by the laboratory for two seconds.
- **Registration:** The distance achieved by the laboratory in the two attempts is recorded and the greater distance is calculated in centimeters.

**Coordination**

- Numbered Circuit Test (Mohamed Sobhi Hassanein, 1995) [6].
- **Purpose of the test:** Measurement of motor compatibility between the eye and the legs.
- **Tools:** Stop clock, draw on the ground (8) circles with a diameter of each (60) cm and number circles from (1 to 8) as in Figure (23).
- **Performance Description:** The student tester stands inside the circle (1) and when he hears the start signal, he jumps according to the circle (2) and then (3). Until the end of the circle (8), the jump will be with the two legs together.
- **Registration:** Records the time it took for the laboratory student to move on the eight circuits per second.

**2.4.3 Identification of handball skill tests**

The researcher chose some basic skills for handball, and these skills are (Passing-shooting).

**2.4.3.1 The first test: compatibility test and scrolling speed**

**The objective of the test:** To measure compatibility and scrolling speed on the wall.

**Tools:** (handball, wall, stopwatch).

**Performance description:** The laboratory stands at a distance of (4) meters from the wall and the player passes the ball on the wall and continues to pass for as many as possible in the specified time (60) seconds.

**How to score:** The number of passes is calculated from the specified time (the number of times the ball is received).

**2.4.3.2 The second test: the accuracy of the handball shooting**

**The objective of the test:** Measuring the accuracy of aiming with handball.

**Tools:** Handball target drawn on the wall with dimensions (2×3) m so that the shape of the two pillars is in contact with the line of convergence of the wall with the ground and divided into (9) rectangles and draws a line with length of (9)

with the goal drawn.

**Method of performance the player shoots from behind the line with the pivot step, taking into account the following**

- Hitting the rectangles (9,7,3,1), which represent the angles of the goal, which have dimensions (100×60) cm and the four degrees.
- Injury of the rectangles (8,2) and the area represents the area above the head of the goalkeeper and between his feet, which has dimensions (100×60) cm gets three degrees.
- Injury of the rectangles (6, 4), which represents the area of the extent of the arms of the goalkeeper, which has dimensions (100×80) cm and the player obtains two degrees.
- Rectangle injury (5) represents the chest and trunk of the goalkeeper, which has a distance of (100×80) cm, the player receives one degree.
- If the ball comes outside that, he gets zero.
- -Each player performs ten throws and each player only one attempt

**2.5 Statistical means**

The Social Sciences Statistical Kit (SPSS) was used to extract the results.

**3. Presentation, analysis and discussion of results**

Statistical estimates of the results of measuring the variables studied in the research, namely (creative thinking patterns, motor skills and some offensive skills in handball).

In order to present the results that have been investigated from measuring the variables covered by the research among the members of the research sample, they have been presented in the form of tables for easy analysis and discussion, and to complete the subsequent statistical analysis operations aimed at achieving the objectives of the research, as the statistical estimate of the results of the sample members of (30) students was presented in the variables studied.

**Table 2:** Shows the statistical estimates of the research variables (creative thinking styles, motor skills and some offensive skills in handball)

t	Variables	Unit of measurement	Mean	Standard deviation	Torsion coefficient	Hyperbole coefficient
1	Creative thinking patterns	degree	177	12.31	0.353-	0.656-
2	Motor abilities	Agility	11.23	2.39	0.939	0.836
3		Motor flexibility	17.28	3.32	0.262	0.176
4		Coordination	10.88	1.27	0.670	0.823
5	Skills	Passing	16.66	3.46	0.687	0.496
6		Shooting	11.89	3.90	0.577	-0.687

**3.1 Presentation of the results of the correlation with creative thinking patterns and motor abilities and some offensive skills in handball.**

**3.1.1 Presentation of the results of the correlation with creative thinking patterns and kinesthetic abilities of handball.**

To identify the correlation between the results of creative thinking patterns and motor abilities, the researcher found the correlation coefficients using the simple correlation law (Pearson) for the members of the research sample as shown in Table (3).

**Table 3:** Shows the values of the correlation coefficient between creative thinking patterns and students' motor abilities

t	Motor abilities	Creative thinking patterns	Significance
1	Agility	0.21	Sig
2	Motor flexibility	0.14	Sig
3	coordination	0.19	Sig

Table 3 shows: That there is no correlation between the patterns of creative thinking with the studied motor abilities (agility, motor flexibility and compatibility) as the value of

the correlation coefficient calculated with agility was (0.21) and the value of (t) tabular (0.35) at the level of significance (0.05) and in front of the degree of freedom (28) and since the



value (t) calculated is smaller than the value (t) tabular indicates the randomness of the correlation of this ability with the value of creative thinking patterns.

It is clear from the above that the relationship between the studied motor abilities and the patterns of creative thinking was random and attributed to the researcher these results to the performance of motor abilities does not require a certain amount of creative thinking patterns as much as the student possesses physical and motor capabilities that help her in the performance of these abilities. The studied motor abilities require certain physical preparations for the possibility of. And the relationship of creative thinking patterns in improving the performance of these abilities.

### 3.1.2 Presenting the results of the correlation with creative thinking patterns and some offensive handball skills

To identify the correlation between the results of creative thinking patterns and some offensive handball skills, the researcher found the correlation coefficients using the simple correlation law (Pearson) for the members of the research sample as shown in Table (4).

**Table 4:** Shows the values of the correlation coefficient between creative thinking styles and some offensive handball skills for students

t	Skills	Creative thinking patterns	Significance
1	Passing	0.16	Sig
2	Shooting	0.167	Sig

Table 4 shows the following: The value of the correlation coefficient between the degree of creative thinking patterns with passing was a random correlation for this skill with the value of creative thinking patterns.

As well as the values of the simple correlation coefficient between the patterns of creative thinking and the skill of correction and indicated the randomness of the correlation.

Through the analytical procedures of the field research results for the values of handball skill tests for students and the values of creative thinking patterns, we note that the values of random correlations mean that creative thinking patterns do not affect when performing skills and in linking the parts of the movements of the skill with the student's thinking skills in the brain to prepare for the performance of. The offensive skills of all kinds because learning these skills can be learned in the initial stages through repetition and repetition away from the explanation and clarification of the parts of the skill and the role of dismantling by reducing the time for learning, meaning that the student has passed the performance of offensive skills in handball in the second and third stages and has mastered its performance and when linking a set of skills, the students. They perform this skill without prior creative thinking, i.e. performed randomly, and in this way the skill performance can be good or not good, and this confirms to us that students when performing motor skills in performance once is at a high level and once decreases, and this is evidence that learning skills must take a large part of thinking and creative thinking and that the obstacles to thinking are many in the previous stages, "Personality, simulation, censorship and pedagogy play a prominent role in the development and non-development of creative thinking." (Mohamed Hamad, 2001) [12] and that the performance of offensive skills comes by reaching the mechanism of performance through repetition of these skills from the initial stages of learning between the stability of the skill and learning, and this is consistent with what came by the Mufti Ibrahim Hamada as he mentions "that

the player reaches the performance of the skill automatically through the permanent repetition of performance." (Mufti Ibrahim, 1998) [8].

## 4. Conclusions and recommendations

### 4.1 Conclusions

In light of the results reached by the researcher, the following can be concluded:

1. Students have a good level of creative thinking.
2. There is no significant correlation between creative thinking patterns and motor abilities (agility, motor flexibility, coordination).
3. There is no significant correlation between creative thinking styles and some offensive skills (passing and shooting) in handball for students.

### 4.2 Recommendations

In light of the conclusions, the researcher recommended the following:

1. Teachers and workers in the field of teaching handball skills should pay attention to studying the creative thinking patterns of players when choosing their relationship to motor abilities to obtain the best results and invest time and effort because of its close relationship to motor abilities.
2. Teachers should pay attention to creative thinking patterns because of its relationship to students' handball skills.
3. The application of the scale can be used on other samples and the scale can be used for other activities.

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