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The percentage of contribution of attention aspects in the quantitative assessment of some free rhythmic movements of female students of the college of physical education and sports sciences

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Abstract
This research aims to the percentage of contribution of attention aspects in the quantitative assessment of some free rhythmic movements of female students of the College of Physical Education and Sports Sciences." The researcher used the descriptive approach using the survey method and the correlation and predictive relationship to achieve the research objectives and choose its hypothesis. The research community included female students in the second and third years of the College of Physical Education and Sports Sciences at Tikrit University. The researcher deliberately selected the research sample for the academic year (2022-2023 AD), where their number reached (77) students distributed among the stages of the college concerned with the research. Through the results of the statistical analysis of the data and the study of the relationship of variables with each other, conclusions were reached, the most important of which is identifying the percentage of contribution of each of the attention aspects to each of the free rhythmic movements and setting quantitative estimates for each rhythmic movement in terms of the studied variables among female students in the second and third years of the College of Physical Education and Sports Sciences at Tikrit University.

Keywords: Attention aspects, free rhythmic movements

Introduction
Sports are one of the most important human resources that must be addressed to achieve a degree of comprehensive quality in all our sports institutions, in light of international standards and the adoption of players' physical, skill, psychological, and mental preparation and training based on foundations and principles rooted in scientific research. Modern gymnastics is one of the most important sports, receiving significant attention in most countries around the world, especially developed ones. Because jumps, spins, and balances are its primary language, and because it differs from other sports in its multiple equipment and skills, its players must possess distinct mental abilities that qualify them to perform these skills, especially the difficult and mentally influential ones represented by attention in performing free rhythmic movements. This prompted the study to study the contribution of certain aspects of attention to the possibility of quantitatively estimating basic movements in rhythmic gymnastics. Herein lies the importance and need for the research.

Research Objectives
- To identify the aspects of attention among the research sample members.
- To identify the performance of free rhythmic movements among the research sample members.
- Identifying the strength and direction of the correlation between aspects of attention and each rhythmic movement.

Terminology
- **Aspects of Attention:** As (Abdul Hamid Ahmad: 1976 [1], p. 328) pointed out, "The process of attention is characterized by several aspects, as follows:

- **Intensity of attention:** This is the greatest amount of neural energy that can be lost during an activity involving psychological processes that occur with precision, clarity, and speed.
- **Focus of attention:** This is the psychological processes or activity (attention) directed toward a single object or activity.
- **Shifting attention:** The researcher agrees with what Adnan Yousef Al-Atoum: 2010 [2], p. 63) pointed out, which is "the ability to quickly direct attention from one activity to another with the same intensity."
- **Distribution of attention:** As Saad Jalal, Muhammad Hasan Alawi: 1975 [8], p. 368) pointed out, "It is the psychological processes and activity (attention) directed toward several objects or activities simultaneously."
- **Stability of attention:** "The ability to maintain sharp attention for the longest possible period."

Research methodology and field procedures

Research Methodology

Community and sample research

The research population was selected from female students in the College of Physical Education and Sports Sciences at Tikrit University, registered in the college's records for the academic year (2022-2023).

The researcher intentionally selected the research sample from female students in the College of Physical Education and Sports Sciences at Tikrit University for the academic year (2022-2023). The sample numbered (77) students, representing (89.5%), as shown in Table (1). The researcher then discarded some of the students' questionnaires due to their failure to complete all sections of the tests and questionnaires.

Table 1: shows the distribution of the research sample across the stages of the research.

College	Number	Stage	Stage	Notes
Physical education and sports sciences (Tikrit university)	83	50	27	After neglecting the form (1) of a student who did not take all the tests. After taking (5) students to conduct the pilot experiment (2) second stage (3) third stage

- **The primary study sample:** (77) female students representing the primary sample, to be used for the primary study, determining the standard levels for the test, and extracting the test's scientific coefficients.
- **The exploratory study sample:** (5) female students representing the exploratory study sample, to be used for the exploratory study.

Research Methods

In order for the researcher to complete her work to the fullest extent, she must utilize the tools and methods that assist her. This means "all the means and instruments that the researcher will draw upon at each stage of his research," as indicated by (Sami Muhammad Melhem: 2005) [10]. These are as follows:

- Observation.
- A questionnaire surveying experts and specialists on identifying the mental abilities that influence rhythmic gymnastics movements.
- Testing and measurement.

Devices and tools used

- A form to evaluate the students' performance for each rhythmic gymnastics' movement.
- One (1) video camera.
- A computer.

Procedures for Determining Research Variables

Determining Free Rhythmic Movements: To identify the basic movements in rhythmic gymnastics, the researcher surveyed scientific sources and references to identify the rhythmic movements taught in the curriculum for female students of the College of Physical Education and Sports Sciences in the Modern Gymnastics subject. These movements are:

- Scissor jump.
- Cat jump.
- Jumping with a push-up.
- Gazelle jump.
- Triple front jump.

Tool survey: The researcher conducted a survey experiment on March 2, 2023, on a sample of (5) female students, randomly selected from students in the (third and second) years of the College of Physical Education and Sports Sciences, Tikrit University. The purpose of the survey was to identify the obstacles and difficulties that the researcher might face. She also sought to extract the scientific foundations for the questionnaire and tests of the aspects of attention, represented by (validity and reliability). She photographed the students' performances and stored them on a CD.

Scientific foundations of tests

Validity of the questionnaire

As indicated by (Muhammad Hasan Alawi, Muhammad Nasr Al-Din Radwan, 2000) [7], the degree of validity is the most important factor for the quality criteria of tests and measures. The free rhythmic movements evaluation questionnaire achieved content validity when it was presented to a group of experts and specialists to confirm its suitability in determining the degree of each of the free rhythmic movements of female students.

Questionnaire Reliability

The researcher extracted the examiners' reliability coefficient, which is one of the main sources of variance in the scoring error on the selection scales that rely on the examiner's division rather than the correction key, as indicated by (Safwat Farag: 1989) [9]. When she evaluated the performance of the students in the survey sample, she then adopted the judges' evaluation of the students' performance. She then sought to extract a Spearman's correlation coefficient between the researcher's assessments and the assessments of the first judge, as well as with the assessments of the second judge, and extracted the correlation coefficient between the assessments of the two judges. Table (2) illustrates this.

Table 2: Values of the Spearman's coefficient (correction reliability coefficient) for the free rhythmic movement's performance questionnaire.

Free rhythmic movements	Evaluate the correlation coefficient of the first judge and the researcher	Evaluate the correlation coefficient of the second judge and the researcher	Correlation coefficient values of the first and second judgment
Scissor jump	0.703	0.824	0.348
Cat jump	0.704	0.796	0.665

Determining Mental Abilities (Attention Aspects): To identify some of the attentional aspects that influence the performance of free rhythmic movements among female students in the College of Physical Education, the researcher utilized a survey of scientific sources and references. Through this, the attentional aspects were identified and included in a questionnaire. The questionnaire was presented to a group of experts and specialists in testing, measurement, and motor learning, as well as gymnastics specialists, to survey their opinions on determining the ability that contributes to the performance of rhythmic movements. The researcher then sought to extract the Chi-square value for the experts' agreement and determine the acceptance of the most important aspects by comparing the calculated Chi-square value with its tabular value at a degree of freedom of (1) and a significance level of (0.05), which amounted to (3.84), as shown in Table (3). Two aspects of attention were accepted: (attention intensity, attention concentration).

Table 3: shows the number of those who agreed, the percentage, the calculated and tabular Chi-square values, and the acceptance of the attentional aspects according to the opinion of (10) experts and specialists.

Mental abilities		Number of approvers	Percentage	calculated value of Chi-square	table value of Chi-square	Type sig	accepting nomination	
							yes	no
manifestations of attention	attention intensity	9	90%	6.4	3.84	Sig	√	
	switching attention	7	70%	1.6		Non-sig		√
	focus of attention	10	100%	10		Non-sig	√	
	stability of attention	10	60%	10		Non-sig		√
	distribution of attention	6	60%	0.4		Non-sig		√

Defining Attention Aspect Tests: By reviewing a set of scientific sources and references that addressed the study of attention topics, the researcher found that there is a more common and widely used test in the field of physical education and sports sciences that can be used to measure students' attention abilities:

The Borden-Anfimov Scale for measuring attention, as indicated by (Ahmed Khater, Fahmi Al-Bayk: 1978) [3]. The study requires the application of the Attention Aspects Scale. The Borden-Anfimov Scale is a test that measures five aspects of attention: (attention intensity, attention concentration, attention distribution, attention shifting, and attention stability). It consists of a sheet of paper containing (31) lines of Arabic numerals distributed in groups, each group consisting of (3-5) numbers. Each line contains (10) groups, with a total of (40) numbers. In other words, the test contains (1240) numbers. The numbers were arranged in a standardized order and sequence, and care was taken to ensure that their distribution was unorganized and uneven to avoid the possibility of memorization.

Scientific Basis for Attention Tests: Since the tests used in this research were selected from scientific references and research that were published over a long period of time, the researcher sought to establish scientific parameters (validity, reliability, and objectivity), as these tests are standardized and approved in several studies in the field of physical education and sports science. However, the researcher wanted to verify the objectivity of these tests and determine their results, and that they measure the level of certain aspects of attention among female students at the present time, so that they could be adopted and applied to the research sample. She sought to extract characteristics from them:

Test validity: Test validity is the most important characteristic of a good test, as indicated by (Mahmoud Ahmad Omar (*et al.*): 2010) [6]. The researcher verified the validity of the Borden-Anfimov Attention Scale by extracting content validity when she presented the scale to a group of experts and specialists. It was found that there was complete agreement at a rate of (100%).

Reliability: Test reliability means "the degree of accuracy with which the test measures the phenomenon being measured," as indicated by (Laila Al-Sayyid Farahat: 2007) [5]. To extract the reliability coefficient, the principle of stable testing must be applied. This is a test that produces similar results, or the same results, if applied more than once under similar conditions, as indicated by (Ibrahim Ibn Abdul Aziz: 2010) [4]. To determine the reliability of the attention span test results, the researcher extracted Spearman's correlation coefficient values between the first application in the pilot experiment on March 2, 2023, and the re-administration of the tests on March 30, 2023, during a period that does not allow for learning or training. This method is based on administering the test or measurement to a single group of individuals twice in a row on two different days. The correlation between the scores of the first application and the scores of the second application indicates the stability coefficient (reliability) of the test. Table (4) illustrates this.

Table 4: shows the date of the first application and re-application and Spearman's correlation coefficient values for the attention span tests.

Tests	First application date	Second application date	Spearman's coefficient
Borden-Anfimov Attention Scale	2/3/2023	3/30/2023	0.868

The Main Experiment: Due to the completion of the procedures that qualify for conducting the main experiment, which confirmed the validity of the free rhythmic movements evaluation form and the tests nominated to measure aspects of attention, the researcher began conducting it on the research sample members, numbering (77) female students affiliated with the College of Physical Education and Sports Sciences at Tikrit University. The experiment was conducted in the gymnastics hall and lasted four days, beginning on Sunday, April 3, 2023, and ending on Tuesday, April 6, 2023. She filmed the students' performance of the free rhythmic movements, then applied the attention scale on the first day. On the second day, she filmed and saved the data on a CD, distributing it to a group of specialists to evaluate the students' performance of the movements. She then proceeded to transcribe the data and conduct statistical processing: The researcher used the Statistical Package for the Social Sciences (SPSS) to process the data in the following topics:

- Arithmetic mean.
- Standard deviation.
- Standard error.
- Spearman's correlation coefficient. 5- Pearson's correlation coefficient.
- Multiple regression.
- Contribution ratio.
- F-law for the significance of the contribution ratio.

Presentation and discussion of the results: After the students' performances of the free rhythmic movements (scissors jump and cat jump) were filmed, they were then displayed on a set of criteria stored on a CD, along with the evaluation form prepared by the researcher. After collecting the evaluation forms, the researcher sought to extract the total score the student achieved for each movement, based on the judges' estimates. She then extracted the average values based on the opinions of (5) criteria. She then proceeded to empty the attention scale forms to collect the sample members and extracted the values of the arithmetic mean, standard deviation, and standard error for the study variables. Therefore, the study's primary objective, which was to identify aspects of attention, was verified, as was the second objective, which was to identify the students' level of performance in rhythmic movements.

Table 5: illustrates this. (5) It shows the threshold size, the arithmetic mean, the standard deviation, and the standard error of the variables.

S. No.	Variables	Sample size	arithmetic mean	standard deviation	standard error
1	Scissor jump	77	4.787	1.2	0.139
2	Cat jump	77	3.827	1.667	0.181
3	Attention intensity	77	71.501	13.584	1.548
4	Attention focus	77	1.826	0.691	0.080

Correlation Coefficients of Research Variables: To identify the correlation coefficients of the research variables, a simple (Pearson) correlation was used statistically to achieve this purpose.

Correlation of the Scissors Jump Movement with Attentional Aspects: After statistically processing the data and studying the correlation of the Scissors Jump Movement with the Attentional Focus variable, it was found that there was a significant positive correlation, reaching (0.321), as well as a correlation at a degree of freedom of (75) and a significance level of (0.05) equal to (0.22), as indicated by (Wadih Yassin Al-Tikriti and Hassan Muhammad Al-Ubaidi: 1999) [11]. The researcher attributes this correlation to the fact that the process of focusing attention is fundamental to learning free rhythmic movements and sports in general. Students must have a high capacity for concentration when skills are presented and explained, which helps them learn, perform, and consolidate the skill automatically.

Table 6: shows the correlation matrix and the percentage of contribution of the Scissors Jump Movement and Attentional Aspects

Variable	Attention span	Focus of attention	Correlation value	Contribution rate	Calculated value of f	Correlation coefficient significance
Scissor jump movement	0.156	0.340	0.0321	0.201	10.203	0.09

The table shows that the correlation coefficient and the contribution ratio are significant. This is indicated by the calculated F value, which indicates a correlation between the scissors jump movement and the attentional aspects. As long as the contribution ratio is significant and significant, it can be selected using the F law and thus adopted, as the scissors jump movement is directly proportional to the focus of attention.

Table 7: shows the quantitative estimate of the scissors jump movement in terms of attentional aspects.

Variables	Transactions		Correlation coefficient	Correlation coefficient	Standard error of the coefficient	Calculated t value	Significance
	Nature of the coefficient	coefficient value					
Scissor jump	- a -	0.523	0.523	Multiple	0.165	2.700	Sig
Attention focus	- b1 -	0.390					

From Table (7), which shows the quantitative estimate of the scissors jump movement in terms of the students' attention span estimates, the linear regression equation can be derived as follows:

Quantitative estimate of the scissors jump movement = 1.652 + (0.390 × attention span value).

Relationship of the scissors jump movement to aspects of attention: After statistically processing the data and identifying the scissors jump movement with aspects of attention, it was found that there is a significant positive correlation between the scissors jump movement and the attention span variable, with the correlation coefficient reaching (0.523).

Table 8: show the correlation matrix and the percentage contribution of the cat jump movement to aspects of attention are shown.

Variable	Attention span	Focus of attention	Correlation value	Contribution ratio	Calculated value of f	Type sig
Cat Leap Motion	0.225	0.125	0.225	0.051	4.400	sig

The table shows that the correlation coefficient and the contribution ratio between the estimates of the cat's jumping movement and the attention focus variable among the female students are significant. As long as the contribution ratio is significant and significant, it can be tested using the F-law and thus can be adopted, as the cat's jumping movement is directly proportional to the attention focus variable.

Table 9: It shows the quantitative estimates of the cat's jumping movement in terms of the attention focus variable.

Variables	Transactions		Correlation coefficient	The nature of the relationship	Standard error of the regression coefficient	Calculated t value	Type sig
	Nature of the coefficient	coefficient value					
Cat leap	- a -	0.244	0.244	Simple	0.023	2.23	Sig
Attention focus	- b -	0.046					

From the table, which shows the quantitative estimate of the cat's jumping movement in terms of the students' attention focus variable estimates, the linear regression equation can be derived as follows:

Quantitative estimate of the cat's jumping movement = 4.425 + (0.046 × attention focus value)

Relationship of the cat's jumping movement to the manifestations of attention: After statistically processing the data and identifying the cat's jumping movement with the manifestations of attention, it was found that there is a significant positive correlation between the cat's jumping movement and the attention focus variable, with the correlation coefficient reaching (0.244).

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