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Building and codifying visual abilities tests for female students of the College of Physical Education and Sports Sciences for Girls

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Abstract

The field of physical education has recently witnessed development in sports activities as a result of studies and research carried out by many researchers, including studies on testing and measurement, as the field of tests in physical education and sports science has many horizons that extend to the fields of teaching, training and auxiliary sciences. It targets the athlete's category, whether they are within the categories of players or students of colleges of physical education and of all ages, as the tests are an essential part in the plan to improve physical and skilful performance. On the results of studies and research that take the test as a tool used for the purpose of reaching a solution to the presented problems,

In light of that comprehensiveness and multiplicity of the extension of these horizons by imposing the principle of specialization in the test must be adhered to in order to achieve the demands or goals of applying the tests. The field of physical education and sport science includes many sports activities that require many capabilities, including visual abilities, which is one of the capabilities that research and studies have proven its impact and effectiveness on skill performance. As the eye has a set of basic functions through which we can collect information about our surroundings, Since we can distinguish visual images, whether static or moving, the visual ability is the ability to receive visual stimuli, interpret and perceive them, and translate what has been visually perceived into movement or a group of kinetic forms.

From here came the importance of research in building and codifying tests for static and mobile visual capabilities and perception of horizontal depth, as these tests are an objective tool for measuring students' visual capabilities that enable specialists to diagnose the strengths and weaknesses of the student's visual ability and thus be able to address weakness and strengthen strengths, which positively affects The student's skill performance. As for the research problem, the two researchers were able, through reviewing scientific sources and references and previous studies, to arrive at the absence of tests for the visual abilities of the students of the College of Physical Education and Sports Science for Girls, and this situation indicates an existing problem for which appropriate solutions must be developed. Physical education and sports sciences for girls and placing them in front of specialists to use them in measuring the visual abilities and determining their levels of female students of the College of Physical Education and Sports Sciences.

Keyword*: codifying, abilities, tests*

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Research objectives

1. Building tests for the most important visual abilities of female students of the College of Physical Education and Sports Sciences for Girls.
2. Determining grades and standard levels for the most important visual abilities of female students of the College of Physical Education and Sports Sciences for Girls.

Research field

1. The human field: the first-year female students in the College of Physical Education and Sports Sciences for Girls - University of Baghdad.
2. Time range: 4/12/2018 to 4/6/2019
3. Spatial field: the playgrounds of the College of Physical Education and Sports Sciences for girls.

Research methodology and field procedures

Research Methodology

The two researchers chose the descriptive approach in the survey method for its convenience with the nature of the research problem.

Research community

The research community is determined by the female students of the first stage in the College of Physical Education and Sports Sciences for girls for the academic year 2018/2019, whose number is (112) students. The main sample (the builder sample and the sample of technicians), so that the two researchers took the entire research community, which makes the research more accurate and gives reliable results. Walker mentions: “In designing measuring tools we resort to increasing individual building samples, to increase the opportunity to measure smaller samples with these tools. In subsequent research "[1]

Tools and devices

1. Direct individual interviews.
2. A paper questionnaire form to obtain opinions.
3. A paper form to record data, information and test results.
4. A video camera (Z5) for recording long and short films consisting of a recording cassette, a processor, a temporary and permanent stored memory, a fixed document, a Japanese-made (Sony) type number (1).
5. Daytime LED strips or night lights with a thickness of (3) mm
6. Legal throwing sector.
7. Iron legal women's ball of weight, count (5).
8. A leather metric tape measuring (50) meters long, count (5).
9. whistle.
10. Colourful adhesive tape 5 cm wide.

Field research procedures

Determine the most important visual abilities of students

After reviewing the scientific sources and references and carrying out a number of personal interviews with the specialists, the two researchers prepared a questionnaire form that includes five of the visual abilities, and in order to determine the most important of these capabilities, the two researchers presented the form to (15) experts and specialists, and after collecting the forms and unpacking the data, the results resulted in the acceptance of capacity nominations. Those who obtained an agreement percentage (90%) or above according to the results of the agreement, three visual capabilities were chosen (fixed, moving, and horizontal depth perception).[2]

Building visual aptitude tests

After identifying the most important visual abilities, the two researchers constructed a test for each candidate visual ability, meaning building three tests, and then the two researchers presented them to (20) experts. In the field of testing, measurement, training and learning physics, and after gathering expert opinions about the validity of the tests, the tests were modified and finalized.[3]

Final image for the three visual abilities tests

1. Steady visual accuracy test for students in the effectiveness of pushing the weight.

- Test name: Steady visual accuracy test for students in the effectiveness of pushing gravity.
- The objective of the test: To measure the static visual accuracy of second-stage students in the College of Physical Education and Sports Sciences in the effectiveness of pushing the weight.
- Tools: a legal throwing strip, a legal women's ball bearing number (5), a whistle, a coloured adhesive tape 5 cm wide, a paper registration form.
- Procedures and conditions:

1. A circle with a diameter of 5 meters shall be drawn with adhesive tape on flat ground, this circle is located at a distance of (1) meter from the throwing line and contains within it (5) circles, one inside the other and their area smaller on a regular basis, i.e. the perimeter of each is far from the perimeter of the other 50) cm, to be the radius of the largest circle from its centre to its circumference (2.5) meters, and the circles are numbered from the smallest to the largest area (1-5), as in Figure (1).
2. The tested student stands inside the circle of the throwing sector and pushes the weight to target the circle (1) whose circumference is 3 meters away from the throwing line and which represents the most accurate area, and then repeats the attempts to push the remaining balls of gravity.
3. The tested student is free to choose the preferred arm to push the weight.
4. The tested student is given five consecutive attempts without pauses.

- Register :
  - If the ball of gravity falls inside Zone No. (5), the tested student (1) is given one score.
  - If the ball of gravity falls inside Area No. (4), the tested student (2) is given two degrees.
  - If the ball of gravity falls inside Area No. (3), the tested student (3) is given three scores.
  - If the ball of gravity falls inside Area No. (2), the tested student (4) is given four degrees.
  - If the ball of gravity falls inside Area No. (1), the tested student (5) is given five degrees.
  - If a ball falls outside the test area, or if the attempt is incorrect, the tested student is given a zero, and the attempt is not repeated.
  - The maximum score for the test in the five correct attempts is (25) marks.
- Measurement unit: (degree).

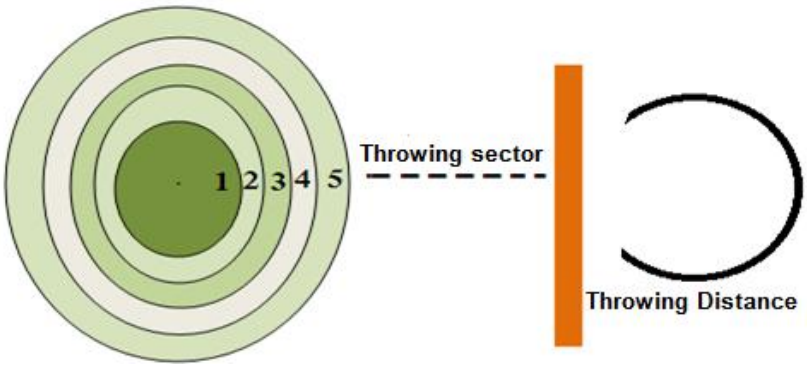

Figure 1. An illustrative chart to test the static visual accuracy of the students in the effectiveness of pushing gravity (prepared by the researcher)

2. Test the moving visual accuracy of students in the effectiveness of pushing gravity:

- Name of the test: the test of visual accuracy moving for students in the effectiveness of pushing gravity.
- The objective of the test: to measure the moving visual accuracy of second-stage students in the College of Physical Education and Sports Sciences in the effectiveness of pushing the weight.

- Devices and tools: a legal throwing sector, a ball of legal women ball number (5), daytime floor led strips (LED) or double lighting with a thickness of (3) mm by the remote control of the remount, as shown in Figure (2), a paper registration form.
- Procedures and conditions:

1. Day-to-day LED strips are drawn on flat ground (5) circles, each of them with a diameter of (50) cm arranged together, distant one from the other with a line of (50) cm long, these five circles are parallel to the firing line and a distance away from it (3) meters, as these LEDs are distinguished by the availability of safety and security factors, and they do not constitute an obstacle, and are not affected by the impact of gravity on them, and control the exchange of lighting for remote circuits.
2. The tested student stands inside the circle of the throwing sector and pushes the weight to target the circle that is illuminated by the examiner's control by the Remount. It represents the instruction to initiate the payment for each attempt, not on the appointment to change the location of the spatial accuracy by alternating between one attempt and another to repeat the attempts to push the remainder of the weight as shown in the figure (2).
3. The tested student has the freedom to choose the preferred arm to push the weight.
4. The tested student is given five consecutive attempts without pauses.

- Register :
  - If the ball of gravity falls within the area specified by the double lighting, the tested student is given (3) three scores.
  - If the ball of gravity falls on the line between one of the two circles specified by the double lighting, the tested student is given (2) two degrees.
  - If the ball of gravity falls at a distance of (50) cm from the circle specified by the double lighting and outside the lines between the lines, the tested student is given (1) one score
  - If a ball falls outside the test area or in an incorrect attempt, the tested student is given a zero.
  - The maximum score for the test is in the five (15) correct attempts.
- Measurement unit: (degree).

Figure 2. Shows a picture of the daytime running lights with the remote control

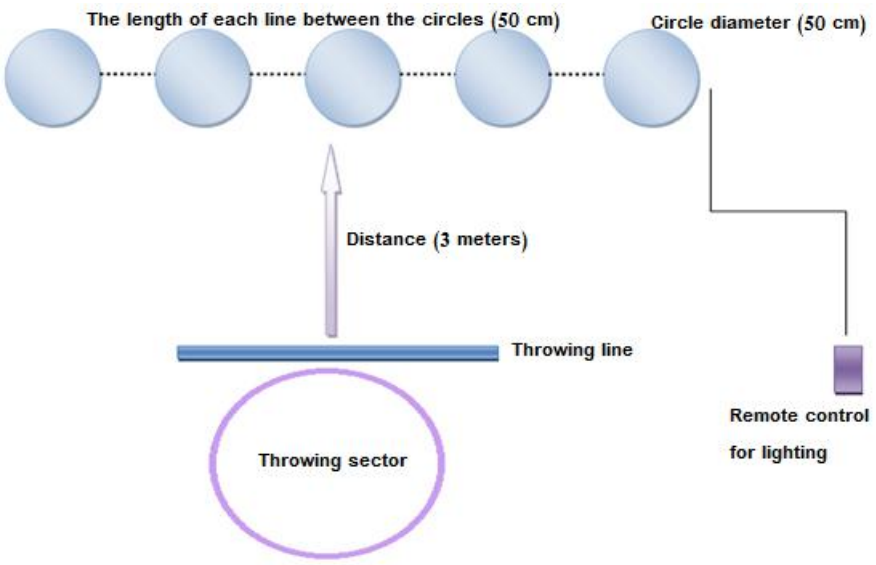

Figure 3. An illustrative diagram to test the moving visual resolution for students in the effectiveness of pushing gravity (prepared by the researcher)

The students 'horizontal depth perception test on the effectiveness of pushing gravity[4]

- Name of the test: the test of perceiving the horizontal depth of the students in the effectiveness of pushing gravity.
- The objective of the test: To measure the perception of the horizontal depth of second-stage students in the College of Physical Education and Sports Sciences in the effectiveness of pushing the weight.
- Tools: a legal throwing strip, a legal women's ball bearing number (5), a whistle, a coloured adhesive tape 5 cm wide, a paper registration form.
- Procedures and conditions:

1. The coloured adhesive tape shall be drawn on flat ground, a rectangle with a length of (5) meters and a width of (50) cm divided into (10) square areas measuring (50 x 50) cm numbered (1-10) in sequence, the rectangle is far from the shooting line by a distance of (1.5) meters and is parallel to it vertically, as shown in Figure (4).
2. The tested student stands inside the circle of the throwing sector and pushes the weight to target any specific area (the numbered square) with her freedom to mention his number to the test-taker before performing the attempt, to repeat the attempts to push the remaining balls
3. For each attempt, one specific region for the tested student is free to choose her and this region will not be repeated in subsequent attempts.
4. The tested student has the freedom to choose the preferred arm to push the weight.
5. The tested student is granted only one trial attempt, and her score is not counted in the test.
6. The tested student is given five consecutive attempts without pauses.

- Register :
  - If the ball of gravity falls within the area specified by the tested student, she is given two (2) two degrees.
  - If the ball of gravity falls on any of the area lines determined by the tested student, she is given one (1) score.
  - If a ball falls outside the test rectangle, or in an incorrect attempt, the tested student is given a zero.
  - The maximum score for the test is in the five (10) correct attempts.
- Measurement unit: (degree).

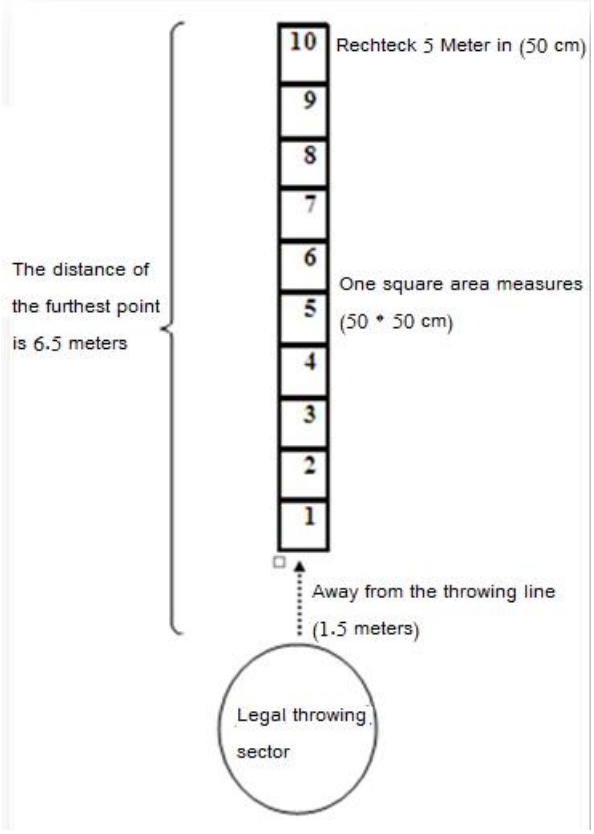

Figure 4. An illustrative diagram for the students' horizontal depth perception test on the effectiveness of pushing gravity (prepared by the researcher)

Pilot study

The pilot study is practical training for the researcher to find out for himself the negatives and positives that he meets during the conduct of the tests for future modification,[5] as the two researchers conducted the pilot experiment on a sample of 12 students on 12/25/2018 and after three days the experiment was repeated And on the same sample to verify the scientific basis. Exploratory experience

The pilot study is practical training for the researcher to find out for himself the negatives and positives that he meets during the conduct of the tests for future modification,[6]as the two researchers conducted the pilot experiment on a sample of 12 students on 12/25/2018 and after three days the experiment was repeated And on the same sample to verify the scientific basis.

The scientific basis for the tests

First: The test is validated

The two researchers used the validity of the content by presenting the tests to a group of experts and specialists, as the test is considered valid if it is presented to a number of experts in the field that measures the test, and they judge that it measures what was set to measure it. 80% agreed on it, and thus the two researchers verified the validity of the tests.

Second: Stability test

The reliability coefficient shows the relationship between two groups of test scores on the individuals themselves, and there are several methods for obtaining the scores, including the preparation of the application .[7]

Third: Objectivity of the test

Objectivity is defined as the extent to which the arbitrator or examiner is free from subjective factors (45: 2013: 5). To verify objectivity, the two researchers adopted the scores of two arbitrators. He extracted the value of the Pearson correlation coefficient between the scores of the arbitrators and the results showed that all the tests have a high degree of objectivity as shown in the table (1).

Table 1. Shows the values of the stability factor and the objectivity factor of the tests

Tests	Stability	Sig.*	Statistical significance	Objective coefficient	Sig.*	Statistical significance
Static visual ability	0.918	0.000	moral	0.941	0.000	objective
Moving visual ability	0.904	0.000	moral	0.926	0.000	objective
The ability to perceive horizontal depth	0.892	0.000	moral	0.928	0.000	objective

*Correlation significant if (Sig) (0.05)

Fourth: The difficulty and ease of the three visual abilities tests

By adopting the scores of applying each of the three exams on the building sample of (100) students. Determining the number of successful and unsuccessful students in each test by adopting the highest and lowest half of the total score for each group of them and applying the Difficulty Coefficient Law to address these results for each test separately, and as shown in Table (2), so that each test acquires the appropriate difficulty and ease condition to acquire each test. Including the condition of difficulty and ease of proportion to the sample according to the criterion of acceptance mentioned previously.

Table 2. Shows the results of the difficulty coefficients and ease of tests of visual abilities

Tests	Total marks	Half of the total mark	N	Difficulty factor	Ease factor	Acceptance test	Difficulty and ease
Static visual ability	15	7.5	90	0.61	0.39	(0.70-0.30)	Acceptable
Moving visual ability	15	7.5	90	0.47	0.53	(0.70-0.30)	Acceptable
The ability to perceive horizontal depth	5	2.5	90	0.52	0.48	(0.70-0.30)	Acceptable

Fifth: the discriminatory power of the three visual abilities tests

To confirm the principle of avoiding measurement errors that result from re-applying the three tests and repeating this application on the construction sample for many times, the researcher adopted the degrees of its application and the method of the two peripheral groups in the same method and percentage in the same previous procedure to verify the discriminatory strength condition for each test. However, the statistical treatment In this procedure was using the law (t-test) for non-correlated samples, so that each test acquires from it the condition of the strength of discrimination from the scientific conditions for acceptable sport tests, as shown in Table (3).

Table 3. Shows the results of the discriminatory power of the general mental ability test prepared

Tests	Group	N	Mean	SD	(t) value*	(Sig.)	indication	Force discrimination
Static visual ability	Supreme	24	20.58	0.776	14.123	0.000	Sig.	Special
	Minimum	24	15.13	1.727				
Moving visual ability	Supreme	24	12	0.59	22.054	0.000	Sig.	Special
	Minimum	24	7.75	0.737				
The ability to perceive horizontal depth	Supreme	24	8.08	0.408	9.552	0.000	Sig.	Special
	Minimum	24	6.25	0.847				

*The test is differentiated if (Sig.) (0.05)

As the acceptance of differentiation of tests depends on the significance of the statistical difference between the scores of the two terminal groups of the statistical analysis sample, and (27%) is considered one of the most accurate percentages to determine the number of individuals in these two extremes groups .[8]

The main experience

The tests were applied to the building sample of (100) students on 14/1/2018 for a period of three days, according to the results of the pilot experiment, for a period of (15) minutes for the purpose of warm-up, and before the application, the tests are presented and explained by the assistant work team.

After a period of two months, and on 3/16/2019, the tests were applied to the same sample for the purpose of codification and building of standard levels tables, and the two researchers took care of fixing the conditions for applying the tests.

Statistical means

The researcher verified that the study data were processed using the SPSS system.

Results and discussions

Tests	Units	N	Great score for the test	Mean	SD	Skewness
Static visual ability	Degree	100	25	20.49	2.358	-0.838
Moving visual ability	Degree	100	15	10.61	1.844	0.088
The ability to perceive horizontal depth	Degree	100	10	7.3	0.977	-0.489

Table (4) shows the arithmetic mean, standard deviations, and torsion coefficient values as an indicator of the distribution and spread of the sample scores in the three visual aptitude tests. The table shows that all the torsion coefficient values were confined between ±1, meaning that all test scores fall below the equilibrium curve and are thus ready to begin determining levels Standard tests for visual abilities of the research sample.

Determining the criteria for visual aptitude tests for the research sample

"The raw scores obtained from applying the tests have no significance unless we refer to a standard that defines the meaning of these scores. "Accordingly, the raw scores obtained from the implementation of the skill tests were converted into standard scores in a sequential manner, as in the following steps:

- The arithmetic mean is placed in the middle of the values in front of the standard value of 50, noting that the values are listed from (20-80)
- The standard deviation is subtracted from the mean value in the 50th position to obtain the standard score of 30 and so on up to the value 20.
- The standard deviation is added to the value of the arithmetic mean in the rank of 50 to obtain the standard score of 60 and so on.

Determine the standard levels of visual abilities tests for the research sample

The standard levels are "standard levels that represent the purpose required to achieve the ratio for any description and represent the level that individuals must relate to in a particular test. The researchers have set the standard levels using Cause method and the normal distribution as" is one of the most common distributions in the field of physical education. Traits measured in this domain have a distribution approaching the normal curve.

The determination of the standard levels is done on the basis of the sample in the variables that are naturally distributed and that the percentage of fields located between the standard marks of the natural meaning of (99.73) from the states that fall within three standard deviations of the arithmetic mean with a value of (6 standard units) on three levels Adopted by the two researchers, "Each level is 2 units of standard signs."

1. The level (below the middle) represents 15.73%.

2. The (average) level represents 68.27%.
3. The level (above average) represents 15.73%.

Table 5. Shows the raw scores, their limits and percentages corresponding to the standard levels of visual abilities tests for the research sample

Levels	Above average		Average		Below average	
Standard score limits	61-80		41-60		21-40	
A second visual ability test	22.85 -24,61		19.23 -22.84		16.85 -19.22	
	N	%	N	%	N	%
	13	13%	36	36%	51	51%
Moving visual ability test	11.84 -14.92		9.27 -11.83		7.44 -9.26	
	N	%	N	%	N	%
	14	14%	30	30%	56	56%
A test of the ability to perceive horizontal depth	8.15 -9.56		6.22 -8.14		4.38 -6.21	
	N	%	N	%	N	%
	23	23%	43	43%	34	34%

Table (5) shows that there is a difference in the percentages achieved by the sample, which were not according to the percentages determined for them in the normal curve. Normal level, and for all tests, At the intermediate level, the sample achieved percentages of (36% - 3% - 43%), which are less than what is prescribed for them in the normal curve and for all tests. As for the above-average level, the sample achieved percentages of (13% - 14% - 23%), which is close to the percentage determined for it in the normal level and for all tests.

It is evident from the results of Table (5) that the sample was concentrated at the below-average level, and the two researchers reinforced this to the weakness of the visual abilities of the research sample. Negative on the sense of performing the basic skills of the various activities because of their active role in receiving the performance images, as well as focusing and paying attention to the motor field of the skilful performance of the various activities. If Mustafa Hussein believes that "the link between the manifestations of attention and reaction constitutes one of the basic requirements in performance, especially since the movement performance is closely associated with the intensity of attention, which results in a good reaction and a correct movement response",[8] "The ability to activate the requirements of visual and sensory perception increases the effectiveness of mental processes that play a role in imparting meanings to our sense of various sports movements and is an important part of the information processing system, i.e. analysis, including the sensory information coming from the surrounding environment .[9]

Parking points out that visual perception consists of a large range of inferential processes that use the hints presented in the medium to place the two-dimensional basis on the network, which creates a realistic perception of the three dimensions ",[10]In light of the results and their discussion, the two researchers showed the level of visual abilities of the students of the College of Physical Education and Sports Sciences to put before the specialists a tool to evaluate these capabilities.

Conclusions and recommendations

Conclusions

1. Building three tests for visual abilities (static visual ability - moving visual ability - horizontal depth perception ability). These tests measure the purposes for which they are designed for female students of the College of Physical Education and Sports Sciences for Girls.
2. Standard levels of visual abilities tests were determined for female students of the College of Physical Education and Sports Sciences for Girls.
3. All tests achieved the highest percentage in the below-average level.
4. All tests achieved ratios close to the normal distribution at the above-average level.

Recommendations

1. The use of corrected tests by the two researchers in assessing the visual abilities of students of the College of Physical Education and Sports Sciences for Girls.

2. Adopting the results of standard levels in determining the strengths and weaknesses of students in visual abilities.
3. Conducting similar research on the male sample.

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