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Setting standard levels of cognitive achievement in offensive skills for the Wasit clubs karate athletes of sports season / 2022-2023

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Abstract

The Objectives of the study constructing a cognitive test for the Numaniyah club players` offensive skills in the game of karate and determining standard scores for the level of cognitive achievement in the offensive skills of the Numaniyah Club players in the sport.

The importance of research lies in building a knowledge test that may further interest in the cognitive aspect of offensive skills in karate sport, as well as measuring the degree of cognitive achievement in karate sport by learning various offensive skills in this kind of sports.

The researcher used the descriptive survey method due to its suitability for the achievement of the research aims. All research procedures were conducted during the period from 15/10/2022 to 4/28/2023. The research sample was selected by the intentional method, and it consisted of 122 karate athletes (youth category), under (20) years old, from the clubs of Wasit Governorate (Numaniyah Club, Wasit Club - Al-Haidariyya Youth Center - Talent Center - Kim School) at Wasit Governorate/ Iraq. Conclusions: In light of the objectives and questions of the research, the methodology used, the sample, and the cognitive tests, the researcher reached the following conclusions:

- The test prepared by the researcher earlier can reveal the level of cognitive achievement of the youth's offensive skills in karate.
- The level of cognitive achievement of the offensive skills of the research sample is good.
- The prepared cognitive test can be utilized as a means for evaluating performance in later research on the sport of karate.
- In its final form, the test consisted of (66) statement that were divided into three levels (basic positions, defense skills, offensive skills).

Keywords: Cognitive achievement, offensive skills, karate

Introduction

Modern training is characterized by being more specialization- oriented through focusing on the requirements of specialized performance in order to reach the highest levels in sports performance through developing and improving the physical, skill-related, and planning capabilities of players in addition to their qualifications and their personal and conscious characteristics in the light of the requirements of the sports activity practiced.

And since the cognitive aspect is of great importance in developing the skill level of the player, tools must be developed to measure this aspect for each sport and skill that can be acquired or taught. Karate is a combined sport that requires its players to enjoy special physical characteristics so that they can practice it and gain good results. Moreover, skillful performance is an effective and important factor in fulfilling distinguished achievements. (9: 119)

Cognitive tests have the same importance as psychological and physical tests in identifying and diagnosing the player's level of performance from the various aspects (13:34). Citing Carroll, the cognitive field is closely related to the player's motor field, and Ahmed Abdel-Rahman (2:19), quoting martens, indicates that an individual's failure in remembering a piece of information or to perform an appropriate response to a specific stimulus is often related to cognitive failures in other areas such as perception and remembrance, which are a key factor in producing the response.

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And this can serve as an indicator of the information processing ability of the individual as, among what is included in the motor learning theories is the so-called cognitive stage that highlights the need to provide direct and indirect knowledge and information about the exercised activity to the learner. Fathia Hassan (1991) ^[10] indicates that objective tests play an important role in the field of sports activities, especially those that contribute to selecting the best and most accurate measurements. (30: 10)

Mr. Mustafa (2007) ^[7] confirms that individual sports in particular have recently been characterized by rapid development due to the progress of new plans, techniques, and methods of play. This necessitates the development of training systems and methods to keep pace with this progress and the scientific advances made a matter which made the most important duties of educators to develop training strategies and draw implementation plans that aim to improve the level of players (7:25).

Shashinna Gamine (1990) ^[24] and Wajih Shamandi (1993) ^[23] agree that Karate is one of the sports that require extraordinary physical and kinetic abilities to be practiced, as it depends entirely on flexibility, strength, and speed to perform the effective skill, in addition to the availability of agility. So, in case of not developing such capabilities, this would cause harm the players` training hence, they would not achieve the required results and fail to hit high records. (23:76) (22:61)

Research questions

Does the proposed test determine standard scores for the level of cognitive achievement in offensive skills in the karate game for the players of Numaniyah Sports Club?

What is the level of cognitive achievement in the offensive skills of the Numaniyah club players in the karate event?

Based on studies whose subjects similar to the subject of our research, and which followed the same steps in designing cognitive scales, the research hypotheses are as follows: The proposed test determines standard scores for the cognitive achievement level of the Numaniyah club players` offensive skills in the karate game.

Objectives of the study

Constructing a cognitive test for the Numaniyah club players` offensive skills in the game of karate and determining standard scores for the level of cognitive achievement in the offensive skills of the Numaniyah Club players in the sport.

The importance of research lies in building a knowledge test that may further interest in the cognitive aspect of offensive skills in karate sport, as well as measuring the degree of cognitive achievement in karate sport by learning various offensive skills in this kind of sports.

Research Terminology

Standards: They are standardized scores in which each player's score is shown on the basis of the number of the standard deviation units of their score from the group mean. (20:104)

Standard Score: It is one of the standard means for evaluating the numbers recorded by the players in light of the average and the standard deviation, in order that the standard levels (raw scores) can be put as fixed marks, as this facilitates comparing all results, collecting them and treating them statistically to extract the implications. (5: 29)

Levels: Muhammad Sobhi Hassanein (2004) believes that levels are similar to standards in that they are internal bases for judging the phenomenon of evaluation as they take qualitative form in the light of what the phenomenon should be. This type is commonly used in physical education as is the case with the levels normally set by physical education colleges for admitting students fulfilling specific requirements and exceeding certain thresholds in standard tests set for measuring the physical qualifications. (15-30)

Muhammad Nasr al-Din Radwan 2011 ^[18] defines levels as means (which can be grades, opinions, or others) that are used to interpret the score of the examinee in order to return it to them. Levels are considered as bases for evaluating, from within the phenomenon, the measurements that indicate what this phenomenon should be. Levels are known as simulation (CR) because they do not require holding a comparison between the testees and the group to which they belong. (18: 24)

Previous studies

Muhammad Al-Mutawakel Ali Allah Hassan (1994) ^[14] conducted a study titled "Building a Cognitive Test for Fencing Players" with the aim of building a knowledge test for fencing players as well as determining levels of knowledge among them in the sport of fencing. The researcher used the descriptive approach and the number of the research sample was (30) male and female fencing players. The validity was calculated by means of the validity of differentiation and reliability by means of the split- half method. The most important results were the inclusion of (57), statements representing all axes, in the test in the final form of the test.

"Muhammad Khalifa" (1990) ^[1] conducted a study titled "Building a Knowledge Test for Handball Students at the Faculty of Physical Education / University of Jordan", with the aim of building a knowledge test for this stage and measuring handball-related information of students of the specialty as well as preparing two equivalent pictures. The researcher used the descriptive approach. The number of the research sample group was (60) male and female students majoring in handball. The validity was calculated by means of the validity of differentiation, while reliability was calculated by using the split-half method. The most significant result was the preparation of two equivalent pictures. Each picture contained (75) statement. The test consisted of the following axes and with the following distribution of marks: the general knowledge 20%, Skill qualification 12%, basic skills 28%, play rules 18%, plans 13%, exploration, analysis and evaluation 9%.

Safia Ahmed Mohii El-Din (1990) ^[8] with a study titled "Building a Knowledge Test in Modern Innovative Dance for Students of the College of Physical Education for Girls in Al-Jazeera ", with the aim of building a knowledge test in innovative dance. The researcher used the descriptive approach and the number of the research sample group was (60) female students from the fourth band. The validity was calculated by means of the validity of differentiation, and the reliability by means of the split- half method. The most important results were that the test included in its final form (42) statements, with a difficulty coefficient of 0.30-0.70 and a coefficient of discrimination between 0.30-0.54.

Lowe (1995) ^[25]: conducted a study titled "Sports Knowledge of Sports Coaches and Teachers in Secondary Schools at Hong Kong ", with the aim of measuring the level of sports

knowledge to prevent sports injuries during the practice of sports activity. The research sample consisted of (305) secondary school students. The axes included (Anatomy, Physiology, sports diet, external factors affecting the occurrence of sports injuries). The most important results were that coaches and sports teachers should pay attention to knowing the causes of injuries during the implementation of school programs, and focus on the importance of medical sports culture for protection against injuries.

Field Research Procedures

First: Research Methodology

The researcher used the descriptive survey method due to its suitability for the achievement of the research aims. All research procedures were conducted during the period from 15/10/2022 to 4/28/2023 as follows:

Second: Research Scopes

The Temporal Scope

- All research procedures were conducted from 15/10/2022 to 4/28/2023 as follows:
- Surveys for the period from 11/15/2022 to 12/25/2022.
- Basic study from 14/1/2023 to 28/ 4/2023.

The Human Scope: Karate players at Numaniyah Sports

Club in Wasit Governorate, Iraq.

Spatial Scope: All research procedures were conducted in the sports halls and stadiums of Numaniyah Sports Club in Wasit Governorate/ Iraq

Third: Research Sample:

The research sample was selected by the intentional method, and it consisted of 122 karate athletes (youth category), under (20) years old, from the clubs of Wasit Governorate (Numaniyah Club, Wasit Club - Al-Haidariyya Youth Center - Talent Center - Kim School) at Wasit Governorate/ Iraq.

The sample was divided as follows:

- (102) young athletes who were subjected to the basic study.
- (20) young players on whom the survey was conducted.

Fourth: Conditions for selecting the sample:

- To be registered in the Iraqi Karate Federation.
- To be keeping on training without interruption.
- The training period should not be less than two years.
- To agree to take part in the research and accept its measurements.

Table 1: Statistical description of the data of the basic research sample in the basic primary variables n = 122

Primary variables	Measurements	Statistical significance of characterization			
		Arithmetic means	Average	Standard deviation	Skewness coefficient
	Age / year	12.89	13	0.80	0.20
	Height/cm	149.29	149	7.75	0.28
	Weight/ kg	46.46	45	4.98	0.44
	Number of practice years	3.94	4	1.14	- 0.57

Regarding the homogeneity of the data of the research sample in the basic primary variables, it is clear from Table (1) that the skewness coefficients range was from (- 0.57 to 0.44), which indicates that the extracted measurements are close to normal, as the values of the normal skewness coefficient range between ± 3 and are very close to Zero. This confirms the homogeneity of the members of the research group in the basic primary variables.

Fifth: Data collection methods and tools

Personal interviews

Personal interviews were conducted with a number of experts specialized in karate, sports training and tests and measurements in order to make use of their opinions about the form on some offensive skills.

Tests

Experts' opinions, about the most important cognitive tests, were surveyed to measure some offensive skills (front punch with the right hand, the opposite punch with the back hand, the front straight kick) under study, where some punching and kicking skills were identified to test their skills.

Questionnaires

- The opinion of experts and specialists was polled through a survey form in order to determine some of the most important offensive skills for young people in the sport of karate.
- The opinion of experts and specialists was polled through a survey form in order to determine the most important tests that measure some of the offensive skills of young

players in the sport of karate.

Sixth: Devices and tools used

- Sports hall or futsal court.
- Whistle.
- Stopwatches to measure time to the nearest 1/100 seconds, 3 in number.
- Data collection and dump forms.

Seventh: Statistical treatments

The researcher used the following statistical treatments:

- Measures of central tendency (arithmetical mean
- average, standard deviation, torsion coefficient)
- T test
- Percentile standards
- Orthogonal factor analysis by means of principal component analysis method · Orthogonal analysis using the rotated component matrix

The conditions for testing the experts and specialists were determined as follows:

- To have experience in teaching and training karate for a period of no less than (10) years.
- To have a postgraduate degree from physical education faculties.
- To have attended international training courses in the field of training and karate.

Eighth: Steps of building the cognitive test

- Determining the goal and content of the cognitive test. This test aims to build an objective tool on the basis of

which the knowledge level of offensive skills in karate sport, for 18-20 year-old young people, is measured as well as set standard levels for the scores of the players under study. The researcher made an analysis of the theoretical framework for the various offensive skills in karate by relying on previous studies, books and references as well as several interviews with specialists in order to provide a comprehensive briefing on the various theoretical aspects of offensive skills (under study).

- Determining the dimensions (areas of cognitive testing and their relative importance to determine the areas of cognitive testing. Hence, A questionnaire form was distributed to survey the opinions of 9 experts and

specialists in this field regarding the validity of the proposed fields and the various skills that make up each field in the sport of karate for young people aged 18-20 years. The fields are 3 and include: (basic postures, basic skills for hands, basic skills for legs). The aim behind this step is determining the relative significance of the mentioned three fields of cognitive test by giving 100 mark so that the total sum of the percentages for all three dimensions equals 100% at the end. Furthermore, the percentages of each field's contents are calculated separately, where the sum of the percentages for each field is equal to the percentage of the field as a whole, and table (2) clarifies this.

Table 2: The relative significance of cognitive test fields

S	fields	skills	Compatibility frequency	percentage	Relative significance	order	
1.	Basic positions	Kiba-dachi	14	100%	09%	01	
		Zenkutsu-dachi	14	100%	10%	02	
		Kou-kutsu-dachi	14	100%	08%	03	
2.	Hands basic skills	Defence by hands	Age-Uke	14	100%	08%	05
			Ude-Uke	12	86%	06%	08
			Gedan barai	13	93%	07%	07
			Shuto- Uke	10	71%	04%	12
			Soto – Uke	11	78. 50%	05%	11
			Oi -tsuki	14	100%	08%	04
		Attack by hands	Kizami-tsuki	8	57%	03%	16
			Gyaku Tsuki	12	86%	05%	10
			Uraken-Tsuki	9	64%	04%	13
3.	Legs` basic skills	Mae Geri	14	100%	04%	14	
		Mawashi Geri	12	86%	07%	06	
		Ura Mawashi Geri	9	64%	05%	09	
		Yoko Geri	10	71%	03%	15	
		Yushiro Geri	8	57%	03%	16	
4.	Total			.9%	100%		

Determining cognitive levels of the test is based on Blume`s division which includes (knowledge, comprehension,

application). The athlete must be familiar with these levels as shown in table no. (3).

Table 3: Shows the relative significance of every cognitive dimension in each field according to views of experts

S	Fields	Skills	Knowledge	Comprehension	Application	Total	
1.	Basic positions	Kiba-Dachi	30%	30%	40%	100%	
		Zenkutsu-Dachi	30%	30%	40%	100%	
		Kou-Kutsu-Dachi	30%	30%	40%	100%	
2.	Hands basic skills	Defence by hands	Age- Uke	25%	25%	50%	100%
			Ude-Uke	25%	25%	50%	100%
			Gedan barai	25%	25%	50%	100%
			Shuto- Uke	25%	25%	50%	100%
			Soto – Uke	25%	25%	50%	100%
			Oi -tsuki	35%	35%	30%	100%
		Attack by hands	Kizami- tsuki	35%	35%	30%	100%
			Gyaku Tsuki	35%	35%	30%	100%
			Uraken-Tsuki	35%	35%	30%	100%
3.	Legs` basic skills	Mae Geri	35%	35%	30%	100%	
		Mawashi Geri	35%	35%	30%	100%	
		Ura Mawashi Geri	35%	35%	30%	100%	
		Yoko Geri	35%	35%	30%	100%	
		Yushiro Geri	35%	35%	30%	100%	

Preparing a specification table: In order that the researcher can determine the number of questions for each field statements, and after completing the specification table, the total number of field questions must be equal to the total

number of test questions. The relative significance of the cell that equals the product of field relative significance multiplied by the cognitive level relative significance divided by 100, as shown in table no. (4)

Table 4: Shows the Specifications of the cognitive test of the offensive skills in karate

S	Fields	Skills	Knowledge	Comprehension	Application	Total	
1.	Basic positions	Kiba-Dachi	2.7%	2.7%	3.6%	09%	
		Zenkutsu-Dachi	3%	3%	4%	10%	
		Kou-Kutsu-Dachi	2.4%	2.4%	3.2%	8%0	
2.	Hands basic skills	Defense by hands	Age-Uke	2%	2%	4%	8%0
			Ude-Uke	1.5%	1.5%	3%	6%0
			Gedan Barai	1.75%	1.75%	3.5%	7%0
			Shuto- Uke	1%	1%	2%	4%0
			Soto – Uke	1.25%	1.25%	2.5%	5%0
		Attack by hands	Oi -Tsuki	1.6%	2.8%	3.6%	8%0
			Kizami- Tsuki	0.6%	1.05%	1.35%	3%0
			Gyaku Tsuki	1%	1.75%	2.25%	5%0
			Uraken-Tsuki	0.8%	1.4%	1.8%	04%
			Mae Geri	1.4%	1.4%	1.2%	4%0
3.	Legs` basic skills	Mawashi Geri	2.45%	2.45%	2.1%	7%0	
		Ura Mawashi Geri	1.75%	1.75%	1.5%	5%0	
		Yoko Geri	1.05%	1.05%	0.09%	3%0	
		Yushiro Geri	1.05%	1.05%	0.9%	3%0	

- **Preparing and formulating test statements:** The researcher studied the most important items` building questions in cognitive tests that were used in previous research and scientific studies, and he utilized three forms: (true and false questions, multiple choice questions, and picture- based questions).
- **Formulating statements:** After determining the relative value of the dimensions as well as the methods of their construction, the test included in its initial form 80 phrases distributed over the three fields according to the relative value of the dimension through its various forms of construction.
- **The survey experiment:** the survey studies were carried out during the period from 11/15/2022 to 25/12/2022, on a group of (17) experts. The questionnaire containing the (80)- phrase proposed in the cognitive test distributed on the three axes, was handed over to the experts and (14) out of the (17) experts handed over their responses.
- **The first exploratory experiment:** This exploratory study was conducted for the period from 1/12/2022 to 5/12/2022, in the halls of Al-Haidariya Youth Center and Wasit Club. The researcher proceeded to apply the cognitive test in its second form, consisting of (66) phrases, after modifying and deleting the phrases that were not approved by the experts to be on the research sample consisting of the youth of Numaniyah Sports Club. The aim was to Calculate the scientific coefficients for the tests of the study and also included the following additional objectives:
 - Examining the validity of the devices and tools for the tests.
 - Training the assistants on how to implement the tests.
 - Organizing the process of carrying out the tests in steps and in a sequential and easy manner.
 - Observing the sequence and orderliness of the tests.
 - Training on how to record test results in registration forms to ensure the accuracy of measurement.
 - Identifying the difficulties that hinder the implementation of measurement procedures in order to find appropriate solutions.
 - The researcher prepared the tools used in the research for the tests to ensure their validity, and the researcher arranged the tests in steps. Besides, the researcher explained the tests used and the method of their implementation to the assistants, as well as the method of recording the results in the registration forms.

Results of the first exploratory study

- The researcher, through the implementation of this exploratory experiment, reached the following results: Devices and tools are valid for tests.
- The assistants are able to carry out tests and record results in the registration forms.
- Organizing the tests in the form of stations is consistent with the level of the sample members, a matter which helped to implement the tests in a sequential and orderly manner.
- Getting the results to calculate the scientific coefficients for the tests.

The second exploratory experiment

The study aims to calculate the scientific coefficients for the physical and skill tests under study during the period from 7/12/2022 to 25/12/2022.

First: The validity of the excellence in the cognitive test

The researcher analyzed the test items and extracted the coefficient of difficulty and ease of the items, in order to evaluate each word and judge it. The distinction coefficient of 0.40 and more was adopted to accept the phrase, by applying cognitive tests on the exploratory research sample. The sample is represented by two groups (a distinguished group (Brown Belt) consisting of (10) young people and an undistinguished group (green belt) consisting of (10) young people from the same research group but outside the main group. The goal of the experiment is to calculate the differentiation validity as shown by the following tables:

Second: The reliability of tests

To calculate the reliability of the tests, the researcher used the method of applying the tests and then re-applying them again. The tests were applied once then re-applied after a week of the first application on the sample of the exploratory study, to find the correlation coefficient between the first application and the second application. In order to ensure an accurate result of it, the test applied Siberman-Brown equation, as the reliability coefficient was 0.81.

Preparing the key of the cognitive test was done by defining the standard levels through which the scores of the respondents can be judged through the standard level to which they belong. Five levels (very good, good, average, fair average, weak) were prepared.

Determining the test time: The researcher determined the appropriate time by calculating the experimental time, which is the period taken by the fastest player and comparing it with the period taken by the slowest player. Then we add the two periods and divide the result by (2) to extract the arithmetic average of the test time.

The final instructions for conducting the cognitive tests:

- Each testee must read each statement carefully in order to understand it, and then be able to answer.
- All statements must be responded to, and no statement can be left without an answer.
- The testee must answer items by himself without the help of others.
- Putting more than one mark as an answer for a single item is not allowed.
- The test should be Explained and instructions be given to the testees before starting the test.

- The actual test time is (40) minutes.

Presentation, interpretation and discussion of results

- With regard to the first hypothesis, the proposed test determines standard scores for the level of cognitive achievement of offensive skills for young people aged 18-20 years in karate sport.
- The standard levels were determined using the normal distribution curve through the following steps: The researcher combined the two levels in the middle of the curve so that this level corresponds to (68.25%) of the standard averages under the curve, and in this way we have obtained five levels, as shown in table no. (5).
- Good tests are those that guarantee standards giving the raw values that are extracted through the application of tests in terms of implication and meaning, as standards help the testee in his relative position within his group (17: 301).

Table 5: Shows standardized levels, raw scores, and standardized ratios of the cognitive test

Limits of raw scores	Limits of standard z-scores	Limits of the modified standard t- scores	Standard levels	Standard percentages
49 - 66 (and more)	1,2,3	80- 71	Very good	2. 14%
42- 48	1,1,2	70- 61	Good	13.59%
34 - 41	+1, -1	60- 40	average	68. 27%
27 - 33	-1, 1,-2	39- 30	Fair average	13.59%
19 – 26 (and less)	-1, 2,-3	29- 20	weak	2.14%

The second hypothesis: Young players aged (18-20) years old in karate activity have a good level of cognitive achievement in the offensive skills of the sport of karate.

In order for the researcher to be able to know the level of cognitive achievement of offensive skills in the sport of karate, he applied the test to the research sample of the (80) blue and brown-belt testees whose training age is not less than two years without interruption in exercising in the Numaniyah Sports Club, as shown in table no. (6).

Table 6: It shows the statistical value of the test results of the sample through the arithmetic mean and standard deviation

Sample members` number	Arithmetic mean	Standard deviation
80	44.7	2.3

The arithmetic mean is (44.7), which is a value confined between (42-48) and the standard deviation is (2.3).The results indicate that the level of knowledge achievement of some offensive skills of the young athletes in karate sport was of a good level when these results are compared with the standard levels.

As Nimatullah Walaa Abdel-Fattah Ahmed Al-Sayed confirms that the greater the mastery of the theoretical knowledge specific to each sporting activity and the methods of applying it are, the more able the learner will be to develop and strengthen the skill level to a maximum limit (21:195).

The impact of education and training on offensive and cognitive skills and on thinking in performance level is noticeable here.

This is what (Qasim Hassan Hussein) indicated, where the researcher confirms that cognitive preparation leads to maturing the process of thinking among the tested players and make them acquire significant capabilities such as analysis, synthesis and evaluation. They are mental processes that need continuous thinking for solving the competition requirements according to the situation, as the skill-related motor performance is a mere application of the acquired knowledge

and information. (11:114)

Conclusions and Recommendations

Conclusions

In light of the objectives and questions of the research, the methodology used, the sample, and the cognitive tests, the researcher reached the following conclusions:

- The test prepared by the researcher earlier can reveal the level of cognitive achievement of the youth offensive skills in karate.
- The level of cognitive achievement of the offensive skills of the research sample is good.
- The prepared cognitive test can be utilized as a means for evaluating performance in later research on the sport of karate.
- In its final form, the test consisted of (66) statement that were divided into three levels (basic positions, defense skills, offensive skills).

Recommendations

- . There is a need to pay attention to the cognitive aspect while teaching various offensive skills.
- Further research and similar studies on the sport of karate are needed.
- It is necessary to seek the assistance of the previous experiences of former coaches and players in this field.
- Use of these tests in training programs must be made, as well as re-applying them after the end of the season is needed.

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