

## **Finding Standard Levels for Some Special Physical Fitness Elements and Basic Skills of Volleyball for Juniors in the Middle Euphrates Clubs**

**Ali Radhi Abdul Hussein<sup>1</sup>, Nabeel Kadhim Hrebid<sup>2</sup>**

<sup>1</sup>General Directorate of Education in Najaf, Ministry of Education, Iraq, <sup>2</sup>College of Physical Education and Sport Sciences, Al-Qasim Green University, Iraq.

Corresponding author e-mail: [allitufaly1@gmail.com](mailto:allitufaly1@gmail.com)

Article History: Received on 12 August 2024, Revised on 13 November 2024,  
Published on 28 December 2024

**Abstract:** Since tests and measurements are thought of as the fundamental sports tests that reveal the true level that the player reaches, they shed light on the secrets of the ability so that the coach can know the true level of the players to achieve good results. This highlights the significance of the research by identifying standard levels for young volleyball players through specific physical fitness elements and basic skills using evaluation tools. Regarding the research problem, although there are several tests for the components of particular physical fitness and fundamental volleyball skills, the results only provide raw values that are meaningless to the coach. Therefore, in order to assess the components of unique physical fitness and fundamental skills, these raw scores need to be transformed into standard ratings. We can establish benchmarks and levels for junior volleyball players in the Middle Euphrates clubs by assessing their actual physical attributes and fundamental ball skills. The purpose of the study was to determine the degree of fundamental skills and unique physical fitness components among junior volleyball players in the Middle Euphrates clubs. Establishing benchmarks for assessments of particular physical fitness components and fundamental abilities for young volleyball players in the Middle Euphrates clubs. In order to address the nature of the study problem, we employed a descriptive technique that made use of the survey method as well as relationships and correlations. The research sample's highest percentage in the preparation, agility, and strength tests was at the standard level (good), according to the most significant findings. Additionally, the research sample's maximum percentage in the speed tests was at the standard level, or average. Additionally, the research sample's lowest percentage in the spiking test was at the standard level, which is quite poor.

**Keywords:** Basic Skills, Fitness Elements, Standard Levels, Volleyball

### **A. Introduction**

Scientific progress is one of the variables of our modern era, as it has included all of life, including the sports aspect, which interacts with the human sciences to prepare

the individual in a balanced manner that paves the way for reaching the highest levels in sports events, as reaching championships in all sports events is linked to an integrated series of rules based on scientific foundations for selecting the player, educating him, and training him, and the science of training is one of these sciences (Hasan, & Malih, 2023).

Volleyball has a distinguished position in the world and continues to gain popularity and public admiration among sports followers. We are in the field of physical education have given this game great attention, which has led to raising its level, increasing the demand for playing it, and making it an exciting game with wide spread. It is characterized by many changing situations and conditions, as the transition from attack to defense and vice versa occurs at a high speed, which requires physical, skill, planning and psychological preparation that enables players to control the field and act in the best possible way. The nature of performance in volleyball is characterized by a fast pace and surprise, in addition to its successive and sequential skills that require a high level of accuracy in performance (Abbas, & Ahmed, 2021).

The science of testing and measurement, along with the science of sports training and other sports sciences, are among the basic necessities that must be taken into consideration when using the means that would raise the level to what satisfies ambition, summarizing the efforts and capabilities. The importance of this science has emerged through the possibility of objective evaluation of each of the physical, skill, planning, functional and other aspects as indicators of the current situation. Tests are one of the important means used to evaluate players' achievement. They are one of the most common means and thus become an important incentive for developing their abilities and knowledge. Tests have purposes beyond relationships and motivation. Among these purposes is selecting the facts, concepts, theories and opinions of the greatest importance from among a large group of information. It has become necessary to set standard levels and reach a scientific basis for evaluating the level of performance. The use of scientific methods is in line with the modern trends of developed countries. This has prompted us to try to determine standard levels for the elements of special physical fitness and basic skills to determine the level of fitness of players and try to identify areas of weakness or deficiency in order to treat them. Hence, the importance of the research came through finding standard levels for young volleyball players through the elements of special physical fitness and basic skills using evaluation tools represented by tests and measurements, as they are considered the basic sports tests that reveal the true level that the player reaches, as they shed light on the secrets of the ability so that the coach can know the true level of the players to achieve good results (Abed Malih, & Sadeq, 2015).

In order to evaluate young volleyball players according to the level of skill performance they reach, this evaluation must be objective and far from personal assessments, which achieves justice in giving grades. Given the existence of several

technical tests that measure special physical qualities and basic skills, the content of which combines skill and physical quality (Star, & Malih, 2012). It includes in its composition multiple aspects of the development of motor coordination, despite the multiplicity of tests for the elements of special physical fitness and basic skills in volleyball, its results only give raw scores that cannot give a real meaning to the coach (Noor Hatem Al-Haddad, 2023). Therefore, these raw scores should be converted into standard scores so that we can evaluate the specific physical fitness elements and basic skills and be able to determine the real level of physical qualities and basic skills with the ball and set standards and levels for junior volleyball players in the Middle Euphrates clubs.

Identifying the level of special physical fitness elements and basic skills of junior volleyball players in the Middle Euphrates clubs. Determining standard levels for tests of special physical fitness elements and basic skills to help evaluate junior volleyball players in the Middle Euphrates clubs (Hrebid, et al., 2022). Human field in this study: young players in the clubs of the Middle Euphrates for the 2023-2024 season. Time field: The period from 5/9/2023 to 20/3/2024. Spatial field: Sports halls and outdoor yards in the clubs of the Middle Euphrates governorates.

## **B. Methods**

We used the descriptive approach with the survey method because it is suitable for the nature of the research problem. The research community and its sample: The research community was determined by the players of the first and excellent division clubs in the Middle Euphrates governorates (Babil, Karbala, Najaf, Diwaniyah) in volleyball for the junior category, aged (14-15) years, with a total of (168) players. The research sample was selected using the stratified random method, with a total of (120) players. Methods of data collection: Sources and references, tests and measurements, Questionnaire. Tools and devices used in the research: Electronic calculator (Pentium 4), Electronic stopwatches (Casio) type (2), Video camera (Sony) type, Metal measuring tape (30 m) long, Legal volleyballs number (6) balls, and Medicine balls number (2) weight (2 kg). In order to determine the validity of specific fitness elements and basic skills for junior volleyball players, we nominated a set of specific fitness elements and basic skills. It was put in a questionnaire form and presented to experts and specialists in the field of volleyball, numbering (7) experts.

## **C. Results and Discussion**

After collecting the forms and transcribing the data, some of all the elements of physical fitness and basic skills were accepted through the moral value ( $\chi^2$ ), and Table 1.

**Table 1. Validity of the Specific Physical Fitness Elements and Basic Skills for Junior Volleyball Players**

N	Tests	Validity		Chi <sup>2</sup>	Sig type	Result
		Validity	Non-Validity			
1	Muscular Strength	7	0	7	Sig	Acceptable
2	Speed	7	0	7	Sig	Acceptable
3	Endurance	3	4	0.14	Non-Sig	Not Acceptable
4	Flexibility	4	3	0.14	Non-Sig	Not Acceptable
5	Agility	7	0	7	Sig	Acceptable
6	Serving	7	0	7	Sig	Acceptable
7	Receiving	5	2	1.28	Non-Sig	Not Acceptable
8	Set	7	0	7	Sig	Acceptable
9	Spiking	7	0	7	Sig	Acceptable
10	Blocking	5	2	1.28	Non-Sig	Not Acceptable
11	Defending the Court	4	3	0.14	Non-Sig	Not Acceptable

The value of Chi<sup>2</sup> at a degree of freedom (1) at a significance level of (0.05) reached (3.84).

**Determining the validity of physical fitness tests for junior volleyball players:**

In order to determine the validity of the tests of the specific physical fitness elements and basic skills of junior volleyball players, we nominated a group of tests and put them in a questionnaire form and presented them to the experts and specialists in the field of volleyball, numbering (7) experts. After collecting the forms and transcribing the data, the tests were accepted through the significant value (Chi<sup>2</sup>), and Table 2.

**Table 2. Validity of Physical Fitness Tests for Junior Volleyball Players**

N	Fitness elements	Tests	Validity		Chi <sup>2</sup>	Sig type
			Validity	Non-Validity		
1	Strength	One-Handed Medicine Ball Throw (Explosive Arm Power)	3	5	0.5	Non Sig
		Hand volleyball throw (explosive arm power)	8	0	8	Sig
2	Speed	Run for (10) seconds (transitional speed)	2	6	4	Non Sig
		Run 150m from the flying position (transitional speed)	8	0	8	Sig
3	Agility	Zigzag running in the Barrow method (agility)	8	0	8	Sig
		Multi-directional running (changing direction) (agility)	1	7	4.5	Non Sig
4	Serving	Mass Serving test	3	5	0.5	Non Sig
		Test the accuracy of the Serving skill	8	0	8	Sig
5	Set	Testing the set near the network	8	0	8	Sig
		Remote set test from network	1	7	4.5	Non Sig
6	Spiking	front Spiking test	7	1	4.5	Sig
		Back Spiking test	2	6	4	Non Sig

The value of Chi<sup>2</sup> at a degree of freedom (1) at a significance level of (0.05) reached (3.84).

We conducted the exploratory experiment on (8) players from the clubs (Al-Qasim, Al-Hashimiya, Al-Madhatiya) for the junior volleyball category. The experiment was

conducted at (3) o'clock in the afternoon on (12/10/2023) in the closed hall of Al-Qasim Forum to test the special physical fitness elements and basic skills in volleyball. After (7) days had passed, the experiment was repeated on (19/10/2023) on the same individuals and under the same conditions. Its aim was: 1) identify the time taken for each test as well as the total test time; 2) the level of difficulty of the tests for the research sample; and 3) extract the scientific bases for the tests (reliability and objectivity).

To determine the validity of the selected tests, we utilized content validity as a measure. This process involved presenting the test items and structure to a panel of experts in the relevant field (Kadhun, & Abed Malih, 2022). The experts assessed the tests to ensure that their content accurately represented the domain being measured and aligned with the intended objectives. By incorporating expert feedback, we were able to confirm that the test items were comprehensive, appropriate, and relevant, thus establishing the content validity of the tests (Abdul, & Hrebid, 2023). To calculate the reliability coefficient of a test, we often rely on the principle of stability, which asserts that a reliable test should yield similar results when administered multiple times under the same conditions. One widely used approach is the **test-retest method**, where the same test is given to the same group of participants at two different points in time, separated by a specific interval in this case, 7 days. We then calculate the reliability coefficient by determining the simple correlation coefficient ( $r$ ) between the scores from the first and second test administrations (Mohamed et al., 2022). To ensure the reliability coefficient is not influenced by random chance, they assess the significance of the correlation using a t-test for the correlation coefficient. This process verifies that the observed relationship reflects true consistency in the test's performance over time, rather than being the result of random fluctuations or external factors. as shown in Table 3.

Objectivity refers to the degree to which test results are free from subjective influences or biases introduced by the examiner or judge. In this study, we assessed the objectivity of the tests by calculating the **simple correlation coefficient** between the scores assigned by two independent judges (Judge 1 and Judge 2). A high correlation coefficient indicates a strong agreement between the judges, signifying that the test results are largely independent of individual judgment or subjective factors (Maarib Jawad Kadhim & Fatimah Abed-Malih, 2022). This method ensures that the evaluation process is standardized and reliable, minimizing personal bias in scoring as shown in Table 3.

**Table 3. The Reliability Coefficient and Objectivity Coefficient for the Physical Fitness Elements Tests In Volleyball**

N	Tests	Reliability Coefficient	T R Calculated	Sig type	Objectivity Coefficient	T R Calculated	Sig type
1	Medicine Ball Throw with Hands	0.88	4.54	Sig	0.91	5.38	Sig
2	150m Flying Run	0.91	5.38	Sig	0.92	5.75	Sig
3	Barrow Zigzag Run	0.88	4.54	Sig	0.91	5.38	Sig
4	Serving Skill Accuracy Test	0.80	3.27	Sig	0.85	3.95	Sig
5	Near Net Set Test	0.91	5.38	Sig	0.92	5.75	Sig
6	Forehand spiking Test	0.80	3.27	Sig	0.88	4.54	Sig

\* The tabular correlation value at a significance level of (0.05) and a degree of freedom of (6) was (0.62).

After we completed the basic requirements for conducting their work in detail and confirmed the suitability of the tests for the sample and the validity of the tools and devices used in the research, the main experiment was conducted on (1/11/2023) on the players of the Middle Euphrates Clubs (juniors) aged (14-15) years in volleyball, numbering (120) players.

We used the SPSS statistical package, including: 1) Arithmetic mean; 2) Standard deviation; 3) Simple correlation coefficient; 4) Standard score (z); 5) Adjusted standard score; 6) Test (t-r) for the significance of differences; and 7) Chi-square. After collecting and statistically processing the data, we reached the results that they decided to present in the form of tables.

### Display and Analysis of the Results of the Physical Fitness Elements Tests

**Table 4. The Arithmetic Means and Standard Deviations for the Physical Fitness Elements Tests For Volleyball**

N	Tests	Measurement Unit	Mean	Std. Deviation
1	Medicine Ball Throw with Hands	Cm	11.07	1.03
2	150m Flying Run	Second	23.02	2.13
3	Barrow Zigzag Run	Second	9.25	1.37
4	Serving Skill Accuracy Test	Degree	6.49	1.17
5	Near Net Set Test	Degree	5.72	1.92
6	Forehand spiking Test	Degree	7.11	1.33

Table 4 shows the values of the arithmetic means and standard deviations of the tests, where the arithmetic mean for the test (throwing the medicine ball with hands) reached a value of (11.07), while the standard deviation was (1.03). Either the test (running 150m from the flying position) had an arithmetic mean of (23.02) or a standard deviation of (2.13), or the test (zigzag running using the Barrow method) had an arithmetic mean of (9.25) or a standard deviation of (1.37), Either the test (the accuracy of the sending skill test) had an arithmetic mean of (6.49) or a standard deviation of (1.17), either the test (the close-to-network preparation test) had an arithmetic mean of (5.72) or a standard deviation of (1.92), either the test (the front smash test) had an arithmetic mean of (7.11) or a standard deviation of (1.33).

## Presentation, Analysis and Discussion of the Modified Standard Scores and Standard Levels of Volleyball Players

**Table 5. The Adjusted Standard Scores, Standard Levels, Number of Players For Each Level, and Percentage of Tests**

Modified Standardized Test Scores	Standard levels	Strength		Speed		Agility		Serving		Set		Spiking	
		players	Percentage	players	Percentage	players	Percentage	players	Percentage	players	Percentage	players	Percentage
80above	Very good	15	%12.5	11	%9.16	13	%10.83	8	%6.67	16	%13.33	9	%7.5
79.9-70	Good	35	%29.16	29	%24.16	30	%25	44	%36.67	47	%39.17	35	%29.16
69.9 -60	Average	30	%25	40	%33.33	37	%30.83	25	%20.38	35	%29.16	42	%35
59.9 -50	Acceptable	20	%16.67	25	%20.38	26	%21.67	28	%23.33	15	%12.5	29	%24.16
49.9 -40	Weak	13	%10.83	10	%8.33	11	%9.16	9	%7.5	5	%4.17	4	%3.33
39.9 Below	Very weak	7	%5.83	5	%4.17	3	%2.5	6	%5	2	%1.67	1	%0.83

Table 5 shows the adjusted standard scores and their corresponding standard levels according to the normal distribution, the number of players for each level, and the percentage for each level in the tests of the special fitness elements. The largest number of players appeared in the (explosive ability) test at the (good) level, reaching (35) players, with a percentage of (29.16%). While the largest number of players appeared in the (transitional speed) test at the (average) level, reaching (40) players and a percentage of (33.33%), while the largest number of players appeared in the (agility) test at the (average) level, reaching (37) players and a percentage of (30.83%), while the largest number of players appeared in the (sending) test at the (good) level, reaching (44) players and a percentage of (36.67%). While the largest number of players appeared in the (preparation) test at the (good) level, reaching (47) players and a percentage of (39.17%), while the largest number of players appeared in the (crushing) test at the (average) level, reaching (42) players and a percentage of (35%).

### Displaying the Standard Tables and Their Corresponding Raw Scores for the Research Tests

To interpret the sample results for the studied tests, we calculated standard scores and categorized them into levels based on the normal distribution, often represented by the Gauss curve (Al-Jubouri, & Hussein, 2022). This approach aligns with the principle that many measured traits and characteristics approximate a normal distribution. We divided the data into six distinct levels, each corresponding to a specific range within the normal distribution (Abdul Hussein, et al., 2021). These levels were determined by splitting the data across three standard deviations to the right and left of the arithmetic mean. Each range within these levels included a single standard score. The methodology ensured a systematic categorization of scores into six standard ranges that reflect varying degrees of performance relative to the mean. The division highlights the natural distribution of results, with most values clustering around the mean and fewer values extending toward the extremes.

This process facilitated a clear and standardized interpretation of the test scores, as summarized in Table 6.

**Table 6. The Standard Degree and Their Corresponding Raw Degree for the Physical Fitness Elements Tests for the Research Sample**

Standard degree	Raw degree Strength	Speed	Agility	Serving	Set	Spiking
80 -above	14.28- above	20.86- below	7.85- below	10.03- above	11.6- above	11.13- above
79.9-70	14.27-13.24	20.87-23	7.86-9.23	10.02-8.85	11.5-9.58	11.12-9.79
69.9 -60	13.23-12.2	23.01-25.14	9.24-10.61	8.84-7.67	9.57-7.65	9.78-8.45
59.9 -50	12.1-11.07	25.15-23.02	10.62-9.25	7.66-6.49	7.64-5.72	8.44-7.11
49.9 -40	8.74-9.77	27.29-25.16	12-10.63	4.15-5.32	1.88-3.8	4.45-5.78
39.9 - below	8.73 - below	27.30 - above	12.01 -above	4.14- below	1.87- below	4.44- below

#### **D. Conclusion**

The standard level (good) in the preparation, agility and explosive power tests was the highest percentage achieved by the research sample. The standard level (average) in the transition speed tests was the highest percentage achieved by the research sample (Abod, & Al Haddad, 2022a). The standard level (very weak) in the crushing hit test was the lowest percentage achieved by the research sample. The majority of the sample are at the levels (average - good) (Abdul, & Shaalan, 2021).

The necessity of benefiting from the standardized tests that were used as a means of objective and real evaluation to measure the specific physical fitness and basic skills in volleyball (Abod, & Al Haddad, 2022b). Adopting the standard grades and levels that were determined for the tests of the specific physical fitness elements and basic skills in volleyball (Radhi et al., 2022). Working on using standardized tests for physical skills and elements and other basic skills in the field of volleyball for the purpose of determining standard grades and levels for them (Abbas, & Malih, 2021). The necessity of conducting tests continuously during the training stages to show the improvement in the level of physical fitness elements and basic skills of volleyball players (Abdul Hussein, et al., 2021).

#### **E. Acknowledgement**

Thanks to all parties who help us in this article. We also thank to General Directorate of Education in Najaf, Ministry of Education, Iraq, and College of Physical Education and Sport Sciences, Al-Qasim Green University, Iraq.

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