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Factorial construction a battery of skills test for soccer player under 15 years old

بناء عاملي لبطارية اختبارات تقنية للاعبي كرة القدم أقل من 15سنة

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Abstract:

the study aims to identify technical characteristics by constructing a battery of standardized technical tests and using them during the selection and evaluation process of U15 footballers, we used the descriptive method on a sample composed of (50) football players from the state of El Tarf, who were chosen intentionally and to collect data, we used technical skill tests.

After collecting the results and processing them statistically by factorial analysis, it was concluded to build a battery of technical tests intended for coaches in order to use them in the process of selecting football players and evaluating their level during the sports season.

On this basis, the study recommended the use of standardized scientific tests during the process of selecting and evaluating soccer players and moving away from the traditional and random methods applied by many coaches in Algerian soccer clubs**.**

Keywords: Test battery; technical skill; football; soccer player under 15.

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1. Introduction:

Football is part of the collective games that require to rely on theoretical and scientific aspects, taking into account the scientific and objective foundations in order to achieve the objectives set. Therefore, importance should be given to all aspects during the training process so that the level of the players can be upgraded for the better The economic and technological development that has taken place has been In the world, its effective impact on the development and progress of sports events in general and football in particular, since it has had the greatest share of this development and the progress due to the connection of the science of sports training with other sciences and to take advantage to develop and formulate the correct concepts of the coaching process according to the contexts and the modern scientific foundations of coaching (Ghazi and Hachem, 2013, p. 22), the science of coaching has developed rapidly and its theories have taken a new direction to follow modern football trends in terms of playing methods, skillful and technical performances, tactical movements and high physical abilities, and in light of the spread of professionalism and more complex performances and sophisticated, the more necessary it is to keep up with all that is new in the science of sports training is a necessity that must be taken into account when planning the training process and developing its programs.

Performance is the main objective that each team seeks to achieve, so the countries compete in search of ways to ensure and study the best bases to select players with all the dimensions, stages and requirements of these means, because it is no longer enough to rely on personal experience, superficial observation and chance to arrive at the optimal choice, but it has become necessary to take into account the causes and stages of science and rely on standardized observation, field and laboratory experimentation, and tests and measurements that reveal special abilities, which allow the player to excel and be creative (Al- Saud, 2013, p.13) Achieving high levels in any of the sports is linked to a set of scientifically proven procedures and steps to select an athlete.

Therefore, tests and standards are a necessary scientific means for the pursuit of legalized scientific progress in the field of sport in order to reach high standards and achieve achievement and ideal performance (Allawoui, 2000).

The basic skills in football are a specific type of work and performance that requires the use of muscles to move the body or some of its parts in order to obtain particular physical performances. In this way, it depends mainly on the movement and includes an interaction between cognitive processes and emotional cognitive processes to achieve integration in the performance, and here we must know There are certain basic skills which mainly depend on the technique of performance , and there are other skills that depend on the ability of the player to respond to external stimuli related to others in real competitive situations, and this is what actually happens in football activity, and we also notice that some players appear in a way that is characterized by They excel in skillful performance during training, but they do not show the same level during matches because they are unable to respond properly to different game situations.

And since the learning of basic skills in football is the process by which the skillful behavior of the player is modified or changed, the modification or change must be the outcome or result of what may happen to the personality of the player at the end of the educational

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situation, and since skillful performance motor learning is a developmental process The individual's capacity for movement to perform the skill and master it in the form of physical and motor strengths, mental abilities and psychological preparations of the individual, so it is important to see how the player learns and how to find the guiding framework in order to develop and improve his skillful performance practice in football (Atiyah, 2017, p. 107).

Technical testing is an essential and integrated part of the training process, which aims to improve the technical level of the talented player in the future, and based on the existing data, we had to develop a strategy on which to build the selection process. and the evaluation of players in a proper scientific way from various aspects, especially from the technical side.

Through the monitoring of the football match by the researchers, he noticed a weakness in the technical performance of the football players for the category of under 15 years old. The researcher believes that one of the reasons for the weakness of the technical aspects of basis of young football players is the fact that coaches rely on traditional methods to select the player without resorting to standardized scientific tests, in light of all of the above and the valuable opinions of researchers in the theories and curricula of sports training in football, we decided to ask the question of the following year, which explains the problem (The central question):

- Is there a battery of technical skill tests to select and assess footballers under 15?

1.1. Study hypotheses:

1- Simple factorial construction of basic technical skills in terms of skills testing for footballers under 15.

2- Technical tests of candidates to deduce the extracted basic technical skill factors for football players.

1.2. Study objectives:

1- Determine the simple overall construction of basic technical skills in terms of technical events for the under 15 category.

2- Appointment of technical tests to deduce extracted basic technical skill factors for footballers in the U15 category.

1.3. The importance of the topic:

- Determining the simple factorial construction of basic skills in terms of technical tests for the U15 category.
- Nomination of technical tests to infer the factors of basic technical skill extracted for soccer players for the U15 category.
- Building a battery of technical tests for the purpose of selecting and evaluating soccer players under 15 years old.

1.4. Previous and similar studies (Literary Review):

1.4.1. Hazem Mohamed Abou Youcef (2005):

Title: "Identifying principles of cadet's selection for football players in Egypt".

Objective: The study aims to identify the most important tests and measurements that can be used to select young people from the morphological-physical-skill-physiological aspects.

Approach: The researcher used the descriptive method, and the sample members were (26) players from the national football team for juniors under 16 years old.

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Results: The best measurements, tests elected to accepted factors like the morphological variants (minimum rate of oxygen consumption), skilful variants: (shoot the ball to the farest distance with right foot –average of shooting toward goal from distance of 16,5m – runing 30meter with the ball in strait line)

1.4.2. Bouhaj Meziane (2008):

Title: "The process of evaluating physical and skill abilities through a battery of tests during the selection of soccer players, middle class (17-19 years)".

Objective: The study aims to highlight the importance of evaluation in general and physical - skill evaluation through a battery of tests to select football players, as well as correct previous mistakes made by coaches by relying on observation and matches, and their distance from the scientific aspect, in addition to highlighting the role of the scientific aspect in the process of selecting football players.

Approach: The researcher used the descriptive method, and the sample members were (164) Of which 104 players from 41 teams were tested and the interview sample consisted of 30 people for football players middle class (17-19 years).

Results: The researcher concluded that a battery of tests to assess the physical and skillful abilities of players in the selection process is a scientific and methodological work.

On the other hand, the researcher concluded that the coach who relies on competitive interviews and observation during the selection process finds it difficult to manage players during training.

1.4.3. kabouya Mohammed (2010):

Title: "Assessment and identification of a skill test battery for Algerian football players (12-14 years)".

Objective: The study aimed to construct the most appropriate assessment methods for the different stages that are likely to support the trainer from multifaceted psychomotor observation to a set of skill tests.

Approach: The researcher used the descriptive method, and the sample members were (1200) for football players Categories: U12, U13, U14.

Results: The researcher proposed skill assessment tools for Algerian football players between the ages of 12 and 14 years.

1.5. Theoretical aspect of the study:

1.5.1. The Battery:

It is a set of standardized tests applied to the same people and its derivative standards allow for comparison (Hassanin, 1995, P. 44).

1.5.2. The Test:

It is a standardized situation designed to show a sample of an individual's behavior, where its value depends on the extent of its real connection between the individual's performance of it and his performance in other similar situations from his real life (Al-Tai, 2005).

1.5.3. Basic Skills:

The basic skills in football are those motor vocabulary with different duties that are performed within the framework of the law of the game, whether with or without the ball, and the proficiency of the team players in all forms of basic skills is considered as the basis on which the success and superiority of the team in the skill field is formed (Dhiabat and Al-Jabouri, 2013, P. 87).

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1.5.4. Soccer:

It is a game in which two teams participate, each consisting of eleven players, and each team tries to enter the ball into the opponent's goal, and the successful attempt is called a goal, and the winner is the team that scores the largest possible number of goals during the two halves of the match, which lasts forty-five minutes each. Players use their feet, heads, or any part of their bodies except for their hands or arms to push or control one of the balls (Al-Zubaidi, 2008, P. 179).

2. The practical aspect and the methodological procedures of the study:

2.1. Research Methodology:

In this study, the descriptive approach was relied upon, as it is considered one of the most widely used research methods, especially in the field of educational, psychological, social and mathematical research, The list between the different phenomena (Abdel Hafez and Bahi, 2002, P 83).

2.2. Research Community:

The study population is considered the original community from which the sample was selected, as the study population represents all young football players for the state of El-Taref for the U15 category.

2.2.1. Research Sample:

Due to the nature of the research and the methodology used, the researcher selected the research samples according to the ruling purposes for each stage of the research work, which are as follows:

A- Sample of the second exploratory experiment:

The sample was selected randomly, consisting of (10) players under 15 years old.

B- The main experiment sample:

The sample was chosen by the intentional method in accordance with the requirements and the objective of the research, as it consisted of (50) players for the category under 15 years old, who were chosen from schools: The Sports Academy for Ain Al-Assal Talents - The Sports Academy of the city of El-Taref - The Zaitouna Buds Challenge School - The Frantz Fanon School Ain El Karma - Amal Bouhadjar School.

2.3. Search Variables:

2.3.1. The independent variable: represented in skill tests.

2.3.2. The dependent variable: It is represented in the process of selection and evaluation.

2.4. Determining the most important skills qualities of U15 football players:

Table n° (01): Indicates the relative importance of the skills according to the opinions of the experts.

N	Skills Qualities	Repetition	Relative importance	Skills excluded
01	**Running with ball**	**5**	**100%**	/
02	**The pass**	**5**	**100%**	/
03	**The dribble**	**4**	**80%**	/
04	**Ball control**	**3**	**60%**	/
05	**Shoot the ball**	**4**	**80%**	/

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2.5. Determining skill tests:

The researcher nominated (16) skills tests characterized by high scientific coefficients due to their inclusion in the scientific references, and the tests that achieved a percentage of less than (50%) were excluded, and he reached (12) skills tests nominated for application for the age group under 13 years.

Table n° (02): Presents the skill tests selected which are candidates for the U15 application.

N	Skills Qualities	The Tests
01	Running with ball	Rolling test between 10 Cones
02		Rolling test between poles
03		30 meter ball run test
04	The pass	Pass test
05		Pass and receive test
06	The dribble	Dribble between 3 cones
07		Dribble between 8 cones
08	Ball control	Ball stop test
09		Ball control test
10		Juggling test for 30 seconds
11	Shoot the ball	Ball shooting test
12		Goal shot test

2.6. Exploratory study:

The exploratory experiment was conducted on: 15-16-17/09/2021 on a sample consisting of (10) football players for the category of less than 15 years, skills tests were applied, then the tests were re-applied on the same sample members after 10 days on 25-26-27/09 /2021, where the researcher used the method of application and re-application of the test (Test-Retest), and this is for the purpose of finding the stability coefficients for the tests using the correlation coefficient (Pearson), and calculating the validity coefficient through the honesty of the arbitrators and the self-truth by calculating the square root of the stability coefficient.

2.7. The scientific basis for the skill tests nominated for application:

Through the results of the exploratory experiment, the scientific bases for skills tests for the under 13category were extracted.

2.7.1. Test stability:

The stability of the tool refers to the consistency of its scores in measuring what should be measured, and to give similar or close results if the measurement process was repeated on the same individuals, and in the same factors and conditions (Abd el Rahman, 1998, p163), where we applied the test and re-test method to The same sample of the exploratory experiment, which was excluded from the sample of the main study.

2.7.2. Validity of the test:

It is measured by calculating the square root of the test reliability coefficient (Moqaddam Abd el Hafeez, 1993, p. 152), it was found that the test has a high degree of self-veracity as shown in the table.

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Table No (03): show the arithmetic mean, standard deviation, stability and subjective validity of the skill tests for the category under 15 years old.

Variable Name	Test		Re-test		Stability coefficient	Validity coefficient
	Mean	Standar Deviation	Mean	Standar Deviation		
Rolling between 10 cones	19.813	1.234	19.780	1.153	0.998	0.998
Rolling test between poles	21.275	1.775	21.186	1.641	1.00	1
30meter ball run test	6.284	0.535	6.213	0.482	0.979	0.989
Pass test	6.60	1.776	7.300	1.059	0.484	0.695
Pass and receive test	6.800	0.788	7.200	0.788	0.250	0.5
Dribble between 3 cones	12.826	0.823	12.777	0.801	0.999	0.999
Dribble between 8 cones	18.030	1.336	17.996	1.333	0.998	0.998
Ball stop test	7.400	1.350	7.400	1.897	0.538	0.733
Ball control test	8.615	2.987	8.283	2.969	0.967	0.983
Juggling for 30 seconds	36.400	14.229	35.300	12.849	0.976	0.987
Ball shooting test	9.500	2.121	9.300	2.002	0.327	0.571
Goal shot test	8.300	1.702	7.500	1.715	0.551	0.742

2.8. Main experience:

After completing the exploratory experiment and ensuring the reliability and validity of the skills tests that were drawn, the main experiment was conducted after distributing the roles to the assistant work team by applying the skills tests to the main sample of the research.

2.9. Statistical means: we used the statistical package program (SPSS) in order to obtain:

- Arithmetic mean - Standard deviation - Pearson correlation coefficient - Factor analysis.

3. Présentation, analyse et discussion des résultats de recherche :

3.1. Matrix of aptitude test coefficients for U15 category after orthogonal rotation:

During this stage in the use of orthogonal rotation using the (varimax) method, 05 factors were reached, the percentage of variance explained for them amounted to 63,823%, and according to the conditions for accepting the factors and the construction criteria represented in accepting the factors whose saturation equals or exceeds 03 variables or more, in addition to the saturation value It must be equal to or greater than 0.30, accordingly, two factors are accepted, and the following table shows this:

Table No (04): shows the factors matrix for the skill tests for the category under 15 years old after orthogonal rotation.

variables	Factors									
	01	R	02	R	03	R	04	R	05	R
C1	0.043		0.283		0.300		0.672	**2**	-0.226	
C2	0.071		0.135		0.239		-0.777	**1**	-0.072	
C3	-0.149		-0.793	**1**	-0.010		-0.122		-0,246	
C4	-0.355		0.116		0.711	**2**	-0.059		0.328	
C5	0.065		-0.027		-0.014		-0.045		0.915	1
C6	0.626	**3**	0.201		-0.181		0.039		-0.218	
C7	0.396		0.495	**3**	0.155		-0.248		-0.276	
C8	0.137		-0,736	**2**	0.018		-0.004		0.176	
C9	-0.686	**1**	0.182		0.013		0.217		-0.202	
C10	0.654	**2**	0.136		0,288		0.385		0.192	
C11	-0.099		-0.006		-0.760	**1**	-0.014		0.167	
C12	-0.360		0.305		-0.390	**3**	0.053		-0.020	

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A. Explanation of the first factor:

It turns out that the number of variables that saturate the first factor is 03 variables, representing 25% of the total number of variables, amounting to 12 variables, as these saturations varied between positive and negative.

They are arranged in descending order according to their absolute values as follows:

1. **Ball control test (C9): -0.686**
2. **Juggling test for 30 seconds (C10): 0.654**
3. **Dribble between 3 cones (C6): 0.626**

By arranging the saturations, it is clear that the variables that were saturated on the first factor are a test related to the skill of controlling the ball by 33.33%, while the second is related to the skill of junglling test for 30 seconds by 33.33%, while the third is related to the skill of dribbling between 3 cones by 50%.

Through the diversity of saturations seen on this factor, it is evident that it is a sectarian factor, as the percentage of the variance explained by the first factor reached 17,037%. It indicates that the players who achieve high scores on the dribbling tests and the Juggling test for 30 seconds, and achieve low scores on the ball control test, and because the ball control (juglling) test achieved the highest saturation, we see that we can call this factor the name of **control the ball**.

In this factor, the skill of controlling the ball it means that the ball is subject to the player's disposal, dominates it, and makes it out of the reach of the opponent, in order to dispose of it in the appropriate manner according to the conditions of the match. Control of the ball takes place at all levels and heights, as well as controlling the ball requires timing Very accurate and very sensitive from the different parts of the player's body, which controls the ball at a high speed and then behaves with it wisely, and this requires the player to reveal the different aspects of the field. It can also be said that this skill must be performed by both the defender and the attacker with a great degree of mastery and control for what It is of great importance in subjecting the ball to the player's control (Abu Abda, 2008, p. 15).

Control of the ball includes the player's control over all the balls coming to him, whether the next ball is ground, high, or half-high within the framework of the law of the game, and the importance of controlling the ball in modern football is due to the fact that the player must control the ball during his movement, with the ability To use any part of the body and in any position to control the ball, and stopping or mute the ball in itself is not very compatible with the requirements of modern play, and therefore we now see players working to run with the ball at the same moment they control the ball, and control the ball One of the difficult basic skills that requires a high sensitivity from the player towards the ball so that he can control it (Hanafi, 1990, P. 77).

B. Explanation of the second factor:

It turns out that the number of variables that saturate the second factor is 03 variables, representing 25% of the total number of variables, amounting to 12 variables, as these saturations varied between positive and negative, and they were arranged in descending order according to their absolute values as follows:

1. **30meter ball run test (C3): -0.793**
2. **Ball control test (C8): -0.736**
3. **Dribble between 8 cones (C7): 0.495**

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By arranging the saturations, it is clear that the variables that were saturated on the first factor are a test related to the skill of running with the ball 30 meters by 33.33%, while the second is related to the skill of controlling the ball by 33.33%, while the third is related to the skill of dribbling between 8 cones by 50%.

It is evident from the diversity of saturations seen on this factor that it is a sectarian factor, as the percentage of the variance explained by the second factor reached 13,785%. It indicates that the players who achieve high scores on the dribble between 8 cones test, and achieve low scores on the 30-meter ball-running test and the ball control test, and because the 30meter ball running test achieved the highest saturation, we see that this factor can be called **the ball running factor**.

In this factor, the skill of running with the ball or dribbling has emerged, which means the process of the player dealing with the ball with one of his body parts according to the football game law for the purpose of moving from one place to another, and using motor skills related to it to carry out defensive and offensive duties (Ghazi and Hachem, 2013, p 27-29).

C. Explanation of the third factor:

It turns out that the number of variables that saturate the third factor is 03 variables, representing 25% of the total number of variables, amounting to 12 variables, as these saturations were negative and were arranged in descending order as follows:

1. **Ball Shooting Test (C11): -0.760**
2. **Pass test (C4): -0.7110**
3. **Goal Shooting Test (C12): -0.390**

By arranging the saturations, it is clear that the variables that were saturated on the first factor are a test related to the skill of Ball Shooting Test by 50%, while the second is related to the skill of Pass test by 50%, while the third is related to the skill of goal shooting by 50%.

It is evident from the diversity of saturations seen on this factor that it is a sectarian factor, as the rate of discrepancy explained for the third factor reached 12,459%, and since the goal shooting test achieved the highest saturation, we see that we can call this factor **the shooting factor.**

The shooting skill has emerged in this factor, as it is considered one of the means of individual attack, which requires the player to be able to focus and have a high technical skill in performing various types of kicking the ball.

Shooting is considered the effective means used by the attacking player to overcome the blocs and the numerical large number of players of the opposing team to defend within the penalty area. The interest of the trainers and the allocation of times for training on it, whether within the daily training unit or through duties and additional individual exercises (Atiyah, 2017, P 151).

D. Explanation of the fourth factor:

It turns out that the number of variables that were saturated on the fourth factor is two variables representing 16.67% of the total number of variables, amounting to 12 variables, where these two saturations were positive and they were arranged in descending order as follows:

1. **Rolling test between 10 cones (C1): 0.672**
2. **Rolling test between poles (C2): 0.777**

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By arranging the saturations, it is clear that the variables that were saturated on the fourth factor are a test for the skill of running with the ball between 10 cones with a rate of 33.33%, while the second is related to the skill of controlling the ball between 10 lists with a rate of 33.33%.

It is evident from the diversity of saturations seen on this factor that it is a sectarian factor, as the percentage of the explaining variation for the fourth factor reached 10,696%, and because the number of saturations on this factor did not achieve the level required to accept the factor, we neglected it.

E. Explanation of the fifth factor:

It turns out that the number of variables that were saturated on the fifth factor is one variable that represents 8.33% of the total number of variables, amounting to 12 variables, where it is positively saturated as follows:

1. Pass and receive test (C5): 0.915

The fifth factor has satisfied one test of passing skill by 50%.

Where the percentage of the factorial variation explaining the fifth factor was 9,847%, and because the number of saturations on this factor did not achieve the level required to accept the factor, we neglected it.

3.2. Nomination of Skill Test Battery Units:

Based on the results of the factors matrix of the skill tests for the category under 15 years old, the test battery units were nominated, and this is according to the following table

Table No (05): show the nomination of the skill tests battery units for the category U15 years old.

N	Test	Measuring Unit	Factor	Factor Name
01	Ball stop test	Degree	01	**Skill of ball control**
02	30 meter Ball run test	Second	02	**Skill of ball driving**
03	Ball Shooting Test	Degree	03	**Skill of shooting**

4. Conclusions and suggestions:

4.1. Conclusions

Within the limits of the objectives of the research, the procedures used, and the statistical method used through the factor analysis of the skill tests applied to the age group of soccer players under 15 years old, the researcher was able to build a battery of physical tests for the process of selection and evaluation of players for a category under 15 years old, and the researchers were able to reach:

1- Three (03) basic skills factors were identified in terms of skill tests for soccer players for the U15 category:

1. The first factor: the ability to control the ball
2. The second factor: the skill of running with the ball.

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3. The third factor: scoring skill.

2- The skill tests were nominated to infer the basic skills factors extracted for the under 15 category:

1. The ball control test from the dribbling representative of the first factor, the skill of controlling the ball.
2. The 30-meter ball running test, the representative of the second factor, the ball running skill.
3. Ball scoring test representing the third factor, scoring skill.

4.2. Suggestions:

- The need to build a battery of tests in the physical and morphological aspects of all small varieties.
- Designing the profile grid as a reference for coaches to know the football player's profile.
- Determine standard levels according to playing centers.
- Paying attention to sports selection, especially in the early stages of a football player, in order to discover early talents.
- Training the trainers on the scientific basis of the selection process.

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