P-ISSN: 1992-0091
E-ISSN: 2708-3454

Modern Sport
Vol.22 No.2 ,2023

Published 30/06/2023 Open Access

DOI: https://doi.org/10.54702/ms.v22i2.1146

Constructing a psychological excellence scale for handball players in Iraq

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Received: 26/03/2023, Accepted: 10/05/2023

Abstract

The current research aims to construct a measure of psychological excellence for advanced handball players applying to the Iraqi Premier League clubs in Iraq. The study seeks to understand the psychological excellence among advanced handball players participating in the Premier League of handball in Iraq, and due to the lack of a tool to measure psychological excellence for handball players. The researcher decided to address this problem and find solutions to it by constructing a tool to measure psychological excellence. The researcher used the descriptive method in the survey style, as it is most suitable for solving the current research problem, the researcher has successfully constructed the Psychological Excellence Scale for handball players, based on the theoretical aspect of psychological excellence and the derivation of dimensions from it. The scale was developed using a sample of 240 players, which represents a percentage of 80.81% of the total population of the research. The scale was applied to the players, and the scientific principles were extracted from the statistical analysis of the items such as content validity, construct validity, internal consistency, and factor analysis validity. The reliability was verified by two methods, the split-half method, and Cronbach's alpha coefficient. After conducting the statistical operations represented by factor analysis, the researcher extracted five factors: (creativity, skill excellence, field intelligence, self-confidence, and perseverance), as these factors were based on 34 items distributed across the five factors. The current scale serves as a tool for revealing the psychological excellence of advanced handball players in Iraq. The researcher recommends using the scale that he has prepared and constructed for measuring the psychological excellence of advanced handball players.

Keywords | **Constructing , Scale , Psychological Excellence , Handball**

Introduction:

The concept of "excellence" is defined as consistently demonstrating prestigious performance in any field of significance. It is also defined as reaching a higher level than ordinary individuals in areas that reflect the intellectual and functional level of an individual, provided that the field is appreciated by the group" (1). Psychological factors and variables play a significant role in achieving goals and positive results at the level of sports teams and at the level of the individual athlete, whether technically or strategically. This is due to the components that sports psychology possesses that help to improve the high level of the athlete in general and in particular. Psychological factors and variables play a significant role in achieving goals and positive results at the level of sports teams and at the level of the individual athlete, whether technically or strategically. This is due to the components that sports psychology possesses that help to improve the high level of the athlete in general and in particular. "An athlete who is psychologically superior is characterized by a high degree of responsibility, leadership, self-confidence, emotional control, psychological and training toughness, conscience, and trust in others. This leads to psychological satisfaction and a high social

P-ISSN: 1992-0091
E-ISSN: 2708-3454

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status in terms of others' acceptance of them. This, in turn, leads to stability which drives the development of sports movement." (2) The researcher believes that the importance of psychological excellence is crucial for preparing a handball player from a physical, skilful, and psychological perspective for high-level sports competitions. This aims to achieve the desired goal, foster a spirit of sports competition, and consequently achieve advanced sports achievements for the team in general and the player in particular. "Alawi confirms that the concept of excellence, like other concepts we use in the field of sports psychology, is a relative concept that varies from individual to individual depending on the levels of practice and what it takes to reach these high levels in terms of physical, functional, anatomical, psychological, and mental energies. Athletes who excel physically and psychologically are those who possess and utilize these energies, thereby achieving elevated levels in their performance in the field of sports activities." (3), as the psychological excellence of a player plays a significant role in improving their performance level and maintaining their high and distinguished play. The player's psychological excellence is significantly associated with the intelligence and creativity of the player in performing their tasks and duties within the field, and their commitment to the defensive and offensive strategies required by the coach during the game or training. The importance of the research is summarized in the fact that psychological excellence has a positive role for the player, and due to its effectiveness in the player's personal performance, in addition to constructing a measure of psychological excellence for handball players in Iraq. The problem of the research is that psychological excellence is one of the positive variables in sports psychology, which is relatively modern, and helps in stimulating behaviour to face stressful events and create a competitive atmosphere among the team. The problem of the research emerges through the researcher's observation that the variable of psychological excellence is relatively modern in the field of sports psychology, and due to the fact that most researchers have not addressed these studies, especially in the sports field, except for one study dealt with this variable. Therefore, the researcher decided to delve into this problem by constructing a tool to measure the psychological excellence of handball players. As far as the researcher knows, this scale is not available in the field of handball and has not been addressed by researchers previously, which necessitated the construction of this scale. As for the aim of the research

The research aims to construct a measure of psychological excellence for advanced handball players in Iraq. As for the importance of the research is that this study gains importance from the concepts it includes, which is psychological excellence. This study occupies special importance on the practical and theoretical level.

Research areas:

- Human Field: Players of the Iraqi Premier League handball clubs in Iraq.
- Temporal Field: From (22/10/2022) until (12/1/2023).
- Spatial Field: Indoor halls in sports clubs.

Method and Procedures:

Research Method:

The descriptive method was adopted by the researcher in the survey style as it is most suitable for the nature of the problem being studied.

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E-ISSN: 2708-3454

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Research and Population Sample:

The research community includes advanced handball players participating in the Iraqi Premier League for the year 2022-2023, amounting to 297 players, according to the rosters of the Central Iraqi Handball Federation. The sample was selected using simple random sampling method through a draw, consisting of (240) players participating in the Iraqi league. The researcher distributed the scale on Tuesday (22/11/ 2022) and continued until (12/1/2023) to the clubs. (20) forms were excluded due to incomplete responses, and 18 forms for the exploratory sample from the Karbala team were also excluded from the main research sample. The main research sample included (240) players, representing a percentage of 80.81% of the total research community, as shown in Table (1).

Table (1)
It shows the distribution of the research population and sample members

Seq.	The Club	The total number of players	The number of participants in the exploratory experiment sample	The number of participants in the main experiment sample	Percentage
1	Diyala	20	-	18	%90
2	Maysan Oil Club	19	-	18	%94,73
3	Al-Karkh	18	-	16	%88,88
4	Al-Kut	20	-	15	%75
5	Al-Fotuwa	20	-	17	% 85
6	Al-Nasiriyah	21	-	18	%85,71
7	Basra Municipality	22	-	18	%81,81
8	The Arabian Gulf	18	-	17	%94,44
9	Al-Musayyib	18	-	15	%83,33
10	Cooperation	20	-	17	%85
11	Kufa	20	-	19	%95
12	Karbala	18	18	-	%100
13	The Army	22	-	18	%81,81
14	The Mobilization	18	-	16	%88,88
15	The Police	23	-	18	%78,26
Total		297	18	240	%80.81

Research Tools:

"These are the means by which a researcher collects their data. The tool is a method of collecting data from individuals associated with the research topic." (4)

Data Collection Methods:

This includes resources from both Arabic and foreign sources, observation, questionnaires, and the World Wide Web.

Data Collection and Analysis Methods:

This involves a supporting team, a stopwatch, and pens.

Scale Construction Procedures:

"The procedures for constructing the scale include the steps followed in constructing the scale, which based on foundational principles and are subjected to a well-structured work plan. This plan predefines a set of stages, steps, and necessary execution procedures." (5)

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- The purpose of constructing the scale.

- Identifying the phenomenon that needs to be measured.

- Defining the domains (dimensions) of the scale.

The researcher identified the dimensions of the scale, relying on theoretical sources of psychological excellence, and a suitable definition was put in place for each dimension.

- Preparing the initial formulation of the scale items.

To prepare the initial formulation of the items, the researcher followed the following steps:

- Preparation of the scale's items.

The researcher wrote the items, relying on Arabic sources for the purpose of utilizing them in writing the scale's items.

Validity of the items

The researcher completed the initial formulation of the scale's items, which included (50) items, both positive and negative, distributed across (5) dimensions. To ensure their linguistic appropriateness, they were presented to a professor specialized in Arabic for linguistic evaluation. After making the necessary linguistic adjustments, the items were presented to a group of experts to judge their suitability in terms of measuring the dimensions of psychological excellence. These dimensions are (creativity, self-confidence, skill excellence, field intelligence, persistence). The experts suggested some important observations. Therefore, some items were deleted, others were modified, were modified, and a portion of them was moved to other dimensions that were deemed more valid than the dimension they were initially placed in.

Also, verification was made of the five-point Likert scale, where the five response alternatives were given (applies to a very large degree, applies to a large degree, applies to a moderate degree, applies to a small degree, does not apply to at all). The scores for the positive statements were (5,4,3,2,1), and for negative statements, the scores were (1,2,3,4,5). Therefore, the highest possible score one can achieve is (250), and the lowest score is (50). To statistically analyse the experts' opinions, the researcher used the Chi-square test ($\chi 2$).

Preparing the Scale Instructions

To answer the items of the scale correctly, the researcher emphasized the necessity of answering all items. Any item left unanswered would result in the omission of the entire questionnaire. Examples of how to answer the scale's items were provided. The scale, which contains (50) items written without mentioning the dimensions, was prepared to conduct the exploratory experiment.

Exploratory Experiment

The researcher conducted the exploratory experiment on a sample from Karbala Handball Club, involving 18 randomly selected players, on 18/11/2022. The exploratory experiment is a method to discover the surrounding conditions of the research sample and to understand how well they comprehend the scale items and their responses. As well as to find out the time taken to answer the items of the scale.

- The Main Experiment (Scale Application)

After the scale with its instructions and its (50) items were ready for application on the construction sample, who are the players of the Premier League handball clubs in Iraq, totaling (240) players, the scale was applied on the construction sample during the period from 22/11/2022 to 12/1/2023.

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- The scientific basis for constructing the Scale:

- Validity of the scale:

"The validity of the scale is the most important feature among the scale's characteristics, and a valid scale is the one that achieves the function it was designed for." (13). To verify the validity of the scale, the researcher sought to determine its validity through two indicators.

Validity of the content: -

"The validity of the content is a measure of the extent of the impact of the test on the different aspects of the phenomenon to be measured" (6:58). Content validity was achieved after defining the concept of psychological excellence. The researcher prepared the scale and identified its dimensions and items with the help of experts in sports psychology for the validity of the items. Thus, the researcher obtained content validity.

Construct Validity:

This type of validity is "the most complex, because it depends on theoretical assumptions that are empirically verified. Its types include extreme groups, internal consistency, and factorial validity, which is the most precise type of validity" (6).

The researcher verified this through three indicators of validity, they are:

- Discriminative Power of the Items:

This method in item analysis is called (Extreme Comparison), which refers to the two-party groups in the total degree. It provides an important indicator known as the discrimination coefficient. The item of discrimination coefficient is an important aspect in the statistical analysis of the test items" (7). This method requires the following steps: (8).

1- The score that the players have achieved on the scale is arranged in descending order, from the highest to the lowest score.

2- A percentage (27%) of the sample individuals from the top who have achieved the highest scores is extracted to represent the highest grades. Similarly, and a percentage (27%) of the sample individuals from the bottom who have achieved the lowest scores is extracted. Thus, the number of players in the top group is (65), and there are (65) players in the lower group.

The researcher used the t-test to find the items of discrimination coefficient. By comparing the results of the statistical analysis for the calculated t-values and comparing them with the statistical significance values, all items were accepted.

Table (2)
It shows the arithmetic means, standard deviations, and calculated t-values for the upper and lower groups and their statistical significance for the scale items

Item N.	Groups	AM	SD	T	Error Rate	Statistical significance
1	The upper group	2.49	.732	-16.811	.000	characteristic
	The lower group	4.29	.458			
2	The upper group	3.14	.726	11.950	.000	characteristic
	The lower group	4.45	.501			
3	The upper group	2.57	.585	-15.891	.000	characteristic
	The lower group	4.23	.606			
4	The upper group	2.65	.598	-15.696	.000	characteristic

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	The lower group	4.23	.553			
5	The upper group	2.31	.769	-13.199	.000	characteristic
	The lower group	3.95	.648			
6	The upper group	2.62	.722	-16.792	.000	characteristic
	The lower group	4.45	.501			
7	The upper group	2.80	.666	-15.339	.000	characteristic
	The lower group	4.37	.486			
8	The upper group	2.77	.656	-16.014	.000	characteristic
	The lower group	4.40	.494			
9	The upper group	2.05	.694	-12.698	.000	characteristic
	The lower group	3.51	.616			
10	The upper group	2.26	.735	-11.786	.000	characteristic
	The lower group	3.65	.598			
11	The upper group	2.89	.732	-14.007	.000	characteristic
	The lower group	4.43	.499			
12	The upper group	5.000	.0000	7.045	.000	characteristic
	The lower group	4.452	.5038			
13	The upper group	4.929	.4629	7.045	.000	characteristic
	The lower group	4.381	.8250			
14	The upper group	4.929	.2607	4.869	.000	characteristic
	The lower group	4.071	.7120			
15	The upper group	5.000	.0000	5.623	.000	characteristic
	The lower group	4.238	.8782			
16	The upper group	4.810	.5516	3.940	.000	characteristic
	The lower group	4.048	1.1252			
17	The upper group	5.000	.0000	6.830	.000	characteristic
	The lower group	3.452	1.4684			
18	The upper group	4.881	.5501	4.628	.000	characteristic
	The lower group	3.833	1.3600			
19	The upper group	4.881	.3278	3.524	.000	characteristic
	The lower group	4.357	.9058			
20	The upper group	4.881	.3278	4.621	.000	characteristic
	The lower group	4.452	.5038			
21	The upper group	4.952	.2155	2.460	.000	characteristic
	The lower group	4.667	.7213			
22	The upper group	4.857	.5213	4.433	.001	characteristic
	The lower group	4.214	.7820			
23	The upper group	5.000	.0000	7.138	.000	characteristic
	The lower group	4.238	.6917			
24	The upper group	4.548	.6325	2.492	.000	characteristic
	The lower group	4.167	.7624			
25	The upper group	4.738	.5868	2.139	.000	characteristic
	The lower group	4.381	.9094			
26	The upper group	3.70	.723	1.779	.001	characteristic
	The lower group	3.38	1.096			
27	The upper group	3.66	.831	2.645	.000	characteristic
	The lower group	3.13	1.194			

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28	The upper group	3.38	1.060	2.209	.003	characteristic
	The lower group	2.87	1.301			
29	The upper group	3.26	1.258	2.229	.001	characteristic
	The lower group	2.68	1.438			
30	The upper group	3.58	.887	4.157	.000	characteristic
	The lower group	2.60	1.472			
31	The upper group	3.08	1.107	2.743	.000	characteristic
	The lower group	2.43	1.294			
32	The upper group	3.36	1.021	3.292	.000	characteristic
	The lower group	2.60	1.321			
33	The upper group	4.961	.1960	4.880	.000	characteristic
	The lower group	4.412	.7791			
34	The upper group	5.000	0.0000	5.175	.000	characteristic
	The lower group	4.490	.7035			
35	The upper group	4.824	.4777	4.382	.000	characteristic
	The lower group	3.980	1.2883			
36	The upper group	4.784	.6423	3.694	.000	characteristic
	The lower group	4.196	.9385			
37	The upper group	4.941	.2376	5.618	.000	characteristic
	The lower group	4.314	.7613			
38	The upper group	4.902	.3003	2.323	.000	characteristic
	The lower group	4.765	.4284			
39	The upper group	4.941	.4201	6.421	.000	characteristic
	The lower group	3.627	1.3994			
40	The upper group	4.881	.3278	5.115	.000	characteristic
	The lower group	4.333	.6115			
41	The upper group	4.857	.3542	2.975	.000	characteristic
	The lower group	4.524	.6339			
42	The upper group	5.000	.0000	4.585	.000	characteristic
	The lower group	4.476	.7404			
43	The upper group	4.905	.2971	4.377	.000	characteristic
	The lower group	3.952	1.3784			
44	The upper group	4.833	.5372	4.101	.000	characteristic
	The lower group	4.119	.9927			
45	The upper group	4.952	.2155	2.561	.000	characteristic
	The lower group	4.762	.4311			
46	The upper group	4.929	.2607	4.875	.000	characteristic
	The lower group	4.310	.7805			
47	The upper group	4.905	.2971	5.348	.000	characteristic
	The lower group	3.619	1.5294			
48	The upper group	4.667	.8165	3.885	.000	characteristic
	The lower group	3.810	1.1737			
49	The upper group	5.000	.0000	7.138	.000	characteristic
	The lower group	4.238	.6917			
50	The upper group	4.881	.3278	4.621	.000	characteristic

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Internal Consistency

"The researcher used the internal consistency coefficient in the analysis of the scale items. The simple correlation coefficient of Pearson was used to extract the correlational relationship between the scores of the sample members of (240) forms, between the item and the total score of the scale using the statistical package (SPSS). To determine the statistical significance, it was compared with significance values" (9). In light of this standard, five items were excluded, item number (4), item (20), item (38), item (46), and item (49) from the scale items.

Table (3)

It shows the results of the Pearson correlation coefficient between the scale items and the total scale score using the internal consistency method

Item N.	Correlation coefficient	Significance values	Level of significance	Item N.	Correlation coefficient	Significance values	Level of significance
1	.314**	.000	Significant	26	.326**	.000	Significant
2	.659**	.000	Significant	27	.668**	.000	Significant
3	.580**	.000	Significant	28	.631**	.000	Significant
4	.094	.147	Not Significant	29	.496**	.000	Significant
5	.338**	.000	Significant	30	.056	.387	Significant
6	.275**	.000	Significant	31	.397**	.000	Significant
7	.284**	.000	Significant	32	.362**	.000	Significant
8	.345**	.000	Significant	33	.154*	.017	Significant
9	.459**	.000	Significant	34	.727**	.000	Significant
10	.516**	.000	Significant	35	.579**	.000	Significant
11	.430**	.000	Significant	36	.657**	.000	Significant
12	.383**	.000	Significant	37	.479**	.000	Significant
13	.157*	.015	Significant	38	.105	.105	Not Significant
14	.751**	.000	Significant	39	.545**	.015	Significant
15	.618**	.000	Significant	40	.243**	.000	Significant
16	.695**	.000	Significant	41	.328**	.000	Significant
17	.508**	.000	Significant	42	.669**	.000	Significant
18	.271**	.043	Significant	43	.623**	.000	Significant
19	.577**	.000	Significant	44	.669**	.000	Significant
20	**.092**	**.155**	**Significant**	**45**	.311**	**.000**	**Significant**
21	**.453****	**.000**	**Significant**	**46**	**087.**	**179.**	**Not Significant**
22	**.150***	**.020**	**Significant**	**47**	****669.**	**.000**	Significant
23	**.524****	**.000**	**Significant**	**48**	****258.**	**.000**	Significant
24	**.440****	**.000**	**Significant**	**49**	**036.**	**.581**	**Not Significant**
25	**.634****	**.000**	**Significant**	**50**	****549.**	**.000**	**Significant**

Factorial Validity:

"Factorial analysis is an advanced and complex form of validity. In this method, we use factor analysis to get a quantitative assessment of the validity of the test in the form of a statistical coefficient, which is the test's saturation on the factor that measures the specific field. We start from a correlation matrix between a number of tests that measure a homogeneous field applied to a homogeneous sample of individuals.

The output of this matrix's factor analysis is a number of abbreviated categorical groups which are the factors that express the common variance between these variables" (10). Factor analysis is

P-ISSN: 1992-0091
E-ISSN: 2708-3454
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based on understanding the main components of the phenomena that are being measured.

In order to achieve the research objective, the researcher entered (45) items for factorial analysis.

Stability of the Scale: -

"Stability is one of the important facts of the scale, which means the accuracy of the scale in measurement and observation" (12). "The term "stability" in psychological measurement refers to the accuracy of the test in measurement and observation, and its consistency with itself. Stability is the proportion of the variation in the score on the scale that refers to the actual performance of the examinee" (11).

The researcher verifies the stability of the scale through the method of split-half and the Cronbach's alpha coefficient. - Split-Half Method:

The researcher used the relationship between odd and even questions to establish reliability across all items, totalling (240) forms. The researcher used the statistical package (SPSS), and input the data into it, then divided the scale items into two halves and extracted the reliability coefficient between the total scores of the two halves using the Pearson method, the correlation coefficient between the two halves was (0.77). However, these values represent the "test half-reliability coefficient, so it is necessary to adjust and correct the reliability coefficient in order to obtain the full test reliability coefficient. Therefore, the Spearman-Brown equation was used to correct the correlation coefficient." (14).

After correction, the stability coefficient became (0.95), which is a high stability coefficient that can be relied upon to estimate the stability of the test.

- Cronbach's Alpha Coefficient: -

In order to calculate the stability coefficient using this method for the scale, the researcher relied on a sample for constructing the scale suitable for statistical work, totalling (240) players. When calculating the value of the stability coefficient, it reached (0.880). This is a "good and reliable value in physical education research and sports science, a high and reliable stability coefficient that can be relied upon." (15).

Statistical Methods: -

The statistical data was processed using the statistical program (SPSS).

Results:

Display and Analysis of the Results for the Factorial Analysis.

The results of the factorial analysis confirmed the presence of (14) factors before rotation. However, these factors could not be explained until after their rotation. Therefore, the researcher used the (Varimax) orthogonal rotation method by (Kaiser), because it leads to the best solutions that meet the simple structure characteristics of Thurston.

Factors before rotation

Through the procedures of obtaining the inter correlation, which are considered a preparatory step towards obtaining a summarized image of the most important factors, the use of factor analysis is to explain the values of the inter-correlations based on the fewest possible number of factors. In order to obtain a simple factor structure, the researcher used Hoteling's Principal Components method to analyse the matrix factorial, a method preferred by Thomson, because it extracts the maximum correlational variance of the matrix, and also it is accepted by Kaiser's criterion for determining factors and using the correct one in the diagonal cells of the correlation matrix instead of the test

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stability coefficient. The results of the factor analysis before rotation revealed (14) factors. These factors are called direct factors.

Table (4)
It shows the values of the factors before rotation

Item N.	Factors before rotation														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Explained variance
1	.296	.425	-.062-	.422	-.051-	-.171-	-.297-	.266	.308	-.103-	.122	-.163-	-.035-	.072	.793
2	.697	.191	.281	.287	.149	-.272-	-.223-	.127	-.067-	.061	.056	.059	.017	-.012-	.861
3	.604	.327-	.102	.323	-.150	.368	.132	.167	.216	.049	.053	.005	-.045-	-.096-	.853
5	.279	.391	.439	.450	-.068-	-.078-	-.120-	-.147-	.042	.032	-.186-	.249	.195	-.041-	.813
6	.319	-.254-	-.054-	.375	.224	.031	-.272-	.225	.161	-.362-	.146	.068	.140	-.003-	.688
7	.238	.175	-.311-	-.423-	.037	.169	.125	-.106-	.353	.043	.199	.035	.215	-.042-	.634
8	.360	-.138-	.148	.498	.185	-.011-	-.044-	.110	.120	.061	-.263-	-.288-	.010	.121	.652
9	.426	-.050-	.293	-.049-	-.079-	-.011-	.065	-.099-	.038	-.147-	-.076-	.560	-.114-	-.249-	.710
10	.509	-.051-	.036	.173	.027	.098	.124	-.258-	.024	.016	-.367-	-.151-	-.229-	.037	.598
11	.437	.013	-.436-	.270	.298	-.342-	.227	-.209-	.104	.083	.324	.035	-.018-	.065	.884
12	.318	.546	-.027-	-.296-	-.147-	.126	-.066-	-.328-	.051	.218	-.046-	-.196-	.269	.012	.801
13	.035	.236	.553	-.078-	.441	.381	.167	.036	-.039-	.096	.179	-.041-	-.119-	.164	.823
14	.739	.026	.070	-.278-	-.156-	-.094-	.373	.046	.109	-.247-	-.084-	-.077-	-.004-	.027	.890
15	.619	.047	-.176-	-.033-	-.352-	.214	.040	-.133-	-.095-	.366	.070	.215	-.173-	.009	.831
16	.691	.182	.010	.118	.001	-.048-	.028	.049	-.313-	.081	.054	-.116-	-.293-	-.376-	.879
17	.524	.129	-.461-	.258	.287	-.156-	.238	.034	-.212-	.124	-.078-	-.036-	.227	-.089-	.862
18	.279	-.476-	.132	.180	.274	.353	.240	.170	-.102-	.075	-.024-	-.163-	.268	-.226-	.807
19	.658	-.186-	-.261-	-.129-	-.035-	.274	-.368-	-.077-	-.025-	-.069-	-.141-	-.019-	.137	.067	.870
21	.392	.264	-.080-	.059	.166	.142	.329	-.131-	.189	-.349-	.127	.359	.094	-.009-	.717
22	.063	.268	.491	.008	.350	.410	.044	.071	-.018-	.064	.169	.005	-.054-	.280	.728
23	.538	-.052-	-.119-	.239	.114	-.209-	.038	-.175-	.004	.132	.068	-.120-	-.285-	.356	.696
24	.392	.373	.314	.297	.045	-.168-	-.150-	-.114-	-.010-	.082	-.408-	.042	.093	.072	.735
25	.669	-.206-	.313	-.269-	.157	-.264-	-.190-	.098	-.062-	.078	.157	-.025-	-.004-	.113	.848
26	.282	.633	-.114-	-.140-	-.085-	.135	-.083-	.359	.074	-.212-	.139	-.072-	-.033-	-.225-	.801
27	.656	.023	.141	-.243-	-.204-	-.107-	.424	-.024-	.050	-.245-	-.052-	-.161-	-.003-	.196	.873
28	.669	-	.307	-	.172	-	-	.045	-	.049	.109	.090	.081	.001	.867

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		.227-		.293-		.252-	.247-		.054-						
29	.583	-.222-	-.367-	-.081-	-.066-	.345	-.420-	.030	-.060-	-.102-	-.073-	.037	-.022-	.101	.863
30	.011	.013	.177	.328	-.497-	.015	.090	.049	-.603-	-.151-	.182	.017	.142	.174	.868
31	.410	-.056-	-.436-	.263	.314	-.336-	.199	-.224-	.143	.063	.323	.117	-.018-	.071	.880
32	.298	.583	-.024-	-.286-	-.149-	.183	-.056-	-.292-	.021	.275	-.014-	-.162-	.233	.033	.813
33	.037	.354	.508	-.068-	.445	.410	.134	.102	-.001-	.093	.145	-.002-	-.054-	-.016-	.817
34	.719	.003	.074	-.303-	-.162-	-.125-	.364	.029	.092	-.251-	-.080-	-.107-	.023	-.018-	.880
35	.579	.044	-.142-	.015	-.366-	.260	.025	-.110-	-.103-	.390	.157	.201	-.126-	.119	.829
36	.664	.221	-.012-	.133	-.026-	-.050-	-.003-	.081	-.333-	.071	.015	-.126-	-.304-	-.375-	.883
37	.488	.179	-.418-	.261	.249	-.117-	.225	.012	-.261-	.162	-.031-	-.028-	.282	-.055-	.818
39	.637	-.210-	-.316-	-.141-	-.031-	.273	-.317-	-.042-	.046	-.057-	-.079-	.079	.145	.064	.781
40	.089	.199	-.299-	-.092-	.170	.038	.236	.614	-.081-	.095	-.293-	.287	-.128-	.243	.791
41	.302	.638	-.102-	-.049-	-.145-	.153	-.138-	.308	.011	-.137-	.232	-.091-	.031	-.083-	.868
42	.667	.079	.126	-.216-	-.216-	-.140-	.388	-.024-	.003	-.258-	-.181-	-.161-	-.016-	.091	.759
43	.670	-.228-	.279	-.324-	.150	-.285-	-.247-	.053	-.045-	.070	.090	.031	.057	-.023-	.865
44	.580	-.242-	-.351-	-.021-	-.068-	.350	-.365-	.085	.002	-.074-	-.081-	.015	-.087-	.070	.871
45	.007	-.082-	.132	.286	-.521-	.049	.075	.101	-.513-	-.206-	.296	.025	.174	.220	.810
47	.713	-.180-	.323	-.253-	.137	-.265-	-.230-	.086	-.119-	.053	.040	.004	.050	.013	.868
48	.572	-.234-	.111	.356	-.126-	.367	.163	-.072-	.283	-.030-	.016	.047	-.188-	.003	.821
50	.266	.382	.388	.462	-.031-	-.127-	-.139-	-.171-	.057	-.016-	-.133-	.267	.214	-.008-	.785

The factors after rotation

"The orthogonal rotation using the Varimax method by Kaiser was used, which accepts the concept of a simple factorial construction while maintaining orthogonality between factors. Most researchers in the field of sports education tend to use this method, as it leads to the best solutions that meet the characteristics of a simple construction." (16).

Kaiser's criterion stops accepting factors when the latent root drops below one" (18). After factor rotation, the researcher worked on identifying and extracting the explainable factors based on the saturation of items on the factors. "The researcher has the right to choose the test which has a saturation equal to or greater than (0.30±) and more, and the factor which has been saturated by three or more tests is accepted after rotation" (17). By adopting a saturation ratio of (0.40±), (5) factors were accepted which composed the measure of (34) items distributed across five dimensions. Appendix (1) shows this, and we note that the saturations in the factors have changed when compared with the values before the orthogonal rotation, and table (5) shows this.

P-ISSN: 1992-0091
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Table (5)
It shows the values of the factors after orthogonal rotation."

Item N.	Factors after rotation														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Explained variance
1	.023	.078	.006	.224	.320	-.057	.756	-.015	.141	-.089	-.051	-.011	-.031	-.167	.793
2	.869	.175	.199	.059	.084	.029	-.007-	.034	.051	.044	.034	.117	-.053-	.026	.861
3	.003	.536	.334	.178	.175	-.056-	-.129-	.138	.271	.343	-.335-	.179	.023	.132	.853
5	.070	-.042-	.013	.018	.087	.143	.844	.126	.063	.001	-.102-	.066	.115	.134	.813
6	.204	.318	-.047-	.199	.131	.352	-.435-	-.035-	-.052-	.330	-.088-	-.209-	.015	.096	.688
7	.019	.184	.192	.192	-.276-	.122	.300	.029	.048	-.002-	.027	-.182-	-.288-	.474	.634
8	.080	.169	.125	.167	.404	.107	-.235-	.084	.112	.348	-.035-	.044	-.092-	-.438	.652
9	.279	.161	.244	-.049-	.328	-.139-	-.159-	.046	.069	-.081-	-.018-	.224	-.034-	.571	.710
10	.003	.327	.410	.135	.311	-.149-	-.023-	.053	-.061-	.079	-.079-	.303	-.156-	-.225	.598
11	.100	.045	.104	.910	-.007-	.079	-.003-	-.099-	-.035-	.029	-.027-	.073	-.082-	.034	.884
12	.054	.108	.179	.002	.165	.143	.818	.065	-.084-	-.105-	-.082-	.042	-.072-	-.027	.801
13	.096	-.143-	.029	-.076-	.047	-.021-	.048	.873	-.089-	.090	.009	.030	-.046-	-.005	.823
14	.317	.156	.830	.108	.013	.092	.112	-.015-	.086	.060	.077	.105	-.014-	.122	.890
15	.107	.541	.152	.226	.060	-.090-	.316	.028	.289	-.155-	.065	.432	.151	.138	.831
16	.755	.147	.224	.199	.123	.244	.064	.022	-.063-	.130	.014	.303	.073	.021	.879
17	.071	.104	.128	.622	.160	.102	.180	-.197-	-.164-	.365	.353	.223	.008	-.042	.862
18	.115	.163	.066	.032	-.051-	-.191-	.812	.174	.096	-.124	.021	.087	.009	-.006	.807
19	.771	.316	.141	.031	.039	.073	.174	-.143-	-.138-	.158	.009	.004	-.035-	-.024	.819
21	-.086-	.133	.387	.353	.177	.150	.024	.206	-.153-	.045	.064	-.085-	-.049-	.531	.717
22	.068	-.011-	-.016-	-.071-	.128	.069	.050	.825	-.063-	.042	.032	-.072-	.043	-.028	.728
23	.208	.261	.230	-.340-	.134	-.011-	-.095-	.089	.028	-.161-	-.057-	.161	.020	.570	.696
24	.176	.021	.136	.024	-.161-	.111	.129	.055	-.059-	-.036-	.051	.116	-.038-	.777	.735
25	.857	.152	.210	.119	.022	.021	-.009-	.129	.073	.015	-.030-	.060	.007	-.067	.848
26	-.001-	.037	.178	-.102-	-.038-	.741	.256	.091	-.068-	-.052-	.192	.199	-.036-	.219	.801
27	.266	.095	.860	.117	.011	.021	.120	.052	.079	.002	.016	.031	.116	-.007	.873
28	.882	.181	.158	.075	.086	-.019-	.013	.054	.027	.057	-.041-	.044	-.039-	.073	.867
29	.229	.859	.049	.027	-.076-	.133	.029	-.128-	-.126-	.075	.066	.052	.016	-.018	.863

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30	-.073-	-.034-	.053	-.075-	.131	.000	-.040-	-.046-	.019	.029	-.043-	.108	.904	-.028	.868
31	.110	.078	.904	.069	-.006-	.030	-.061-	-.109-	-.028-	.014	-.037-	.022	-.110-	.092	.880
32	.023	.120	.132	.001	.150	.146	.830	.136	-.054-	-.129-	-.036-	.078	-.041-	-.019	.813
33	.057	-.166-	-.021-	-.124-	.097	.103	.815	.116	-.093-	.161	.059	.090	-.122-	.110	.817
34	.340	.121	.821	.088	-.009-	.079	.128	-.060-	.071	.084	.046	.110	-.015-	.122	.880
35	.091	.549	.099	.245	.048	-.074-	.322	.109	.332	-.153-	.046	.346	.247	.098	.829
36	.272	.148	.208	.163	.139	.282	.063	-.007-	-.077-	.108	.047	.766	.085	-.005	.883
37	.058	.087	.081	.601	.177	.096	.254	-.148-	-.156-	.353	.337	.201	.093	-.037	.818
39	.092	.229	.055	.085	-.057-	-.162-	-.193-	.185	.158	.756	-.021-	.032	-.061-	.076	.791
40	.292	.772	.123	.091	-.009-	.067	.149	-.145-	-.069-	.143	.048	-.041-	-.072-	-.009	.868
41	-.072-	.076	.092	.063	-.035-	.112	-.117-	.089	.073	-.083-	.890	.023	.123	.139	.759
42	.008	.093	.106	-.026-	.004	.317	.733	.135	-.030-	-.078-	.140	.146	.078	-.010	.865
43	.250	.082	.858	.057	.102	.042	.127	-.039-	.021	.015	.053	.128	-.071-	.027	.871
44	.887	.166	.176	.065	.051	-.008-	.035	.009	.040	.048	-.044-	.076	-.029-	-.039	.810
45	.184	.912	.069	.039	-.076-	.151	-.036-	-.104-	-.042-	.101	.068	.100	.837	.017	.868
47	-.054-	.028	.057	-.057-	.007	.039	-.085-	-.048-	.082	.042	-.078-	-.009-	.003	-.028	.879
48	.872	.171	.216	.049	.128	.019	.020	.046	.017	.072	-.003-	.119	-.028-	.086	.821
50	-.063-	.520	.350	.188	.204	.001	-.209-	.237	.322	.217	-.230-	.188	.119	.151	.785

Discussions:

Explanation of Extracted Factors (19)

"The factors should be explanted after axis rotation, as the total variance of the matrix is redistributed in light of the properties of simple construction distinguishing one variable by high saturation on one factor, unless it is expressing forms of variance that are prominently distributed with many of the matrix variables."

Factor Acceptance Conditions

1- The factor is accepted if it is saturated by at least (3) significant items, according to Guilford's criterion (0.30±).

2- The factors are explanted based on saturations that are equal to or exceed (0.30±).

3- The significant factors whose square root equals at least one full integer according to Kaiser's criterion.

4- Factor explanation in light of results after orthogonal rotation.

5- Thurstone's guidelines are followed, which include reduce in factor description of unique aspects, differences in factor saturations, and significance explanation.

The items were arranged in descending order for each factor, and items with high saturations of (±0.40) or higher were selected. This value is a good indicator for accepting factor loadings. Based on this criterion, (5) factors were accepted.

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We will review the factors that constitute the scale according to the item loadings on these factors, and the factors are:

Explanation of the first factor:

The first factor consists of items with the highest saturations, according to the adopted factor explanation conditions. These items had saturations of (.755) or more, and there were (7) items with significant values of (+0.40) or more, with a rate of (20.59%) of the total number of items. This factor retained its name as 'Creativity'.

Table (6)

It shows the sequence of the items, their numbers, and their saturations associated with the first factor, arranged in descending order according to the degree of saturation

Seq.	Item N.	Items	Degree of saturation
1	Q44	I view my abilities and ambitions in a positive way.	**.887**
2	Q28	I strive to reach my goal I plan for.	**.882**
3	Q48	I can find solutions in difficult situations during the match.	**.872**
4	Q2	I assess the weaknesses and strengths in my performance.	**.869**
5	Q25	I set my future goals by myself.	**.857**
6	Q19	I can practice unfamiliar tasks to achieve success.	**.771**
7	Q16	I can imagine my performance before the competition.	**.755**

Explanation of the second factor:

The second factor consists of items with the highest saturations, according to the adopted factor explanation conditions. These items had saturations of (.520) or more, and there were (7) items with significant values of (0.40+) or more, with a rate of (20.59%) of the total number of items. This factor retained its name as (Skill Excellence).

Table (7)

It shows the sequence of the items, their numbers, and their saturations associated with the second factor, arranged in descending order according to the degree of saturation

Seq.	Item N.	Items	Degree of saturation
1	Q45	I feel I'm at a higher level than my peers.	**.912**
2	Q29	I can show maximum energy during matches.	**.859**
3	Q40	Defeat is something I find unpleasant.	**.772**
4	Q35	I train for additional hours outside of training time.	**.549**
5	Q15	I can participate in the match without feeling tired.	**.541**
6	Q3	I do what the coach asks of me very professionally.	**.536**
7	Q50	I wish to learn difficult and unfamiliar skills.	**.520**

Explanation of the third factor

The third factor consists of the items that have the highest saturations in accordance with the conditions for explaining the adopted factors, which reached a saturation of (.410) or more and their number is (6) items, with significant values of (+0.40) or more. The percentage (65, 17%) of the total number of items, and this factor retained its name (Field Intelligence).

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E-ISSN: 2708-3454

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Published 30/06/2023 Open Access

Table (8)
It shows the sequence of items and their numbers and saturations related to the third factor, arranged in descending order according to the degree of saturation.

Seq.	Item N.	Items	Degree of saturation
1	Q31	I can read the opponent's thoughts in advance.	**.904**
2	Q27	I respect the competing team and do not belittle them.	**.860**
3	Q43	I have the ability to express my opinion in front of the coach and my teammates.	**.858**
4	Q14	I overcome my weaknesses and focus on compound exercises.	**.830**
5	Q34	I act within my skill abilities on the field.	**.821**
6	Q10	I can be calm in the moments leading up to the competition.	**.410**

Explanation of the seventh factor

The seventh factor consists of the items that have the highest saturations in accordance with the conditions for explaining the adopted factors, which reached a saturation of (-435) or more, and their number is (8) items, with significant values of (±0.40) or more. The percentage of the seventh factor's items was (23.53%), and this factor retained its name (Self-confidence).

Table (9)
It shows the sequence of items and their numbers and saturations related to the seventh factor, arranged in descending order according to the degree of saturation

Seq.	Item N.	Items	Degree of saturation
1	Q5	I have self-confidence when performing skill and physical exercises.	**.844**
2	Q32	I am afraid of failing in the training.	**.830**
3	Q12	I can enter any sports complex without hesitation.	**.818**
4	Q33	I have great confidence in winning matches.	**.815**
5	Q18	I believe in my abilities and capabilities during matches.	**.812**
6	Q1	I try to be a role model for my teammates.	**.756**
7	Q34	I make up some excuses to avoid exercises.	**.733**
8	Q6	I feel responsible towards my teammates in the team.	**.435-**

Explanation of the fourteenth factor

The fourteenth factor consists of the items that have the highest saturations in accordance with the conditions for explaining the adopted factors, which reached a saturation of (-.438) or more, and their number is (6) items, with significant values of (±0.40) or more. The percentage of the fourteenth factor's items was (65, 17%), and this factor retained its name (Perseverance).

Table(10)
It shows the sequence of items and their numbers and saturations related to the fourteenth factor, arranged in descending order according to the degree of saturation

Seq.	Item N.	Items	Degree of saturation
1	Q24	I am determined to accomplish the tasks assigned to me by the coach.	**.777**
2	Q9	I have a mutual respect relationship with my teammates.	**.571**
3	Q23	I strive to be more famous than the rest of the players.	**.570**

P-ISSN: 1992-0091
E-ISSN: 2708-3454

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Published 30/06/2023 Open Access

4	Q21	I feel that I am a person characterized by calmness.	**.531**
5	Q7	I feel that I am a valuable person in my team.	**.474**
6	Q8	I feel frustrated by my wrong performance.	**-.438**

Excluded Factors

The factors which did not meet the acceptance criteria were excluded as follows:

Factor (4) has only one item saturated, which is item (37). Factor (5) has no item saturated. Factor (6) has no item saturated. Factor (8) has two items saturated, namely item (13) and item (22). Factor (9) has no item saturated. Factor (10) has two items saturated, namely item (17) and item (39). Factor (11) has only one item saturated, which is item (41). Factor (12) has only one item saturated, which is item (36). Factor (13) has only one item saturated, which is item (30).

Conclusions:

Based on the results derived from the factor analysis, the researcher was able to construct the Psychological Excellence Scale for professional handball players in the Premier League in Iraq.

In light of the extracted results from the factor analysis, (5) factors were identified for the Psychological Excellence Scale. The scale consists of (34) items distributed among the five factors, as indicated in the appendix (1).

The researcher recommended using the scale he developed to measure the psychological excellence of handball players in the Iraqi Premier League.

Standardizing the scale developed by the researcher.

Constructing a Psychological Excellence Scale for various individual and team sports.

Using the Psychological Excellence Scale developed by the researcher on different samples after making appropriate modifications that align with the sample type and the specific sport on which it is being applied.

Author's declaration:

Conflicts of interest: None

We confirm that all tables and figures and pictures in this article are ours and written by the researchers themselves.

Ethical-Clearance: this manuscript approved by local ethical committee of physical education and sport sciences college for women on (April /2023)

Author's contributions:

All contributions of this study were done by the researcher (J.M.) who get the main idea and work on writing and concluding also with number of experts, Jassim Mohammed Radhi who made and collect the Statistics, Suaad Sebti in revision, Inaam Ghalib in translating, Huda Shihab in proofreading

Facilitate the task: this study was supported by Iraqi Central Handball Federation – Baghdad – Iraq

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Appendix (1)

The final image of the psychological excellence scale for handball players with the correction key

Seq.	Items	Applies to a very high degree	Applies strongly	Applies moderately	Applies weakly	Does not apply at all
1	I try to be a role model for my teammates	5	4	3	2	1
2	I identify my strengths and weaknesses in my performance	5	4	3	2	1
3	I do what the coach asks of me with high professionalism	5	4	3	2	1
4	I act within the limits of my skills on the field	5	4	3	2	1
5	I have self-confidence when performing skill and physical exercises	5	4	3	2	1
6	I feel a sense of responsibility towards my teammates	5	4	3	2	1
7	I feel like a valuable person in my team	5	4	3	2	1
8	I feel frustrated by my wrong performance	1	2	3	4	5
9	I have a mutual respect relationship with my teammates	5	4	3	2	1
10	I can remain calm in the moments leading up to competition.	5	4	3	2	1
11	I have the ability to express my opinion in front of the coach and my colleagues	5	4	3	2	1
12	I can enter any sports complex without hesitation.	5	4	3	2	1
13	I desire to learn difficult and unfamiliar skills.	5	4	3	2	1
14	I overcome my weaknesses and focus on compound exercises.	5	4	3	2	1
15	I can participate in the match without feeling tired.	5	4	3	2	1
16	I can imagine my performance before the competition.	5	4	3	2	1
17	I train for extra hours outside of training time.	5	4	3	2	1
18	I believe in my abilities and skills during matches.	5	4	3	2	1
19	I can practice unfamiliar tasks to achieve success.	5	4	3	2	1
20	Defeat for me is something unpleasant.	5	4	3	2	1
21	I feel like I am a calm person.	5	4	3	2	1
22	I feel that I am at a higher level than my colleagues.	5	4	3	2	1
23	I strive to be more famous than the rest of the players.	5	4	3	2	1
24	I plan to accomplish the tasks assigned to me by the coach.	5	4	3	2	1
25	I set my future goals myself.	5	4	3	2	1
26	I look at my abilities and ambitions positively.	5	4	3	2	1

P-ISSN: 1992-0091
E-ISSN: 2708-3454

Modern Sport
Vol.22 No.2 ,2023

Published 30/06/2023 Open Access

27	I respect the opposing team and do not belittle them.	**5**	**4**	**3**	**2**	**1**
28	I strive to reach the goal I have planned for.	**5**	**4**	**3**	**2**	**1**
29	I can show maximum energy during matches.	**5**	**4**	**3**	**2**	**1**
30	I can find solutions in difficult situations during the match.	**5**	**4**	**3**	**2**	**1**
31	I can preemptively read the opponent's thoughts.	**5**	**4**	**3**	**2**	**1**
32	I am afraid of failing in training.	**1**	**2**	**3**	**4**	**5**
33	I have great confidence in winning matches.	**5**	**4**	**3**	**2**	**1**
34	I make up some excuses to avoid exercises.	**1**	**2**	**3**	**4**	**5**

بناء مقياس التفوق النفسي للاعبي كرة اليد في العراق

جاسم محمد راضي
مديرية تربية ديالى

مستخلص البحث

يهدف البحث الحالي لبناء مقياس التفوق النفسي للاعبي كرة اليد المتقدمين لأندية الدوري العراقي الممتازفي العراق ,التعرف على التفوق النفسي لدى لاعبي كرة اليد المتقدمين المشاركين في الدوري الممتاز بكرة اليد في العراق ,ونظراً لعدم وجود أداة لقياس التفوق النفسي للاعبي كرة اليد قرر الباحث الخوض في هذه المشكلة وأيجاد حلول لها من خلال بناء أداة لقياس التفوق النفسي,واستخدم الباحث المنهج الوصفي بالأسلوب المسحي لأنه الأقرب لحل مشكلة البحث الحالي,إذ أتم الباحث بناء مقياس التفوق النفسي معتمدًا على الجانب النظري للتفوق النفسي واشتقاق الابعاد منها ,وقد بلغت عينة بناء المقياس (240) لاعب ويمثلون نسبة مئوية مقدارها (80.81%) من المجتمع الكلي للبحث إذ تم تطبيق المقياس على اللاعبين وأستخراج الأسس العلميةَ من صدق التحليل الاحصائي للفقرات كصدق المحتوى وصدق البناء, والاتساق الداخلي, وصدق التحليل العاملي, وتم التحقق من الثبات بطريقتين, طريقة التجزئة النصفية ,ومعامل ألفاكرونباخ, وتوصل الباحث بعد أجراء العمليات الإحصائية المتمثلة بالتحليل العاملي الى أستخلاص (5) عوامل وهي(الأبداع, التفوق المهاري , الذكاء الميداني, الثقة بالنفس, المثابرة) تشبعت عليها (34) فقرة موزعة على العوامل الخمسة ,ويعد المقياس الحالي أداة للكشف عن التفوق النفسي للاعبي كرة اليد المتقدمين في العراق, وأوصى الباحث بأستخدام المقياس الذي قام بأعداده وبنائه لقياس التفوق النفسي للاعبي كرة اليد المتقدمين

الكلمات المفتاحية | **بناء ، مقياس ، التفوق النفسي ، كرة اليد**