



Constructing a Self-Efficacy Scale for Volleyball Players

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Abstract

The research aims to construct a self-efficacy scale for volleyball players. The researcher used the descriptive survey method to suit the nature of the study. The researcher selected a sample of (120) players from the clubs (Naft al-Janoob, al-Shurta, Peshmerga, Erbil, Masafi al-Shamal, al-Jaish, al-Habbaniya, and al-Bahri). They were divided into (20) players for the pilot study, and (100) players to apply the scale. The researcher used a self-efficacy scale for volleyball players (prepared by the researcher) as a basic tool for collecting data. One of the most important results was the construction of a self-efficacy scale for soccer players, which includes two axes: (the physical self-efficacy of volleyball players - the skills self-efficacy of volleyball players). The scientific coefficients of the physical self-efficacy scale for volleyball players indicate the possibility of its application. One of the most important recommendations was to use the scale that the researcher arrived at as a scientific means to measure self-efficacy for volleyball players.

Keywords: Self-efficacy, volleyball players, scale construction, descriptive survey method, physical and skills self-efficacy.

Introduction

1. Introduction

1.1 Introduction and Research Significance

The focus on athletic preparation should not be limited to physical and skill-based training alone; rather, it should extend to the comprehensive and holistic development of the athlete, targeting all aspects of their personality to create a well-balanced player across various domains. Sports, as a discipline, are inherently linked to multiple fields of science, including physiology, anatomy, psychology, kinesiology, philosophy, sociology, and history.

The psychological aspect of an athlete is one of the key requirements in volleyball, as it enables players to perform physical, motor, and skill-based tasks at appropriate levels during matches.

Volleyball, unlike other sports, relies heavily on psychological abilities in addition to mental, physical, and technical aspects throughout the game, which may last up to five sets of indeterminate duration (Khatayba, 2014: 256).

According to Mohamed Al-Arabi Shamoun (2003), one of the most crucial stages of athlete preparation is psychological training, which serves as the decisive factor in determining results when other forms of preparation—physical, technical, and tactical—are equal. Therefore, psychological preparation must be given greater attention and integrated into various training phases, as it is a fundamental factor in achieving athletic excellence. Sporting success depends on how effectively players utilize their mental abilities, which are just as important as their physical capabilities. Mental abilities help athletes harness their full potential and energy to achieve peak performance (Shamoun, 2003: 5).

Mohamed Hassan Allawi and Mohamed Nasruddin (1997) emphasize that self-concept is also a crucial factor in shaping an individual's personality. Many psychologists describe self-concept as a broad, hypothetical construct encompassing all of an individual's thoughts and feelings about their physical, mental, and personal traits, including their beliefs and values. In the sports field, two important aspects of self-concept are skill-based and physical self-concept, which play a significant role in enhancing performance. These aspects help predict how an athlete will perform during competition, as they reflect the player's perception of their motor skills, efficiency, and readiness to execute various movements essential to their sport (Allawi & Nasruddin, 1997: 124).

Self-efficacy and self-concept are closely interrelated, as self-efficacy significantly influences an individual's goal-setting, responses to themselves and others, capabilities, and interactions with life's challenges. Self-efficacy is a multidimensional concept that varies among individuals and is an essential component of self-concept, reflecting the person's sense of worth and competence. High self-efficacy is associated with positive attitudes toward oneself, whereas low self-efficacy is linked to negative self-perception. In other words, self-efficacy is the overall evaluation an individual has of themselves (Abdulameer, 2011: 297).

Maslow also underscored the importance of self-efficacy, considering it a fundamental human need. He argued that individuals cannot achieve self-actualization unless their self-efficacy needs are fulfilled. A person reaches self-actualization when they develop a positive self-opinion based on feelings of competence and acceptance from others (Zahran, 2001: 82).

Skill-Based Self-efficacy in Volleyball:

Skill-based self-efficacy refers to an individual's perception of their motor abilities in a specific sport and their overall competence and preparedness for various essential movements within that sport. It manifests in individuals who strive for success, seek achievements, and overcome obstacles to prove themselves. These individuals are typically responsible, continuously update their knowledge, and enhance their skills through new experiences (Allawi & Nasruddin, 1997: 158).

Like other team sports, volleyball requires players to focus and execute fundamental skills with precision during matches. This demands intensive training that addresses technical, physical, and psychological aspects, with psychological training playing a crucial role in improving overall performance. Self-confidence, gained through competition, is a key psychological factor that assists players in executing different skills effectively.

A study conducted by Thaer Rasheed (2015) on skill-based self-concept and team rankings in volleyball found that teams with high scores in skill-based self-assessment ranked among the top teams, whereas those with lower scores ranked lower. Similar results were observed in a study by Mohamed Yaqoub and Nidal Bani Saad (2020), which confirmed that volleyball players in the Arab East had high levels of skill-based self-efficacy.

Building on these findings, the researcher focused on developing a self-efficacy scale for volleyball players in Iraq to aid coaches in assessing the psychological aspects of their athletes.

Research Objective:

The study aims to develop a self-efficacy scale for volleyball players.

Previous Studies:

- Thaer Rashid (2015) conducted a study titled *"Physical and Skill Self-efficacy and Its Relationship to the Accuracy of Performing Offensive Skills in Volleyball."* The study aimed to identify the level of physical and skill self-efficacy among volleyball players and examine the accuracy of their offensive skills. The study sample consisted of 12 players from the Diyala Governorate team in Iraq. The researcher used the Physical and Skill Self-efficacy Scale in Volleyball, designed by Mohamed Hassan Allawi. The study results indicated a positive correlation between physical self-efficacy and the performance of offensive skills among volleyball players, as well as between skill self-efficacy and both the jump serve and blocking skills. However, no correlation was found between the setting skill and either physical or skill self-efficacy.
- Mohammed Yaqoub and Nidal Bani Saad (2020) conducted a study titled *"Physical Self-efficacy and Its Relationship with Self-Confidence Among Volleyball Players Participating in the 14th Arab Junior National Teams Championship."* The study aimed to explore the relationship between physical self-efficacy and self-confidence among volleyball players participating in the championship. The researchers employed a descriptive approach on a purposive sample of 65 players. The key findings indicated a strong, statistically significant positive correlation between the Physical Self-Concept Scale and the Self-Confidence Scale. The researchers recommended paying greater attention to the psychological aspects associated with volleyball, fostering physical self-concept among junior volleyball players, enhancing their self-confidence, and increasing their awareness of their physical attributes, strengths, and weaknesses.

Research Procedures

Research Methodology

The researcher employed the descriptive method using a survey approach, as it was suitable for the nature of the study.

Study Population

The study population included all volleyball players from sports clubs in Iraq.

Study Sample

The researcher selected a sample of **120** players from the following clubs: *Gas Al-Janoub, Al-Shurta, Peshmerga, Erbil, North Refinery, Army, Habbaniya, and Al-Bahri*.

The researcher divided the study sample as follows:

- **Pilot Study Sample:** Consisting of **20** players, this group was selected to validate the Self-efficacy Scale for volleyball players. These players were chosen from the original study population but were not included in the main study sample.
- **Main Study Sample:** Consisting of **100** players, this group was used to apply the Self-efficacy Scale for volleyball players, as illustrated in Table (1).

Table (1): Numerical Distribution of the Study Population and Sample

Category	Study Sample	Pilot Sample	%	Main Sample	%
Gas al-Janoob	20	3	15%	17	85%
al-Shurta	20	3	15%	17	85%
Peshmerga	15	3	20%	12	80%
Erbil	15	3	20%	12	80%
Massafi al-Shamal	13	2	15.38%	11	84.62%
al-Jaish	13	2	15.38%	11	84.62%
al-Habbaniya	12	2	16.67%	10	83.33%
al-Bahri	12	2	16.67%	10	83.33%
Total	120	20	16.67%	100	83.33%

Data Collection Tools

- **Volleyball Players' Self-efficacy Scale (Developed by the Researcher)**

Steps in Constructing the Volleyball Players' Self-efficacy Scale

The researcher designed the Volleyball Players' Self-efficacy Scale as the primary tool for data collection among the study sample outlined in Table (1). The following steps were taken to develop the scale:

- Reviewing scientific references and previous studies related to the research topic.
- Conducting personal interviews with several volleyball players.

The researcher structured the scale into two main dimensions:

1. **Physical Self-efficacy** of Volleyball Players.
2. **Skill Self-efficacy** of Volleyball Players.

Scientific Validity of the Volleyball Players' Self-efficacy Scale

Validity:

To ensure the validity of the self-efficacy scale, the researcher relied on:

- **Content Validity:**
The researcher presented the scale dimensions to a panel of **10 experts** specializing in sports psychology and volleyball training. Their feedback was sought to assess the suitability of the proposed dimensions in achieving the research objectives.

Table (2): Frequency and Percentage of Experts' Opinions on the Dimensions of the Volleyball Players' Self-efficacy Scale

N = 10 Experts

Dimensions	Experts in Agreement	Percentage	Notes
Physical Self-efficacy of Volleyball Players	10	100%	
Skill Self-efficacy of Volleyball Players	10	100%	

Table (2) clearly indicates that the experts unanimously agreed (**100%**) on the validity of the dimensions established by the researcher.

Following this, the researcher formulated appropriate statements for each dimension, totaling **66** statements, as detailed in Table (3).

Table (3): Number of Statements in Each Dimension of the Volleyball Players' Self-efficacy Scale (Preliminary Version Before Expert Review)

Dimensions	Number of Statements
Physical Self-efficacy of Volleyball Players	26
Skill Self-efficacy of Volleyball Players	40
Total	66

The dimensions and statements of the **Volleyball Players' Self-efficacy Scale** in its preliminary form (Appendix 1) were then presented to the experts. The researcher personally delivered the forms to the experts to gather their opinions on:

- The **appropriateness** of each statement within its respective dimension in achieving its intended purpose.
- The **accuracy** of the linguistic formulation of each statement.
- Suggestions to **delete, merge, relocate, or modify** statements as deemed necessary.

Table (4) presents the **frequencies and percentages** of experts' opinions regarding each statement in the **Volleyball Players' Self-efficacy Scale**.

Table (4): Frequencies and Percentages of Experts' Opinions on Each Statement in the Volleyball Players' Self-efficacy Scale

St. No.	Fr.	%	St. No.	Fr.	%	St. No.	Fr.	%	St. No.	Fr.	%
Dimension 1: Physical Self-efficacy											
1	10	100%	8	4	40%	15	10	100%	22	10	100%
2	2	20%	9	10	100%	16	10	100%	23	9	90%
3	10	100%	10	10	100%	17	10	100%	24	10	100%
4	8	80%	11	9	90%	18	10	100%	25	10	100%
5	10	100%	12	10	100%	19	10	100%	26	7	70%
6	10	100%	13	10	100%	20	10	100%			
7	7	70%	14	10	100%	21	10	100%			
Dimension 2: Skill Self-efficacy											
27	10	100%	37	10	100%	47	10	100%	57	10	100%
28	10	100%	38	10	100%	48	10	100%	58	3	30%
29	10	100%	39	10	100%	49	5	50%	59	10	100%
30	10	100%	40	8	80%	50	10	100%	60	10	100%
31	9	90%	41	10	100%	51	10	100%	61	9	90%
32	9	90%	42	10	100%	52	9	90%	62	10	100%
33	10	100%	43	10	100%	53	10	100%	63	8	80%
34	10	100%	44	10	100%	54	10	100%	64	10	100%

35	10	100%	45	10	100%	55	10	100%	65	10	100%
36	10	100%	46	10	100%	56	10	100%	66	3	30%

N = 10 Experts

ST: Statement; Fr.: Frequency

It is clear from Table (4) that the frequencies and percentages of experts' opinions on each statement in the Volleyball Players' Self-efficacy Scale ranged from 20% to 100%. The researcher accepted an agreement rate of 80% or more. Based on the experts' opinions, the researcher modified the statements in the scale, as illustrated in Table (5)

Table (5) illustrates the modifications made to the Volleyball Players' Self-efficacy Scale:

First Axis	No.	Statement Before Modification	Type of Modification	Statement After Modification
	2	When I train with weights, I can't repeat the exercise several times	Removed	-
	7	During matches, I wish they would end quickly because I don't feel tired	Reworded	I wish matches would end quickly
	8	can sprint quickly without hesitation	Removed -	
	26	I can act quickly to maintain my balance without falling	Reworded	I can act quickly to maintain my balance
Second Axis	49	If I were in a critical situation during the game, I could act	Removed	-
	58	When I perform a block against the hit in front of me, I can block the ball	Removed -	
	66	Some of my passes are not liked by my teammates on the court	Removed -	

Based on the modifications made to the Volleyball Players' Self-efficacy Scale, including the removal and rewording of some statements, the total number of statements in the scale after the modification reached 61 statements, as illustrated in Table (6).

Table (6) illustrates the number of statements in each axis of the Volleyball Players' Self-efficacy Scale in its final form after being reviewed by the experts:

Axis	Number of Statements
First Axis: Physical Self-efficacy of Volleyball Players	24

Second Axis: Skill Self-efficacy of Volleyball Players	37
Total	61

Internal consistency validity:

The validity of the statements in the Volleyball Players' Self-efficacy Scale was confirmed by calculating the correlation coefficient between the score of each statement and the total score of the scale. This is illustrated in Table (7).

Table (7)
Correlation Coefficients Between the Score of Each Statement and the Score of the Axis to Which It Belongs, and the Overall Score of the Self-efficacy Scale for Volleyball Players
N = 20

Statement Number	Correlation Coefficient with Axis	Correlation Coefficient with Scale	Statement Number	Correlation Coefficient with Axis	Correlation Coefficient with Scale
Axis 1					
1	0.695*	0.751*	13	0.399*	0.469*
2	0.525*	0.562*	14	0.643*	0.741*
3	0.499*	0.596*	15	0.852*	0.901*
4	0.487*	0.615*	16	0.569*	0.591*
5	0.524*	0.699*	17	0.553*	0.587*
6	0.441*	0.651*	18	0.745*	0.852*
7	0.678*	0.688*	19	0.500*	0.520*
8	0.485*	0.569*	20	0.578*	0.625*
9	0.459*	0.529*	21	0.623*	0.789*
10	0.802*	0.852*	22	0.759*	0.765*
11	0.484*	0.694*	23	0.648*	0.705*
12	0.527*	0.587*	24	0.697*	0.756*
Axis 2					
25	0.673*	0.688*	44	0.478*	0.569*
26	0.638*	0.691*	45	0.556*	0.621*
27	0.769*	0.801*	46	0.491*	0.518*
28	0.470*	0.480*	47	0.579*	0.695*
29	0.886*	0.894*	48	0.884*	0.902*
30	0.594*	0.658*	49	0.721*	0.784*
31	0.699*	0.741*	50	0.854*	0.871*
32	0.648*	0.695*	51	0.654*	0.754*
33	0.475*	0.756*	52	0.635*	0.569*
34	0.894*	0.935*	53	0.647*	0.521*
35	0.562*	0.569*	54	0.746*	0.881*
36	0.487*	0.532*	55	0.821*	0.521*
37	0.488*	0.496*	56	0.691*	0.816*
38	0.697*	0.437*	57	0.824*	0.823*
39	0.478*	0.572*	58	0.547*	0.835*
40	0.886*	0.451*	59	0.556*	0.630*
41	0.635*	0.476*	60	0.452*	0.491*

42	0.594*	0.860*	61	0.638*	0.500*
43	0.579*	0.558*			

*Significant at 0.05 level (Pearson correlation coefficient table = 0.433)

It is evident from Table (7) that the correlation coefficients between each statement and the score of the axis to which it belongs, which ranged from (0.441 to 0.894), and the overall score, which ranged from (0.437 to 0.935), for the self-efficacy scale of volleyball players are statistically significant at the 0.05 significance level.

Table (8)
Correlation Coefficients Between the Score of Each Axis and the Overall Score of the Self-efficacy Scale for Volleyball Players
N = 20

Scale Axis	Correlation Coefficient Value
Axis 1: Physical Self-efficacy for Volleyball Players	0.754*
Axis 2: Skill Self-efficacy for Volleyball Players	0.841*

*Significant at the 0.05 level (Pearson correlation coefficient table = 0.433)

It is evident from Table (8) that the correlation coefficients between each axis and the overall self-efficacy scale for volleyball players, ranging from (0.754 to 0.841), are statistically significant at the 0.05 significance level. This indicates the internal consistency validity of the scale axes.

Reliability:

Reliability was verified using Cronbach's Alpha coefficient to determine the reliability of the statements and axes of the self-efficacy scale for volleyball players, as shown in Table (9)

Table (9)
Reliability Coefficients of the Self-efficacy Scale for Volleyball Players Using Cronbach's Alpha Coefficient
N = 20

Statement No.	Cronbach's Alpha Coefficient (If Statement Is Deleted)		Statement No.	Cronbach's Alpha Coefficient (If Statement Is Deleted)	
	Axis	Scale		Axis	Scale
Axis 1					
1	0.812	0.916	13	0.887	0.916
2	0.864	0.916	14	0.847	0.916
3	0.745	0.916	15	0.799	0.916
4	0.903	0.916	16	0.784	0.916
5	0.825	0.916	17	0.902	0.916
6	0.754	0.916	18	0.887	0.916
7	0.898	0.916	19	0.900	0.916
8	0.886	0.916	20	0.915	0.916
9	0.823	0.916	21	0.864	0.916
10	0.895	0.916	22	0.910	0.916
11	0.866	0.916	23	0.701	0.916
12	0.748	0.916	24	0.823	0.916

Axis 2					
25	0.795	0.916	44	0.795	0.916
26	0.851	0.916	45	0.864	0.916
27	0.791	0.916	46	0.908	0.916
28	0.710	0.916	47	0.864	0.916
29	0.855	0.916	48	0.789	0.916
30	0.784	0.916	49	0.748	0.916
31	0.748	0.916	50	0.825	0.916
32	0.794	0.916	51	0.748	0.916
33	0.795	0.916	52	0.821	0.916
34	0.902	0.916	53	0.754	0.916
35	0.790	0.916	54	0.747	0.916
36	0.903	0.916	55	0.869	0.916
37	0.854	0.916	56	0.832	0.916
38	0.799	0.916	57	0.877	0.916
39	0.821	0.916	58	0.854	0.916
40	0.836	0.916	59	0.887	0.916
41	0.742	0.916	60	0.786	0.916
42	0.801	0.916	61	0.900	0.916
43	0.745	0.916			

The table provides the Cronbach's alpha coefficients for the reliability of the self-efficacy scale for volleyball players when each statement is deleted. All coefficients are statistically significant, confirming the reliability of the scale.

It is evident from Table (9), which shows the reliability coefficients of the self-efficacy scale for volleyball players using Cronbach's Alpha, that the reliability coefficients for the statements with the axes ranged from (0.701 to 0.915). The reliability coefficients for the statements with the overall scale were (0.916), and all are statistically significant at the 0.05 significance level, indicating the stability of the scale.

Table (10)
Cronbach's Alpha Coefficients for the Self-efficacy Scale Dimensions for Volleyball Players

Scale Axis	Cronbach's Alpha Coefficient	
	For the Axis as a Whole	For the Scale as a Whole
Axis 1 1: Physical Self-efficacy of Volleyball Players	0.784	0.931
Axis 2: Skill-based Self-efficacy of Volleyball Players	0.874	

It is clear from Table (10), which shows the reliability coefficients for the self-efficacy scale dimensions for volleyball players using Cronbach's Alpha, that the reliability coefficients for the dimensions within the scale ranged between (0.784 – 0.874). The reliability coefficients for the items within the entire scale ranged from (0.931), all of which are statistically significant at the 0.05 level, indicating the scale's reliability.

Preparation of the Scoring Key for the Self-efficacy Scale for Volleyball Players

The researcher relied on the responses for the Self-efficacy Scale for Volleyball Players based on the (three-point Likert scale), which includes the options (Yes – To some extent – No). The

responses were assigned the scores (3, 2, 1), respectively. Therefore, the minimum score for the scale is 61 points, and the maximum score is 183 points.

By determining the items in the direction of the scale and in the opposite direction, and using the three-point scoring key (Yes – To some extent – No), the score distribution is shown as outlined in Table (11).

Table (11)
Determining the Three-Point Scoring Key for the Scale

Type of Statement	Yes	To Some Extent	No
Opposite Direction of the Dimension	1	2	3
In the Direction of the Dimension	3	2	1

The score is calculated as follows:

For positive statements, "No" indicates a low level of self-efficacy, "To some extent" indicates a moderate level of self-efficacy, and "Yes" indicates a high level of self-efficacy.

The opposite applies for negative statements.

Statistical Procedures Used in the Research:

The statistical treatments were carried out using the SPSS version 2020 program, as follows:

- Percentage
- Reliability coefficient using the Test-Retest method
- Cronbach's Alpha coefficient
- Pearson correlation coefficient
- Factor analysis

Presentation and Discussion of Results:

The researcher will extract the factors for factor analysis using the Principal Components method from the correlation matrix, with the goal of extracting the maximum correlation variance and ensuring the highest degree of confidence in estimating the factor loadings. The factors will be rotated orthogonally using the Varimax method with the Kaiser Criterion to determine the number of factors. A factor is considered acceptable if the eigenvalue is greater than one. Then, the items that load on each factor at a value of (0.50) will be identified.

Table (12)
Factor Loadings, Communalities, Eigenvalues, and Percentage of Variance After Rotation, with Factor Loadings Below 0.50 Removed for the First Dimension (Physical Self-efficacy of Volleyball Players)
(N = 100)

Statement No.	Statement	Factors After Rotation			Communalities
		Factor 1	Factor 2	Factor 3	
14	I move quickly to take the proper position	0.848		0.355	0.93
18	I fear muscle strain when performing movements that require a wide range	0.827	0.377	0.366	0.961
1	I can jump high to a great height	0.796	0.427	0.394	0.971
4	I am a fast player	0.788	0.427	0.403	0.965

19	I can change my direction and movements quickly when the movement path changes	0.764	0.439	0.401	0.937
6	I wish the games would end quickly	0.759	0.447		0.837
24	I can act quickly to maintain my balance	0.662	0.46	0.545	0.947
23	I can perform the greatest number of repetitions when training with a certain weight in a specific time	0.655	0.395	0.577	0.918
13	When I train with weights, I feel fatigued quickly	0.383	0.845		0.956
22	Slow movements make me lose many of my skills	0.393	0.832		0.917
2	I cannot jump forward over a great distance	0.396	0.79	0.431	0.966
20	I feel that I am the best at performing fast-paced weight training exercises	0.392	0.764	0.381	0.882
11	I can train with weights for a long time	0.406	0.751	0.484	0.963
9	I perform most skills quickly	0.413	0.428	0.511	0.962
10	There are some movements I cannot perform as required because they require great flexibility	0.43	0.454	0.544	0.908
16	During matches, I feel the urge to stop playing for a few seconds to catch my breath	0.561	0.392	0.673	0.921
17	I am characterized by agility	0.508	0.523	0.657	0.962
21	I cannot play a strong match until the end with the same vitality and energy	0.517	0.53	0.656	0.978
3	I feel weakness in my leg muscles	0.517	0.53	0.656	0.978
8	I can change my body position easily according to changes in the game	0.486	0.534	0.637	0.927
12	I outrun most of my teammates in running	0.477	0.585	0.632	0.97
7	I find it difficult to maintain my balance	0.569	0.488	0.629	0.957
15	When I fall, I can change my body position to absorb the shock and avoid injury	0.458	0.603	0.619	0.956
5	I can change my body posture according to changes in the game situations	0.461	0.602	0.417	0.956
Eigenvalue		8.13	8.07	6.43	22.63
Percentage of Variance After Rotation		33.87	33.62	26.78	

It is clear from Table (12) that the factor analysis after rotation using the Varimax method for the first axis (self-efficacy in physical aspects of volleyball players) resulted in the extraction of three factors. The first factor had the highest variance percentage of 33.87%, the second factor had a variance percentage of 33.62%, and the third factor had the lowest variance percentage of 26.78%. The total sum of the eigenvalues and communalities was 22.63

Table (13)
The factor loadings extracted for the first axis (self-efficacy in the physical aspects of volleyball players):

No.	Statement Number	Statement	Loading
1	14	I move quickly to take the appropriate position	0.848
2	13	When I train with weights, I feel tired quickly	0.845
3	22	My slow movements cause me to lose many of my skills	0.832
4	18	I fear muscle strain when performing movements that require a wide range of motion	0.827
5	1	I can jump high to great heights	0.796
6	2	I cannot jump forward a great distance	0.791
7	4	I am a fast-moving player	0.788
8	19	I can change my directions and movements quickly when the direction of movement changes	0.764
9	20	I feel that I am the best at performing quick weight training exercises	0.764
10	6	I wish the matches would end quickly	0.759
11	11	I can train with weights for a long time	0.751
12	24	I can act quickly to maintain my balance	0.662
13	23	I can perform the greatest number of repetitions when training with a certain weight in a set time	0.655
14	16	During matches, I feel the urge to stop playing for a few seconds to catch my breath	0.673
15	17	I am characterized by agility	0.657
16	21	I cannot play a strong match until the end with the same vitality and energy	0.656
17	3	I feel weakness in my leg muscles	0.656
18	8	I can change my body's direction easily according to the game's variables	0.637
19	12	I outrun most of my teammates	0.632
20	7	It is difficult for me to maintain my balance	0.629
21	15	When I fall, I can adjust my body position to absorb the shock and prevent injury	0.619

It is clear from the table that the first axis has a total of 21 statements, accounting for 34.43% of the total statements in the extracted scale. The factor loadings on the first axis ranged from 0.619 to 0.848. All of these statements align with the axis and share the common theme of expressing self-efficacy in the physical aspects of volleyball players.

Table (14):
Factor loadings, communalities, eigenvalues, and variance percentages of the factors
after rotation, with the removal of loadings below 0.50 for the second axis (self-efficacy
in the technical skills of volleyball players)
N = 100

Statement Number	Statement	Variance after rotation				Communality
		Factor 1	Factor 2	Factor 3	Factor 4	
31	I hesitate when receiving the serve.	0.971	0.088	0.38	0.105	0.616
40	I can receive the serve in any position on the court.	0.955	0.098	0.47	0.155	0.542
27	I move at the appropriate speed.	0.909	0.102	0.91	0.210	0.656
28	It is difficult for me to make movements backward.	0.877	0.207	0.94	0.270	0.538
37	I can pass the ball directly to the empty spot on the opponent's court.	0.860	0.266	0.100	0.287	0.564
32	I can vary my serves.	0.788	0.309	0.109	0.191	0.549
58	I can play the serve with more power over the net.	0.697	0.315	0.112	0.301	0.587
34	It is difficult for me to make a good block against a fast spike.	0.588	0.322	0.147	0.316	0.446
35	I can score a point from a serve.	0.560	0.349	0.149	0.318	0.670
36	I am good at defending in any position on the court.	0.504	0.355	0.151	0.358	0.343
45	I can pass the ball to the desired location.	0.491	0.369	0.184	0.379	0.512
50	I do not like performing skills that involve falling on the ground.	0.487	0.389	0.189	0.385	0.734
39	It is easy for me to move in any direction on the court.	0.476	0.399	0.192	0.389	0.643
49	I can direct my serve to the weak receiver.	0.470	0.401	0.197	0.392	0.487
53	My movements on the court allow me to perform my offensive	0.470	0.925	0.201	0.392	0.447

	and defensive duties well.					
46	I defend only in my position and am not good at defending in other positions on the court.	0.425	0.834	0.294	0.413	0.524
38	I am good at hitting the ball from the backcourt.	0.425	0.824	0.312	0.416	0.582
56	The hardest skill is flying forward.	0.410	0.808	0.364	0.418	0.527
25	I can perform top-spin serves easily.	0.408	0.805	0.369	0.420	0.563
48	My movements on the court are precise.	0.399	0.801	0.390	0.425	0.578
26	I am accurate in passing the ball.	0.396	0.644	0.420	0.431	0.575
41	I can move easily after receiving the ball to perform offensive duties.	0.380	0.625	0.425	0.435	0.518
51	I am good at setting (lifting) the ball from the bottom.	0.369	0.525	0.468	0.436	0.553
47	I can direct my serve to the substitute player.	0.342	0.488	0.480	0.440	0.445
33	I am not good at making a powerful spike.	0.340	0.469	0.485	0.445	0.559
43	I can make a successful defense against any ball hit towards me.	0.331	0.474	0.847	0.448	0.562
52	I can receive any serve, no matter how difficult.	0.330	0.470	0.822	0.448	0.489
57	I am good at all types of passing.	0.326	0.461	0.788	0.450	0.874
44	It is difficult for the opposing team to block my spike.	0.315	0.431	0.786	0.455	0.632
54	I can deceive the opposing team by passing the ball directly to their court instead of setting it.	0.309	0.408	0.781	0.458	0.745

59	I am an excellent spiker at the net.	0.289	0.384	0.481	0.799	0.798
60	My defense in the backcourt is not good.	0.274	0.374	0.471	0.784	0.721
55	I am good at all types of serves.	0.268	0.364	0.461	0.749	0.720
29	After defending, I can move to the appropriate position for coverage and attack.	0.259	0.360	0.425	0.741	0.625
30	I can direct my spike to the weak defender.	0.254	0.355	0.405	0.738	0.669
42	The opposing teams know how dangerous I am at the net.	0.049	0.184	0.225	0.399	0.658
61	It is difficult for me to direct my reception to the setter in the right position.	0.039	0.147	0.221	0.348	0.647
Eigenvalues		7.84	5.36	5.15	3.54	21.898
Variance percentage after rotation %		26.45	23.50	21.45	20.84	

It is clear from Table (14) that the factor analysis after rotation using the Varimax method for the second axis (self-efficacy of volleyball players) resulted in the extraction of four factors. The first factor had the highest variance percentage (26.45%), followed by the second factor with a variance percentage of (23.50%), the third factor with a variance percentage of (21.45%), and the fourth factor with the lowest variance percentage (20.84%). The total of the eigenvalues and communalities was (20.84).

Table (15)
Loadings Extracted for the Second Axis (Self-efficacy of Volleyball Players)

No.	Statement No.	Statement	Loading
1	31	I hesitate when receiving the serve.	0.971
2	40	I can receive the serve in any position on the court.	0.955
3	53	My movements on the court enable me to perform my offensive and defensive duties effectively.	0.925
4	27	I move at the appropriate speed.	0.909
5	28	It's difficult for me to move backward.	0.877
6	37	I can pass the ball directly to the open spot on the opponent's court.	0.860
7	43	I can perform a successful defense against any ball hit toward me.	0.847
8	46	I defend only in my position and do not perform well in other positions on the court.	0.834
9	38	I am skilled at hitting the ball from the backcourt.	0.824
10	52	I can receive any serve, no matter how difficult.	0.822
11	56	The hardest skill for me is jumping forward.	0.808
12	25	I can perform overhead serves (of all types) easily.	0.805
13	48	My movements on the court are precise.	0.801

14	59	I am an excellent hitter at the net.	0.799
15	57	I am skilled in all types of passing.	0.788
16	32	I can vary my serves.	0.788
17	44	It is difficult for the opposing team to block my powerful spikes.	0.786
18	60	My defense in the backcourt is not good.	0.784
19	54	I can deceive the opposing team by passing the ball directly to their court instead of setting it up.	0.781
20	55	I am skilled in all types of serves.	0.749
21	29	After defending, I can move to the right spot for coverage and attack.	0.741
22	30	I can direct my spike to a player with weak defense.	0.738
23	58	I can serve with high power just above the net.	0.697
24	26	I am precise in passing the ball.	0.644
25	41	I can move easily after receiving the serve to perform offensive duties.	0.625
26	34	It is difficult for me to create a good block for a fast spike.	0.588
27	35	I can score a point from a serve.	0.560
28	51	I am skilled at setting the ball from below.	0.525
29	36	I am skilled at defending in any position on the court.	0.504

It is clear from the table that the following is observed: A total of 20 statements on the second axis have a loading of 47.54% of the total extracted statements of the scale. The loadings on the third axis ranged between 0.504 and 0.971, and all these statements align with the axis. These statements all share the characteristic of reflecting the self-efficacy of volleyball players in terms of their skills.

Table (16)
Number of Extracted Statements in the Axes

No.	Axis	Number of Statements
1	Physical Self-efficacy of Volleyball Players	21
2	Skill-Based Self-efficacy of Volleyball Players	29
Total		50

Standards for the Scale:

The researcher used the modified T-score to set standard scores for the scale, converting raw scores into standard scores as shown in Table (17). These standard scores were derived from the application on the main sample of the research. The researcher used the following formula:

$$\text{Modified T-score} = ((\text{Raw score} - \text{Mean}) / \text{Standard deviation}) \times 10 + 50$$

The researcher considered these standards as temporary and specific to the research sample, subject to change over time.

Table (17)
T-Score (Modified T-Score according to Thorndike) for Raw Scores
N = 100

Raw Score	T-Score	Raw Score	T-Score	Raw Score	T-Score	Raw Score	T-Score
61	26.5	93	45.00	125	63.6	157	79.5
65	28.6	97	47.5	129	65.5	161	81.6
69	30.7	101	49.2	133	67.3	165	83.2
73	32.8	105	52.0	137	69.8	169	85.7
77	35.5	109	55.2	141	71.8	173	87.6
81	37.5	113	57.4	145	73.4	177	89.4
85	39.8	117	59.5	149	75.1	181	91.3
89	42.6	121	61.8	153	77.8		

Table (18)
Key for Correcting the T-Score for the Self-Estimation Scale for Volleyball Players

Self-efficacy Level	T-Score Range
High Self-efficacy	71.8 - 91.3
Average Self-efficacy	49.2 - 69.8
Low Self-efficacy	26.5 - 47.5

Conclusions:

In light of the results of the factor analysis and according to the findings of this research, the following conclusions were drawn:

- A self-efficacy scale for volleyball players was developed, consisting of two axes: (Physical Self-efficacy of Volleyball Players - Skill-Based Self-efficacy of Volleyball Players).
- The scientific factors of the physical self-efficacy scale for volleyball players indicate its applicability.
- Volleyball players possess high levels of physical and skill-based self-efficacy.

Recommendations:

Based on the conclusions reached, the researcher recommends the following:

- The scale developed by the researcher should be used as a scientific tool to measure self-efficacy among volleyball players.
- The scale should be included in the methods for selecting volleyball players.
- It is necessary to support the coaching staff with a psychological specialist to help players achieve athletic success.
- Coaches should pay attention to the psychological aspects as much as they do to other components of the training process.

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