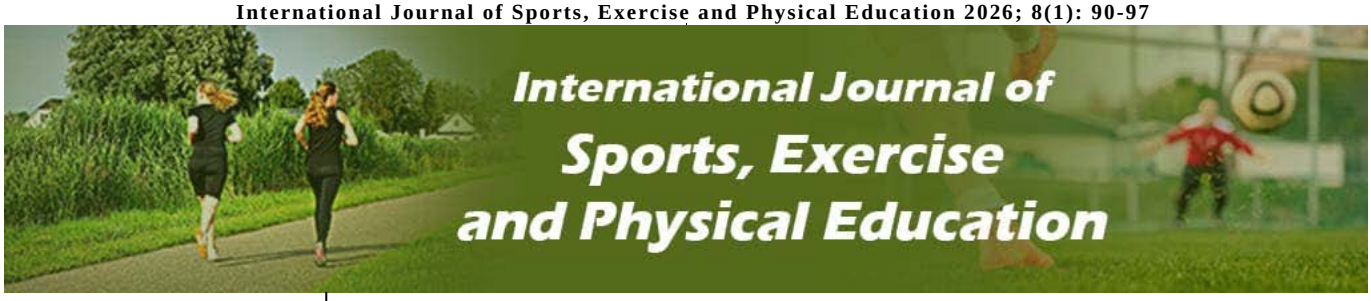

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Hala Razzaq Madlool
College of Physical Education and Sports Sciences, University of Kufa, Iraq

Corresponding Author:
Hala Razzaq Madlool
College of Physical Education and Sports Sciences, University of Kufa, Iraq

Construction and Standardization of a Motor Self-Efficacy Scale in Rhythmic Gymnastics for Female Students of Colleges of Physical Education and Sports Sciences

Hala Razzaq Madlool

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Abstract
This study aims to construct and standardize a motor self-efficacy scale for female students of Colleges of Physical Education and Sports Sciences in the sport of rhythmic gymnastics, due to the importance of this concept in understanding the student's level of confidence in her motor performance and her positive interaction with skill-related tasks. The descriptive method was employed using the approach of constructing and standardizing measurement tools. The scale was applied to a sample consisting of (30) female students. The scale was prepared according to scientific procedures that included item formulation, expert validation, pilot application, extraction of validity and reliability coefficients, and the determination of normative standards. The results revealed that the sample possessed a moderate to acceptable level of motor self-efficacy, reflecting the impact of the educational environment and the skills acquired through university-level training in rhythmic gymnastics. The researcher recommends adopting this scale as a diagnostic and developmental tool within physical and skill preparation programs for female physical education students.

Keywords: Motor self-efficacy, tests and measurements, rhythmic gymnastics

Introductionand Significance of the Study
Motor self-efficacy is considered one of the core concepts in the field of sport psychology and has received wide attention due to its highly influential role in motivating motor behavior and enhancing confidence in physical and skill-related abilities among athletes, particularly in individual sports that require a high level of concentration, discipline, and precision, such as rhythmic gymnastics.

In light of the ongoing development in the field of physical education and sports sciences, it has become essential to pay attention to psychological-motor aspects, not merely as complementary elements to physical performance, but as fundamental components that contribute to performance development and to shaping the personality of the athlete who is capable of decision-making and controlling motor responses in both competitive and educational environments.

Rhythmic gymnastics, with its complex motor demands and integrated dynamic organization of movements, requires the student to possess a high level of motor self-efficacy, enabling her to be confident in her ability to perform rhythmic movements and to overcome the challenges associated with training tasks. Motor self-efficacy represents an internal motivational force that drives the student to continue learning, improve performance, and confront difficulties without withdrawal or hesitation.

Despite the importance of this variable, the local academic field lacks standardized and contextually adapted instruments suitable for the Iraqi university environment, particularly for female students of Colleges of Physical Education and Sports Sciences. This highlights the urgent need to construct an objective scale with acceptable levels of validity and reliability, capable of diagnosing the level of motor self-efficacy and guiding educational and training programs in accordance with the psychological and motor characteristics of the student. Accordingly, the significance of the present study emerges from its attempt to construct and standardize a motor self-efficacy scale toward female students of Colleges of

Physical Education and Sports Sciences, as a methodological step toward providing a measurement tool that contributes to understanding the students' psychological-motor reality and supports coaches and educators in designing more effective educational strategies.

Research Problem

Motor self-efficacy is one of the decisive psychological factors that contribute to improving physical and skill performance, especially in sports that require a high level of coordination between sensory perception and motor execution, such as rhythmic gymnastics. However, observation of the educational and training reality of female students in Colleges of Physical Education and Sports Sciences reveals noticeable variation in the level of confidence in their self-abilities to perform complex rhythmic skills, which negatively affects students' motivation and progress in the motor learning process.

Based on the researcher's field experience and direct observations in gymnastics halls, in addition to reviewing relevant literature, a clear deficiency has been identified in standardized tools that can accurately and objectively measure the level of motor self-efficacy among female students. This deficiency creates a gap in the psychological-motor diagnostic process and limits the ability to design training or educational programs that align with individual needs.

Moreover, most previous studies have addressed self-efficacy as a general concept without specializing or adapting it to the requirements of complex sports activities such as rhythmic gymnastics, and without considering the specific characteristics of female students in this field.

Accordingly, the research problem of the current study is formulated in the following question:

To what extent is it possible to construct and standardize a motor self-efficacy scale for female students of Colleges of Physical Education and Sports Sciences in the sport of rhythmic gymnastics?

1-3 Objectives of the Study

The study aims to

1. Construct and standardize a motor self-efficacy scale for first-year female students in the College of Physical Education and Sports Sciences.
2. Establish norms and performance levels for the motor self-efficacy scale among first-year female students in the College of Physical Education and Sports Sciences.
3. Identify the level of motor self-efficacy among first-year female students in the College of Physical Education and Sports Sciences.

Scope of the Study

- **Human Scope:** First-year female students of the College of Physical Education and Sports Sciences, University of Kufa, for the academic year 2023-2024.
- **Spatial Scope:** The gymnastics hall at the College of Physical Education and Sports Sciences, University of Kufa, for the academic year 2023-2024.
- **Temporal Scope:** From 14/10/2023 to 20/12/2023.

Research Methodology and Field Procedures

Research Method

The researcher employed the descriptive method using the survey approach, due to its suitability for the nature of the current study. The descriptive research method aims to identify conditions and relationships between observable and existing phenomena, while the descriptive survey approach seeks to collect data from members of the population in order to determine the current status of the population across various variables.

Research Population and Samples

The research population was defined as first-year female students in the College of Physical Education and Sports Sciences - University of Kufa for the academic year (2023-2024), totaling (35) students. These students were enrolled, as part of their curriculum, in the rhythmic gymnastics course, which makes them suitable for measuring the level of motor self-efficacy related specifically to performance in this sport.

The research sample was selected using the comprehensive enumeration method from the total population and was distributed as follows:

Pilot Study Sample

The pilot sample was selected randomly and consisted of (5) female students, as shown in Table (1).

Construction, Standardization, and Application Sample

This sample consisted of (30) female students from the research population.

Table 1: Distribution of Research Samples

Category	Total Population	Pilot Sample	Construction & Standardization Sample
Number	35	5	30
Percentage	100%	14.29%	85.71%

After defining the research population as first-year female students in the College of Physical Education and Sports Sciences - University of Kufa for the academic year (2023-2024), the research sample was selected. A sample is defined as "a part or subset of the whole population," and it represents a distinct and selected group drawn from the study population. It is considered representative in that it possesses the same characteristics as the population, and it is selected according to specific procedures and methods.

Tools and Equipment Used in the Study

The researcher reviewed a number of scientific sources, references, research papers, and previous studies in the fields of psychology, scale construction, testing, and scientific research in order to select relevant information and complete the current study. The success of research in achieving its objectives depends on several factors, one of the most important of which is the proper and appropriate selection of methods for data collection; therefore, choosing suitable tools is considered a fundamental factor in scientific research.

To achieve the objectives of the study, the researcher used the following tools and equipment:

- Arabic and foreign scientific sources and references.
- Personal interviews.
- Data collection and recording forms.
- Electronic calculator.
- Electronic stopwatch.
- Stationery tools (papers and pens).

Research Procedures

Procedures for Constructing and Standardizing the Motor Self-Efficacy Scale

To achieve the first objective of the study, which is constructing and standardizing the motor self-efficacy scale, the researcher followed the following scientific steps:

Determining the Objective of the Motor Self-Efficacy Scale

The first step in constructing any scale is to clearly define its objective and intended use. At this stage, the researcher aimed to construct a scale to measure motor self-efficacy among female students.

Determining the Theoretical Framework of the Motor Self-Efficacy Scale

It is necessary to clearly define the phenomenon or trait to be measured, ensuring that its concept and boundaries are well specified. The phenomenon targeted by the researcher for measurement in this study is motor self-efficacy.

Determining the Domains of the Motor Self-Efficacy Scale

After reviewing relevant scientific references and sources, conducting a number of personal interviews with gymnastics specialists and experts in motor skill performance, and consulting a group of experts specialized in sport psychology and psycho-motor measurement, six main domains were identified to form the preliminary structure of the motor self-efficacy scale. These domains are:

1. Self-body perception
2. Control of balance and motor stability
3. Ability to perform rhythmic skills
4. Motor control and coordination
5. Awareness of breathing and physical energy
6. Motor persistence and perseverance

To verify the suitability of these domains and adopt them as the basis for the final scale, the researcher presented them in a specially prepared questionnaire that was distributed to a group of experts and specialists in sport psychology, gymnastics teaching methods, and tests and measurement in physical education.

After collecting the questionnaires and reviewing the experts' opinions, the researcher refined the domains according to the provided feedback. All-important remarks suggesting the addition, deletion, merging, or renaming of certain domains were taken into consideration in order to achieve scientific accuracy and ensure appropriateness for the level of the sample (first-year female students).

For the statistical analysis of experts' responses, the Chi-square test (χ^2) for goodness of fit was employed to measure the degree of agreement regarding the suitability of the proposed domains for inclusion in the final scale.

The statistical results are presented in Table (2), which indicate that all domains achieved a statistically significant level, reflecting agreement among experts on their suitability as fundamental components for constructing the motor self-efficacy scale.

Table 2: Calculated Chi-square (χ^2) values for experts' agreement on the domains of the motor self-efficacy scale

No.	Domain	Suitable	Not Suitable	Calculated χ^2 Value	Significance
1	Self-body perception	19	0	19.00	Acceptable
2	Control of balance and motor stability	19	1	16.20	Acceptable
3	Ability to perform rhythmic skills	15	5	5.00	Acceptable
4	Motor control and coordination	19	1	16.20	Acceptable
5	Awareness of breathing and physical energy	20	0	20.00	Acceptable
6	Motor persistence and perseverance	19	1	16.20	Acceptable

The tabulated Chi-square (χ^2) value at one degree of freedom and a significance level of (0.05) equals (3.84).

Based on Table (2), the calculated Chi-square values for all domains of the motor self-efficacy scale were greater than the tabulated value of (3.84) at one degree of freedom and a significance level of (0.05). This indicates that all domains of the motor self-efficacy scale are statistically significant and suitable for inclusion in the final form of the scale.

Preparation of the Preliminary Form of the Scale

To prepare the preliminary form of the motor self-efficacy scale, the researcher followed several scientific steps, summarized as follows:

Collection and Preparation of Scale Items

After determining the objective of the scale and identifying its domains, the next step involved collecting and preparing the items. The researcher reviewed relevant sources and references and conducted personal interviews with specialists in the field.

Determining the Method and Principles for Formulating the Items of the Motor Self-Efficacy Scale

Through the use of several methods for collecting and formulating scale items—including reviewing theoretical literature, analyzing previous studies, benefiting from personal interviews with specialists, and consulting experts' opinions—the researcher initially developed (28) items.

After carefully examining and analyzing these items in terms of linguistic construction, clarity of meaning, and avoidance of repetition, similar items and those that were unclear or weakly worded were excluded. Consequently, the final number of items was reduced to (24), distributed across the six domains as follows:

- **Self-body perception:** (4) items
- **Control of balance and motor stability:** (4) items
- **Ability to perform rhythmic skills:** (4) items
- **Motor control and coordination:** (4) items
- **Awareness of breathing and physical energy:** (4) items
- **Motor persistence and perseverance:** (4) items

Determining the Validity of the Motor Self-Efficacy Scale Items

After completing the collection and preparation of the scale items, the researcher presented them to a group of experts and specialists in the fields of sport psychology, educational psychology, motor education, and gymnastics teaching

methods. This was done for the purpose of item validation and to determine their suitability in terms of:

- Appropriateness to their respective domains,
- Clarity of wording,
- Absence of ambiguity or repetition,
- Possibility of transferring items from one domain to another,
- Or proposing deletion or modification.

The total number of items distributed across the six domains of the scale was (24). After reviewing the experts' feedback, the researcher modified some items to make them more accurate, clearer, and more closely related to their designated domains. In addition, some negatively worded items that might confuse respondents or affect response accuracy were eliminated in order to improve the overall quality of the scale.

Based on the experts' judgments, and for the purpose of statistically verifying the acceptance or rejection of the scale items, the Chi-square (χ^2) test for goodness of fit was applied. The tabulated χ^2 value at one degree of freedom and a significance level of (0.05) was (3.84). By comparing the calculated values with the tabulated value, it was found that all items exceeded the critical value, indicating their statistical acceptance and inclusion in the preliminary form of the scale.

Thus, all items were formulated in a positive and clear manner and were compatible with the cognitive and motor level of the research sample (first-year female students), making them suitable for entry into the experimental stage for statistical analysis and testing the psychometric properties of the scale.

Preparation of the Scale Instructions

After the experts approved the validity of the items, the researcher prepared specific instructions for the scale to explain to the respondents how to answer the items. These instructions were designed to be clear and easy to understand. To enhance clarity, the instructions included an example illustrating how to respond to the scale items.

The instructions emphasized that there were no right or wrong answers; rather, respondents were asked to choose the response that best applied to them. Participants were also requested to answer all items honestly and accurately, with assurance that their responses would remain completely confidential and used solely for scientific research purposes. They were instructed not to write their names on the questionnaire. The scale instructions were presented without explicitly stating the name of the scale, as Cronbach indicated that explicit labeling of such scales may lead respondents to distort their answers or refrain from providing accurate responses.

Selection of Response Alternatives for the Scale

The researcher selected a five-point Likert-type response format, as recommended by experts and deemed appropriate for the nature of the study, providing greater freedom of expression. The response alternatives were:

(Always agree, often agree, sometimes agree, often disagree, never agree).

Pilot Study

To ensure the clarity of the scale instructions and items for respondents, determine the time required for completion, and identify any potential difficulties or obstacles during administration, the researcher applied the scale to a pilot sample consisting of (5) female students selected randomly on 14/11/2023.

The pilot study results indicated that the scale instructions and items were clear, and the time required to complete the scale ranged between (15-20) minutes, with an average of approximately (17) minutes. Accordingly, the scale, with its instructions and items, was deemed ready for application to the construction and standardization sample.

Main Experiment

The main experiment was conducted by administering the scale to the construction and standardization sample in order to perform statistical analysis of its items. This procedure aimed to select valid items and exclude invalid ones based on their discriminatory power and internal consistency, as well as to extract indicators of validity and reliability for the scale. The scale was applied to the construction and standardization sample consisting of (30) female students on (18/11/2023). The scale forms were distributed to the students at 10:00 a.m., and the experiment was carried out on the designated sample.

Scoring of the Scale

The responses of the participants on the motor self-efficacy scale were scored using the scoring key prepared for this purpose. The total score was calculated based on the sum of the weights of responses to the (24) items of the scale. Each item was assigned a weight ranging from (1-5) points according to the response selected by the student. Accordingly, the minimum possible score on the scale was (24) and the maximum possible score was (120).

Statistical Analysis of the Motor Self-Efficacy Scale Items

The statistical analysis aimed to calculate the discriminatory power and internal consistency of the scale items. Discriminatory power refers to the ability of the items to differentiate between individuals who obtain high scores and those who obtain low scores on the same scale, whereas internal consistency refers to the degree of homogeneity of the items in measuring the same trait. Thus, item analysis involves retaining good items within the test.

The researcher adopted two methods for the statistical analysis of the scale items, as follows:

First: Extreme Groups Method (Discriminatory Power)

Discriminatory power is defined as the ability of scale items to distinguish between individuals who obtain high scores and those who obtain low scores on the test. To identify the discriminatory power of the items of the motor self-efficacy scale, the extreme groups method was used, as it is considered one of the appropriate methods for item discrimination.

The total scores obtained by the students after scoring the scale were arranged in descending order. Then, (10) students were selected for the upper group and (10) students for the lower group, representing the upper and lower (33%) of the score distribution, while the middle (44%) was excluded. This procedure was based on the findings of Kelley (1939) and Mehrens and Lehmann (1973), who confirmed that adopting the (33%) proportion provides the greatest differentiation.

To calculate the discrimination index for each of the (24) items, an independent samples t-test was used through the Statistical Package for the Social Sciences (SPSS). Statistically significant t-values were considered indicators of acceptable item discrimination.
The results showed that the calculated t-values ranged between (4.94 - 16.10). When compared with the tabulated t-value of (2.013) at (18) degrees of freedom and a significance level of (0.05), all items were retained, as they demonstrated statistically significant discriminatory power.

Second: Internal Consistency Coefficient
The internal consistency coefficient is used to determine the extent to which the items are homogeneous in measuring the targeted behavioral trait. The researcher employed this method due to its advantages, including:

- Providing a scale with homogeneous items, where each item measures the same behavioral dimension measured by the scale as a whole.
- Ensuring that the discriminatory power of each item is similar to that of the overall scale.
- Revealing the degree of intercorrelation among the scale items.

The internal consistency coefficient was calculated using Pearson's correlation coefficient between the score of each item and the total score of the scale for all sample members (30 students), using SPSS.
The results indicated that the correlation coefficients ranged between (0.399 - 0.638). When compared with the critical values of the correlation coefficient, all items were retained due to their statistical significance, resulting in the retention of all (24) items.

Psychometric Properties of the Scale:
The construction of a scale requires the availability of essential conditions to ensure its scientific rigor and methodological soundness. Among the most important of these conditions are validity and reliability. This is emphasized by Davidoff, who states that test developers must provide evidence of the reliability and validity of their instruments.

Validity of the Scale
Validity is considered one of the fundamental indicators and essential concepts in evaluating measurement instruments. Validity is defined as "the degree of accuracy with which a test measures the purpose for which it was designed." To ensure the validity of the scale, the researcher adopted two types of validity, as follows:

Content Validity
This type of validity aims to determine the extent to which the test or scale represents the aspects of the trait or attribute intended to be measured, and whether the test measures only a limited aspect of the phenomenon or covers it comprehensively. In other words, it reflects the degree of correspondence between the content of the scale and what it is intended to measure. Content validity is typically determined through the judgments of experts specialized in the field addressed by the test.
Content validity was established by presenting the motor self-efficacy scale to a group of experts and specialists in psychology and sport psychology in order to assess the suitability of its core components, the appropriateness of its items, and the extent to which these items adequately represent the dimensions they are intended to measure. Based on the experts' feedback, some items were modified, merged, or reassigned to different domains.

Construct Validity
Construct validity, also known as factorial validity, is considered one of the most complex types of validity, as it is based on theoretical assumptions that are empirically verified. It is defined as "the extent to which performance on a test can be interpreted in terms of specific theoretical constructs." To establish construct validity, the researcher employed the following methods:

First: Extreme Groups Method
The ability of items to discriminate between students who possess the trait and those who do not is considered an indicator of construct validity. In the present scale, this was verified by calculating the discriminatory power of the items using the extreme groups method and the independent samples t-test.

Second: Internal Consistency
Internal consistency is achieved when the measured trait consists of multiple subtests, and the sum of these subtests reflects the total test score. The higher the correlation between the scores of the subtests and the total test score, the greater the internal consistency, which in turn indicates construct validity. The researcher employed this indicator by calculating the correlation coefficients between each item score and the total scale score.

Reliability of the Scale
Reliability is a fundamental concept in measurement and must be ensured for a scale to be suitable for use. When compared with validity, validity is more comprehensive; therefore, it can be stated that any valid test is reliable, but not every reliable test is necessarily valid.
Reliability was calculated using the following methods:

Split-Half Reliability
The split-half method is characterized by efficiency in terms of time and effort, as it requires administering the test only once. It is one of the most commonly used methods in educational and psychological studies to estimate reliability.
To apply this method, the scale items were divided into odd and even items, resulting in two halves of (12) items each. Pearson's correlation coefficient between the two halves was calculated, yielding a value of (0.85), which exceeded the tabulated value of (0.27) at a significance level of (0.05) and (28) degrees of freedom.
The reliability coefficient for half of the test was calculated and reached (0.84). To obtain the reliability of the full test, the Spearman-Brown prophecy formula was applied, resulting in a coefficient of (0.90), which is a high value indicating strong reliability of the scale.

Cronbach's Alpha Coefficient
Cronbach's Alpha is one of the most widely used methods for estimating the reliability of psychological and educational scales, particularly those that employ graded response options such as the Likert scale. This method is based on measuring the internal correlation among scale

items, as well as the correlation of each item with the total score, which serves as a key indicator of internal consistency in measuring the targeted construct.

To calculate the reliability of the motor self-efficacy scale, the researcher applied it to the construction sample consisting of (30) first-year female students in the College of Physical Education and Sports Sciences. The data were analyzed using the Statistical Package for the Social Sciences (SPSS).

The results revealed that Cronbach's Alpha coefficient was (0.88), which is a high value indicating excellent reliability of the scale. This demonstrates that the scale items are highly interrelated and capable of measuring motor self-efficacy with consistency and objectivity.

Derivation of Norms for the Motor Self-Efficacy Scale

Scientific research in the field of physical education and sports sciences is not limited to merely applying tests and scales; rather, it also seeks to construct and standardize new instruments characterized by accuracy and objectivity, and equipped with the necessary psychometric properties for effective application in the sports field, which is distinguished by its multiple physical, psycho-motor, and skill-related dimensions.

The raw score is defined as the original score obtained by the respondent prior to any statistical processing, and it represents the basis for deriving norms. In this study, the researcher extracted T-scores for the standardization sample, as they are among the most commonly used and appropriate methods for determining individuals' levels. T-scores also help assign precise meaning to raw scores by relating them to the overall group performance.

A T-score is defined as a standardized score with a mean of (50) and a standard deviation of (10). It is used to transform raw scores into comparable, aggregable, and analyzable scores. T-scores are suitable for psycho-educational analyses because they do not include negative values and contribute to determining an individual's relative standing compared to other members of the sample.

Accordingly, the adoption of T-scores in this study represents an effective tool for understanding the student's position within the normal distribution of group performance, enabling objective and systematic interpretation of test results. Table (3) below presents the raw scores and standardized T-scores derived from the application sample of (30) female students who completed the scale on 15-16/12/2023 at 10:00 a.m.

Table 3: Raw Scores and Standardized Scores for the Application Sample on the Motor Self-Efficacy Scale

No.	Raw Score	T-Score	No.	Raw Score	T-Score
1	80	37	12	106	54
2	81	38	13	109	56
3	84	40	14	111	58
4	85	40	15	112	58
5	86	41	16	113	59
6	87	42	17	115	60
7	90	44	18	117	62
8	91	44	19	123	66
9	92	45	20	124	66
10	96	48	21	128	69
11	103	52			

The results shown in Table (3) indicate that the lowest raw score achieved by the sample was (80), while the highest score was (128). The mean of the raw scores was (98.72), and the standard deviation was (13.98). Considering that the maximum possible score on the scale is (120) and the minimum possible score is (24), based on a five-point Likert scale ranging from (1) to (5), these statistical results indicate an acceptable normal distribution of students' performance. This reflects the efficiency of the scale in distinguishing between different levels of motor self-efficacy among the sample.

Normative Levels of the Motor Self-Efficacy Scale

The process of determining normative levels is considered one of the fundamental steps in scale standardization, as it contributes to interpreting individuals' results and classifying them into precise levels that reflect their position on the measured trait. Normative levels are defined as:

"Standard criteria that represent the target or goal to be achieved for a given trait or characteristic, as they include scores that indicate the necessary levels, and are developed based on trained individuals with high levels of performance."

To determine the normative levels of the motor self-efficacy scale, the researcher relied on the standardized T-scores and the raw scores obtained from the application sample. Following statistical analysis, performance levels were classified into five normative categories that accurately reflect the degree to which students possess motor self-efficacy. These levels are: (Poor, Acceptable, Average, Good, Very Good).

Table (4) below illustrates the normative levels and their corresponding raw scores:

Table 4: Normative Levels, Standardized Scores, and Corresponding Raw Scores for the Motor Self-Efficacy Scale

No.	Level	Raw Score Range	T-Score Range	Frequency
1	Poor	77-86	35-41	3
2	Acceptable	87-96	42-48	6
3	Average	97-106	49-55	12
4	Good	107-116	56-60	6
5	Very Good	117-126	61-67	3

After determining the norms and levels of the scale, the second objective of the study—establishing norms and levels for the motor self-efficacy scale—was achieved.

Application of the Motor Self-Efficacy Scale

After completing all procedures related to the construction and standardization of the motor self-efficacy scale and confirming its validity and reliability, the final version of the scale became ready for field application on the target

sample. The scale was applied to a sample of (30) first-year female students in the College of Physical Education and Sports Sciences - University of Kufa, within the rhythmic gymnastics course. These students had previously undergone training in some basic rhythmic gymnastics movements, making them suitable for the application of the scale. The application was conducted in an appropriate educational environment and at a unified time for all sample members. Prior to responding, the researcher provided the necessary instructions and guidance to ensure clarity of the items and ease of interaction. The researcher also considered the nature of the adopted response format (five-point Likert scale) to ensure the collection of accurate and objective data. Accordingly, one of the central objectives of this study was achieved, namely the application of the motor self-efficacy scale to an actual sample of university students and the analysis of their levels within a scientifically standardized framework.

Presentation, Analysis, and Discussion of the Results

Statistical Descriptions of the Motor Self-Efficacy Scale

In order to present the results obtained after measuring the level of motor self-efficacy among the members of the application sample, which consisted of (30) female students, the data were presented in tabular form to facilitate analysis and discussion. To complete the subsequent statistical analyses aimed at achieving the research objectives, the statistical estimates of the sample members' results on the motor self-efficacy scale were presented.

Table 5: Statistical description of the results of the research sample on the motor self-efficacy scale

Variable	Mean	Standard Deviation	Skewness	Kurtosis	Minimum	Maximum
Motor self-efficacy	86.9	19.24	-0.428	-0.665	80	128

Table (5) shows that the mean score of the motor self-efficacy scale was (86.9), with a standard deviation of (19.24). The skewness value (-0.428) indicates that the scores of the research sample were normally distributed. This suggests that the internal structure of the motor self-efficacy scale was sound and statistically appropriate.

Presentation, Analysis, and Discussion of the Level of Motor Self-Efficacy

After completing the application of the final version of the motor self-efficacy scale, consisting of (24) items, to the members of the main experiment sample (30 female students from the College of Physical Education and Sports Sciences), the researcher collected the response forms, entered the data, and conducted the required statistical analyses.

These procedures included calculating the mean and standard deviation of the students' scores on the scale, in preparation for comparing these values with the theoretical mean of the scale, which had been previously determined as (72) points. This value represents the theoretically expected mean for a scale consisting of 24 items based on a five-point Likert scale ($5 \times 24 = 120$, theoretical mean $= 120 \div 2 = 60$, plus an estimation margin resulting in 72 according to the scale design).

To determine the significance of the differences between the obtained mean and the theoretical mean, the researcher used the one-sample *t*-test, which is appropriate for this type of comparison. The obtained mean score was (79.21), with a standard deviation of (12.24), while the theoretical mean was (72). The calculated *t*-value was (13.99), compared to the tabulated *t*-value of (2.43) at a significance level of (0.05) and (14) degrees of freedom.

Comparing the two values revealed that the calculated *t*-value was significantly higher than the tabulated value, indicating a statistically significant difference between the obtained mean of the sample scores and the theoretical mean of the scale at the (0.05) level. This result indicates that the level of motor self-efficacy among the research sample was lower than the theoretically expected level.

Table 6: Significance of differences between the obtained mean and the theoretical mean of the motor self-efficacy scale

Variable	Obtained Mean	Standard Deviation	Theoretical Mean	*t*-value (calculated)	*t*-value (tabulated)	Significance
Motor self-efficacy scale	86.9	19.24	72	9.99	2.43	Significant

Table (6) shows that the difference favored the obtained mean of the students in the motor self-efficacy variable. This means that the level of motor self-efficacy among the research sample is at a moderate level, as the obtained mean is lower than the theoretical mean of the scale.

Table 7: Levels of motor self-efficacy, score ranges, frequencies, means, and standard deviations of the sample

Level	Score Range	Frequency	Mean	Standard Deviation
Very good	77-86	3	86.9	9.24
Good	87-96	6		
Moderate	97-106	12		
Acceptable	107-116	6		
Weak	117-126	3		

Through this study, the researcher sought to identify the levels of motor self-efficacy, their ranges, and the distribution of the sample members across the different levels of the scale, in order to analyze the actual state of motor self-efficacy among first-year female students in the College of Physical Education and Sports Sciences. The statistical analysis results, as shown in Table (7), indicate that the mean score of the students on the motor self-efficacy scale was (86.9), with a standard deviation of (9.24), which reflects a natural variation in motor self-efficacy levels among individuals. The frequencies were distributed as follows: weak level (3 students), acceptable level (6 students), moderate level (12 students), good level (6 students), and very good level (3 students). These results show that the vast majority of the sample (more than 80%) fell within the acceptable, moderate, and good levels, indicating that they possess a positive level of motor self-efficacy. Based on the study results and the analysis of the students' scores on the motor self-efficacy scale in rhythmic gymnastics, this favorable level of self-efficacy can be interpreted as a natural outcome of the systematic academic training that students receive within the rhythmic gymnastics curriculum at the university level. This subject is

considered one of the applied courses that rely on the integration of physical performance, motor perception, and neuromuscular control. This level can also be attributed to repeated practical practice of rhythmic movements and skill sequences, which require continuous body awareness and precise utilization of balance, coordination, timing, and movement fluency. Such requirements enhance self-confidence and the ability to exercise self-control during performance. The researcher also believes that the personality traits of female students in Colleges of Physical Education and Sports Sciences—such as seriousness, discipline, and achievement orientation—are positively reflected in their performance of complex rhythmic skills, such as those involved in rhythmic gymnastics. These skills require the ability to organize movement, spatial-temporal attention, and perseverance in training, all of which are closely related to motor self-efficacy. These results further support the notion that a supportive and effective university educational environment contributes to enhancing students' sense of self-efficacy, especially when accompanied by highly qualified instructors in rhythmic training and psychological motivation techniques. Previous studies have also confirmed that the sense of motor self-efficacy is positively associated with accumulated practical experience and the nature of social relationships within the training group. A supportive educational environment characterized by cooperation and mutual respect enhances motor performance and emotional stability. This was noted by Al-Rawi, who indicated that students working within a cohesive educational group possess a higher ability to regulate motor performance and interact positively in complex skills. These findings are also consistent with the results of the study by Mankhi, which showed that female students in Iraqi universities demonstrate positive social behavior that promotes teamwork and reduces individualistic tendencies. This contributes to creating a healthy educational environment that directly reflects on the development of psycho-motor skills, including motor self-efficacy in rhythmic gymnastics.

Conclusion and Recommendations

Conclusion

1. The scale constructed and standardized in this study proved to be an effective scientific tool for measuring the level of motor self-efficacy among first-year female students in the College of Physical Education and Sports Sciences.
2. The results showed that the study sample was distributed across five normative levels of the motor self-efficacy scale, namely: *Very Good*, *Good*, *Average*, *Acceptable*, and *Weak*, reflecting a natural variation in the level of motor self-efficacy among the sample members.
3. The analysis revealed that the majority of the sample achieved an average level or higher of motor self-efficacy, indicating the presence of a solid foundation that can be further developed through practical curricula and training programs in rhythmic gymnastics.

Recommendations

1. It is recommended to adopt the current motor self-efficacy scale as a standardized measurement tool to evaluate first-year female students and diagnose their motor-perceptual levels, particularly in rhythmic gymnastics classes.
2. Conducting similar studies on other academic stages or sports specializations is recommended in order to compare levels of motor self-efficacy across different variables (stage, gender, experience, specialization).
3. Future correlational studies are recommended to examine the relationship between motor self-efficacy and skill achievement in gymnastics, athletics, or other sports activities.
4. Expanding the use of the scale within practical training programs and teaching methods is recommended due to its role in improving students' performance by enhancing their self-awareness of movements and body positions during skill execution.

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