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## Psychological Resilience Predicts Self-Efficacy in Track Athletes

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### Abstract

**General Background:** Psychological factors play a central role in athletic performance, particularly in individual sports requiring high personal responsibility. **Specific Background:** Perceived self-efficacy and psychological resilience are considered core constructs in sport psychology, yet empirical examination among track and field athletes in Iraq remains limited. **Knowledge Gap:** Few studies have constructed validated measurement tools tailored to this population while simultaneously examining the predictive relationship between these two psychological variables. **Aims:** This study aimed to develop and validate scales for perceived self-efficacy and psychological resilience and to examine their correlational and predictive relationship among Iraqi Athletics League athletes (2023–2024). **Results:** Findings revealed high levels of perceived self-efficacy ( $M = 136.312$ ) and psychological resilience ( $M = 173.517$ ), with a significant positive correlation ( $r = 0.661$ ,  $p < 0.05$ ). Regression analysis indicated that psychological resilience significantly predicts perceived self-efficacy ( $\text{Self-Efficacy} = 17.526 + 0.232 \times \text{Resilience}$ ). **Novelty:** The study provides newly validated sport-specific scales and empirical evidence of a predictive psychological model in track and field athletes. **Implications:** Integrating structured psychological preparation programs into athletic training is recommended to support performance stability and competitive readiness.

### Highlights:

- High levels of self-efficacy and resilience were identified among athletes.
- A strong positive correlation ( $r = 0.661$ ) was confirmed.
- Psychological resilience significantly predicts perceived self-efficacy.

**Keywords:** Perceived Self-Efficacy; Psychological Resilience; Track and Field; Sport Psychology; Regression Analysis

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## Introduction

Perceived self-efficacy is considered one of the central concepts in contemporary sport psychology, as it represents the framework that determines the extent of an individual's confidence in their ability to organize their behaviors and actions in order to achieve optimal performance in situations that require high physical and psychological effort. Bandura (1997) indicated that self-efficacy is not merely a personality trait; rather, it is a cognitive system that influences how individuals think, the level of energy they invest, and their responses to stressful situations, making it a fundamental factor in predicting athletic success and adaptation to the demands of training and competition.

In contrast, psychological resilience is regarded as one of the modern concepts that has received considerable attention in the field of sport psychology, as it reflects the ability to confront pressures and difficult situations and to regain psychological balance after failure or defeat. A psychologically resilient athlete is viewed as an individual who possesses emotional flexibility, emotional stability, and self-control when facing repeated challenges within the competitive arena, which is positively reflected in their level of athletic achievement.

Track and field athletes are exposed to substantial physical and psychological pressures due to the nature of intensive training and individual competitions that require high levels of concentration and strong self-confidence. Herein lies the importance of examining the relationship between perceived self-efficacy and psychological resilience as two complementary psychological variables that largely determine an athlete's ability to maintain performance and achieve success despite obstacles and potential setbacks.

Numerous studies in this field have confirmed that athletes with high levels of perceived self-efficacy demonstrate a greater ability to cope with failure, injury, and competitive stress, and they exhibit higher levels of psychological resilience compared with others. This can be attributed to the fact that an individual's perception of their own competence provides motivational energy that enables them to adopt effective coping strategies, thereby maintaining emotional balance and focus during performance.

Accordingly, the significance of the present study lies in analyzing the relationship between perceived self-efficacy and psychological resilience among track and field athletes, with the aim of identifying the nature of the relationship between the two variables and determining the extent to which perceived self-efficacy contributes to enhancing psychological resilience. This, in turn, may contribute to the development of psychological training programs and the formulation of mental preparation strategies that enhance athletic performance and promote achievement in track and field events.

## Problem of the Study

Despite the significant development in the physical and technical preparation of athletes in the field of track and field, many coaches and researchers still overlook the psychological aspect of the preparation process, particularly the cognitive and emotional factors that contribute to achieving optimal performance. Perceived self-efficacy and psychological resilience are among the most important of these factors, as field observations indicate a clear variation among athletes in the extent of their confidence in their ability to cope with difficult situations during training or competition, as well as in their capacity to return to a high level of performance after failure, injury, or championship-related pressures.

Moreover, through academic and field experience, the researcher has observed that some track and field athletes possess high physical and technical skills, yet their performance declines when facing stressful situations or strong competition. In contrast, other athletes demonstrate stable performance and remarkable psychological resilience despite similar training conditions. This observation raises a fundamental question regarding the relationship between perceived self-efficacy and psychological resilience among track and field athletes, and the extent to which each variable influences the other.

Accordingly, the problem of the present study is defined by the following questions:

- Is there a statistically significant relationship between perceived self-efficacy and psychological resilience among track and field athletes?
- What is the nature and direction of this relationship?

## Objectives of the Study

1. To develop a scale for perceived self-efficacy among track and field athletes.
2. To construct a psychological resilience scale for track and field athletes.
3. To identify the nature of the correlational relationship between perceived self-efficacy and psychological resilience.
4. To predict the level of psychological resilience through the level of perceived self-efficacy among track and field athletes.

## Research Hypotheses

1. There is a positive, statistically significant correlation between perceived self-efficacy and psychological resilience among track and field athletes.
2. The level of psychological resilience can be predicted through the level of perceived self-efficacy.

## Scope of the Study

- Human Scope: Track and field athletes participating in the Iraqi Athletics League for the 2023–2024 season.
- Temporal Scope: From 8/2/2024 to 31/8/2024.
- Spatial Scope: The field of the College of Physical Education and Sports Sciences, University of Baghdad.

## Terms Used in the Study

### 1. Perceived Self-Efficacy:

It refers to all the self-capabilities possessed by an individual that enable them to exercise regulatory control or set standards over their abilities, thoughts, emotions, and actions. It represents the reference framework for the behaviors exhibited by the individual in accordance with the physical, social, and training-related environmental determinants in which they live.

### 2. Psychological Resilience:

It is the ability to anticipate and confront pressures and external shocks, whether physical, emotional, or economic, and the individual's capacity to rebound and recover psychologically after exposure to such pressures.

## Method

### A. Research Methodology and Field Procedures

#### 1. Research Method

The researcher adopted the descriptive method, employing the survey approach, correlational relationships, and comparative studies, as it is appropriate for the nature of the research problem and its objectives.

#### 2. Research Population and Sample

The researcher identified the research population as all track and field athletes participating in the Iraqi Athletics League for the 2023–2024 season. These athletes were officially registered on the club rosters, and their names were documented by the Iraqi Central Athletics Federation. Accordingly, the total population consisted of 215 athletes, distributed across 20 clubs representing the official clubs participating in the league. The research sample was distributed as follows:

##### 1. Pilot Study Sample

The pilot study sample, used in the preparation of the two scales (perceived self-efficacy and psychological resilience), consisted of 10 athletes who were selected randomly. This sample represented 4.45% of the total research population.

##### 2. Construction and Development Sample for the Perceived Self-Efficacy and Psychological Resilience Scales

The construction sample included athletes from the league clubs, totaling 205 athletes, which represented 98.36% of the research population.

##### 3. Application Sample for the Perceived Self-Efficacy and Psychological Resilience Scales

The application sample for the two study scales consisted of 50 track and field athletes from league clubs, representing 34.69% of the research population. Table (1) presents the details of the distribution of the research population across the three samples.

Parameters	Statistical	Number of Athletes	Pilot Sample	Construction Sample	Application Sample
Track and Field Athletes	215		10	205	50

Table 1. Distribution of the Research Population Across the Study Samples

### B. Means, Tools, and Equipment Used in the Study

In order for the researcher to achieve accuracy and obtain meaningful and valid results for the study, it is essential to employ appropriate tools that contribute to fulfilling the requirements of the research. Accordingly, to complete the study in



a sound and comprehensive manner, the researcher relied on a set of means and tools that assisted in achieving the objectives of the study, as follows:

## 1. Means of Data Collection

These included:

- Arabic and foreign sources and references.
- Expert questionnaires for the two study scales (perceived self-efficacy and psychological resilience).

## 2. Tools and Equipment Used

- One personal computer (Dell), Chinese-made.
- Stationery and office supplies (papers, pens).

## C. Main Research Procedures

In order to achieve the objectives of the study and to develop scientific scales that meet all the required methodological and scientific foundations in the processes of construction and preparation, the researcher followed all the necessary scientific procedures and steps involved in developing the study scales, as outlined below:

- Developing a perceived self-efficacy scale for track and field athletes in the Iraqi Premier League for the 2023-2024 season.
- Constructing a psychological resilience scale for track and field athletes in the Iraqi Premier League for the 2023-2024 season.

## D. Developing the Perceived Self-Efficacy Scale for Track and Field Athletes

In line with the objectives of the study, and after conducting a comprehensive review of studies and research related to the study variable (perceived self-efficacy), the researcher adopted the perceived self-efficacy scale prepared by Fawaz Ali Abdul Khalaf (2019), as shown in Appendix (2). The scale domains were determined based on Albert Bandura's Social Learning Theory (1977), as it is considered one of the most realistic and comprehensive theories within the sport context.

In its final form, the scale consisted of 53 items distributed across five domains: physical and skill-related (11 items), emotional (11 items), cognitive (12 items), persistence and perseverance (11 items), and social (8 items). The scale included 37 positive items and 16 negative items.

The response alternatives were based on the five-point Likert scale: (Always, Often, Sometimes, Rarely, Never). The scoring weights for the positive items ranged from (5-1), while the scoring weights for the negative items were reversed (1-5). The negative items included the following item numbers: (48, 46, 45, 44, 42, 41, 40, 35, 28, 26, 19, 18, 16, 12, 7, 2).

## E. Constructing the Psychological Resilience Scale for Track and Field Athletes

One of the objectives of the present study is to identify the level of psychological resilience among athletes in the Iraqi Premier League in track and field. Achieving this objective requires the availability of an appropriate scale to assess psychological resilience. Therefore, the first step undertaken by the researcher was to construct a psychological resilience scale for track and field athletes in the Premier League.

Following an extensive review and search of available psychological resilience scales, it was found that there was no local instrument that matched the objectives of the study and the nature of the sample. This justified the need to build a new scale, given the specificity of the study topic and the selected sample. Moreover, previous studies had not examined this psychological trait within such samples, in addition to the absence of instruments meeting the required conditions in terms of suitability for the present study. Accordingly, the researcher constructed the scale to fulfill this objective.

To achieve this, the researcher followed the established methodological steps for scale construction in order to obtain a measure that is grounded in rigorous scientific principles. This process involved a set of key steps, including:

## F. Determining the Theoretical Framework of the Scale

### 1. Perceived Self-Efficacy Scale

The preparation of the perceived self-efficacy scale was based on Bandura's theory, in accordance with the scale adopted by Fawaz Ali Abdul Khalaf (2019), with the aim of covering all domains and items that explain the studied phenomenon according to this theory.

### 2. Psychological Resilience Scale

The researcher relied on Richardson's theory (2002) in constructing the psychological resilience scale, in order to benefit

from the interpretations of this theory and the components and factors involved in the formation of this trait. This approach facilitated the formulation of the domains and items of the scale in a realistic manner consistent with the theoretical explanation of the behavior associated with this trait.

### 3. Determining the Scale Domains

No.	Domain	Suitable	Not Suitable	$\chi^2$ Value	Significance	Selection
1	Responsibility	17	0	17.00	Significant	<input type="checkbox"/>
2	Personal Competence	17	0	17.00	Significant	<input type="checkbox"/>
3	Regulation of Psychological Stress	of 17	0	17.00	Significant	<input type="checkbox"/>
4	Mental Toughness	15	2	9.94	Significant	<input type="checkbox"/>
5	Psychological Flexibility	14	3	7.11	Significant	<input type="checkbox"/>
6	Optimism	11	6	0.47	Not Significant	<input type="checkbox"/>
7	Social Support	14	3	7.11	Significant	<input type="checkbox"/>
8	Problem Solving	12	5	2.88	Not Significant	<input type="checkbox"/>

Table 2. Calculated Chi-square ( $\chi^2$ ) values for experts' agreement on the domains of the psychological resilience scale. Accordingly, the domains of optimism and problem solving were excluded. The domains that received experts' approval as suitable for identifying psychological resilience comprised six domains, namely:

- Responsibility
- Personal competence
- Regulation of psychological stress
- Mental toughness
- Psychological flexibility
- Social support

These domains were retained because their calculated  $\chi^2$  values exceeded the tabulated value of 3.84 at 1 degree of freedom and a significance level of 0.05, in favor of the response (Suitable). The researcher adopted the approval of 13 experts or more as a criterion for domain validity, representing 76.47% of the total number of experts (17 experts).

### 4. Determining the Relative Importance of the Domains

Table (3). Degree of importance and relative importance of the domains of the psychological resilience scale

No.	Domain	Degree of Importance	of Relative Importance Accepted (%)	
1	Responsibility	168	98.82	<input type="checkbox"/>
2	Personal Competence	114	67.05	<input type="checkbox"/>
3	Regulation of Psychological Stress	of 134	78.82	<input type="checkbox"/>
4	Mental Toughness	152	89.41	<input type="checkbox"/>
5	Psychological Flexibility	142	83.52	<input type="checkbox"/>
6	Social Support	144	84.70	<input type="checkbox"/>

Table 3.

### 5. Preparation of the Initial Form of the Scale

The process of preparing the scale in its initial form requires a sequence of procedures and steps that begin with drafting the scale items, determining the method of wording, establishing the principles for item formulation, and preparing the scale instructions to ensure that the items are clearly understood by respondents. The following section describes these procedures:

### 6. Collection of Scale Items

After conducting a comprehensive review of all studies addressing psychological resilience based on Richardson's theory (2002), in addition to analyzing relevant scientific sources on psychological resilience, the researcher and the supervisor employed several methods to collect scale items. This process resulted in 70 items covering the six domains.

Following careful examination and analysis of these items by the researcher and the supervisor, similar items were eliminated, some items addressing the same objective were merged, and unclear items were excluded. Consequently, the number of items was reduced to 50 items, which were then distributed according to the relative importance of each domain after being presented to experts to determine their suitability and reach agreement. Among the studies consulted were:

- The study by Mohammed Salman Shabib.
- The study by Sharifa Zahra.

- The study by Afraa Ibrahim Khalil.

The researcher explains below how the number of items for each domain was calculated in light of their relative importance:

Calculation of the number of items for each domain:

Number of items for each domain =  $\frac{\text{Total number of items} \times \text{Relative importance percentage}}{100}$

No.	Domain	Relative Importance (%)	Number of Items
1	Responsibility	19.67%	10
2	Personal Competence	13.34%	7
3	Regulation of Psychological Stress	15.69%	8
4	Mental Toughness	17.79%	9
5	Psychological Flexibility	16.62%	8
6	Social Support	16.86%	8
Total	—	100%	50

Table 4. Relative importance percentage and number of items for each domain of the psychological resilience scale

## 7. Determining the Method and Wording of Scale Items

Several principles were followed in wording the items of the psychological resilience scale, including:

- Each item contains a single idea and is phrased in simple and direct language.
- Avoidance of negation or double negation in item wording to prevent confusion for respondents.
- Items were phrased using the second-person (addressing the respondent directly), in accordance with expert recommendations.

To minimize response distortion and enhance honesty in answering, the researcher ensured that respondents' names were not required and that responses were kept strictly confidential. Based on expert consensus, the psychological resilience scale adopted five response alternatives for each item.

## 8. Validity of the Scale Items

The researcher presented the scale items to a linguistic specialist(\*) in order to evaluate the items of each scale from a linguistic perspective and ensure that they were accurate and free from linguistic errors, if any. Before examining the validity of the scale items, the researcher adopted all the remarks and corrections suggested by the linguistic evaluator. Accordingly, the items were confirmed to be linguistically sound.

## 9. Perceived Self-Efficacy Scale

To establish the validity of the items of the perceived self-efficacy scale, the researcher modified all 53 original items of the adopted scale to suit the nature and objectives of the sample, while carefully preserving the original meaning of each item (see Appendix No. 7). These items were then presented to a group of experts and specialists in sport psychology, numbering 17 experts and specialists.

Subsequently, the researcher collected all expert responses and considered all observations proposed by some of the experts. Thereafter, a questionnaire including the 53 modified items of the perceived self-efficacy scale was prepared (see Appendix No. 7) and re-presented to the same number of experts and specialists in educational and sport psychology (17 experts, see Appendix No. 6). The collected data were then tabulated and analyzed.

The researcher relied on the Chi-square test ( $\chi^2$ ) as a criterion to distinguish valid items from invalid ones. The results indicated that 15 items were not valid and were therefore excluded, while 38 items were deemed valid and retained, as they obtained agreement and approval from the experts, confirming their suitability. Table (7) illustrates these results. Accordingly, the scale was finalized with 38 items, and the following items were excluded: (5, 9, 11, 13, 19, 21, 22, 25, 27, 33, 37, 39, 47, 50, 53).

## 10. Psychological Resilience Scale

The researcher presented the 50 items of the psychological resilience scale within a special questionnaire to determine their validity (see Appendix No. 8) to a group of experts and specialists in educational sciences, psychology, and sport psychology, numbering 17 experts (see Appendix No. 6). This procedure aimed to evaluate the appropriateness of the item wording and their suitability for measuring the domains of the study scales.

Based on this process, the scale was established in its initial form to be administered to the construction sample (see Appendix No. 9). After collecting and analyzing the experts' responses, the researcher applied the Chi-square ( $\chi^2$ ) test, using the tabulated value of 3.84, one degree of freedom, and a significance level of 0.05, to compare the number of approving and non-approving experts.

The results showed that out of the 50 items, 44 items achieved full expert agreement regarding their validity for measuring psychological resilience, as their calculated  $\chi^2$  values exceeded the corresponding tabulated values. Meanwhile, 6 items were approved by the experts on the condition that their wording be modified. The researcher adopted all the observations and recommendations provided by the experts and specialists and revised the items accordingly.

## 11. Pilot Study of the Scales

It is possible that the scale items may not be as clear to the athletes as they are to the researcher. Therefore, the researcher conducted a pilot study on a group of athletes who were not included in the construction and preparation samples nor in the main research sample. A total of 24 athletes were randomly selected from six clubs, with four athletes from each club, as previously indicated.

The purpose of conducting the pilot study was to provide an opportunity for the researcher and the assisting research team (see Appendix No. 12) to achieve the following objectives:

1. To apply the scale and determine the time required to complete it.
2. To train the assisting research team practically in order to identify the potential strengths and weaknesses that might be encountered during the main administration of the scale.
3. To ensure the clarity of the scale instructions and the extent to which they are understood by the athletes.
4. To identify the conditions under which the scale is administered and any difficulties that may accompany its application.
5. To assess the efficiency and readiness of the assisting research team.

Accordingly, the pilot study was conducted from Sunday, 28/2/2024, to Saturday, 6/3/2024, on a sample consisting of 24 athletes. During this process, the researcher determined the time required to respond to each scale by recording the time taken by the first athlete to complete the scale and the time taken by the last athlete to finish, after which the average response time was calculated.

The average time required to complete the perceived self-efficacy scale was 19 minutes, whereas the average time for the psychological resilience scale was 22 minutes. As for the third scale, the average completion time was 9 minutes. Consequently, the three study scales—the perceived self-efficacy scale with its 38 items and instructions, the psychological resilience scale with its 50 items, and the third scale with its 14 items—became ready for application to the construction and preparation sample.

## 3-4-4-4 Application of the Study Scales

In order to verify the research objectives and hypotheses, the researcher administered the three study scales (perceived self-efficacy and psychological resilience) to the construction and preparation sample, which consisted of 196 athletes who were deliberately selected by the researcher. The selected clubs were those that occupied individual league rankings (1, 3, 5, ..., 19) after the completion of the first round (first-leg stage) of the league.

This selection was intended to ensure homogeneity among teams and athletes in the construction and preparation samples, given that some clubs include high-level athletes, particularly institutional clubs and Baghdad-based clubs. Accordingly, the preparation sample included athletes the researcher emphasized to the assisting research team the necessity of ensuring that members of the construction sample carefully read the instructions and items and respond honestly and accurately to all scale items. The application process lasted 24 days, starting from Friday, 12/3/2024, to Sunday, 4/4/2024.

## 3-4-4-5 Method of Scoring the Scales

### 12. Perceived Self-Efficacy Scale

The purpose of scoring each item of the perceived self-efficacy scale was achieved through the use of a scoring key adopted by the researcher after administering the scale to the preparation sample. Following the collection of questionnaires, total scores were calculated using the designated scoring key, which assigns scores (5-1) for positive items and (1-5) for negative items.

The total score was calculated based on the sum of the weighted responses to the 38 items of the scale. Scores for the response alternatives to the positive items were assigned as follows: Always (5 points), Often (4 points), Sometimes (3 points), Rarely (2 points), Never (1 point). For the negative items, the scoring was reversed: Always (1 point), Often (2 points), Sometimes (3 points), Rarely (4 points), Never (5 points).

Accordingly, the maximum possible score on the perceived self-efficacy scale was 190, while the minimum possible score was 38. After reviewing all questionnaires, the researcher excluded five questionnaires due to failure to meet the required conditions for valid responses, and two questionnaires could not be retrieved. Thus, the final number of questionnaires for the preparation sample was 189. The researcher then summed these scores to obtain the total score for each domain and subsequently the overall score for each questionnaire using the prepared scoring key.

### 13. Psychological Resilience Scale

The psychological resilience scale consisted of 50 items, and scoring was based on the total weights of the responses. Scores for the response alternatives to the positive items were assigned as follows: Always (5 points), Often (4 points), Sometimes (3 points), Rarely (2 points), Never (1 point). For the negative items, the scoring was reversed: Always (1 point), Often (2 points), Sometimes (3 points), Rarely (4 points), Never (5 points).

Accordingly, the maximum possible score on the psychological resilience scale was 250, while the minimum possible score was 50. These scores were summed to obtain the total score for each domain and subsequently the overall score for each questionnaire using the designated scoring key.

The psychological resilience scale included nine negative items, corresponding to the following item numbers: (18, 20, 22, 23, 25, 35, 37, 38, 42).

After examining all questionnaires, the researcher excluded five questionnaires due to invalid response conditions, and two questionnaires could not be retrieved. Consequently, the total number of valid questionnaires for the preparation sample was 189. The researcher then aggregated these scores to calculate the total score for each domain and the overall score for each questionnaire using the prepared scoring key.

## 14. Statistical Description of the Perceived Self-Efficacy Scale

Statistical Measures	Perceived Self-Efficacy	Psychological Resilience	—
Mean	148.735	187.830	33.629
Sample Size	189	189	189
Median	150	189	34
Mode	146	180	37
Standard Deviation	16.085	15.403	3.617
Standard Error of the Mean	1.176	1.120	0.231
Skewness	−0.294	−0.131	−0.789
Standard Error of Skewness	0.177	0.177	0.177
Kurtosis	−0.485	0.129	−0.513
Standard Error of Kurtosis	0.352	0.352	0.352
Highest Score	178	224	39
Lowest Score	109	142	22

Table 5. Descriptive statistical characteristics of the responses of the construction and preparation sample to the study. Based on Table (5) and the values obtained from the three study scales, it is evident that the responses of the sample follow a normal distribution. This is confirmed by the skewness values, which did not exceed the acceptable normal limits ( $\pm 3$ ). Accordingly, the researcher was able to proceed with the statistical analysis of the preparation sample, rely on the scales in their final forms, and apply them to the application sample.

## G. Scientific Foundations of the Scale

### 1. Statistical Analysis of the Scale Items

### 2. Discriminatory Power (Extreme Groups Method) of the Scale Items

The procedures involved the following steps:

- First step: The researcher ranked the total scores of all questionnaires in descending order, starting from the highest score down to the lowest score.
- Second step: The researcher identified the upper 27% of questionnaires that obtained the highest scores, as well as the lower 27% of questionnaires that obtained the lowest scores. This percentage was selected because it provides the maximum possible differentiation and optimal group size for comparison. Accordingly, the number of questionnaires in each group was 51 questionnaires, while the middle 46% of questionnaires—numbering 87 questionnaires—were excluded from the analysis.

These procedures were adopted to determine the discriminatory power of the scale items and to ensure their effectiveness in distinguishing between individuals with high and low levels of the measured trait.

### 3. Perceived Self-Efficacy

The calculation of the discrimination index for each item of the perceived self-efficacy scale, which initially consisted of 38 items, was conducted using the independent samples t-test to determine the significance of differences between the upper-score group and the lower-score group for each item. The analysis was performed using the Statistical Package for the Social Sciences (SPSS), and the significance level (Sig) was considered statistically significant when it was less than 0.05.

Upon analyzing the results of the item analysis, it was found that the calculated t-values for the items ranged between 0.120 and 8.180. The significance level (Sig) for each item was compared with the significance level of 0.05 at 100 degrees of freedom. The results of the statistical analysis indicated that two items—items (2 and 36)—were not discriminatory and did not demonstrate statistical significance or adequate discriminative power. Accordingly, these items were excluded. Thus, the perceived self-efficacy scale was finalized with 36 items that demonstrated statistically acceptable discriminative power.



## 4. Psychological Resilience

Similarly, the calculation of the discrimination index for each item of the psychological resilience scale, which initially consisted of 50 items, was carried out using the independent samples t-test to identify the significance of differences between the upper-score group and the lower-score group for each item. The analysis was conducted using SPSS, and the significance level (Sig) was considered statistically significant when it was less than 0.05.

The analysis of the item results revealed that the calculated t-values ranged between 0.196 and 6.705. The significance level (Sig) for each item was compared with a significance level of 0.05 at 100 degrees of freedom. The results indicated that six items—items (47, 43, 36, 26, 21, and 6)—were not discriminatory and lacked statistical significance or sufficient discriminative power. Consequently, these items were excluded. As a result, the psychological resilience scale was finalized with 44 items that demonstrated statistically significant discriminative power.

### 3-4-6 Internal Consistency Coefficient

The use of the internal consistency method is considered one of the most common and widely used approaches by researchers in the construction and development of psychological and educational tests. In the present study, the researcher extracted the internal consistency index by relying on the Pearson simple correlation coefficient between:

- the score of each item and the total score of the scale,
- the item score and the total score of its domain, and
- the total score of each domain and the total score of the scale,

for all members of the preparation sample, which consisted of 189 athletes. The internal consistency was verified as follows:

## H. First: Correlation between Item Scores and the Total Scores of the Domain and the Scale

### 1. Perceived Self-Efficacy

To determine the relationship between the two indicators (item score and the total score of the domain or the scale), the researcher used the Pearson correlation coefficient to identify the statistical significance of the correlation between the scores of the preparation sample participants (189 athletes) on each item of the perceived self-efficacy scale and their total scores on the scale and its domains, after excluding the non-discriminatory items identified through the extreme groups method.

The analysis, conducted using the (r) test, showed that all items were statistically significant, as the calculated correlation values for all items were greater than the tabulated value of 0.195, and all significance levels were less than 0.05 at 187 degrees of freedom.

### 2. Psychological Resilience

Similarly, the researcher examined the internal consistency of the psychological resilience scale by calculating the correlation between the score of each item and the total scores of the domain and the scale, after excluding the non-discriminatory items identified through the extreme groups method. The analysis was conducted using the Pearson correlation coefficient (r).

The results indicated that all items were statistically significant, as the calculated correlation values for all items exceeded the tabulated value of 0.195, and all significance levels were less than 0.05 at 187 degrees of freedom.

### 3. Psychometric Properties of the Scale

To determine and calculate the psychometric properties, which are considered among the most important and fundamental tools in the construction of psychological and educational tests and measures, the researcher examined the indicators that reflect the accuracy and effectiveness of the scale in measuring the trait for which it was designed. The greater the evidence supporting these psychometric properties, the higher the degree of accuracy and reliability of the scale, thereby increasing its suitability for measuring the intended construct.

Among the most important psychometric properties of the scale, as agreed upon by specialists, are validity and reliability, which are essential for ensuring the accuracy of the scores obtained from psychological measures. These properties are addressed as follows:

#### 3-4-7-1 Validity of the Scale

To ensure the validity of the two study scales, the researcher relied on two methods of establishing validity, as follows:

### I. First: Content Validity (Expert Judgment Validity)

This type of validity was established through presenting the study scales to a group of experts and specialists in sport psychology and educational psychology. The experts were asked to evaluate the appropriateness of modifying the items and the extent to which each item adequately represents the domain to which it belongs. Their judgments were used to confirm the suitability of each item within its respective domain for inclusion in the scale proposed for use.

## **J. Second: Construct Validity (Hypothetical Construct Validity)**

Construct validity for the two study scales was established through statistical analysis of all scale items. This was achieved by examining the discriminatory power of the items using the extreme groups method, which allowed the researcher to retain items with high, good, and acceptable discrimination indices. In addition, internal consistency was examined by calculating the discrimination indices of the items and the correlation between each item and the total score of its domain, as well as the total score of the scale. The correlation between the total score of each domain and the total score of the scale was also calculated.

## **K. Reliability of the Scale**

To verify a high level of reliability for the perceived self-efficacy scale, the researcher employed the following two reliability methods:

### **L. First: Split-Half Method**

This method is based on obtaining two scores for each respondent by dividing the scale into two equivalent halves. The researcher divided the items of each scale into odd and even items, with each set representing one half of the scale. This method provides an indicator of the internal consistency of the scale in terms of content sampling.

### **M. Second: Cronbach's Alpha Coefficient**

The researcher also employed another method for estimating reliability, namely Cronbach's alpha coefficient, which is considered by many specialists in psychological measurement to be one of the most accurate and valid methods for estimating reliability compared with other commonly used methods. Cronbach's alpha reflects the degree of internal consistency and homogeneity among the items of a single scale or domain in measuring responses from the research sample. This method depends on the consistency of an individual's performance across items and indicates the strength of the intercorrelations among the scale items, thereby providing a robust estimate of the reliability coefficient.

## **N. Perceived Self-Efficacy**

### **1. Split-Half Reliability:**

The researcher calculated split-half reliability by dividing the scale items into two equal halves: odd items (18 items) and even items (18 items). Prior to computing the correlation, the variances of the odd and even items were calculated and tested using the F-test to ensure homogeneity between the two halves. The calculated F-value (3.328) was compared with the tabulated value (4.197) at a significance level of 0.05 and degrees of freedom (187-187). The result was not statistically significant, indicating homogeneity of variance between the odd and even items.

Subsequently, the researcher computed Pearson's correlation coefficient for each of the five domains of the scale, as well as for the scale as a whole. The split-half reliability coefficient reached 0.770. To obtain the full-test reliability, the Spearman-Brown prophecy formula was applied, yielding a reliability coefficient of 0.811, which is considered a good and relatively high value, indicating acceptable reliability of the scale.

### **2. Cronbach's Alpha Coefficient:**

The researcher also calculated Cronbach's alpha for the five domains of the perceived self-efficacy scale, as well as for the total scale. The alpha coefficient for the total scale was 0.877, indicating that the scale possesses a high level of internal consistency and reliability.

## **O. Psychological Resilience**

### **1. Split-Half Reliability:**

Split-half reliability for the psychological resilience scale was calculated by dividing the items into two equal halves: odd items (22 items) and even items (22 items). Before calculating the correlation, the variances of the odd and even items were tested using the F-test to ensure homogeneity between the two halves. The calculated F-value (1.326) was compared with the tabulated value (4.197) at a significance level of 0.05 and degrees of freedom (187-187). The result was not statistically significant, indicating homogeneity of variance between the two halves.

The researcher then computed Pearson's correlation coefficient for each of the five domains of the scale, as well as for the total scale. The split-half reliability coefficient was 0.669. After applying the Spearman-Brown formula to estimate the full-

test reliability, the coefficient increased to 0.741, which represents a good and relatively high level of reliability.

## 2. Cronbach's Alpha Coefficient:

Cronbach's alpha was also calculated for the six domains of the psychological resilience scale, as well as for the total scale. The alpha coefficient for the total scale was 0.812, indicating that the scale demonstrates good internal consistency and reliability.

## P. Final Form of the Study Scales

After completing all procedures related to the scientific foundations and methodological steps required for constructing and developing the study scales (perceived self-efficacy and psychological resilience), and based on the relevant statistical methods employed in the preparation process, the study scales were finalized in their final forms. The finalized versions of the scales are presented are ready for use and application to the preparation sample.

## Statistical Methods Used in the Study

The Statistical Package for the Social Sciences (SPSS) was used to process and analyze the data.

## Result and Discussion

### A. Presentation and Discussion of Results

#### 1. Presentation of the Results of the Study Scales

(Perceived Self-Efficacy and Psychological Resilience)

No.	Variable	Sample Size	Mean	Standard Deviation	Hypothetical Mean	Calculated t-value	Significance Level	Significance
1	Perceived Self-Efficacy	176	136.312	11.090	108	33.868	0.000	Significant
2	Psychological Resilience	176	173.517	11.233	132	41.032	0.000	Significant

Table 6. Means, standard deviations, hypothetical means, and calculated t-values for the research sample

The high statistical significance of both variables (perceived self-efficacy and psychological resilience) reflects the presence of a robust psychological structure among track and field athletes. Perceived self-efficacy is considered one of the most important factors explaining psychological resilience; the higher the athlete's perception of their ability to achieve and maintain control, the greater their capacity to confront psychological pressures and difficulties.

These results indicate that perceived self-efficacy functions as a protective psychological mechanism that enhances psychological resilience and contributes to the continuity of high-level performance, particularly in individual sports that rely on independence and personal responsibility.

The findings also emphasize the importance of integrating psychological programs into the training process, especially those aimed at developing self-confidence, emotional regulation, and positive thinking, due to their effective role in strengthening psychological resilience among track and field athletes.

#### 2. Presentation of the Results of the Relationship between Perceived Self-Efficacy and Psychological Resilience among Track and Field Athletes in Iraq

Variables	Type of Correlation	Correlation Coefficient	Significance Level	Significance
Psychological Resilience	Simple	0.661	0.000	Significant

Table 7. Correlation coefficients between perceived self-efficacy and psychological resilience

Table (7) shows the results of the correlation coefficient between perceived self-efficacy and psychological resilience among track and field athletes in Iraq. The calculated correlation coefficient reached 0.661, indicating a positive simple correlation at a significance level of 0.000, which confirms that the relationship is statistically significant.

This result indicates the existence of a relatively strong positive correlation between perceived self-efficacy and psychological resilience. In other words, as the level of perceived self-efficacy among track and field athletes increases, their level of psychological resilience increases accordingly. This reflects that athletes' perception of their competence and ability to control performance and achieve success directly contributes to enhancing their capacity to cope with psychological pressures, deal positively with failure, and maintain emotional balance in competitive situations.

This relationship can be explained by the fact that perceived self-efficacy represents one of the most important psychological determinants that form the cognitive and emotional foundation of psychological resilience. Athletes who trust their abilities are more capable of interpreting pressures as challenges that can be overcome rather than threats leading to withdrawal or

psychological breakdown. Moreover, higher self-efficacy helps athletes employ effective coping strategies such as emotional regulation, problem-solving, and perseverance, all of which are core components of psychological resilience.

These findings are consistent with Bandura's theoretical framework, which emphasizes that self-efficacy influences how individuals think, feel, motivate themselves, and respond to stress, making it a central element in building psychological resilience. They also align with the views of Connor and Davidson, who indicated that psychological resilience is closely associated with self-confidence, perceived control, and positive adaptation.

From a sport perspective, the nature of track and field—as an individual sport based on personal achievement and responsibility—enhances the interdependence between perceived self-efficacy and psychological resilience. Athletes are continuously exposed to competitive pressures, performance demands, and the need to overcome injuries or failures, making self-efficacy a decisive factor in sustaining high performance and psychological resilience.

Accordingly, these results confirm that developing perceived self-efficacy among track and field athletes represents a fundamental approach to enhancing psychological resilience, which necessitates the attention of coaches and sport psychology specialists to incorporate psychological preparation programs focused on building self-confidence, reinforcing successful experiences, and developing effective coping skills.

### 3. Extraction of the Regression Equation (Model) Values for Track and Field Athletes

Model	Coefficients	T value	Statistical significance
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