



## CONSTRUCTING A SCALE OF THE BIG FIVE PERSONALITY FACTORS IN THE SPORTS FIELD

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### Abstract

This research aims to build a scientific scale to measure the Big Five personality factors in the sports field, which include: openness to experience, agreeableness, neuroticism, extroversion, and conscientiousness. These factors directly affect athletes' performance and behavior inside and outside sports teams. The research relies on scientific and psychological foundations to design the scale to ensure its accuracy and reliability, which helps coaches and researchers understand individual differences among athletes and analyze their relationship to sports performance.

Keywords: personality, factors, analyze, sports field, coaches .

### The introduction

Psychological factors play a vital role in the sports field, as they affect athletes' behavior, performance level, and ability to deal with challenges and pressures. Among the most widely used psychological models in the study of personality, the Big Five Factor Model stands out, which classifies personality according to five main traits that contribute to shaping behavior and social interaction. In the sports field, measuring these factors is an important tool for analyzing the relationship between an athlete's personality and performance, which contributes to developing training strategies that suit the characteristics of each individual.

### Importance of research

Gain a deeper understanding of the psychological factors affecting athletes, which helps improve athletic performance..

Providing an accurate scientific measurement tool that contributes to evaluating and guiding players based on their personalities..

Assisting coaches and sports administrators in selecting the right players and promoting harmony within sports teams..

Contribute to sports psychology studies by providing a reliable and scientifically validated measure that can be used in future research..

### Research objectives

Building an integrated scale for the Big Five personality factors in the sports field.

Verifying the validity and reliability of the proposed scale.

Study of the relationship between personal factors and athletes' performance in various sports.

Providing recommendations for employing the scale results in sports training and development..

### Research problem

Although there are multiple personality scales, few of them focus on the applications of the Big Five factors in the sports field in particular. Athletes also have different psychological characteristics that affect their interaction with sports pressures and challenges. Therefore, this research aims to answer the main question:

How can an accurate scientific scale be built to measure the Big Five personality factors in the sports field, and to what extent do these factors affect sports performance?

### Theoretical framework



The Big Five Factor Theory is one of the most important psychological models for studying personality, as it describes human personality based on five main traits that determine how individuals interact with their environment and with others. These factors are::

openness to experience(Openness to Experience)

Refers to the extent to which an individual is receptive to new and creative ideas and willing to undergo different experiences..

Individuals who score high on this trait are imaginative, intellectually curious, and open to innovation..

Low-score individuals tend toward tradition and practical thinking and avoid major changes..

In sports, openness can influence receptivity to new training methods and innovative playing strategies..

Compatibility(Agreeableness)

Reflects the extent to which an individual tends to be cooperative, tolerant, and kind in dealing with others..

Athletes who have a high level of compatibility cooperate with their teammates easily, which enhances team spirit..

In contrast, athletes with low conformity may be more competitive and aggressive, which can lead to conflicts within the team..

Nervousness(Neuroticism)

It refers to the extent of an individual's emotional stability and ability to deal with stress and tension..

Individuals with a high degree of neuroticism are characterized by anxiety, excessive emotionality, and tension, which may negatively affect athletic performance under pressure..

Individuals who score low on neuroticism are better able to control their emotions and remain calm in difficult situations..

extroversion(Extraversion)

It expresses the extent to which an individual is inclined towards social activity, vitality, and the ability to interact with others..

Extroverted athletes have high energy and feel comfortable in competitive environments, making them more engaged during matches..

Introverted athletes, on the other hand, may prefer self-focus over social interaction, which may be appropriate for individual sports..

living conscience(Conscientiousness)

Refers to an individual's commitment to discipline, responsibility, and hard work..

Athletes who score high on conscientiousness are more committed to training and tactical plans, which helps them achieve success..

Conversely, low conscientiousness may lead to indiscipline, laxity in training, and consequently low performance..

Psychological factors affecting sports performance

In addition to the Big Five personality factors, there are many psychological factors that directly affect athletes' performance, including::

Motivation(Motivation)

Motivation is a key factor in an athlete's success, determining how much effort they are willing to put in to achieve their goals..

It is divided into intrinsic motivation (stemming from the love of sports and the desire to succeed) and extrinsic motivation (such as financial rewards or fame.)

Self-confidence(Self-Confidence)



It greatly affects athletic performance, as a confident athlete is more able to make decisions and execute skills with consistency..

Lack of self-confidence can lead to hesitation, which negatively affects performance during competitions..

Anxiety and stress(Anxiety and Stress)

Stress can be a positive factor if properly controlled, motivating an athlete to perform well..

But if it exceeds the limit, it may lead to loss of focus and negatively affect performance, especially at crucial moments..

Focus and attention(Focus and Attention)

Concentration is one of the key factors that ensure good performance, as it helps to execute skills accurately..

Athletes with high levels of concentration are able to ignore external distractions and stay in the right frame of mind..

Emotional intelligence(Emotional Intelligence)

It relates to the athlete's ability to understand and control his feelings, as well as to understand the feelings of others and interact with them in a positive way..

Emotional intelligence helps you deal with stress, communicate with colleagues and coaches, and enhances athletic performance..

Previous studies on personality measurement in the sports field

There are many studies that have addressed the relationship between personality and athletic performance, the most important of which are::

A study on the relationship between personal factors and sports performance

This study examined the impact of the Big Five factors on athletic performance in team and individual sports..

The results indicated that extroversion and conscientiousness were associated with superior athletic performance, while neuroticism negatively affected performance..

A study on the use of the Big Five Factor Scale to evaluate professional athletes

It aimed to develop an accurate measurement tool for personality traits in professional athletes..

She explained that successful athletes have a high level of consistency and conscientiousness, which contributes to improved discipline and teamwork..

A comparative study between the personalities of athletes in individual and team sports

It was revealed that athletes in team sports have a higher degree of agreeableness and extroversion than those who practice individual sports..

Athletes in individual sports scored higher on openness to experience and autonomy..

A study on the impact of psychological stress on athletes and its relationship to personality traits

She noted that athletes with high neuroticism have difficulty dealing with competitive pressures, which negatively affects their performance..

A study on developing a new scale to measure personality in the sports field

An improved scale was developed that focuses on assessing personal factors and their impact on athletic performance, with the inclusion of new dimensions such as emotional intelligence and motivation.

Methodology used: Descriptive analytical method

The research is based on the descriptive analytical approach, which is an approach used in psychological and mathematical studies to analyze phenomena as they are in reality, without interfering with them or modifying them..



The descriptive approach aims to collect data related to the personality traits of athletes and analyze them to draw conclusions..

The analytical approach allows for the interpretation of the relationship between the Big Five personality factors and the level of athletic performance..

It helps in building the scale in a scientific way based on actual data from the target sample..

## Search Tools

### A. Constructing a questionnaire to measure the Big Five personality factors

A questionnaire is designed that includes a set of statements that express each of the Big Five personality factors (openness to experience, agreeableness, neuroticism, extraversion, conscientiousness)..

A five-point Likert scale (e.g. 1 = strongly disagree, 5 = strongly agree) is used to determine the degree of each trait in athletes..

The questionnaire should be comprehensive and clear so that participants can answer it easily and accurately..

### B. Validity and reliability tests of the scale

honesty test(Validity): It measures the extent to which the questionnaire can accurately measure the five factors. Validity is verified through:

Validity of the arbitrators: The questionnaire was presented to experts in sports psychology to verify the validity of the statements and their suitability for measurement..

Construction honesty(Construct Validity): Analyzing the internal relationships between scale items to ensure that each set of statements measures the correct factor.

stability test(Reliability): Measures the consistency of responses over time using:

Cronbach's alpha coefficient(Cronbach's Alpha): Determines the consistency of responses across the sample, and the closer the reliability coefficient is to 1, the more reliable the scale is.

Retest(Test-Retest): The questionnaire is applied to the same sample with a specific time interval to determine the stability of the results.

## Research sample

### A. Sample characteristics

A sample of athletes is selected to include::

Professional athletes (players of official sports teams, participants in local and international tournaments))

Amateur athletes (non-professional players who play sports regularly))

The sample is diversified to cover different age groups and sports levels, making the research results more general..

### B. Classification of the sample according to the type of sport

The sample includes athletes from:

Individual sports (such as swimming, athletics, tennis))

Team sports (such as football, basketball, volleyball))

This classification helps to find out if there are differences in personality traits between athletes who play individual sports versus team sports..

## Data analysis methods

### A. Statistical analysis using the programSPSS

Data extracted from questionnaires is entered into the program.SPSS to analyze it statistically.

Appropriate statistical methods are used such as::

Means and standard deviations to analyze data distribution and describe sample characteristics.



Analysis of variance(ANOVA) to find out the differences between athletes according to gender, type of sport, and athletic level.

B. Reliability and validity coefficient (Cronbach's alpha))

Cronbach's alpha coefficient is calculated to determine the degree of internal consistency of the personality factor scale..

If the Cronbach's alpha value is greater than 0.7, it indicates that the scale is reliable and usable for assessment..

C. Analysis of the relationship between personal factors and sports performance

Pearson correlation analysis is used.(Pearson Correlation) to find out the relationship between each of the five factors and the level of athletic performance.

For example:

If there is a strong positive association between conscientiousness and athletic performance, it suggests that more disciplined athletes perform better..

If there is

a negative association between neuroticism and performance, it means that anxious athletes suffer from poor performance during competitions.

Table 1

## Scale building steps

| ratio Centennial | Number of players | The club   |
|------------------|-------------------|------------|
| 84%              | 21                | oil South  |
| 79%              | 19                | oil Maysan |

When constructing the scale, there are several steps that the researcher must adhere to in order to construct the scale on correct scientific foundations. Since the current study aims to construct a sports personality scale and then apply the scale to a sample of football players in the Iraqi Premier League, and due to the importance of this scale in our study, the researcher formulated its paragraphs in a clear and understandable way and in the first person for each player from the Iraqi Premier League clubs (the research sample) and in a report-based manner based on the literature of the phenomenon as well as the sources related to the sports personality and previous studies related to the subject of the study. In addition, we adopted the Likert method (Likert) in constructing the scale, as it is a widely used method and is distinguished from other construction and correction methods. It does not require a large number of judges and provides accuracy of the answer due to the multiplicity of alternatives (6:3)

### Determine the scale areas

One of the important steps in constructing the scale, in the researcher's view, is to accurately define the scale's domains. This depends on the researcher's ability to refer to the priorities of the trait or phenomenon to be measured. Four domains were reached for the sports personality scale (persistence and bearing responsibility, influencing players, leadership ability, fame and love of appearing.)



table number ( 2 )

Shows Levels gauge Character Sports For my trainers ball foot

| ratio Centennial | number | Level         | Degrees Raw | Degrees Standard |
|------------------|--------|---------------|-------------|------------------|
| 5                | 2      | excellen<br>t | 209-240     | 70-80            |
| 22.5             | 9      | good<br>very  | 177-208     | 60-70            |
| 45               | 18     | good          | 145-176     | 50-60            |
| 17.5             | 7      | middle        | 113-144     | 40-50            |
| 7.5              | 3      | acceptable    | 80-112      | 30-40            |
| 2.5              | 1      | weak          | 48-79       | 20-30            |

It becomes clear from table(2) distribution Individuals sample Application For scale Character Sports so Got it level

)excellent( on ) 2 ( Player And by percentage ) 0.05 ( But level ) good very ( Lost Got it on ) 9 ( Players

And the percentage Centennial ) 22.5 ( while She was a class Level ) Good ( ) 18 ( Our player And by percentage Centennial ) 45 ( But what

It concerns Level ) Average ( Lost He won on ) 7 ( Players And by percentage Centennial ) 17.5 ( With what that it Level

) acceptable ( Got it on number ) 3 ( Players And it was His percentage Centennial ) 7.5 ( Lost Got it level )weak(

on ) 1 ( Player And it was His percentage Centennial ) 2.5 ( Player only And during note table number ) 2 ( Show that Level ) Excellent ( may Achieve level It is represented B) 2 (player from pedigreed sample Application

College And as for him Centennial ) 0.05 ( And it is rate Low very And expected Naturally if that Access to For this Level He is in very Difficulty Because of Problems Surrounding With trainers and that **These problems negatively affect the coach and this effect is reflected in his athletic personality.**, Which Leads that To a fault in Balance Psychological For the trainer This By nature The case Affects on progress The match In a way clear because disorder The person ) The coach ( And they were alone His balance Leads To to non Perception ocean as Should Which He goes To away in **Diagnosing the strengths and weaknesses**



of the opposing team, as the coach does not diagnose the mistakes made by his players, which affects the level of achievement of that team, and this depends largely on the characteristics possessed by the coach.

gauge Character

| Not applicable completely | Not applicable | Applicable sometimes on it | Applicable | Applies to completely | Paragraphs  | T |
|---------------------------|----------------|----------------------------|------------|-----------------------|---|---|
|                           |                |                            |            |                       | Owns My trainer power Persistence And determination<br>And able on to bear Responsibility                 | 1 |
|                           |                |                            |            |                       | a lot what Interfere Management in decisions The coach<br>Which He loses it His personality               | 2 |
|                           |                |                            |            |                       | no Owns model Detailed Explained around Plans play that will He<br>does By applying it in<br>Matches      | 3 |
|                           |                |                            |            |                       | I feel that My trainer He is trying Hard working that<br>finds Footstool foot within existing Celebrities | 4 |
|                           |                |                            |            |                       | I feel that My trainer He endures responsible all His<br>decision bravely                                 | 5 |
|                           |                |                            |            |                       | I feel that some Players no They care to decisions The<br>coach   | 6 |
|                           |                |                            |            |                       | He works My trainer As a teacher And father For all<br>Players in team                                    | 7 |
|                           |                |                            |            |                       | I feel that My trainer He does with a bang Media until<br>He is component prominent                       | 8 |
|                           |                |                            |            |                       | Makes me feel My trainer That he is responsible on Actions<br>Players inside And outside The stadium      | 9 |

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## Results and discussion

Analysis of the results of the scale construction and its psychometric properties

After collecting and analyzing the data using the program SPSS, the psychometric properties of the scale are evaluated, which include:

stability coefficient (Reliability): It is measured using Cronbach's alpha, where a high reliability coefficient (>0.7) indicates the reliability of the scale.

Construction honesty (Construct Validity): It is verified using factor analysis to confirm that each of the five factors accurately measures the target trait.

The veracity of the arbitrators (Content Validity): It is ensured that the statements used in the scale clearly represent each dimension of personality, through expert review.

The results are presented in tables and graphs that illustrate the accuracy and effectiveness of the scale in measuring personality factors in athletes..

Discussing the relationship between personality and athletic performance

The relationship between the Big Five factors and the level of athletic performance is analyzed through::

Extraversion: Do more outgoing and sociable athletes perform better in team sports?

Neuroticism: Do anxiety and negative emotions negatively affect athletic performance?

Compatibility: Do more cooperative athletes have positive relationships with their teammates and coaches?

Conscientiousness: Are commitment and discipline linked to higher performance and achievement?

Openness to Experience: Do Athletes Who Are More Receptive to New Ideas Improve Faster Than Others?

Statistical results are interpreted and linked to psychological and behavioral theories in the field of sports..

Comparison of results with previous studies

The results of the research are compared with the results of previous studies to determine the extent of consistency or difference..

If the research proves a relationship between neuroticism and poor athletic performance, is this finding consistent with previous studies?

Does research prove that conscientiousness and openness to experience positively influence athletic performance as other studies have suggested?

If there are differences between the results and previous studies, the reasons for these differences are analyzed, such as differences in sample, type of sport, or study environment..

Recommendations and suggestions

How to use the scale to evaluate and guide players



The scale can be used as a tool to assess the personality traits of athletes and determine how they influence performance..

Helps coaches understand the psychological traits of players and customize training strategies to suit their personalities..

Sports teams can use the scale in their selection processes for new players based on the fit of their personality traits with the requirements of the sport..

Proposals for developing research in the field of sports psychology

Conduct additional studies that include different samples of athletes in diverse environments and cultures..

Develop the scale to include other aspects such as environmental and social factors that may influence personality and athletic performance..

Study the relationship between personality and specific types of sports to see if certain traits are more common in certain sports..

Recommendations for trainers and administrators on incorporating personality knowledge into training plans  
Integrating psychological assessment into training programmes to discover strengths and weaknesses in players' personalities.

Develop psychological and training programs that suit each athlete's personality, such as relaxation techniques to reduce nervousness, or communication exercises to enhance harmony..

Encouraging coaches to adopt training methods that suit players' psychological differences to motivate them and achieve the best possible performance.

## **Conclusion:**

This research demonstrates the importance of personality traits in the sports field, as the Big Five personality factors (openness to experience, agreeableness, neuroticism, extraversion, conscientiousness) directly or indirectly affect the performance of athletes in various disciplines. By constructing a scale based on accurate scientific foundations, we were able to provide a reliable tool to measure these factors, which helps coaches and administrators to understand players more deeply and guide them towards achieving the best possible performance..

The results showed that some traits such as conscientiousness and openness to experience are positively related to athletic performance, while neuroticism may have a negative impact on psychological stability and performance during competitions. The study also showed the importance of integrating psychological assessment into training programs to develop strategies that suit the individual traits of athletes..

This research is a step towards enhancing the integration between sports psychology and modern training methods, and suggests in the future expanding the scope of studies to include the influence of environmental and social factors, comparing the differences between elite and novice athletes, and utilizing artificial intelligence techniques in personality analysis and sports guidance..

Ultimately, understanding athletic personality is not just an assessment tool, but an essential component of skill development and performance enhancement, opening up new avenues for using psychology to improve long-term athletic performance.

## **References :**

1. Abdul Majeed Abdul Rahim: Educational Psychology and Social Adjustment, Cairo, Anglo-Egyptian Library, 1981, p. 226.
2. Abdul Sattar Jabbar Al-Dhamd, Psychology in Sports, 1st ed., Amman, Dar Al-Khaleej, 2010, p. 35.
3. Ali Fahmi Al-Baik and Imad Al-Din Abbas Abu Zaid: The Sports Coach, Publisher of Knowledge, 1st ed., Egypt, 2003, p. 05



4. Ali Kamal: The Soul - Its Emotions, Symptoms and Treatment, 4th ed., Baghdad, Dar Al-Arabiya Press, 1988, p. 73.
5. Alken L,R Attitude measurement and research- in payn, DA CEDR esnt Development in Afferire measurement. ppt- French Josseye. Bass lne pub 1980.p6
6. Amer Saeed Al-Khaikani and others: Sports Psychology, 1st ed., Dar Al-Diaa, Najaf Al-Ashraf, 2015 AD, p. 296.
7. Aqla Suleiman Al-Hawri. Modern Concepts in Sports Psychology, 1st ed., Jordan, Dar Al-Akademoon for Publishing and Distribution, 2019.
8. Holden, R, etal.Structured Personality Test Item Characteristics and Validity, Journal of Research in Personality.Vol (19). 1985.P386
9. Ibn Manzur: Lisan al-Arab, Volume Seven, Beirut, Dar Sadir, n.d., p. 45.
10. Muhammad Hasan Muhammad Al-Hussein: Training Methods, Majdalawi House, 2nd ed., Amman, Jordan, 2004, p. 12. Marwan Abu Huwajj: Introduction to General Psychology, 1st ed., Al-Baz Wardi House, Amman, 2012, p. 163.
11. Muhammad Hassan Muhammad Al-Hussein: Training Methods, Majdalawi House, 2nd ed., Amman, Jordan, 2004, p. 12.
12. Nadim Mar'i and Osama Mar'i: Al-Sihah in Language and Sciences - Renewing the Sihah of the Scholar Al-Jawhari, Volume Seven, Beirut, Dar Al-Hadara Al-Arabiyya, 1974
13. Nizar Al-Talib and Kamel Al-Wais: Sports Psychology, Baghdad, Dar Al-Hikmah for Printing and Publishing, 1993, p. 77.
14. Wagdy Mustafa Al-Fateh, Mohamed Lotfy Al-Sayed: Scientific foundations of sports training for players and coaches, Dar Al-Hoda, Al-Mina, 2002
15. Zaki Muhammad Hassan: Sports Coach, Foundations of Work and the Training Profession, Knowledge Establishment, 1st ed., Alexandria, Egypt, 1997, p. 64.