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## Identification, Classification, and Application of Mental Fitness Components in Sports Field

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تحديد وتصنيف وتطبيق عناصر اللياقة العقلية في المجال الرياضي

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### Abstract

The study aimed to assess the impact of mental fitness factors on the development of physical, health, psychological, and social abilities on a group of students' athletes at Northern Border University, where mental fitness plays major role to enhance athletes' abilities in the sports field. The researcher used a descriptive analysis method approach; where constructed survey questionnaire applied for data collection, which used to measure the impact of mental fitness standards on the development of athletes' physical, psychological, and social abilities in Northern Border University. Sample was randomly selected of students' athletes' population at Northern Border University, they comprised of (91) male and female students. Result indicated a high statistically significant of agreement among the participants in the study on the importance of mental fitness in enhancing and developing each of physical, psychological, and social abilities, and all the main and sub-items were characterized by the importance and high degree to achieve the objectives of the study. The study also recommended the need to disseminate mental fitness standards among all university student-athletes, with the development of a permanent plan to develop mental fitness standards among university students, and the need to support the university and the Ministry of Higher Education in the Kingdom of Saudi Arabia for various studies on the role of mental fitness in promoting and developing physical, psychological, and social abilities.

**Keywords:** Mental fitness, Physical Fitness, Physical education, Psychomotor skills, sports training, Northern Border University.

### المستخلص:

هدفت الدراسة إلى تقييم تأثير عوامل اللياقة العقلية على تنمية القدرات البدنية والصحية والنفسية والاجتماعية على مجموعة من الطلاب الرياضيين في جامعة الحدود الشمالية، حيث تلعب اللياقة العقلية دوراً رئيسياً في تعزيز قدرات الرياضيين في المجال الرياضي. استخدم الباحث أسلوب التحليل الوصفي. حيث تم إعداد استبيان المسح لجمع البيانات، والذي يستخدم لقياس تأثير معايير اللياقة العقلية على تنمية القدرات البدنية والنفسية والاجتماعية للرياضيين في جامعة الحدود الشمالية. تم اختيار عينة عشوائية من الطلاب الرياضيين في جامعة الحدود الشمالية، وهم يتألفون من (91) طالب وطالبة. أشارت النتائج إلى وجود علاقة ذات دلالة إحصائية عالية بين المشاركين في الدراسة على أهمية اللياقة العقلية في تعزيز وتطوير كل من القدرات الجسدية والنفسية والاجتماعية، وتميزت جميع المفردات الرئيسية والفرعية بالأهمية والدرجة العالية. لتحقيق أهداف الدراسة. كما أوصت الدراسة بضرورة نشر معايير اللياقة العقلية بين جميع طلاب الجامعات الرياضيين، مع وضع خطة دائمة لتطوير معايير اللياقة العقلية بين طلاب الجامعات، وضرورة دعم الجامعة ووزارة التعليم العالي بالمملكة. المملكة العربية السعودية لدراسات مختلفة حول دور اللياقة العقلية في تعزيز وتطوير القدرات الجسدية والنفسية والاجتماعية.

**الكلمات المفتاحية:** اللياقة العقلية؛ اللياقة البدنية؛ التربية البدنية؛ المهارات النفس حركية؛ التدريب الرياضي؛ جامعة الحدود الشمالية.

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## Introduction

The interest in mental fitness has scientifically and practically proven that a strong relationship between mental fitness and human performance, through research carried out by Harvard University in cooperation with the Massachusetts Institute of Technology (MIT), after the university allocated a new special section called "Department of Cognitive Neuroscience", which encourages researches on subject of human performance, such as measuring the effect of mind control over the body, as well as maximizing the mind capability used in controlling the body in order to reach human peak performance (Al-Mutairi, 2011).

Mental fitness is a cognitive ability that occurs within the human brain and is inferred directly from the individual's behavior in solving problems, thoughts resilience, and life compatibility. Mental fitness commonly shaped based on certain repeated thought pattern that neural pathway is reinforced, and the thinking becomes automatic. Thus, mental fitness training is crucial to any individual, especially athletes under pressure of competition. The athlete who can maintain appropriate mental behavior pattern on sports' stressful situation, he or she definitely increases the ability to think critically in solving problems and making appropriate decisions (Guidetti, 2010).

The role of mental preparation on physical performance is acknowledged by many health and sport settings, but what strategies that can be included in mental preparation is still vague (Purcell, Gwyther, & Rice., 2019). There is no such agreement among health experts and psychologists to a certain set of principles that can be comprised on mental strategies, specially, when it comes to develop physical performance (Centeno R., 2020). Therefore, this study attempt to provide tools that measure mental fitness capability on the physical, psychological, and social ability among athletes.

### Study objectives

The study aimed to identify the mental fitness factors that enhance the development of the athlete's abilities in the physical, health, psychological and social aspects through the following:

- Defining mental fitness factors and their determinants.
- Studying the impact of mental fitness standards and factors on developing the

capabilities of an athlete affiliated with Northern Border University, which would achieve the desired benefit from the study.

- Reaching a set of recommendations that enhance the impact of mental fitness standards on the development of the athlete's abilities.
- Identifying the obstacles that prevent the benefit of mental fitness factors, and providing suggestions and solutions about those obstacles.
- Expanding the application of mental fitness factors and standards that would enhance and develop the capabilities of university student-athletes.

The importance of this study stems-up from its rarity and its subject, which has not been addressed through many studies, as the individual who enjoys mental fitness becomes more able to solve problems surrounded him, and allows him to feel happiness and psychological comfort, perhaps mental fitness affect more beyond than the psychological fitness, but also physical fitness as well, so the individual would perform great in sport competition, and gains the ability to deal well with sport stressors, raise his self-confidence, and regulate thinking, in addition, the individual's will acquire a set of sound social relationships, and the mental fitness of the individual provides the ability to make sound decisions and deal with others in a balanced manner.

### Study Problem

Given the recent use of mental fitness in aspects of physical education in the Kingdom of Saudi Arabia, the researcher's sense of the problem of the study arose through the following:

- The need to study the impact of mental fitness to athletes on solving the problems surrounding them.
- Measuring the impact of mental fitness contribution on the rate of physical fitness level among athletes.
- Determining the positive and negative factors that impact on the application of mental fitness among athletes.

Thus, the problem of this study is evident in the researcher's keenness of studying the impact of mental fitness application, to determine the way that athletes solve problems, positively interact with others, gaining self-confidence, and acquiring advance physical fitness skills, in

addition, student athletes at Northern Border University would execute the decisions making process in the life situations.

#### Study questions

The study problem can be identified by finding an answer to the following main question:

What is the impact of using mental fitness standards in developing physical and mental abilities of Northern Border University students?

Several sub-questions are emerged from this main question, which the study was sought to answer according to the following:

- What are the determinants of the mental fitness component for university student-athletes?
- Is there a relationship between the application of mental fitness components and the athletes' acquisition of more physical ability?
- Is there a relationship between the application of mental fitness components and high self-confidence and acquiring life skills for university student-athletes?

## Methodology

The researcher used the analytical survey method in this study, a constructed questionnaire was also used to measure the impact of mental fitness standards on developing the abilities of athletes psychological, physical, and social abilities among Northern Border University athletes.

#### The limits of the study

- Subject boundaries: this study was limited to the application of a certain mental fitness components.
- Time boundaries: this study was applied during the first semester of the academic year 2021/2022.
- Spatial boundaries: this study was applied to a sample located on the Northern Border University, Kingdom of Saudi Arabia.
- Human boundaries: this study was limited to college athletes age level.

#### The sample of the study

The study sample consisted of (91) male and female students representing all the faculties of the university and its branches, according to the following distribution:

**Table No. 1**

*Shows the gender of participants.*

Gender	#	%
Male	56	%61.5
Female	35	%38.5
<b>Total</b>	<b>91</b>	<b>%100</b>

*This Table has been manifested by the author and under his authorship*

**Table No. 2**

*Shows the age stages of the study sample.*

Age group	#	%
Under 18 years old	21	%23
From 18 to 20 years old	44	%48.4
Over 20 years old	26	%28.6
<b>Total</b>	<b>91</b>	<b>%100</b>

*This Table has been manifested by the author and under his authorship*

**Table No. 3**

*Shows the distribution of participants majors.*

Study Major fields	#	%
Scientific fields	27	%29.6
Engineering fields	17	%18.7
Health fields	15	%16.5
Humanitarian fields	32	%35.2
<b>Total</b>	<b>91</b>	<b>%100</b>

*This Table has been manifested by the author and under his authorship*

## Study procedures

The following set of actions was taken:

First: the researcher determined the theoretical framework of the study by relevant studies and research related to the subject of the study.

Second: The researcher prepared a list of mental fitness items that necessary to develop the physical, psychological, and social capabilities of athletes' students at Northern Border University students.

Third: the researcher Introduced the survey items for approval to a group of experts and arbitrators who specialized in the field of physical education.

Fourth: the researcher reformed the survey items based on the suggestions, amendments, and opinions that came from experts.

Fifth: the researcher listed final form of survey items include (3) main standards section that consisted to (18) sub-items to measure the impact of mental fitness on the development of physical, psychological, and social capabilities.

Sixth: the researcher constructed (the validity of the arbitrators and the validity of the internal consistency), according to the following:

- the validity of arbitrators calculated to ensure the validity of the questionnaire: This means the extent to which the questionnaire statements are apparently appropriate for the purpose for which it was designed, taking into account: the clarity of the objectives of the questionnaire in an integrated manner, the provision, and publication of the questionnaire electronically, the ability to obtain responses, and the interpretation and analysis of its results accurately. So, experts indicated the questionnaire was valid at (92%), which considered a high percentage and indicates the validity of the questionnaire.
- the validity of internal consistency was verified on the internal consistency coefficient of the questionnaire by applying it according to the following:

## Literature review

### Terminology of study

**Mental fitness:** It is a mental and psychological fitness that we need to continue and commitment

to the pursuit of what we want in our lives, and therefore the ability to face all life situations in a better way, and mental fitness comes to balance physical fitness to maintain better health of the body. So, mental fitness is the capacity to utilize resources and skills to readily adapt to challenges or advantages in order to prosper or succeed.

**Physical fitness:** The individual can carry out his daily activities with the best performance of endurance and strength, and it is indicated that it is necessary to take care to maintain a good level of physical fitness of the body. So, physical fitness is a measure of the body's ability to function efficiently and effectively within its environment.

**Psychomotor skills:** It is the use of movement and plays to provide plays individually with a set of skills and cognitive abilities related to the body, the surrounding space, time, and movement, which affects the behavior of the individual. Psychological education deals with the human being as one integrated unit.

A study by Hammermeister and other (2020) examined the mental fitness skills of first-generation college students and their relationship to psychological resilience and academic achievement with specific data for a sample of 286 students. The cluster analysis revealed four emerging groups for the profile as strong skills, weak skills, go with the flow, and emotionally weaken group, result revealed that the profile of strong skills group reported higher scores on variety indicators of psychological resilience than the peers on the other profile groups.

Another study (Ahmad, 2018) aimed to identify the relationship between mental fitness levels and the basketball shooting skills, in both steadiness shooting and side lay-up shooting. Sample of 30 female students randomly selected from the College of Physical Education and Sports Science for Girls at the University of Baghdad. Researchers used a descriptive approach to conduct a correlational study and measure the statistical relationship between the two variables. The researchers had reached number of conclusions was the most important that the mental fitness helps students to intelligent diversity in the methods of thinking and solving problems.

Group of researchers (Murnaghan, et al., 2014) investigating the mental fitness and school connectedness to a sample of 3318 students in grades 7-12 in Canada. Researchers address depression and anxiety phenomenon among

young people, and promoting positive mental fitness in Canadian schools, which focus on positive psychology, and positive mental health, initiate on a safe and supportive environment, student participation, flexibility, and self-determination, where they examined mental fitness predictors and its three components: (independence, competence, and association) Result showed that positive correlations were found between school connectedness and mental fitness, as well as independence, competence, and relationship, and there were also statistically significant relationships between affective behaviors, social and antisocial behaviors, experimental smoking, and mental fitness. Thus, there is a need for a better understanding of adolescent health by defining basic standards of mental fitness, and how to meet the needs of students through appropriate programs and policies that support a healthy school environment.

Ercis (2018) study the impact of physical fitness and mental toughness on the performance of elite basketball players in Turkey, study population were the same sample size that consisted of 80 elite male athletes. Researcher implemented the Goldberg General Health Questionnaire, and Sports Performance Questionnaire and Hardiness Questionnaire with components of challenge, control, trust, excitement, self-confidence, and commitment. Result showed that significant correlation between physical fitness and mental hardiness variables in all its' components. So, it's clearly; there is constant need for improving mental hardiness in order to improve basketball athletes' performance.

A study by Gu and other (2018) assessed the relationship between physical activity, physical fitness, and health-related quality of life among different school-stages children. The sample of 201 children from southern United States, where they were assessed on Physical Activity self-reported, pedometer-based, physical fitness which includes: (cardiorespiratory fitness, muscular fitness, flexibility, and body composition). They found that promoting children's physical fitness can facilitate positive outcomes specifically health-related quality of life.

This study (Salman, 2021) seeks to identify the relationships between mental fitness level and academic adaptation among university students, sample consisted of (400) male and female students. Mental Fitness Survey and Scale of Academic Adjustment were applied, result revealed a significant relationship between

mental fitness and academic adjustment among, and the university students have shown a high level of mental fitness, and they enjoy their academic lifestyle.

Recent study by Ebrahim (2020) aimed to construct a Learning Styles Scale that linked to brain lobes activity within the framework of mental fitness model (Memletics) among adolescents, sample was consisted of (775) male and female high-school and university students. Researcher applied the Learning Styles Scale an Arabic-version, which psychometric efficiency was estimated in term of (validity, reliability, and internal consistency). The study concluded that the current scale can be used as a valid and reliable measurement tool, and it can be applied to evaluate the learning styles associated with the activity of the cerebral lobes within the framework of the integrated model of mental fitness (Memletics) in adolescents.

### **The theoretical framework**

#### **Fitness**

The Oxford Dictionary defines 'fitness' as "the quality of being suitable to fulfil a particular role or task". So, fitness also can be seen as the ability to influence environment in order meet needs as well as the ability to adapt to fit the demands of the environment. Which require train, practice, develop, and sustain a combination of physical and mental fitness.

#### **Physical Fitness**

Physical fitness is a measure of the body's ability to function efficiently and effectively within its environment (The Oxford Advanced American Dictionary, 2022). Physical fitness also can be referred to the ability of your body systems to work together efficiently to allow you to be healthy and perform activities of daily living. Physical fitness also classified its strategies to group of components that can be observed, developed, and assessed, perhaps; physical fitness components became the standardized health battery to many private and government sectors. The definition for physical fitness is now defined as the body's ability to function efficiently and effectively in work and leisure activities, which categorize into two groups of components. First, the physical fitness health-related components that included cardiorespiratory fitness, muscular strength, muscular endurance, flexibility, and body composition. Second, the physical fitness skill-related components that contained agility,

balance, power, speed, coordination, and reaction time

The importance of physical fitness in social aspects

The benefits of social aspects were widely documented in many sport's studies that have a significant effect on an individual's health, happiness, and future (Wankel. L., & Berger. B. (1990)., Eime, R., et al. (2013)., Pesce, C., et al. (2013)., Papa, S. (2017)). Physical fitness provides individuals with great social experiences that positively impact on his/her personality, and enhance the sense of belonging, which increases his/her interaction to the society. Moral and social values also will be developed through physical activity and physical fitness, such as sportsmanship, cooperation, leadership skills, discipline, pleasure, Increased confidence, friendship and peer acceptance, good citizenship, social relations, respect others, obedience, and socially oriented.

Mental fitness

There is no doubt that sport sets specific physical and mental requirements for the athlete during the training and competition processes, which push the body towards maximum limits of endurance and physical strength, also push the mind as well towards mental barriers such as focus, composure, and determination. Thus, mental fitness is the capacity to utilize resources

and skills to readily adapt to challenges or advantages in order to prosper or succeed (The Oxford Advanced American Dictionary, 2022). Mental fitness also refers to the athlete's ability to optimally organize thoughts, feelings, behaviors, and constructive behavior in a purposeful manner, that contribute on determining the components of mental fitness in order to maximize athletic performance (Xiang et al, 2017., Zhang & Lee, 2020). Mental fitness term also has emerged after McCarthy (1964) proposed the term "mental fitness" to describe the mental health concept in positive manner. In later literature review, Robinson, Oades, and Caputi (2015) built a theoretical model for mental fitness as "the modifiable capacity to utilize resources and skills to flexibly adapt to challenges or advantages and enabling thriving" (p. 63). To this definition sounds perfect, but in term of application there are many challenging issues to be addressed and assessed.

Accordingly, Redondo-Tebar, (2021) reported that mental fitness features commonly associated with athletes included but not limited to: personal self-confidence, commitment, constancy, and ability to set required goals, motivation towards success, positive attitudes, maintaining leadership and responsibility, concentrating on tasks given, emotional control and managing stress and anxiety, and bearing the pressures of matches.

Results and Discussion

**Table No. 4**  
*Correlation coefficients for the study's questionnaire criterio.*

sub-phrase	The correlation coefficient of the sub-statement with the total score of the axis	sub-phrase	The correlation coefficient of the sub-statement with the total score of the axis
1	**0.736	10	**0.771
2	**0.792	11	**0.736
3	**0.729	12	**0.755
4	**0.713	13	**0.687
5	**0.736	14	**0.773
6	**0.658	15	**0.757
7	**0.754	16	**0.667
8	**0.687	17	**0.743
9	**0.743	18	**0.752

(\*\*) Function at (0.01). *This Table has been manifested by the author and under his authorship*

It is clear from Table (4) that the degrees of correlation coefficients between the questionnaire statements, and the total score for each item ranged between (0.658) and (0.792), all of which are statistically significant at the level (0.01). Accordingly, it is considered significant for the extent of the coherence of the questionnaire criteria; And that the resolution is

very strong with effective internal consistency.

Calculating the stability of the resolution: where the stability is one of the psychometric conditions that determine the accuracy of measuring the study criteria, through the use of the mid-term segmentation procedures, through which the scores of the study sample were unloaded, then

the scores were divided partially according to both the odd and even criteria, and then the results have collected a set of simple correlation coefficients (Pearson's coefficient) between each of the two halves of the resolution, and later

corrected through the (Spearman-Brown) equation, and the Guttman equation was applied to calculate the stability of the resolution according to Table (5).

**Table No. 5**

*Reliability coefficient values for the study questionnaire expressions using the split-half method.*

resolution	Stability with Pearson's coefficient	Stability coefficient (Spearman-Brown)	Guttman parameter
Resolution Elements	0.759	0.833	0.849

*This Table has been manifested by the author and under his authorship*

The values in Table (5) show that the resolution enjoys a high degree of stability, and this indicates that the available values are appropriate to a large extent, are procedurally reliable, and have validity and applicability, distribution, and

actual analysis.

#### **Study Analysis:**

**First: The role of mental fitness in developing the physical abilities of athletes**

**Table No. 6**

*The role of mental fitness in developing the physical abilities of athletes.*

Phrase	High		Medium		Low		Average	Evaluation
	#	%	#	%	#	%		
Mental fitness effectively promotes physical activity	68	74.4	17	18.7	6	6.6	2.87	High
Mental fitness works toward regulating physical effort	59	64.9	21	23	9	9.8	2.79	medium
This leads to muscle development	71	78	16	17.5	4	4.5	2.75	medium
Keeps the body safe from injuries	68	74.7	21	23	2	2.2	2.71	medium
Participate in the effort between the sports team	61	67	19	20.8	11	10.9	2.66	medium
Achieving the goal of the competition in sports	45	49.4	22	24.2	24	26.4	2.37	medium

*This Table has been manifested by the author and under his authorship*

From Table No. (6) it is clearly that mental fitness has an acceptable effect on the development of the physical abilities of athletes from Northern Border University students, where the students' responses came in high and medium averages, which is an indication of the

importance of mental fitness in enhancing students' physical abilities.

**Second: The role of mental fitness in developing the health and psychological capabilities of athletes**

**Table No. 7**

*The role of mental fitness in developing the health and psychological capabilities of athletes.*

Phrase	High		Medium		Low		Average	Evaluation
	#	%	#	%	#	%		
Establishes the player's health and physical fitness	72	79.1	16	17.6	3	3.3	2.78	High
Promote proper nutrition for physical activity	54	59.3	29	31.9	8	8.8	2.33	medium
Contribute to avoiding diseases	59	64.8	27	29.7	5	5.5	2.29	medium
Working to avoid stadium injuries	47	51.7	26	28.6	18	19.8	2.19	medium
Lead to mental health	51	56	24	26.4	16	17.6	2.23	medium
Contributes to psychological adjustment with others	55	60.4	19	20.8	17	18.7	2.31	medium

*This Table has been manifested by the author and under his authorship*

Table No. (7) shows that mental fitness has an acceptable impact on the development of health and psychological capabilities of athletes from Northern Border University students, where the students' responses came in high and medium averages, which is an indication of the

importance of mental fitness in enhancing the health and psychological capabilities of students.

**Third: The role of mental fitness in developing the social capabilities of athletes**

**Table No. 8**

*The role of mental fitness in developing the social capabilities of athletes.*

Phrase	High		Medium		Low		Average	Evaluation
	#	%	#	%	#	%		
It leads to the formation of friendships between players	67	73.6	15	16.5	9	9.9	2.71	High
Promote effective team participation	64	70.3	17	18.7	10	11	2.81	High
It leads to social bonding between players	61	67	22	24.2	8	8.8	2.77	High
Work towards achieving the collective goal of the team	63	69.2	18	19.8	10	11	2.75	High
Establishes a compatible sports community	51	54.9	23	25.3	17	18.7	2.55	medium
Drive towards the advancement of the vision and goals of the community	59	64.8	18	19.8	14	15.4	2.64	medium

*This Table has been manifested by the author and under his authorship*

It is clear from Table No. (8) that mental fitness has a high impact on the development of the social abilities of athletes from Northern Border University students, where the students' responses came with high averages, which is an indication of the importance of mental fitness in enhancing students' social abilities.

importance of mental fitness factors and capabilities in enhancing and developing physical, health, psychological, and social abilities.

**Conclusions**

The study sought to determine the impact of mental fitness in enhancing and developing the physical, health, psychological, and social abilities of a sample of athletes from Northern Border University students, male and female, in a consistent manner, and from various scientific disciplines, and age groups, where the questionnaire was applied as the main tool for data collection, where the validity of the internal consistency of its statements was measured in order to verify the existence of internal consistency of the questionnaire; and a specific degree of reliability, which means that the designed questionnaire is very appropriate, and can be applied to a wide sample of individuals.

3. All the main and sub-elements that were monitored in the questionnaire were of high importance and degree to achieve the objectives of the study.
4. The results of the study, in general, indicate that the athletes of the Northern Border University students attach great importance to mental fitness standards as the main determinants of enhancing and developing physical, health, psychological, and social abilities.

Consequently, the main conclusions of the study can be summarized as follows:

1. A total number of 91 athletes from the Northern Border University participated in the study, representing all the faculties of science, engineering, and humanities.
2. There is a high agreement among all the athletes participating in the study on the

**Recommendations**

- Need to establish mental fitness standards among all university student-athletes.
- Spreading the culture of mental fitness standards among university students.
- Developing a permanent plan to develop standards of mental fitness among university students.
- Conducting more studies and research on developing and enhancing the mental fitness of university students in all fields.
- The necessity of supporting the university and the Ministry of Higher Education in the Kingdom of Saudi Arabia for various studies on the role of mental fitness in promoting and developing physical, health, psychological, and social fitness.

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