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## Self-vitality and its relationship to some functional indicators

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### Abstract

The purpose of this paper is to identify the relationship between the level of Self-vitality and some functional indicators for students participating and not participating in the university team in basketball, and to identify the level of Self- vitality and some functional indicators for the sample. The descriptive approach was chosen because it suits the nature and objectives of the research, while the research sample consisted of Students of the College of Physical Education and Sports Sciences, the second stage of the academic year (2023-2024 AD), males participating and not participating in the university team, numbering 14 students, it was divided into two equal groups to undergo the tests. The researcher chose the functional indicators appropriate to the nature of the subjective vitality scale, modified the subjective vitality scale and prepared it specifically for athletes, then applied the scale to the sample and measured the functional indicators. Data was obtained and processed using the SPSS program and discussed, and the research came out with conclusions from which we identified At the level of Self- vitality and some functional indicators for the research sample, in addition to the fact that there is a positive moral correlation between functional indicators and some items of the scale of the level of Self- vitality. Functional indicators are present in players who are not participating in the national team at a higher rate than those participating in the national team, and this means that they are actually present in The players are as a result of the emotional arousal that they experienced due to lack of experience, and this is consistent with some of the items on the subjective vitality scale and the hormones that the researcher used, through which it is possible to identify a large number of items on the subjective vitality scale.

**Keywords:** Self-vitality, functional indicators, athletes

### Introduction

Sports development in any country depends mainly on scientific planning, which uses all sciences and knowledge to establish the sports structure and its progress on strong and solid foundations. Among the basic sciences is sports psychology. Workers in the sports field have begun, and since the beginning of the last century, interest has begun in the psychological aspect, which has taken its place alongside other aspects. Physiological, skillful and tactical aspects in preparing the player well, as the development of sports science has made players reach similar levels in terms of skill and tactical aspects, and made the psychological aspects extremely important in the team's victory or loss in various games, especially basketball.

Self- vitality is considered one of the factors that have a positive impact on the player, as it provides the player with the energy needed to deal with challenges and evaluate their lives better. Self-vitality is represented by positive energy, enthusiasm, and physical fitness. The player must have flexibility, experience, and positive thinking in order to perform various skills and solve problems and frustrations. Which they are exposed to during training.

In order to overcome all the difficulties that affect the performance of the athlete, he must be prepared psychologically and physically, and this requires a codified study of the importance of the vital role of the functional systems of the body in light of the circumstances that give these indicators because of their importance in determining all intellectual and psychological activities when performing sports exercises.

Physical activity can enhance self-vitality by paying attention to how physical activity and the meaning of life work together.

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Without physical activity, life has no meaning. A sense of meaning in life can give one the joy of life and activity, while a lack of it can lead to psychological distress, such as depression (Hyun Joo. 2017) <sup>[1]</sup>.

### Research problem

The psychological state of players has a strong relationship to the occurrence of positive or negative symptoms that result in the level of performance. We infer their presence through functional indicators. Psychological factors are diverse, including positive ones such as enthusiasm, activity, motivation to achieve goals, compatibility and adaptation to circumstances, and negative ones represented by various psychological conflicts, frustrations, anxiety, fear, constant emotional arousal, and various pressures. Despite the studies on the term Self- vitality in previous studies, they did not address its connection with the functional indicators of players because of its importance in determining the level of Self- vitality of the player, as it also changes with changes in the diet, sleep, medications, and other variables, since the psychological aspect is decisive in The good level of achievement, especially the lack of interest in this aspect by coaches and their focus on the physical aspect only, as neglecting the psychological aspect may hinder the player's development and ability to achieve good results.

From here, the problem of research arises in finding the relationship between Self- vitality and some functional indicators of players in order to develop the vital and psychological characteristics, the player's self-esteem, unleash his latent energy, and see himself able to compete in competitions with Arab and international teams.

### Research objective

- Identifying the level of Self- vitality of second-year students who participate and do not participate in the university basketball team.
- Identifying some functional indicators for second-year students who participate and do not participate in the university basketball team.
- Identifying the relationship between the level of Self- vitality and some functional indicators for students participating and not participating in the university basketball team.

### Research hypotheses

- There are statistically significant differences in the level of Self- vitality and functional indicators for students participating and not participating in the university basketball team.
- There is a correlation between the level of Self- vitality and functional indicators for students who participate and do not participate in the university basketball team.

### Research fields

- Human field: Students of the second stage, College of Physical Education and Sports Sciences, Wasit University, for the academic year 2023-2024 AD
- Time field: (1/11/2023) to (15/12/2023)
- Spatial field: College of Physical Education and Sports Sciences, Wasit University.

### Define terms

**Self-vitality:** It is a state of positive feeling, effectiveness, activity, enthusiasm, adapting to different situations, and overcoming difficulties (Rayn., & Frederick, C. 1997) <sup>[2]</sup>.

## Research methodology and field procedures

### Research Methodology

The descriptive method was chosen to suit the nature and objectives of the research. Descriptive research is defined as "research that aims to describe the phenomenon as it exists in reality, according to which existing conditions are described, analyzed, interpreted, comparisons are made, and relationships are discovered. Descriptive research is considered a scientific research methodology and falls under descriptive research in education" (Mohsen Ali Attia. 2010) <sup>[3]</sup>.

### Community and sample research

The research community consisted of students of the College of Physical Education and Sports Sciences, the second stage of the academic year (2023-2024), males who participated and did not participate in the university team, numbering 80 students. The research sample consisted of participants and non-participants in the university basketball team, numbering (14) students from the research community to take the tests, as in Table (1).

**Table 1:** Shows the research community and sample

Research community	Second stage students	80
Research sample	Participants in the Wasit University team	7
	Not participating in the university team	7

### Devices and tools used

1. Tourniquet.
2. Blood collection syringes with a size of 5 cm<sup>3</sup>.
3. Blood storage box after drawing.
4. Sterile materials and cotton.
5. Information dump form
6. Manual watch

### Field research procedures

#### Determine the variables for the study

After the researchers reviewed many previous relevant studies and Self- interviews with some specialists in physiology and psychology, the variables were identified, which were represented by physiological indicators (Pulse before physical effort and some of the hormones thyroxine, cortisol, and blood sugar).

#### Players' subjective vitality scale

We relied on scientific sources to determine the subjective vitality scale for (Ibtisam Sadoun, Zahraa Karim Kattouf), as it has 32 items and consists of five alternatives (Always, often, sometimes, rarely, never applied) corresponding to grades (1, 2, 3, 4, 5), and based on that, the scale was presented in its initial form to a group of (5) experts, specialists in general psychology and sports psychology, to judge the extent of the veracity of the items (Virtual validity) in measuring the subjective vitality of athletes and to conduct Some minor modifications made the scale appear in its final form with a number of 30 items, as the theoretical range of scores for the scale ranged from (30-150) as in Appendix (1).

#### Stability

The stability of the scale was verified using the test and retest method: Test-Retest Method. Stability was found by applying the test twice, with a time interval of (14) days, on a stratified random sample consisting of (10) players. The stability coefficient of the scale was extracted through calculating the Pearson correlation coefficient between the players' scores in

the first application and their scores in the second application. The correlation coefficient reached (0.82) for the scale, and it can be said that the stability coefficient of this amount is considered acceptable in the general scale for evaluating the significances of the correlation coefficient (Gronland, N. 1981) [4].

**Exploratory experience**

It was conducted on 3 players on 11/20/2023 for the purpose of identifying the difficulties and obstacles that the researcher and the assistant work team may face when performing the basic experiment, the exploratory experiment showed some things that benefited the researcher in her work, the most important of which are:

1. The validity of the subjective vitality scale on the research sample.
2. The researcher is aware of the most important requirements that are to be available in the future, how to manage the work correctly and in a timely manner, and prepare all the main requirements for the experiment, including materials, a transport vehicle, a camera, and a capable work team with sufficient experience.

3. Identify the period taken by the sample members to fill out the form, as well as the periods of blood drawing for the purpose of controlling them in the main experiment.

**Main experience**

The main experiment was applied in the basketball lecture on 12/6/2023 on 14 students, divided into two samples: participants and non-participants in the university basketball team, in the presence of the assistant work team. The researcher distributed the scale form to the sample members, and after completion, the functional indicators and pulse were measured. Drawing 3cc blood from each player, placing it in the designated box, and then sending it to the laboratory to test blood sugar, cortisol, and thyroxine.

**Statistical methods:** The search data was processed through the Statistical Package for the Social Sciences (SPSS).

**Results and discussion**

**Identifying the level of Self-vitality of second-year students who participate and do not participate in the university basketball team**

**Table 2:** Shows the level of Self-vitality of the research sample

Sample	Arithmetic mean	Standard deviation	Hypothetical mean	Simple correlation coefficient	Level sig
Students participating in the basketball team	163.2	18.71	135	15.4	0.001
Students who do not participate in the basketball team	155.4	16.33		14.7	0.00

At a significance level of 0.05

Table (2) shows the arithmetic means, the standard deviation, the calculated (T) values, and the significance of the differences for the variable (subjective vitality) for the research sample. Comparing the values of the significance index with the value of the significance level (0.05) shows that there is a significant correlation for both samples and in favor of the participants in the university basketball team.

From Table (2), it becomes clear to us the difference in the level of Self- vitality of the research sample, as the sample was exposed to an increase in the level of Self- vitality with the hypothetical average of the scale (135) degrees, due to the nature of this game, where it is a group game in which the pressure placed on the player is reduced, and this is because responsibility this occurs across the entire sample, which makes the player less emotionally aroused by psychological

pressures. As for the arithmetic average of the research sample participating in the national team, the level of Self-vitality is greater than that of the non-participating research sample. This is attributed by the researcher to the fact that the sample participating in the national team has a high level of vitality, and this indicates The presence of great support for them from the university and the coaches, and the pride of the players in themselves for being chosen from among the players, and their understanding and awareness of the role they play to represent the university in tournaments.

**Identify some functional indicators for second-year students who participate and do not participate in the university basketball team.**

**Table 3:** Shows the functional indicators of the research sample

Functional indicator for the research sample of participants in the national team	Arithmetic mean	Standard deviation	Functional indicator for the research sample that did not participate in the national team	Arithmetic mean	Standard deviation
Cortisol	238.91	6.480		260.05	17.94
T <sub>4</sub>	5.30	0.239		7.687	0.584
Blood sugar	95.50	4.566		104.87	4.642
Pulse	89.50	3.415		79.25	1.707

- The normal level of the hormone cortisol (635-138 nmol/L).
- The normal limits for the T<sub>4</sub> hormone are (4.5-12.5 ng/100 mL).
- Normal limits for blood sugar (Mg/dl120 -80).
- (Here, the range is fixed for the number of heartbeats (60-90) p/m, so it is in a state of acceleration at 90 p/m, and deceleration at 60 p/m.

It appears in Table (3) that the levels of hormones and pulse are within normal limits, but we find that their percentage is

high among the research sample who did not participate in the university team because they are less trained for this game in all aspects of physical, psychological and social training, and this is what Self- vitality requires in order for there to be adaptation to psychological pressure. The reality for the player: This confirms that non-participating players are exposed to psychological pressures and lack internal vitality. This is what was confirmed by the scale. The hormone cortisol increases during physical effort (it works to provide the glucose consumed during physical effort and thinking, whether it is from carbohydrate or non-carbohydrate sources.

In order to provide the energy necessary for muscular work during effort, which imposes a physical effort on the athlete that leads to the occurrence of physiological responses, and this is what neuromuscular compatibility requires during physical effort) (Lazem Muhammad Abbas).

As for the level of the T4 hormone, we notice that it rises in a sample of non-participating players. "It is one of the hormones of great importance in many of the physiological processes associated with physical effort performance and competition, and this appears under the influence of high-intensity physical effort performance." (Raysan Khuraibet Majeed, Ali Turki Musleh. 2002) [6].

The increase in this hormone is attributed by the researcher to (In conditions of emotional arousal, the cerebral cortex is affected by the nerve signals coming from various stimuli as a result of the nervous system being exposed to them, which causes an effect on the body under the hypothalamus (Hypothalamus) and then on the thyroid gland, which leads to an increase in the level of the T<sub>4</sub> hormone. in the blood).

It also appears in Table (3) that the blood sugar level in this case was affected by the psychological emotions before entering the basketball lecture, which indicates that the body is prepared for the risk of energy consumption, so the sugar increases before the lecture. The researcher attributes this to the natural context in the body of depleting the amount of sugar. It is necessary to release energy for the purpose of facing different situations during sports training.

During physical activity, the body inhibits the secretion of

insulin (because blood glucose is needed) in order to use it as a source of energy in order to use it as fuel for the muscles, especially with increased physical activity (Nizar Hussein Jaafar Al-Nafakh. 2005) [7].

The increase in sugar levels is evident from the test results and is the result of poor and organized training for the players. Psychological pressure on the players increases, which leads to a decrease in their level of Self- vitality (Hazza bin Muhammad Al-Hazza.2005; Hasan, B.B., 2023) [8, 9].

As for the pulse value, its rate also increases among the research sample who did not participate in the team. This increase in the pulse rate is generated under high psychological and physical effort as a result of the activity of the sympathetic nervous system, as it begins to rise, which increases the heart rate, so its activity increases and its beats increase as a result of stimulation of the sympathetic nerve that feeds the heart, which is affected. From the hypothalamus. "The heart is one of the areas most affected by emotional experience, as its beats become disturbed and change according to the nature of the emotion, especially the level of Self- vitality of the players (Christie, M.J. & Mellett, G. 1981) [10].

**Identifying the relationship between the level of Self- vitality and some functional indicators for students participating and not participating in the university basketball team**

**Table 4:** Shows the relationship between the level of subjective vitality and functional indicators

Functional indicator for the research sample of participants in the national team	Correlation coefficient	Level sig	Functional indicator for the research sample that did not participate in the national team	Correlation coefficient	Level sig
Cortisol	0.830	0.01		0.918	
T4	0.909	0.03		0.948	0.01
Blood sugar	0.960	0.000		0.926	0.001
Pulse	0.897	0.003		0.898	

Significance level (0.05)

It is clear from the previous table that all correlations between the scale and functional indicators, the hormone cortisol, thyroxine, blood sugar, and pulse, have a significant correlation with the items of the scale. This is due to the fact that the scale contains items related to these indicators, which include the hormone cortisol, which is secreted during emotional arousal, whether psychological or physical or a disease, it is secreted in cases of violent activity and increases the level of sugar in the blood, and this is what the nervous tissue needs because it depends mainly on sugar for its food. This protects the brain from food deficiency resulting from its consumption as a result of psychological and physical arousal, as it is considered the hormone that is secreted for any effort (Khaled Mahmoud Al-Qaoud).

As for the hormone thyroxine, it is secreted as a result of increasing cardiac output, increasing the strength of its contraction, and increasing energy through the metabolism of proteins, carbohydrates, and fats. Thus, energy is generated that nourishes the body, and thus heat is generated in the body as a result of the emotions and effort exerted on the player during training for the paragraphs related to this hormone, "pointed out that the hormone thyroxine, which is secreted by the thyroid gland, works to speed up mental processes, including thinking, perception, and memory. It also works to increase muscle activity and tension and increase the activation of vital functions, that is, increasing the heart rate, raising systolic blood pressure, and increasing oxygen

consumption" (Al-Hijjawi Abdel Karim. 2004) [12].

As for the blood sugar index, its level in the body decreases with excessive physical activity, and this is confirmed by the results: "Physical stress and psychological stress can lead to high blood sugar levels." (Kahn, C. R. and G. C. Weir. 1996) [13].

We also found this among the research sample who did not participate in the university team: "Blood sugar is one of the real physical disorders in which psychological factors play an important role in the onset of its infection or the worsening of the individual's medical condition."(Hala Ramadan Ali).

Increasing the level of physical vitality increases the pulse, as it is linked to increasing the sympathetic nerve in the body, since the game of basketball is a game that requires physical and psychological effort. There is no doubt that the pulse increases with the increase in the effort exerted on the individual." (Krantz, D.S. and Raisen. 1988) [15].

**Conclusions and Recommendations**

**Conclusions**

1. The level of Self- vitality of the students of the second stage, both participants and non-participants in the university basketball team, was identified.
2. Some functional indicators were identified for the students of the second stage, both participants and non-participants in the university basketball team.
3. The researcher concluded that there is a positive moral

correlation between the functional indicators and some items of the measure of the level of subjective vitality for the students of the second stage, for both participants and non-participants in the university basketball team.

4. The researcher concluded that functional indicators are present in players who do not participate in the team at a higher rate than those who participate in the team, and this means that they are actually present in players as a result of the emotional arousal that they experienced due to lack of experience, and this is consistent with some items of the subjective vitality scale.
5. The researcher concluded that the hormones she used could help determine a large number of items on the subjective vitality scale.

**Recommendations**

1. Conduct similar research to find out Self- vitality in order to overcome the obstacles that control the player and lead to poor performance.
2. The coach’s emphasis on the importance of psychological preparation in order to increase the players’ level of vitality in order to raise the players’ performance level.
3. Conducting this study on a larger sample of students in order to identify it and address its decline in students to raise their level of achievement.
4. Providing sufficient supplies and auxiliary tools in order to relieve anxiety and psychological tensions due to a lack of understanding of the technique of this game, which leads to a decrease in the level of their practical achievements.

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**Appendix (1)**

**Self-vitality scale for athletes**

Dear respected player: in a club

**Good greeting**

In your hands is a self-vitality scale consisting of paragraphs, each paragraph containing five alternatives. Please read the content of each paragraph and its choices and understand them well before answering. Each paragraph cannot be answered with more than one option, while not neglecting any of the paragraphs because that will affect negatively, in your answer, the answers will be completely confidential and are for scientific research purposes only.

Research

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Type:

Male ..... , Female.....

No.	Paragraphs	It applies to him				
		Always	Often	Sometimes	Rarely	Never applied
1	I feel that my health is good					
2	I feel helpless, which prevents me from performing my duties effectively					
3	My health qualifies me to perform tasks characterized by vitality and perseverance					
4	My lifestyle is regular					
5	I feel tired in certain situations					
6	I feel that my psychological state improves when I contribute to solving various training problems					
7	I persevere in my work as an athlete, regardless of the stress I feel.					
8	My health prevents me from performing my duties effectively					
9	I enjoy doing my work because it suits my health.					
10	I feel physically fit, which motivates me to accomplish my work.					
11	I'm often awake at work.					
12	I get annoyed by some players' situations that hinder me from doing my job					
13	I have the ability to employ training methods that enable me to confront problems					
14	I try to use mental skills and logic on a daily basis.					
15	I have diverse thinking strategies that increase the odds of success in my work.					

16	I believe that my profession as an athlete requires me to be alert and attentive.					
17	I have the ability to focus on doing my work.					
18	My emotional balance contributes to solving my problems.					
19	My mental ability enables me to think calmly and solve different problems and situations					
20	I have the mental energy that enables me to enjoy doing my work					
21	I feel energetic when I help other athletes during the training unit					
22	I feel psychologically comfortable when I am with my colleagues.					
23	My specialty as an athlete is developing my mental energy.					
24	I have limitless positive energy.					
25	Take the initiative to solve other people's problems.					
26	I have a persevering spirit that enables me to achieve my goals					
27	I have the ability to provide psychological support to every athlete who experiences a psychological crisis.					
28	I have a positive mood that makes me feel excited about life.					
29	I can combine more than one activity at the same time.					
30	I feel psychological pressure because others ignore my athletic work.					