



Psychological Exercises and their Effect on Reducing Anxiety through
Physiological Indicators for Handball Players of the Youth Class

Article Info

Dr. Atheer Abdullah Hussain Al Lami,
AmerMousa Abbas Hassan Al Faza
Faculty of Physical Education & Sport Sciences \ Qadisiya University
Amer_sport11@yahoo.com

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Abstract:

The researchers aim to design psychological exercises in order to improve this psychological aspect and enhance the players' health condition altogether with their physical, technical and strategical state. This forms the main concern of specialists in order to create players with a sense of responsibility within a team, able to fulfill their duties as favorable as possible. The research population consists of the sport clubs that participated with the Iraqi Handball Championship for Youth 2016, including the clubs of Al Nasiriyah, Al Nasr, Balad, Al Qasim, Al Najaf, Al Simawa, and others. The samples are selected randomly by means of draw, resulting in the two sport clubs Al Najaf and Al Qasim. The total number of players is twelve from each club. Al Qasim represented the experimental group which adopted these psychological exercises as part of their training. Al Najaf, on the other hand, represented the control group which followed a preset training program assigned by their trainer. The researchers used the Biometer, designed by the researcher SuhadAbdAlkam (2007), to measure the activity of sweat glands and the decrease of the temperature of fingertips, as well as the Balace in order to measure the average of the heart rate and the blood pressure. The researchers applied certain psychological exercises on the research sample (the experimental group) for 8 week with 2 training units each, according to the method preset by trainer of the sport club itself. These exercises include physical relaxation and breathing techniques, and continue for 10 to 15 minutes, giving rests according to its difficulty level. The exercises are arranged from the easy to the less easy ones. The researchers presented the results of this experiment and analyzed and discussed them, and made their conclusions depending on these results.

Keywords: Psychological Exercises, Reducing Anxiety, Physiological Indicators, Handball

1. Introduction:

Scientific developments is one of the variables of the modern era. Sport, as an aspect of life, interacts with psychology and human sciences in order to prepare the individual in such balanced manner to pave the way to higher levels of sport activity. Sport psychology is the applied science for most of psychology's branches. Its main concern is studying the human behavior during sport practices (in all its types and forms) in order to understand, control, predict and develop this behavior, as well as finding practical solutions for various problems in physical education, competitions and sports. Psychological preparation before a competition is considered to be important, for it affects physical, mental and emotional aspects. It is assumed that there is an ideal level of motivation and power necessary for a player to realize the best level of performance, including physical as well as mental (psychological) power. Any flaw or defect in either of these powers will affect the level of performance negatively.

If we could organize and control the physical power by setting certain training programs, this means that the mental power could be controlled as well, namely by teaching the players how to manage their thoughts and emotion. During a competition, handball players might face psychological pressure as a result of certain internal and external factors that affect the player's emotion or mood, either positively or negatively, as well as the player's effectiveness and thus the results of the competition (due to anxiety, hesitation and lack of concentration and attention, especially before and during the competition). Other affected aspects are the performance of suitable skills (passing, scoring, etc.), and visual perception, which is the ability to interpret the surrounding environment by processing the visual information.

The significance of this research is identifying anxiety, which affects the players before a competition, through several physiological indicators, like the average of blood pressure and heart rate, the activity level of sweat glands and the temperature of fingertips. The researchers aim to design psychological exercises in order to improve this psychological aspect and enhance the players' health condition altogether with their physical, technical and strategical state. This forms the main concern of specialists in order to create players with a sense of responsibility within a team, able to fulfill their duties as favorable as possible.

Anxiety is a psychological indicator that appears in most of the sports and competitive championships; it is an emotional state which the player faces before and during competitions, leading to psychological and cognitive changes, as well as changes in expertise and behavior. The interaction of these changes with one another results in the rise of blood pressure, increase of heart rate average, changes in the temperature of the fingertips, and the activity of the sweat glands, etc. From the aspect of cognition, expertise and behavior, the player faces a difficulty in recalling certain information or receiving any information from the trainer or teammates.

In most of the local sport clubs, there is a scarce application of psychological programs as part of the physical, technical and strategical training plan. Many trainers consulted specialists, but applied these features weakly through personal meetings, and surveys which are designed by the researchers in order to discover the level of application of these psychological programs as part of their training units, and focusing on anxiety itself and its negative effects on the players during competitions.

Therefore, the researchers decided to delve into this problem in order to identify the level of anxiety of the handball players of the youth class, in addition to designing psychological exercises as part of the training program set by the trainer to reduce anxiety through several physiological indicators (rise of blood pressure average and heart rate average, the changes in temperature of the fingertips and the activity of the

sweat glands), and to put this under the specialized trainer's control in order to improve their level and to fulfill the best of achievements.

The purpose of this research is to prepare psychological exercises and to apply them together with other exercises in order to reduce the anxiety level of handball players of the youth-class, in addition to identifying this case of anxiety through physiological indicators (the rise of blood pressure average and heart rate average, the changes in temperature of fingertips and the activity of sweat glands), as well as the fact whether there is a difference between those who do apply such psychological exercises as part of their training plan, and others (within the same sample) who do not apply them.

2. Method:

The research population consists of the sport clubs that participated with the Iraqi Handball Championship for Youth 2016, including the clubs of Al Nasiriyah, Al Nasr, Balad, Al Qasim, Al Najaf, Al Simawa, and others. The samples are selected randomly by means of draw, resulting in the two sport clubs Al Najaf and Al Qasim. The total number of players is twelve from each club. Al Qasim represented the experimental group which adopted these psychological exercises as part of their training. Al Najaf, on the other hand, represented the control group which followed a preset training program assigned by their trainer.

Table 1 (Shows the compatibility of the two samples, the control group and the experimental group, in the normal state of the research participants)

Variables	Experimental Group		Control Group		T Value*	Signific. Level
	M	SD	M	SD		
High pressure	122.92	1.564	123.5	1.783	0.852	Random
Low pressure	82	1.537	81.583	1.24	0.731	Random
Heart rate average	70	1.595	70.666	1.479	1.055	Random
Sweat glands activity	1.55	0.112	1.543	0.108	0.204	Random
Temperature of fingertips (Hand)	33	2	34.25	1.764	1.624	Random

*Note: The T value for these groups is (1.717) with a significance level of (0.05) and a freedom degree of (22).

Table 2 (Shows the compatibility of the two samples, the control one and the experimental one, before the competition)

Variables	Experimental Group		Control Group		T Value*	Signific. Level
	M	SD	M	SD		
High pressure	130.05	2.067	131.5	2.354	1.106	Random
Low pressure	84	1.651	83.75	1.658	0.37	Random
Heart rate average	78.166	2.037	78.916	1.831	0.948	Random
Sweat glands activity	1.31	0.081	1.356	0.055	1.618	Random
Temperature of fingertips (Hand)	31.166	0.937	30.916	0.792	0.705	Random

*Note: The T value for these groups is (1.717) with a significance level of (0.05) and a freedom degree of (22).

The researchers used the Biometer, designed by the researcher SuhadAbdAlkam (2007), to measure the activity of sweat glands and the decrease of the temperature of fingertips. The participant should sit in a comfortable place away from any noises, and put his examined hand in his lap comfortably. The poles will be fastened between his index finger and middle finger in order to measure the conductivity resistance of the skin, and the little finger will be fastened as well in order to measure the skin's temperature. The starting key is pressed for both circuits (conductivity and temperature) to measure the variables which will appear on the screen of the Bio meter in digital numbers.

"The regular human temperature should be about (36.5 – 37 °C) degrees, while the conductivity resistance of the skin should be about (1-2 Ω) Ohm." (2:100)

The researchers also used the Balance in order to measure the average of the heart rate and the blood pressure. The participant should sit comfortably on a chair, and the instrument will be fastened by means of a band which is put around the participant's left hand wrist, and the arm is put in level with the heart. When the start key is pressed, the band will be pumped up and the given information will be noted down on a special form.

The researchers applied certain psychological exercises on the research sample (the experimental group) for 8 week with 2 training units each, according to the method preset by trainer of the sport club itself. These exercises include physical relaxation and breathing techniques, and continue for 10 to 15 minutes, giving rests according to its difficulty level. The exercises are arranged from the easy to the less easy ones.

3. Discussion and Analysis of Results:

Table 3 (Shows a comparison between the normal state of the two groups (control and experimental) and the state before a competition through physiological indicators)

Group	Variables	Normal state		Before competition		T Value	Signific. level
		M	SD	M	SD		
Experim	High Pressure	122.92	1.564	130.05	2.067	9.808	Significant
	Low Pressure	82	1.537	84	1.651	4.342	Significant
	Heart Rate Average	70	1.595	78.166	2.037	11.579	Significant
	Sweat Glands Activity	1.55	0.112	1.31	0.081	5.877	Significant
	Temperature of Fingertips (Hand)	33	2	31.166	0.937	4.525	Significant
Control	High Pressure	123.5	1.783	131.5	2.354	10.986	Significant
	Low Pressure	81.583	1.24	83.75	1.658	3.856	Significant
	Heart Rate Average	70.666	1.497	78.916	1.831	12.014	Significant
	Sweat Glands Activity	1.543	0.108	1.356	0.055	5.043	Significant

	Temperature of Fingertips (Hand)	34.25	1.764	30.916	0.792	6.7	Significant
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**Note: The T value for these groups is (1.796) with a significance level of (0.05) and a freedom degree of (11).*

Table (3) shows the results of the comparison between the normal state of the two groups (control and experimental) and the state before a competition. The differences in all of the variables indicates that anxiety influences these differences greatly, in other words, anxiety affected these variables negatively through increasing the physiological indicators (rise of blood pressure average and heart rate average, the changes in temperature of fingertips and the activity of sweat glands). Thus, due to the competitive atmosphere before a match or competition, a certain physiological stimulant affects these variables of the players. This demonstrates the player's struggles caused by anxiety and a lack of confidence, resulting in a drop in the level of performance and thus a rise in the averages of these variables.

"Being in a competitive atmosphere is a threat, and responding to these circumstances (a sport competition is depicted as a source of psychological stress) will result in an increase of the player's physiological activity, for these circumstances stimulate the nervous system which activates the player's physiological variables."

"The physiological variables affect the player's performance and result in disappointing achievements that do not suit his performance during the training sessions. These flaws in the technical implementation are the consequences of the player's anxiety."

Table 4 (Shows a comparison between the physiological indicators of the experimental group before applying the psychological exercises and after them)

Group	Variables	Before applying exercises		After applying exercises		T value	Significance level
		M	SD	M	SD		
Experim.	High Pressure	130.05	2.067	125.17	4.951	2.988	Significant
	Low Pressure	84	1.651	79.991	2.049	5.136	Significant
	Heart Rate Average	78.166	2.037	69.833	2.208	9.738	Significant
	Sweat Glands Activity	1.31	0.081	1.425	0.089	4.087	Significant
	Temperature of Fingertips (Hand)	31.166	0.937	35.083	2.81	4.352	Significant

**Note: The T value for these groups is (1.796) with a significance level of (0.05) and a freedom degree of (11).*

Table (4) shows the results of the experimental group before and after applying the psychological exercises. There is a noticeable difference between the two cases, and the results after applying these exercises appear to be better than before applying them. This means that these exercises influenced the handball player's condition positively by reducing their anxiety. These psychological exercises included treating anxiety disturbance by using modern techniques and advanced devices in order to handle

unnatural responses as consequent of anxiety. The resulting weakness of the player causes distress, fear, stress, anxiety, etc. Using modern techniques like physical relaxation (by tensing and loosening the player's muscles for several seconds repeatedly) result in more loosened muscles.

"Tensing and loosening the muscles repeatedly will provide the muscles with enough blood to respond appropriately and precisely without any difficulty." (3:181)

"Relaxation exercises have a positive influence on the development of the tactical and muscular performance." (4:37)

Deep-breathing techniques energize the circulatory system, purify the blood from any impurities, and help to control the body's functions. It reduces stress and anxiety and minimizes the player's negative emotion. Therefore, it is considered to be the key exercise of the relaxation training session, in order to control the muscular stress and increase the amount of oxygen absorbed into the blood, which eventually increases the muscular power.

"Whenever the player is stressed or under certain pressure, his breaths will be short and irregular. But whenever he is relaxed, confident and self-controlled, his breaths will be deep." (5:3)

Table 5 (Shows a comparison between the physiological indicators after applying the psychological exercises on both of the control group and experimental group, before the competition)

Variables	Experimental Group		Control Group		T Value*	Signific. Level
	M	SD	M	SD		
High pressure	125.17	4.951	136.585	5.384	5.407	Random
Low pressure	79.991	2.049	85.416	2.527	6.391	Random
Heart rate average	69.833	2.208	79.75	2.527	10.235	Random
Sweat glands activity	1.425	0.089	1.26	0.045	5.727	Random
Temperature of fingertips (Hand)	35.083	2.81	32.583	2.843	2.166	Random

*Note: The T value for these groups is (1.717) with a significance level of (0.05) and a freedom degree of (11).

Table (5) shows that using psychological exercises, including the various relaxation and breathing techniques, played a certain role in enhancing the quality and quantity of performance and affected these variables positively by controlling the nervous system and sensing the difference between tension and both mental and muscular relaxation. As Muhammed Hassan Alawi noted: "Relaxation training is considered to be one of the successful means to control the physical and psychological condition of the players."

The results of the experimental group seem to be better than their counterparts of the control group through the psychological exercises and the use of developed instruments for measuring these variables and their precise results. These instruments are of high significance within the training program in which they are used gradually according to the player's physical, mental, tactical and strategical abilities.

4. Conclusion:

- Psychological exercises before a handball competition (for players of the youth-class) have a positive effect on reducing both of the high and low pressure, as well as the activity of the sweat glands.
- Psychological exercises before a handball competition (for players of the youth-class) influence the conductivity resistance of the skin positively by increasing it.
- Psychological exercises have a positive and effective role in reducing anxiety before any competition.

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Samples of Psychological Exercises:

Exercise 1: Time: 10 seconds

(The eyes are closed, the eye pupil is moved upwards as if to watch something high)

1. Hold on to the tension for 5 seconds (twice), then release half of the tension, and release the rest of the tension another 5 seconds later.
2. Relax the eyes completely.
3. Focus on relaxing the eyes and the other surrounding muscles fully.

Exercise 2: Time: 25 seconds, repeated twice

(Push the jaws against each other, notice the tension in the jaw muscles)

1. Hold on to the tension for 5 seconds, then release half of the tension, and release the rest of the tension after another 5 seconds.
2. Relax the mouth fully, open the lips a little bit and focus on loosening these muscles completely for 15 seconds.

Exercise 3: Time: 10 seconds, repeated twice.

(Tense the tongue by pushing it against the roof of the mouth as hard as possible)

1. Hold on to the tension for 5 seconds, then release half of the tension, and release the rest of the tension after another 5 seconds. Rest your tongue completely.
2. Focus on loosening all of the muscles of the neck, the jaws and the tongue.

Exercise 4: Time: 75 seconds, repeated twice.

(Frown the forehead as far as possible)

1. Hold on to the tension for 5 seconds, then release half of the tension, and release the rest of the tension after another 5 seconds.

2. Focus on the growing sense of release, and compare it to the state of tension for 5 seconds.
3. Now focus on loosening all the muscles of the body for about a minute.

Exercise 5: Time: 25 seconds, repeated twice.

(Clench the hands into fists with tension)

1. Hold on to the tension for 5 seconds, then release half of the tension, and release the rest of the tension after another 5 seconds.
2. Notice the decrease of tension, and focus on the resting tension.
3. Relax the hands completely, focus on the loosening of the hand for 10 to 15 seconds.

Exercise 6: Time: 10 seconds, repeated ten times.

(Deep breathing)

1. Take a deep breath slowly, pushing the stomach out as far as possible.
2. Hold the breath for a short time (5 seconds).
3. Breathe out slowly while relaxing your thoughts for 5 seconds.

Exercise 7: Time: 4 minutes.

(Controlling the breathing process)

1. Sit down or stand in a place where you can see the time on a clock clearly. Place the hands just under the ribs, and count how many times you breathe in and out during 1 minute (Regularly it should be about 14 to 16 times).
2. Speed up the breathing process a bit for 1 minute. People can usually speed up their breathing process without any difficulty.
3. Rest a minute in order to catch your breath again. Then, repeat this exercise but with slowing it down rather than speeding it up. You will notice that you might get used to a slower pace of breathing, and the number of times of breathing in and out might drop to 6 times during 1 minute, which is the regular average during meditation exercises.

Exercise 8: Time: 20 seconds, repeated four times.

(Intensive breathing exercise, it is a quick and easy way to relax the whole body)

1. Look for a place where you can sit quietly without moving.
2. Take a deep breath through your nose while counting to 4, and breathe out through your mouth while counting to 4 as well. Focus on loosening the fingertips.
3. Repeat step 2, but with focusing on loosening the tips of the toes rather than the fingers.
4. Stand up, and repeat quietly: (I am feeling ready – I am feeling all right).