The Impact of Exercises in the Style of Competition on Some Hormones and Variables of the Immune System in the Blood for the Category of Flying Feather Players who are under 17 Years

Assist prof. Dr. Maher Abdoul Hamza Hardan Al- Alwani

Dr. Mohannad Nazar Kzar Al- Swidy

University of Babylon/ Collage of Physical Education and Sport Sciences

Al- Mustaqbal University Collage/ Department of Physical Education and Sports Sciences

habobealiraqi@yahoo.com

mohnaz57@yahoo.com

Abstract

The aim of this research is to identify the effect of exercises in the style of competition on some hormones , like (TSH, T4, T3) and the variables in the immune system in the blood(i.e. the total number of white blood cells, neural cells, acid cells, basal cells, lymphocytes and single- core cells) for the flying feather category of players who are under 17 years.

The researcher uses the curriculum demo on a sample which consists of (6) players who represent the National Iraqi team of flying feather for the category of players under 17 years. In addition, he uses the means and the tools for gathering information as: scientific sources syringes, pipes, a box for drawing, collecting and saving blood, electroscope to analyze the hormones. The researcher reached to a number of conclusions and they are as follows. First, there is a negative impact of the effort exercises in the style of competition on some variables in the immune system in the blood(i.e. the total number of the white blood cells, neural cells, acid

cells, basal cells, lymphocytes and single- core cells) of the flying feather players. Furthermore, there is a positive impact of the exercises in the style of competition, on some blood hormones (T3, T4, TSH) for the flying feather category of players under 17 years.

The recommendations are: adopting the results of the research and make use of them in recognizing the variables in the immune system that take place before and after the exercises in the style of competition, as well as, adopting the results of the research and make use of them in knowing the functional indicators (hormones) before and after the exercises in the style of competition.

Key Words: Exercises of competition, hormones, the immune system in the blood, flying feather.

Introduction

It is undoubtedly clear that there is a relationship between the physical and the psychological burden which is located on the shoulders of the players in the competition of flying feather and the functional work of the vital systems of the body. Whenever the burden of the match is big, the player needs higher level of performance of the functional operations, for the sake of reaching the required physical and skillful performance in the shape that guarantee the requirements during the competition. Therefore, the coaches and the specialists should realize the effect of the training burden on various aspects of the functional operations and adaptation operations of different organs in the body and their capacity to achieve the harmony and balance with the required level of performance during the exercises in the style of competition, especially when the players are under the sever physical, technical, schematic and psychological pressure

throughout the competition. All of these cases are reflected on the influence of the functional equipment, and one of these equipment is the immune system which is considered to be one of the determiners of the achievement. It is found that, the functional disorders of the variables in this system lead to the negative impacts and results in the means of defense of the body. As a result for this, the player is exposed to the injury of different sorts of infections. This is reflected negatively on the level of the athletic achievement, as well as, the nervous system and the endocrine system that work intermittently. It is concluded that a lot of the nervous pressures are reflected on the work of the endocrine system through the hormonal procedures that happen inside the body. This process makes clear the importance of studying the hormones of some glands which have a close relationship with the nervous system that is responsible for the mental, physical and psychological operations during the competition of the flying feather match.

The Problem

It is found that, the physiological state that is associated with the functional efficiency of the internal organs of the body, has a strong and solid relationship with the level of the physical and psychological achievement during the competition. Therefore, the importance of recognizing the impact of the exercises in the style of competition and what is accompanied by psychological and physical pressures are reflected on the nature of the job of the functional equipment of the players. The problem of the research lies in the lack of the available information, as well as, the clear and accurate data about the effect of the exercises in the style of competition of the flying feather; especially for the category of young players under 17 years, on the activation level of some hormones of some glands and the immune system that have an

impact on the players' mental, psychological and physical performance. Furthermore, the immune system has a direct influence on the players' health level. So, the researcher feels that it is important to make this study as an attempt to provide a piece of information that is associated with this aspect and that is probably refers for some scientific facts. It is possible to evaluate the functional case(i.e. the physiological information for the functional organs of the body) of the players throughout the competition. The functional case can help in solving a lot of the players' problems, in diagnosing the training and the healthier cases of the player and allowing the players to sign up in the training and competition.

Aims:

- Recognizing the impact of the competition style on the blood hormones (T3, T4, TSH) and the variables in the immune system of the flying feather players who are under 17 years.

-Identifying the differences in the levels of some hormones and the level of the white blood cells that happen before and after the exercises in the style of competition.

Hypotheses:

It is hypothesized that:

-The exercises in the style of competition have a positive impact on increasing the secretion of some hormones in the blood like (T3, T4, TSH).

- The exercises in the style of competition have a negative effect in decreasing the level of the variables of the immune system in the blood.

- There are differences in the level activation of the immune system (i.e. variables of the study) that take place before and after the exercises in the style of competition and for the benefit of the previous measurement.

- There are differences in the level of the hormonal secretion that happen before and after the exercises in the style of competition and for the benefit of the subsequent measurement.

Domains of the Research:

-The human domain: category of the National Iraqi Team of the flying feather players who are under 17 years.

- The temporal domain: the learning center of the Central Iraqi Union of the flying feather and a specialized laboratory for pathological analysis.

Methodology and Procedures of the Research:

Methodology of the Research:

The researcher uses the experimental approach (which consists of one group) as it suits the problem and the nature of the research and the study.

The Community and the Sample of the research:

The community of the research consists of (6) players who resemble the national team of the flying feather for the category under 17 years and they are the sample of the research. Their choice is intentionally done.

Methods and Tools for Gathering the Information:

The researcher uses the following methods and devices:

-Scientific sources and references.

-Assistant team.

-Sterilized materials and cotton.

-Injections (volume 3 and 5 centimeter) for drawing blood.

-Tubes for collecting blood.

(*) Variables in the immune system are under the study: the total number of the white blood cells, nitrofile (neural cells), Eizenophil (acid cells), Basophile (Basal cells), lymphocytes and monosite (single- core cells.

- Fund for maintaining blood after pulling.

- Materials that prevent blood clotting.

- Pipes (size 10 ml) that are used to separate the blood inside the device for separating blood.

- Electric microscope to estimate the differential and the total number of the white blood cells.

- Neubaeur chamber to calculate cells.

- Special to analyze the hormones in the blood.

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The Method of Measuring the Total Number of the White Blood Cells:

(0.38) of solution (glacial acetic acid 20%) is added to (20) microliter of blood and mixed well. When the colour of the solution has changed to the brown or the black colour, the Neubeaur Chamber is filled up and read on the essential lens(15) and it is considered to be (16) square. The result is multiplied by (200) and the unit of measurement that is used (WBC*109/ liter).

The Method of Measuring the differential Number of the White Blood Cells:

-A slice is prepared in which a drop of one of the sample's blood is put on it. The drop of the blood is spread on a glass slide and this drop is left to dry at a room temperature.

-The slide is painted by Leishman Stain (condensed tincture) for 3-5 minutes (according to temperature, whenever the temperature of the room is increased, the time of the condensed tinctured is decreased). After that, the tincture is softened with water and left for 10-15 minutes.

- The excess tincture is washed with water and dried well.

- The slice is checked under the essential lens (100) (Oil immersion). Then, after (100) cells, these cells are classified according to their sorts as follows: Lymphocytes, Neutrophil, Eosinophil, Monocytes and Basophil.

Experimental Survey:

The researcher has made an experimental survey on Friday 15/8/2018 on two players who are members of the research community. The purpose of this survey is:

1- Recognizing the disadvantages that may appear during the tests for the sake of overcoming them.

2-Applying some of the tests and measurements.

3-The devices that are used in the experiment are suitable for the tests and measurements.

4-Recognizing the response extent of the members of the sample to the measurements and tests.

5-How to implement the tests and measurements by the assistant team.

Field Procedures of the Research:

The method of the research is as follows:

1-The sample (the category of the national team of the flying feather under 17 years) should do exercises in the style of competition, and the rate should be not less than the requirements of the actual competition, but higher than it.

2-Drawing blood (size 3-5 centimeter) before the beginning of the exercises in the style of competition in half an hour.

3-Drawing blood (size 3-5 centimeter) after the end of the exercises in the style of competition in quarter of an hour.

4-Delivering the blood to the laboratory on the same day of the blood tests.

Statistical Means:

1-Arithmetic mean.

2-Standard deviation.

3-Coefficient of variation.

4-Wilcocsin's test for asymmetric samples.

The results are achieved by using (spss) system.

Discussion of Results:

Table (1)

Shows arithmetic means, standard deviations and Wilcocsin's calculated and tabular value of the previous and subsequent measurements of variable of the immune system of the sample of the research.

Variables of the match	Before		after		Wilcocsin's calculated value	Statistical significance	Unit of measurement
	A	B	A	B			
Total number of the white blood cells	5.41	1.49	4.3	1.79	0.5	Significant	WBC*$10^{9/L}$
Neural cells	51.5	7.53	39	10.2	0.4	Significant	%
Acid cells	2	1.3	1.4	1.1	0.5	Significant	%
Basal cells	0.35	0.41	0.25	0.5	0.2	Significant	%
Lymphocytes	36.2	5.4	28	6.3	0.2	Significant	%
Single-core cells	4.4	1.3	3.6	1.9	0.5	Significant	%

Wilcocsin's Calculated Value (5) at the Significance Level (0.5)

Table (1) makes clear that the calculated value in Wilcocsin's tests to check the differences in the total number of the white blood cells before and after the match is (0.5). This value is smaller than the corresponding tabular value which is (5). This indicates the presence of significant differences that have statistical significance in the indicators of the total number of the white blood cells. This fact refers to the clear impact of the effort of the match in reducing the total number of these cells; thus, the negative impact on the players' immune system takes place. According to

the researcher, this case happens since the player is exposed to a very high pressure by physical loads throughout the match (90 minutes) which, in general, leads to an increment in the temporary demolitions inside the body and muscle cells and the white blood cells, in particular. This happens as a reaction to extreme physical efforts that the player is exposed to during the match. This is confirmed by (Sharp &Parry) that the exercises with high intensity lead to negative impacts on the immune system. Heavy and long training lead to temporary weakness in the immunity of the body. These results also agree with what has been reached by (Nielson &Pedersen) that there is a significant decrease in the total number of the white blood cells. Their experiments which include the work on the stationary bike at the strength 80% for (30 minutes) and distributed on (30 stages) that is interspersed with a short rest for (2 minutes) (Sharp, N. and Parry- Billings, M. 1992 P. 33- 37).

The researcher sees that the significant decrease in the total number of the white blood cells in the tests, that was made after the match, is due primarily to the link between the nervous system, the glandular system and the immune system. The studies that are made on Man proved that, there is a link between the nervous system, the glandular system and the immune system (Nielsen, HB. And Pedersen, BK 1997 P. 375-379).

(Ader. et) confirmed that there are two ways through which the brain and the immune system are linked. The autonomic nervous system and the nervous secretions by the Pituitary gland give an active biological molecules which are able to interact with the immune system (Ader, R. 1991. P. 55).

In addition, table (1) shows that the calculated value of Wilcocsin's test for variables in the Neural cells (neutrophils) is (0.4), acid cells (eizenophil) is (0.5), basal cells(basophil) is (0.2), lymphocytes is (0.2) and the single- core cells (Monosite) is (0.5). All of thses values are smaller than the corresponding tabular value that is (5) at the level of significance (0.5). These results confirm the fact that there are significant variables which have statistical significance in the index of the total value of these cells. This denotes the huge impact of the pressure of the match on the shortage of the total number of all the sorts of the white blood cells. The researcher attributes the results of the sample after the exercises in the style of competition and high stress to a general fatigue of different

organs of the body, especially the nervous system, muscular system and the nature of the hormone secretion for many of those hormones as a result of the great physical and psychological burdens that come over the players throughout the time of training by using the style of strong competition. Furthermore, the impacts of the mutual relationship and the dialectical interdependence between the nervous system, glandular system and the immune system which are mentioned above, are clear. It is noticed that, for example, there is an increment in the concentration of Cortisol hormone as a result of the sever physical exertion (Hashim Adnan Al- Keilani, 2000P. 363). This increment leads to the decrease of the neutrophil cells and this is asserted by (Peters- Futer) that the decrease in the number of neutrophil cells happens as a response to the increment in the level of Cortisol hormone (Ander, R. and others. 1995. P. 103).

While (Ander et al., 1991) and his group find that there are nerve endings in the tissues of the immune system. The central nervous system in each of the bone marrow and the Thymus gland (glandule) in the places of producing and the growth of the immune system cells, spleen and the Lymph nodes in the places where immune cells are stored (Ander, R. and others. 1995. P. 103).

It is concluded that this link is interactive between the pathway of the thyroid gland which is represented by the Hypothalamic axis- the pituitary gland- (HPA) and the immune system and what confirms this conclusion is what has been referred by (Ander, et al. , 1995) that the immune system is affected by the glandular secretions of the pituitary gland and all the immune regulation processes happen within neutroxicity environment that is sensitive to the influencing factors and respond to the events in the outer environment (Ander, R. and others. 1995. P. 103). (Pederson et al. 1996) also proclaims that the exercises with high intensity and lasts for a long period of time is followed by a remarkable frustration in the functions of the immune system (Pederson, BK. And others. 1996. P. 240). As for the impacts that are resulted from the athletic training that is described by an extreme severity or less than the maximum and for a relatively long period. There is an agreement that these trainings lead to the frustration in the functions of the immune system. The researcher concluded that the most intense effort and for hard

training periods discouraged the response of the different variables of the immune system (Shephard, RJ. And Shek, P.N. 1998 P. 160).

Table (2)

Shows the arithmetic means, standard deviations and Wilcocsin's calculated and tabular value of the previous and subsequent tests of the

Exercises in the style of competition hormone	Before		after		Wilcocsin's calculated value	Statistical significance	Natural borders Unit of measurement
	A	B	A	B			
T.S.H	6.1	0.31	2.3	0.39	0.6	Significant	4.5- 0.5 ulu/ ml
T4	6.2	0.5	7.1	0.2	zero	Significant	12.5- 4.5 Ng/ 100/ ml

* Wilcocsin's Tabular Value (5) at the Level of Significance (0.5)

Table (1) indicates that the tabular value of Wilcocsin's test for the variables in hormone TSH that take place before and after the competitive training is (0.6) and it is smaller than the corresponding tabular value which is (5). This indicates that there are significant variables which have statistical significance in the index of value of this hormone. This means that the burden of the competition has a clear impact on the levels of TSH hormone that activates thyroid gland. The researchers attribute the results that are achieved by the sample after the match, that the Cerebral cortex is affected by the physical and the psychological burden that occur during the match which in return has an effect on the body as a whole: hypothalamus and pituitary, thus, in the thyroid, which leads to the decrease in the level of TSH hormone in the blood. It is found that, TSH hormone cautions Thyroxin secretion that is produced by the thyroid gland. Thyroxin level regulates the secretion of the stimulating hormone of TSH thyroid. The increase of thyroxin in the blood stops the release of the thyroid stimulating hormone, while the decrease of thyroxin in the blood release thyroid stimulating hormone. Both of the pituitary gland

and the thyroid constitute parts of reciprocal interactive circle and their activities are adapted to maintain body's normal state (Izzat Said Ismail. 1982 P. 361).

Table (1) also shows that there are clear variables in Wilcocsin's test of T4 hormone before and after the exercises in the style of competition. It's tabular value is (zero) and it is smaller than the tabular value which is (5). This indicates that there are significant differences which have statistical significant in the indicators of the quantative values for T4 variables. This confirms that there is an impact of the exercises in the style of competition on the levels of this hormone. The researchers attribute that the rise and the increase in the amount of T4 in the blood after the match is due to the burden of the match which represents a mixture of the physical, intellectual and psychological effort. It is found that there is a compound job of the nervous system, the muscular system and other organs of the body. The nervous system participates in the in all of the body's organs. The burden that occur on that organ because of the frequent nerve impulses will affect the cerebral cortex and its influence is going to be reflected on the hypothalamus, after that, on the thyroid and that leads to the increase in T4 hormone in the blood. The increment of the hormones levels has numerous functional impacts like: its influence on the consumption of energy and oxygen, increasing the absorption rate of the gut, as well as, increasing the blood sugar and decreasing the percentage of body fat, in addition, it affects Cholesterol in plasma and also contributes in breaking proteins and weakens the body (Adnan Hashemm Al- Kilani, 2001 P. 359). Therefore, it is necessary to monitor the rates of the athlete's hormone for the sake of recognizing the nature of its functional capacities as it is classified as the basis in preparing the player for training and competition.

As for T3 hormone, the calculated value of Wilcocsin's test before and after the exercises in the style of competition is (0.4) and it is smaller than its corresponding tabular value which is (5). This means that there are significant variables which have statistical significance in the index of value of this variable. This indicates that the burden of the exercises in the style of competition has a clear impact on the levels of this hormone. Look at figure (1):

The researcher indicates that, the differences in the levels of T3 that take place and which are achieved by the sample after the exercises in the style of competition, the nervous system is affected by the physical, intellectual exertion and emotions. All of these facts are reflected on the cerebral cortex which in return has an influence on the hypothalamus and pituitary gland, thus, its influence on the thyroid, which leads to an increase of T3 hormone. It is found that, thyroid secretions are affected by many factors like: iodine level in the blood and the changes in the temperature and the nerves that feed the gland (Izzat Said Ismail, 1982 P. 461). In addition, thyroid secretions response to other factors such as: different emotional responses, especially the patterns that provoke the nervous system that increase the output of thyroid (Izzat Said Ismail, 1982 P. 461). So that, feeling tired because of the effects of the nerve stimulations that are participated by the thyroid hormones and they are represented by (the exhausting effect of thyroxin on the muscular system and the central nervous system, so, frequently the person who is suffering from an increase in thyroid secretion, he is also suffering from a constant feeling of fatigue (Mohammed Sameer Saad Al- Deen, 2000 p. 304). In addition, the increase of triglycerides hormone (i.e. iodine thyroxin) does several impacts like: loos of weight, nerve tension, increase in pulses of the heart and sweat secretion (Abdullah Abdulrahman and others, 1998 P. 191). The research confirms the need for making the periodic tests during the training and the competition for the sake of avoiding the side effects of these hormones and that may lead to the block or failure of the training process.

Conclusions and Recommendations:

Conclusions:

1-The effort of the exercises in the style of competition have a negative impact on some variables of the immune system in the blood (the total number of the white blood cells, neural cells, acid cells, basal cells, lymphocytes and single- core cells of the flying feather players).

2-The effort of the exercises in the style of competition have a positive impact on some of the blood hormones (TSH, T4, T3) for the category of players who are under 17 years.

3-There is a decrease in the level of all the variables of the immune system in the subsequent measurement (after competitions) with significant differences of what they are before the competition because of the physical, technical, schematic and psychological effort during the performance of the exercises in the style of competition and this is reflected on the nervous, muscular and glandular system and thus the immune system.

4-There is a decrease in the levels of catalyst thyroid hormone (TSH) in the tests that are made after the match (with significant difference) for what they are before the match, as a result of an increment of the thyroxin's levels (T4) in the blood.

5-There is an increase in thyroxin's hormone levels (T4) in the tests that are made after the match (with significant difference) for what they are before the match.

6-There is an increase in Triiodide levels in the tests which are made before the competition (with significant differences) for what they are before the competition.

Recommendations:

1-The results of the research should be adopted and take benefit of them in recognizing the variables of the immune system(that are under study) which are made before and after the exercises in the style of competition on a category of the flying feather players who are under 17 years.

2-The results of the research should be adopted and take benefit of them in knowing the functional indicators (hormones under study) which are made before and after the exercises in the style of competition on the flying feather category of player who are under 17 years.

3-Periodic tests of the variables in the immune system and the hormones of the flying feather players should be done as a factor to know and determine the training and the health level for the sake of evaluating the training status and upgrading and developing them.

4-Making similar researches on the variables of the immune system and other hormones and for other age categories, other than the category that is tackled in this study.

5-Activating the work of the specialized centers in athletic medicine that are concerned with making different functional tests for the players and open private records for each player with low fees to help in raising the level of training and health for the athletes, as well as, saving the researches and trainers the expensive financial expenses.

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