



ISSN: 2456-0057

IJPNPE 2022; 7(2): 289-292

© 2022 IJPNPE

www.journalofsports.com

Received: 19-07-2022

Accepted: 21-08-2022

Zahraa Radhi Jabbar

General Directorate of Education
Maysan, Iraq

Amir Jassim Muhammad

General Directorate of Education
Maysan, Iraq

Mustafa Abdel Karim Laibi

General Directorate of Education
Maysan, Iraq

A comparative study of some variables in the hormone (Cortisol) before and after the effort for the effectiveness of the 200-meter sprint

Zahraa Radhi Jabbar, Amir Jassim Muhammad and Mustafa Abdel Karim Laibi

Abstract

The introduction to the research included that Scientists of physical education and related sciences have recently begun to search for all that is new in terms of a method or a means that contributes to stabilizing or increasing the level. While included Research problem by delving into this phenomenon by answering the following question. 1- What is the level of changes that can occur in the level of the cortisol hormone during the process of speed training by conducting laboratory tests and studying the changes that occur as a result of the exercises, through which the most accurate matters and cases are determined and the extent of their positive and negative impact on the athletes, While the study aimed to identify 1- the extent of the change in the hormone cortisol at rest and after a 200m run. 2- To identify the effect of the exercised physical effort under study on the cortisol concentration of the research sample.

Keywords: hormone (Cortisol), 200-meter sprint

Introduction

Scientists of physical education and related sciences have recently begun to search for all that is new in terms of a method or means that contribute to stabilizing or increasing the level, as the physical capabilities that distinguish each player from another player in individual games differ according to the specifications of each game and the required intensity. performance, and that the training processes that are characterized by regularity and continuity are directed and codified in a sound scientific manner that greatly leads to the development of the physical and physiological condition of the practitioners and makes them able to perform their motor tasks, as the trainers try to use the correct training methods In various sporting events, and among these events is the short-distance running that has an impact The important thing is in the functional variables of the runner and raising the level of his efficiency, whether physically, functionally or physiologically, as the practice of sports training leads to physiological changes that include all body systems, and the process of physiological adaptation and the response of body systems to perform Physical pregnancy takes place through a number of systems and organs in the body, the most important of which is the hormonal system, Where there is a rapid increase in the concentration of the hormone and during the first minutes of physical effort as it is in the hormone cortisol, It is a steroid hormone secreted by the adrenal cortex It is called the stress hormone because stress and its various types cause an increase in its levels in the blood, as it performs several functions, including an increase in blood glucose and an increase in the breakdown of protein within the muscle. This hormone is highly effective, as it is responsible for about 95% of glucocorticoid activity. (Melissa, 2005) ^[12] It regulates a wide range of processes throughout the body, including Dietary metabolism and immune response, as well as regulating protein and enzyme secretions, regulating blood sugar levels, and responding to psychological stress.) Hassan. 2018 ^[8] and other vital functions. The body secretes about 2-5 mg during the day and night, and Fox and Stephen 1998 refer to the variation in the blood hormonal picture as a result of physical training, up or down, as these changes reflect the vital functions carried out by the various organs and systems of the body as a result of exercise training.

Corresponding Author:

Zahraa Radhi Jabbar

General Directorate of Education
Maysan, Iraq

(M. & j, 1998) ^[10] and physical activity can give important biochemical indicators of the state of the athlete that enable the coaches. The specialists are able to develop mechanisms and solutions for any situation that the athlete may encounter that may impede physical work or its development and work to employ that in the training process, and this is the goal that seeks physical, physiological and mechanical development. And recently it has been talked about a lot by runners as a result of its effectiveness on sports, performance, reaching and maintaining the top level, hence the importance of our research in highlighting the biochemical aspect that plays a distinct role in energy production, as the biochemical effects resulting from physical load work on improving the anaerobic energy production processes represented by knowing the anaerobic voltage on the variable biochemistry so that those concerned time and f Based on these results in order to develop the ability of the individual athlete in a better way and technical training programs according to that biochemical vision and the extent of its impact.

Definition of terms

Cortisol hormone: It is a hormone secreted from the cortex of the adrenal gland above the kidneys and plays an important role in the function of almost every part of the body. It increases in the blood in cases of severe pain, fear and anxiety and in sports injuries. And when performing moderate and severe physical effort. (Al-Beik & Sabri Muhammad, 1999) ^[3]

Research problem

The biochemical and hormonal changes in the human blood are one of the indicators. The task that can be built on in assessing the individual's health and physiological condition, and scientists and researchers strive to advance human beings in these two aspects, taking advantage of all possible means to achieve it, so the research problem was identified. By delving into this phenomenon by answering the following question. What is the level of changes that can occur in the level of the hormone cortisol during the speed training process by conducting laboratory tests and studying the changes that occur as a result of the exercises, through which determine the most accurate matters and cases and the extent of their positive and negative impact on athletes.

Research aims

1. To identify the extent of the change in the hormone cortisol at rest and after a 200m run.
2. To identify the effect of the physical exertion under study on the cortisol concentration of the research sample (Hassan, 2018) ^[8]

Research hypotheses

1. There are statistically significant differences between the two research groups in the level of concentration Cortisol hormone between the pre and post measurement of the research sample.

Research methodology and field procedures

The scientific research methodology is "which determines the scientific method followed by the researcher, as it is the primary tool for collecting information, imposing hypotheses, and specifying goals to solve a specific problem and reach it," (Dalen, 1985) ^[6] and accordingly, the researcher used the descriptive method in the survey method. The process of selecting the sample is closely related to the nature of the community from which the sample is taken because it is "that

part of the community on which the tests are conducted and it represents the community correctly. (Mahjoub, 1990) ^[11] The research sample was deliberately chosen, and they are the national team players in the Maysan governorate from the field players, as their number reached (6) players and their ages ranged from (18-20) years old and regular in training even at the time of conducting the research measurements for the season (20 21-20 22), as well as the process of homogenization of the research sample individuals between the variables (height, weight, chronological age, and training age), and it was found that there is clear homogeneity in those variables for the research sample individuals.

Determine the tests and measurements used in the research

The researcher worked after reviewing the sources, references and literature on tests and measurement. He took the choice of the anaerobic ability test for the 200m sprinters, the lactic anaerobic ability. (Al-Khafaji, 2008) ^[4] Cunningham and Falkins test.

Exploratory Experiment: The researcher conducted

it on Monday, coinciding with it (12/20/ by conducting the exploratory experiment on a sample consisting of (4) Players who are from the research community, in order to know the time in carrying out the tests and what are the difficulties facing the researcher, preparing the medical staff, preparing the devices and tools, and ensuring the scientific basis for the tests used in the research.

Scientific foundations of the tests

The researcher extracted the scientific foundations of the tests and measurement used in the research after the tests were applied in the exploratory experiment, with a difference of one week. field research procedures. The researcher conducted tests for the study variable (cortisol hormone) for the research sample of (6) players, on Wednesday corresponding to (28/8/2022) in the Olympic Hall in Maysan, where blood samples were drawn from the research sample. Before performing the physical effort, and after that, the sample, represented by the young 200-meter runners, performed an anaerobic physical effort, and after 10 minutes of performing the effort, blood samples were taken from these players by the medical specialist. The blood was drawn from the research sample and placed in special tubes (gel tubes). To be done after that, the serum was separated by a centrifuge in order to measure the cortisol hormone. This test depends on the blood serum, as this is done by placing a certain amount of the serum on the special cells for that to give the result through the device used, which is (Cobas). Then, the blood samples were transferred to the laboratory of the Department of Life Sciences in the College of Science, University of Maysan, in order to extract the percentage of concentrations (cortisol hormone) in the blood of the research sample members.

Statistical treatments

The researcher used the statistical bag for statistical treatments and the percentage ratio to find out the percentage of change (to signify the differences (T. T st) (SPSS).

Presentation, analysis and discussion of the results

Schedule 1: The arithmetic mean of the pre-measurement, the post-measurement, and the percentage change (for the hormone cortisol).

variants	Pre-measuremen mean	Telemetric mean	Rate change (%)
Cortisol hormone	186,44	234, 42	51,24

Schedule 2: The significance of the differences between the arithmetic mean, the pre-measurement and the post-measurement, to measure the level of (cortisol hormone).

variants	Average measurement tribal	Average measurement remote	The difference between the two averages	t value
hormone cortisol	186.44	234.42	47,98	5.49
morale when level 0,01				

Tabular t at 260, 2=0, 01

It is noted from Table (2), which is related to the study of the differences between the 200-meter sprinters, the following: There are significant differences between the averages of the pre- and post-measurements in concentration. The hormone cortisol under investigation at the level of. 0, 01) and it was in favor of the post-measurement. While the value of (T) was (-5.49). Below the significance level (0.01), which means that there are significant differences in the result in the effort dimension.

Discuss the results

It is clear from the above tables (1) (2) concerning the statistical treatments of the study variable, cortisol, that there is a change In measuring the hormone cortisol, this variation differs from the time of rest and after the efforts, and the researcher sees a significant increase between the pre-measurement and the post-measurement in the 200 -meter race, when applying the (T) test to indicate the differences in the rest period before and after the performance of the physical effort. The direct performance of the effort, that significant differences were achieved after studying the differences in the time of effort and rest for the group under study, and the researcher believes that these differences coincided with the need to balance the internal environment of the body, which may be exposed to imbalances in its compounds due to physical effort practitioner. Where the cortisol hormone increases during violent sports activities, as it speeds up the metabolism of the energy (GA & Yen SS Nutritional, 1996) [7] source. Where in the normal state and during training and physical effort, an increase in the secretion of the medullary gland is observed, which is the main regulator of the secretion of the glands. Otherwise, the secretion of the hormone stimulating the secretion of the adrenal gland above the kidney (ACTH) increases, growth hormone, (GH) and (Prolactin) and this results in increased secretion of cortisol from the adrenal gland, as cortisol is one of the main hormones that It affects sugar and participates in the metabolism of glucose, carbohydrates and protein, and its deficiency leads to an imbalance in the metabolism of carbohydrates, and the level of ephedrine and norepinephrine increases in the plasma as a result of increasing the effectiveness of the adrenal sympatho (system) These exchanges in hormones lead to an increase in the metabolism of glucogen and triglycerides within the muscles. Which puts the importance of the hormone during sports activity, as it supports the hormone glucagon and other hormones in the process of re-formation of glucose and its oxidation, as the physical effort increases the level of concentration Cortisol in the blood plasma and this increase remains for two hours after physical exertion (Abdel-Fattah, 2000) [2] The researcher also believes that the discrepancy in the concentrations of cortisol results from the need for the functions it performs due to the nature and intensity of physical efforts. As the level of cortisol in the blood changes from time to time as a result of

its response to the metabolism process, when performing endurance exercises And the deficit is no oxygen and an increase in the limit The maximum consumption of oxygen results in the preparation of the hormone cortisol, and these responses occur during the first minutes of the start of physical exertion, as the concentration of the hormone cortisol increases to increase the speed of metabolism, especially with regard to carbohydrates, as it works on Accelerating the conversion of liver calcogen, so the level of glucose in the blood rises to obtain energy. (Al-Kubaisi, 2016) [5] The results of the study agree with a previous study, the study of Lazim Muhammad Abbas, the effect of competition effort on the level of concentration of the hormones cortisol, insulin, and lactic acid in the blood of young basketball players. The aim of the research is to identify the effect of competition effort on the level of the hormones cortisol, insulin and lactic acid in the blood of basketball players. The players of the Al-Salwiyya School in the Central Union, Diwanayah Branch, 2012, who numbered 25 players, and then the sample consisting of 12 players was chosen. Research Methodology The researcher used the descriptive method because it is the appropriate method for the nature of the problem and the objectives of the research. The results of the study showed that there were significant differences between the five measures in the concentration of the hormone cortisol (before the competition effort, after the end of the first, second, third, and fourth periods). (Abbas, 2012) [1] The researcher believes that the change in cretazol concentrations is a natural result that is in harmony with the physical effort exercised by the research sample. And through what Presentation of interpretations that summarized the variation in (cortisol) concentrations and its role in reinstatement balance The internal environment of the body, the researcher sees the discrepancy in the results between the two research groups, which indicated the level of significance (0.001) for a group of 200-meter runners, whose energy system is represented by the anaerobic system, based on the formation of training loads on violent exercises, in which work requires larger quantities of sugar during and after the efforts, which requires the effective and large role of the hormone (cortisol) as such Most of the studies and research conducted in the field of the effect of exercise have proven that physical activity can give important biochemical indicators of the state of the athlete, which enables the trainers The specialists are able to develop mechanisms and solutions for any situation that the athlete may encounter that may impede physical work or Its development and work to employ that in the training process, and this is the goal that seeks physical, physiological and mechanical development. Recently, it has been talked about a lot by runners as a result of its effectiveness on sports, performance, reaching and maintaining the top level in the functions of the immune system. (Joseph & Roy J, 1995) [9] Where the researchers believe that this indication came due to the increase in the concentrations of this variable due to the efforts imposed by the exercise of the effectiveness of the 200

m and the adaptation to that, and this adaptation has emerged through the implementation of the anaerobic ability test.

Conclusions and Recommendations

Conclusions

1. The results of the study did not record any critical measurement outside the normal limits in the cortisol variable.
2. The nature and intensity of exercised effort and adaptation affects cortisol and its concentrations in the blood.
3. There is a biological rhythm for each of the variables of cortisol and blood pressure at rest and effort.

Recommendations

The researcher recommends adopting the results of the current study in codifying the practice training programs. Conducting other studies on sporting events and other age groups in the variable of cortisol. The adoption of functional examinations as an objective indicator for the formation of training loads and conducting tests for functional and hormonal indicators of other variables.

References

1. Abbas OM. The effect of competition effort on the level of concentration of the hormones cortisol. Al-Qadisiyah: Al-Qadisiyah University / College of Physical Education and Sports Sciences; c2012.
2. Abdel-Fattah AAA. Biology of Sports and Riyadh Health. Cairo: Dar Al-Fikr Al-Arabi, Cairo, Egypt; c2000.
3. Al-Beik A, Sabri Muhammad. Biorhythm and Mathematical Achievement. Alexandria: Al-Maarif facility in Alexandria; c1999.
4. Al-Khafaji FH. The effect of anaerobic training on the efficiency of some vital organizations and biochemical variables to develop lactic endurance for basketball players. Babylon: University of Babylon, College of Physical Education; c2008.
5. Al-Kubaisi W. A scientific article. Anbar: Anbar, Iraq; c2016.
6. Dalen Dv. Research Methods in Education and Psychology. Cairo: Cairo, Anglo Egyptian Bookshop for Printing; c1985.
7. GA L, Yen SS, Nutritional. Endocrine-metabolic aberrations in amenorrheic athletes. *J Clin*; c1996.
8. Hassan EE-D. Total body resistance training TRX as an indicator for raising physical and physiological efficiency and delaying the onset of fatigue for high-level judo players. *Assiut Journal of Physical Education Sciences and Arts*; c2018. p. 47-2.
9. Joseph S, Roy J. Current therapy in sports medicine. Mosby-Year book, Inc; c1995.
10. MF jS. *Op.cit*; c1998.
11. Mahjoub W. Physical and physiological analysis of sports movements. Baghdad: Baghdad, Higher Education Press; c1990.
12. Melissa C. Stress Management Cortisol. Available. Retrieved from; c2005. <http://www.about.com/cs/cortisol/a/htm>;