

THE EFFECT OF (HIT) TRAINING ON IMMUNE GLOBULINS AND WHITE BLOOD CELLS FOR AMATEUR WEIGHTLIFTERS AFTER THE RETURN OF ACTIVITY FROM THE MANDATORY QUARANTINE FOR THE COVID-19 EPIDEMIC

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Abstract

The aim of the research is to identify an appropriate training method that raises the levels of immune globulins (IgA, IgM, IgG) and white blood cells and the effect of training by (HIT) method using resistance (weights) as a training curriculum that increases immunity and ensures the continuation of the pills after the return of activity from the stone. The response to the Covid-19 epidemic among amateur weightlifters, the researchers relied on the method of trace analysis in an experimental way by conducting a pre-, medial and post-test with the same experimental one agroup on a sample of amateur weightlifters in the Fury private hall for weightlifting and body building in Adhamiya, the number of sample members reached (15 players) who interrupted training during the spread of the Covid 19 virus, and data treatment with (SPSS) system, and the conclusions were as follows, the effect of (HIT) training is effective in improving immune globulins (IgA, IgM, IgG) and white blood cells in light of the Corona pandemic. And that the use of resistance (weights) according to the (HIT) method, which depends on the rest time equal to or slightly more than the training time had the effect of increasing the concentration of immune globulins and increasing the concentration of blood cells. White blood within the level.

Keywords: Sports psychology. Sports exercise. HIT-style exercises. Immune globulins. White blood cells. (Covid 19)

Introduction

Ports training is a fundamental pillar for the athlete to develop the level with emphasis on taking all precautions and the need to be very careful in this period, especially when the Coronavirus is dominating the world, pointed out (Taha, 2021) he main important topics are " Physiological studies in the field of sports training, and these studies in this field have made it possible to identify the impact of methods and methods of sports training on the vital organs of the athlete's body, Training is also concerned with describing and estimating the functional indicators resulting from the performance of training in order to improve the responses of those organs by repeating the effort or systematic training for one time or repeating it several times, "However, the fear of exercise should be kept away from the athlete's mind if the infection or disease does not occur in the stage (immune gap) as an achievement , training is considered (HIT), which is a technique that makes you do a set of exercises with high intensity in the least possible time in order to develop physical fitness but with double effort and after the success of this exercise around the world, began to spread more in the Arab countries, (Gibala et al., 2012) added that the "HIT" exercise is a high-intensity exercise in a short time, and has a great benefit in

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burning fat quickly, as this exercise accelerates fat burning and improves the work of the heart and presses them to improve outcomes related to health and respiratory system and metabolism, He added (Helgerud et al., 2007) that the word (HIT) is a combination of the first letters of three words High-Intensity training, As for immune globulin, it symbolizes (Ig) (Ramasamy et al., 2021) It is one of the glycoproteins (Glycoprotein's) secreted by B lymphocytes, which stick to microbes, paralyzing their movement and growth, and facilitating the movement of phagocytic cells during the time of these immune proteins (IgA, IgM, IgG) mention (Hayakawa et al., 1999) that normal serum contains natural antibodies to the IgG, IgM, and IgA types, which are thought to be essential for the immune-regulating effects of immune globulins in immune disorders. They are called "natural" antibodies because they are generated in the absence of deliberate immunization and independently of exposure to foreign antigens, As (Chapin-Bardales et al., 2021) stated that most of the natural antibodies in healthy people and therefore in the immune globulin pool are autoantibodies. Recent evidence indicates that autoantigens stimulate autoreactive B cells to grow and produce natural antibodies. The natural antibody repertoire remains constant from early childhood through adult life. Most of the normal antibodies in adult serum are IgG, which means that autoreactive T cells contribute to the repertoire of autoreactive B cells under physiological conditions (Hamid Al-Ashkar 2013) refers to a definition of "immune antibodies" as specific protein components produced by plasma cells in response An excitatory is an antigen and is produced by binding to its own antigen and not others, and this binding depends on the size and shape of the site and location of the binding, and this binding is very similar to a "lock and key" When an antibody protein recognizes an antigen that binds to it or with it, then the binding site and these antibodies or antibodies are a family of special proteins secreted by lymphocytes called globulin and known as immune globulin and There are five different species, including: (IgA, IgM, IgG ,IgE, IgD), Each is characterized by a unique chemical composition and a special bio-immune logical role, As for the white blood cells of chart (Alwan, 2022) they are "mostly colorless compounds containing a large nucleus and numbering from (5000-9000) cells per cubic millimeter in the blood, which do not contain hemoglobin and are responsible for the body's immunity and its lifespan. Short, not exceeding five days, to hours. Sometimes white blood cells are divided into two types, one of which contains granules of protoplasm and the other type does not contain granules, (WHO) confirmed that (Covid 19), also known as the Corona pandemic, is an ongoing global pandemic. The currently identified disease (Coronavirus 2019), is caused by a

virus called Corona associated with the severe acute respiratory syndrome (SARS-Covid-2), the disease first broke out in the Chinese city of Wuhan in early December 2019, the virus is transmitted primarily in close contact between People, often via respiratory droplets and droplets from coughing, sneezing, or talking. This virus is very close to the SARS virus, As (Alwan, 2022) indicated, "The conditions of the Coronavirus imposed social distancing between players in their training environment due to the procedures of the World Health Organization or as a result of the fears they experienced for the chaos of information and popular rumors in the various sports media about this epidemic." The study (Abd, 2014) focused on the subject of the research on the extent of (the effect of a high training load using a high-intensity interval training load on the response of immune cells in the blood of football players) to that load by measuring the levels of some types of immune cells before and after training and measuring them during Recovery periods after (1 hour, 2 hours, 24 hours) and it was found that high intensity training led to a rise in all types of immune cells immediately after performing the training load, while it was found that some types of immune cells decreased their level from the normal limit during recovery periods, such as lymphocytes (NK) The researcher found that high-intensity interval training led to an increase in the levels of all types of immune cells under study immediately after the end of pregnancy, and a decrease in the levels of lymphocytes and killer cells during recovery periods up to 24 hours, The recovery period of 24 hours is sufficient to recover most of the immune cells under study. As for the study (Al-khoury et al., 2022), under the title (The effect of high-intensity intermittent training in plyometric training on the motility of some immune blood elements in football players-Akaber), her study included a comparison between two methods of high-intensity intermittent strength training) and plyometric training about the effect that these two methods can have on the level of the individual's immune system. Where the goal was to identify the differences between the pre and dimension analyzes of the two experimental groups in the number of white blood cells in individuals, plyometric training affects the numbers of cells (lymphocytes and monocytes) with a significant decrease and a greater degree than intermittent training of high intensity due to the use of these balls at a level in places of muscle tears Inflammation from strength training, As for the results of the study (Pedersen & Toft, 2000). Also. tended to emphasize the effect of physical exercise on the response of immune cells by causing a kind of disability to them with increased inflammation and a decrease in the concentration of "lymphocyte" cells and a decrease in levels of immunoglobulin

in saliva in addition to an increase in "cytokine" "A companion as an anti-inflammatory that increased in muscle fibers after performing physical exercises with a high load in intensity and volume. As for the study (Souza et al., 2021) entitled (Acute and chronic effects of interval training on the immune system: a systematic review with analysis) the researcher used the interval training method to know the changes of immunoglobulin By using high-intensity aerobic exercise 95% of peak or max heart rate from the peak or maximal oxygen uptake of 85%, the researcher found that immunoglobulin decreased after (24-72 hours) because the high-intensity workouts did not include rest periods, which caused infections, lacerations and the return of immunity after a period ranging between (30-180) minutes after exercise, As for the study (Maatouq, 2022), the title of the study (the effect of using ballistic resistance training to develop muscular capacity and immune proteins (IgA, IgM, IgG) for basketball players), the researcher used the experimental method on a sample of (13) basketball players. Conducting a training curriculum for a period of (10 weeks) at a rate of (3 days) per week to develop the muscular ability of the arms and legs, the researcher reached positive results that the ballistic exercises have a positive effect on the development of muscular capacity and immunity proteins (IgA, IgM, IgG).

Methodology

Research Importance: Identifying an appropriate training method that raises the levels of immune globulins (IgA, IgM, IgG) and white blood cells among amateur weightlifters after the return of activity from the mandatory quarantine of the Covid (19) epidemic. Identifying the effect of (HIT) training using resistances (weights) as a training curriculum that increases immunity and ensures the continuation of life after the return of activity from the mandatory quarantine of the Covid (19) epidemic.

Methods and tools: The researchers used the experimental method with a single experimental group and a sequential method on a sample of amateur weightlifting players in the Fury private hall for weightlifting and bodybuilding in Adhamiya, The number of sample members was (15 players) who interrupted training during the period of the spread of the Covid 19 virus, to achieve the principle of safety and distance between the sample members when performing the training program as a group, As for the players, the training period ranges for them (30-36 months) before the spread of the virus. The researchers conducted homogeneity in growth indicators on the study sample, as shown in the table below (Table 1).

The researchers chose the variables related to the study and included the following:

1. Immune proteins included (IgA, IgM, IgG)
2. The total number of white blood cells in the body.

The test was conducted for each of the immune proteins and white blood cells by experts and specialists, taking into account the researchers and the sample members all the conditions and instructions for this. As for the training program that was applied to the sample members, it was confirmed when performing the exercises according to the following conditions and under the direct supervision of the researchers:

1. Confirmation of taking the body temperature using a Genezink device Model (B099P6KX8P) Before performing the training unit.
2. Sterilization of the devices after they are left by the player before using them for the second time.
3. Emphasize the Fogging of the hall before and after the training module

Training Curriculum

1. Duration of the program (12 weeks) (90 days)
2. The number of training days is 3 on Saturdays, Tuesdays, and Fridays, and the rest period is 48 hours between training days
3. Repetitions (12-15 repetitions) differ from one athlete to another and from one part of the body to another
4. The repetitions for the lower body go up to (12-15) while the lower repetitions for the upper body go down from (6-8).

5. Duration of one exercise (12-15 seconds)
6. The duration of the set is between (45 - 75 seconds) until it reaches the central muscle fatigue.
7. Rest time equal to or slightly more than the training time after each exercise Rest between exercises approximately (30 - 45 seconds)
8. Rest at the end of a set should take (3 min)
9. Centralized and decentralized exercises are performed (6 seconds) for lifting (central contraction) followed by (4 seconds) for reduction (decentralized contraction)
10. The intensity. 80-85% 1RM
11. Duplicates must operate in a controlled way that is to impose constant tension on the muscles.

Statistical means

The researchers carried out all the statistical methods related to the study and its objectives, which included conducting a statistical characterization of the variables before starting the implementation of the study. by means of the torsion coefficient, as well as conducting the significance of the differences between each of the pre, Edina, and post-tests, while the researchers also found differences by finding the least significant difference between the follow-up tests (tribal, median, and dimensional) for the variables as a whole to identify the best change in the study variables between these periods . The pre-measurements were made before the start of the training program, and intermediate measurements after 45 days of training and telemetry it is 45 of measurement middle That is, the duration of the training (90 days).

Results and Discussions

Through Table (2), which shows the values of pre-, median, and post-measurement of the study variables, which indicate that the values of immune plasma proteins (IgA, IgM, IgG) in the pre-test were at a lower level than the normal rates, but the level began to change towards the rise in the median test that It was normal or close to it, and then it reached a better level than normal in the dimensional measurement, and this is evidence that the training that the sample members were exposed to led to an increase in the values of proteins, which is a positive indicator in increasing the immune ability of the players, As for white blood cells, their values started with an increase in the intermediate test, and then the increase in the post test in indicates that the quality of training that the sample members were exposed to contributed to increasing the body's ability to produce these blood cells, which are the buffer against the body's exposure to all diseases, being Supports the immune system in its ability to confront diseases and various viruses that enter the body and prevent them from spreading (Tables 2 and 3).

Table 3, which shows that there are differences in the values of indicators of immune proteins and white blood cells for the values of each of the three measurements (before the application of the exercises, during the application of the training, after the completion of the application of the exercises) according to what was stated in the value of (f) and the value of (sig). which was less than the assumed value of 0.05, To identify the significance and the differences in favor of the median and dimensional tests by means of the L.S.D test, which showed that the median test by value surpassed the pretest and all variables related to immune proteins and white blood cells, while the values of the post-test overcame both the pre and median and all the studied variables as well, and this indicates the effectiveness of The training that the sample members were exposed to, which showed a gradual and noticeable change in the effect through the values of these variables (Table 4).

It is clear from Table (3) and Table (4) that there are statistically significant differences at the level of the mean, dimensional and dimensional measurements of the members of the basic research sample in relation to the immune proteins, The researchers attributed the reason for these differences in white blood cells immune proteins to the effect of resistance training using (HIT) method, which was used during the application of the proposed exercises, which had an effective effect in improving immune globulins and white blood cells, HIT training is a method of training, but it does not pass through one maximum repetition (1RM) at different stages within the training circuit, and immune proteins are stimulated in physical training above average with correct

Table 1: It shows the homogeneity of the members of the research groups in the torsion coefficient test in the growth indicators under study.

Seq	Statistical processors	measuring unit	Arithmetic mean	standard deviation	Mediator	torsion coefficient
1	Chronological age	Year	28.55	1.88	26	- 0.214
2	body length	cm	172	7.53	171	0.275
3	training age	month	33	3.20	32	0.537

Table 2: Arithmetic means and standard deviations of the tests under study.

Seq	Variables	Measurement	Pretest		Middle test		Post-test	
			Mean	Std.V	Mean	Std.V	Mean	Std.V
1	IgM	Mg/dl	105.933	7.787	114.133	8.140	125.466	8.959
2	IgG	Mg/dl	1046.667	99.194	1164.60	86.111	1321.333	96.889
3	IgA	Mg/dl	106.200	6.559	115.466	8.201	127.133	7.998
4	White blood cells	cell/uL	9505.400	827.709	10416.266	851.06	12178.533	841.830

Table 3: Shows the analysis of variance for the four research groups in the post tests the variables under study.

Seq	Variables	Contrast source	sum of squares	Degree of freedom	Mean squares	F. value calculated	Value SIG	Indication
1	IgM	between	2886.178	2	1443.089	20.897	0.000	moral
		in	2900.400	42	69.057			
2	IgG	between	569576.933	2	284788.467	32.068	0.000	moral
		in	372994.267	42	8880.816			
3	IgA	between	3300.933	2	1650.467	28.411	0.000	moral
		in	2439.867	42	58.092			
4	White blood cells	between	55404518.53	2	27702259.27	39.237	0.000	moral
		in	29653248.27	42	706029.721			

Moral at SIG value (0.05) if SIG level \leq (0.05)

Table 4: It shows the differences between the tests (tribal, median and dimensional), the value of the SIG and the type of indication.

Seq	Variables	Groups	The difference between the circle	Value SIG	Indication
1	IgM	tribal - middle	-8.2	0.01	MFA*
		pre-post	-19.533	0	MFD**
		medial-dimensions	-11.333	0.001	MFD
2	IgG	tribal - middle	-117.933	0.001	MFA
		pre-post	-274.666	0	MFD
		medial-dimensions	-156.7333	0	MFD
3	IgA	tribal - middle	-9.266	0.002	MFA
		pre-post	-20.933	0	MFD
		medial-dimensions	-11.666	0	MFD
4	White blood cells	tribal - middle	-910.866	0.041	MFA
		pre-post	-2673.133	0	MFD
		medial-dimensions	-1762.266	0.016	MFD

* MFA :Moral in favor of the average

**MFD: Moral in favor of the dimensional

regulation and during rest periods (recovery) and through that we note a high group Immune protein (IgA, IgM, IgG) in the mean and post-tests i.e. laboratory tests before starting training and after every (6 weeks of exercise) the second test and after (6 weeks) the second test It means the final test, Immunoglobulin and white blood cells have a major role in resisting diseases and epidemics that may affect the athlete and the non-athlete through the formation of the basic units against infection with various diseases, as confirmed by (Boutcher, 2011) "That (IgA, IgM, IgG) are the basic units that work on the formation of antibodies to resistance to infections through albumin, globulin, fibrinogen that enter into the components of hemoglobin" (Ganong, 2000) reminds that "the mechanism of increasing immune proteins After physical exertion, it is caused by an increase in the hormone erythropoietin, which is secreted as a result of lack of oxygen and leads to activating the secretion of lymphocytes, which increases lymphocytes in the blood, liver and spleen and produces plasma cells for the production of a group of immune proteins (IgA, IgM, IgG)" Moderate exercise increases the immune globulin and white blood cells, by activating some cells such as basal white cells, causing inflammation, which results in killing the microbe This was confirmed by Dergaa et al., (2021) in the link between "high-intensity training and prolonged competition with reducing the efficiency of the immune system and the memory of immunity is inversely affected by the intensity of the exercise, which leads to the player's exposure to sports injury Therefore, studies are unanimous that antioxidant fluids and glutamine reduce the effect of training on the immune system".

Conclusions

The aim of the research is to identify an appropriate training method that raises the levels of immune globulins (IgA, IgM, IgG) and white blood cells and the effect of training by (HIT) method using resistance (weights) as a training curriculum that increases immunity and ensures the continuation of the pills after the return of activity from the stone The response to the Covid-19

epidemic among amateur weightlifters. The results showed the number of white blood cells for the research sample has increased in the mean and dimensional measurements from what is high in the tribal measurements before the start of the application of the curriculum, as the results came with significant differences, that the research confirms that the number of white blood cells and their increase is one of the changes that are usually observed during training, as (Alwan, 2022) indicated that "The stress hormones (adrenaline, epinephrine, and cortisol) that are secreted during physical activity have an effect on the numerical and relative changes of white blood cells due to the increase in lymphocytes" which in turn also increased. Natural limits are a preventive health condition by increasing the body's immunity in order to repel germs and viruses that may infect the body. Also, we found there are effect of effective (HIT) training in improving immune globulins (IgA, IgM, IgG) and white blood cells under the Corona pandemic. 2.The effect of using resistance (weights) according to the (HIT) method, which depends on the rest time equal to or slightly more than the training time, had the effect of increasing the concentration of immune globulins and increasing the concentration of white blood cells within the level.

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