

The Impact of a Recovery Training Course Accompanied by an Innovative Device on some Physiological Changes, Body Changes and Achievement of Jerking by Weightlifters

¹Mohammed Hussein Obaid, ²Maysoon Alwan Oudah

Abstract

The recovery process is considered a physiological condition represented in the return of the body's systems to their normal rates or as close to that as possible, and from this we can know that the correct exchange between efforts and recovery processes is among the basic factors necessary for players to reach the highest levels, through Training course, technological development and modern methods are related to different training ways and systems. As such, this study aims to know the impact of a recovery training course on some hormones, body changes and jerking achievement of weightlifters. The researchers used the experimental approach for its suitability to achieve the aims. The two testers, who were 10 weightlifters, were divided into two experimental and control groups, each of them consisted of (5 weightlifters). With the help of an engineering cadre and determine the study variables for some Physiological changes as (T4 - T3 - Cortisol - Testosterone - cpk Enzyme - Heart pulse rate) and Body Change for (maximum strength - endurance strength - Flexibility - achievement)) for weightlifting beginners. After the pre-tests, and after that the recovery course was applied for a period of (12) weeks every week, three recovery units, and after completion, the post-tests were conducted, and the data were collected and statistically processed through the use of the statistical package (spss). The course improves some Physiological changes, strength and achievement for weightlifters.

Key words: recovery - recovery course - Physiological changes - body changes - achievement.

I. Introduction and Significance of the study:

Weightlifting is one of the important activities that require a high physical and skill level by the players to be ready for competition. Thus, further improvement of the physical level of the weightlifting players is a

¹Ministry of Education, Babyl Governorate Education, alhashmya Education Department, Iraq.

²University of Babylon, College of Physical Education and Sports Science, Iraq.

result of increasing the efficiency of the work of functional devices, and this does not come through training only, but through its synchronization with the increase in speed to compensate for energy spent in these exercises. This is related to the nature of the training used by increasing the load, which makes there a great burden on the player by increasing the number of training units per day or during the training week, which lasts for long hours, and causes fatigue. To overcome training loads and improve their level, players follow some methods and means of recovery are used to accelerate the recovery of the body's functional organs and bring them to their normal state to continue the training process in a better way. Among these, the trainers must prepare training curricula that provide appropriate recovery training course means that speed up the recovery processes and choose the appropriate recovery training course means to compensate for the spent energy sources.

Hence the importance of research by implementing a recovery training course to help raise the level of players' performance by increasing the speed of getting rid of fatigue resulting from training, especially with high weights in training and competitions, speeding up the recovery process, and knowing the effect on some Physiological changes, body changes and achievement for weightlifters.

II. Research methodology and field procedures

2-1 Research methodology: The researchers used the experimental approach using equal groups method to find the solution of the problem.

2-2 The community of the study and its sample The two researchers identified the community of the study with the young weightlifters club players in Babel Governorate, which are (6) clubs with (30) players. Research Thus, the research sample represented a percentage of (33.33%) of the original community. They were divided into an experimental group and a control group that each of them involves 5 player.

2-3 Means, devices, and tools used in the research

- Personal interviews with specialists.
- Three stopwatches.
- 3 medical balls
- 5ml medical syringes.
- Blood-holding tubes
- Medical cotton and sterile materials.
- French-made Senterfuge blood apheresis machine.
- ELISA device, model (Eclectica), made in Germany
- Chemicals (kit) to detect the concentrations of (T3, T4, cortisol, and testosterone)
- A cool box to transport blood samples to the laboratory.
- Pasteur Pipet for the purpose of extracting blood plasma and serum from tubes after separation.
- The Rostameter to measure height and weight, US-made.
- Lenovo computer.
- Column of gravity, count (5) weights of different sizes.

- A device of calculating pulse mercury employing, made in America.

2-4 Study sample field , and procedures

2.4.1. Study Sample homogeneity

After determining the measurements affecting the studied research variables, namely height, weight, time, and age of training due to their relationship to the research variables under study, homogeneity was performed using the mean, standard deviation, and Levin test among the sample members in these measurements to adjust the research variables that affect the results of the experiment. Table (1) illustrates

Table (1)

Demonstrates the homogeneity of the research sample

Factors	SD	Mean	Skewness	Levene Statistic	Type of significance	Level of error
Length	168.2	3.327	0.05	0.1	0.99	.No sig
Mass	69.00	5.345	0.456	0.41	0.54	.No sig
Training age	17.5	23.00	0.076	0.18	0.99	.No sig
Chronological age	3.25	0.517	0.644	0.63	0.35	.No sig

Table (1), shows the value of (Sig.) For all variables, which is greater than (0.05) at the degree of freedom (7). Thus the null hypothesis that states that homogeneity of differences is equal to the sample, is accepted. This means that the data are homogeneous.

2-4-2 Determination of research variables :

After surveying modern scientific sources, and consulting experts and specialists at the University of Babylon, the research variables were identified from the Physiological changes most effective in the requirements of the game as well as the body changes that the player needs in achieving this activity, as follows:

Physiological changes (cortisol - testosterone - T3 - T4--cpk -Heart pulse rate).

- strength related to (maximum strength, strength of power endurance).

Achievement of Jerking lifts

2-4-3 .Determining the study variables tests

2-4-3-1. Hormone Tests

- Measurement of the concentration of the hormone T3, T4, cortisol, and testosterone- -- cpk - Heart pulse rate

- Method of performance: a sample of blood is taken from the player with an amount of (cc5) after the training unit and placed in a special tube to preserve the blood, then the doctor who is specialist performs the process of calculating the percentage of the T3 hormone by placing the blood with (ELISA kit) in the (ELISA) device to calculate its percentage In the blood and the mechanism of enzyme extraction through the imported kit, the method of action is the T3 hormone.

Recording: The ELISA readings of the concentration of each hormone (T3, T4, Cortzol, Testosterone--cpk -) are recorded.

-Heart pulse rate: a device of calculating pulse mercury employing, made in America

2-4-3-2 Body changes Tests

2-4-3-2-1 Maximum Strength Tests: -

1- Pulling the weight from bend to straightness (Diedelft test):

- The tools used: the column of gravity (20 kg), iron bar of different weights.
- How to perform: Standing in front of the weight, bending the knees, holding the iron pillar of gravity, and carrying the weight by extending the knees straight to the knees with maximum strength for one time.
- Scoring method: The player is given three attempts and the best attempt is taken.

2- A test of the maximum strength of the two legs (rear-shaped).

Tools: regular iron bar weighing (20) kg, iron discs of different weights, bearers.

- How to perform: Place the column of gravity on the shoulders and is based on the neck and shoulders, and hold the column of gravity with the breadth of the shoulders while maintaining a straight back position.
- Scoring method: The player can perform three attempts and the best attempt is taken. (Allawi, Radwan, 2011, p. 51)

3- Test the maximum strength of the arms (back pressure)

- Tools: a regular iron bar weighing (20) kg, iron discs of different weights, bearers linked to a fixed seat).
- How to perform - from the position of sitting on the seat, grabbing the column of gravity while it is on the rack, then lifting it up behind the head, then bending and extending the arms upwards with maximum force for one time.
- Scoring method: - Three attempts are given and the best attempt is scored. (Allawi and Radwan: The previous source, 2011, p. 55)

2-4-3-2-2 Strength of power Tests:

1- Core muscle strength of power endurance test (deadlift test): -

- Tools used: (weight column (20 kg), steel discs of different weights, stopwatch).

- Method of performance The player stands in front of the weight, bending the knees, holding the iron bar, carrying the weight, and then extending the knees straight to the knees and repeating the performance until the time ends at the maximum speed, and the weight is strongly determined 45%.

- Recording method: Count the number of iterations within (30) seconds. (P72,2016, Ubied)

2- The strength test of the two rear legs:

- Devices and tools: (regular iron bar weighing (20) kg, iron discs of different weights, bearers, stopwatch).

- Method of performance: placing the column of gravity on the shoulders and resting on the neck and shoulders and holding the column of gravity with the breadth of the shoulders while maintaining a straight back position. %.

Recording: Counting the number of iterations for 30 seconds (Ubied, 2016, p77)

3- Arm strength test (back pressure)

- Tools: a regular iron bar weighing (20) kg, iron discs of different weights, bearers linked to a fixed seat, a stopwatch).

- Method of performance: From sitting on the seat, holding the weight of the column while on the carrier, then lifting it up behind the head, then bending and extending the arms up and repeating the performance until the time ends at the maximum speed, and the weight is strongly determined by 45%.

- Recording method: - Counting the number of iterations (within 30 seconds). (Ubied, 2016, p77).

2-4-3-2-3 Flexibility Tests:

1-.The Bergle test to measure the flexibility of the two legs.

Instruments: This test requires an approved scale and a ruler

Method of performance: The player slides the feet separately and sideways with lowering the body down until it reaches the zigzag to the ground if possible. And the tester must be steady in order to measure with the ruler horizontally.

2-A test (standing stick) to measure the flexibility of the arms

Tools: A cylindrical training stick, 2 cm in diameter and 120 cm in length, a tape measure.

Test procedure: the weightlifter stands holding the stick with the two fists in the middle so that the two fists are close together. The laboratory tries to raise the arms in front of the upper back and reach the stick behind the body as much as possible, provided the elbows are not bent. The distance between the two fists is measured after the stick is placed behind the body.

3-The forward bend test to measure the flexibility of the trunk.

Tools: box up to 75 cm.

Performance specifications: From a standing position together with fixing the pelvis, the laboratory bends the trunk forward to the maximum extent possible with commitment to fully extend the arms without bending, the distance is measured through the runway and recorded in centimeters from the top of the box to the maximum distance the hands can reach.

2-4-3-3 Achievement Test

Performing jerking weightlifts according to the legal steps is stipulated by the International Weightlifting Federation.

The player's best attempts are summed and then divided by the player's weight to find relative achievement

2.4-4 Pre-tests

The pre-tests for the search variables were conducted on Monday 7/8/2019 at four in the afternoon in the sports hall of the Medhatia Club.

2-4-5- Equivalence of the study sample to the study variables:

In order to reduce the error in the results resulting from the influence of the research variables, the two researchers conducted parity for two control and experimental groups in Physiological changes (T3, T4, Cortisol, Testosterone-- cpkEnzyme - Heart pulse rate) and body changes variables (the relative maximum strength, flexibility, achievement (through the results of the pre-tests through the T. test)) for independent samples as shown in Table (2)

Table (2)Equivalence of the study sample to the variables of the studied research

unit of measurement variables		Pretest		Post test		T-test value	Level of error	Type of significance
		Mean	SD	Mean	SD			
Physiological changes	T4	81.987	1,09	82.385	1.62	16.64	0.803	.No sig
	T3	10.7.856	0,053	10.795	0,876	4.87	0.612	.No sig
	cortisol	371.296	2,119	371.76	1,421	10.27	0.907	.No sig
	testosterone	396.141	15.73	396.54	17.95	16.64	0.653	.No sig
	Cpk	11.53	0.79	11.23	0.25	23.04	0.008	.No sig
	Heart pulse rate	82.4	0.69	82.47	3.18	5.87	0.0097	.No sig

Body changes	, maximum strength,	Arms	8.01	0.79	7,997	0.86	0.631	0.552	.No sig
		trunk	4.182	0.25	4.2	0.577	0.631	0.882	.No sig
		legs	4,347	0.69	4,417	0.816	1,550	0.935	.No sig
	Strength of endurance	Arms	8.25	3.18	9	0.957	1,550	0.784	.No sig
		trunk	8	0.222	8	0.86	0.085	0.868	.No sig
		legs	8	0.192	8.75	0.957	0.085	0.391	.No sig
	Flexibility	Arms	19	0.095	18.25	1	0.287	0.182	.No sig
		trunk	18.5	0.076	17	1.414	0.287	0.638	.No sig
		legs	18.25	0.574	18.5	1.29	0.173	0.391	.No sig
Achievement			1.02	0.566	1,07	1.25	0.173	0.215	.No sig

From Table (2) it can be seen that the value of (sig) for all research variables is greater than (0.05) and therefore we accept the null hypothesis that says that there is no difference between the scores of the control group and the experimental group and that the differences are not significant, which indicates the parity of the two research groups.

2-4-6- Application of the recovery training course

1. The recovery course started on Tuesday 9/7/2019 and ended on Saturday 9/21/2019.
2. The recovery course lasted for (10) weeks
3. The number of recovery units per week is three
4. Average of weekly Training Units 50-70 minutes
5. The total recovery units in the course are 30 units.
6. Time average of a training Unit 40-80 minutes.
7. Average recovery time per week (8-18 minutes)
8. Average time per recovery training course unit (6-16 minutes).
9. Determine the time of the recovery training course unit according to the intensity of the training unit, which ranged from (65% -100%).
10. The course was implemented immediately after the completion of the training modules.

11.. The recovery course continued even near competitions.

3-4-7- Dimensional tests: The two researchers conducted post tests on Sunday 9/22/2019. After completing the recovery training course on the experimental group and the control group after completing their course with their trainer for some Physiological changes, body changes and achievement for herking.

III. Results Presentation and discussion

3-1 Presentation of the pre and post test results of the studied research variables for the experimental group

Table (3) pre and post test results of study variables for the experimental group

unit of measurement variables		Pretest		Post test		T-test value	Level of error	Type of significance	
		Mean	SD	Mean	SD				
Hormones	T4	96.85	1,09	116.03	2.54	16.64	0.0082	sig	
	T3	20.009	0,053	24.175	0.023	4.87	0.0034	sig	
	cortisol	35.62	2,119	41.763	0.953	10.27	0.004	sig	
	Testosterone	396.076	15.73	430.01	7.252	16.64	0.007	sig	
	Cpk	11.53	0.79	13.1	1.587	4.214	0.024	sig	
	Heart pulse rate	82.4	0.69	71.76	1.489	7.571	0.005	sig	
Special Strength	, maximum strength,	Arms	7.99	0.22	9.95	2.463	6.62	0.007	sig
		trunk	4.182	0.095	8.61	0.344	23.04	0.008	sig
		legs	4.347	0.574	4.955	0.365	5.87	0.0097	sig
	Strength of endurance	Arms	8.25	0.5	10.25	1.445	4.899	0.016	sig
		trunk	8	0.716	10.75	1.393	11.08	0.002	sig
		legs	8	0.816	10.95	0.397	8.66	0.003	sig
	flexibility	Arms	19	0.916	22.01	1.345	8.66	0.0092	sig
		trunk	18.5	2.97	21.75	0.514	9.8	0.006	sig

		legs	18.5	1.29	20.05	1.587	7.87	0.003	sig
Achievement			1.12	0.566	1.42	0.117	10.15	0.002	sig

Through Table No. (3) we note that the statistical indicators of the results of the pre and post measurements of the experimental group of all the studied variables indicated that there are statistically significant differences between the pre and post measurements that the value of (sig) was less than the level of significance (0.05), and thus we accept the alternative hypothesis that states that there are statistically significant differences between the pre and post tests and in favor of the post tests.

• **Presentation of the pre and post test results of the studied research variables for the control group**

Table (4)

the pre and post tests in the study variables for the control group

unit of measurement variables		Pretest		Post test		T-test value	Level of error	Type of significance	
		Mean	SD	Mean	SD				
Hormones	T4	87.36	2.164	106.63	1.62	19.500	0.0082	sig	
	T3	20.932	0.121	22.475	0,876	5.960	0.0034	sig	
	cortisol	36.68	4.92	39,421	1,421	10.480	0.004	sig	
	Testosterone	397.012	67.36	427.882	17.957	18.890	0.007	sig	
	Cpk	11.23	0.25	13.1	0.58	8.46	0.003	sig	
	Heart pulse rate	82.47	3.18	76.85	0.68	10.25	0.002	sig	
Special Strength	, maximum strength,	Arms	8.01	0.192	9.177	0.427	7.739	0.004	sig
		trunk	4.2	0.761	7.61	0.101	5.934	0.013	sig
		legs	4.417	0.566	4.655	0.661	5.143	0.014	sig
	Strength of endurance	Arms	9.00	0.816	10.25	0.88	8.66	0.003	sig
		trunk	8.00	7.5	10.75	0.957	3.806	0.032	sig
		legs	8.75	0.957	10.5	0.63	13.00	0.001	sig

flexibility	Arms	18.25	0.957	21.5	0.95	7.3	0.006	sig
	trunk	17	1.414	20.75	1.25	11.8	0.002	sig
	legs	18.25	1.25	20.75	1.5	9.53	0.003	sig
Achievement		1.07	0.118	1.18	0.02	7.739	0.004	sig

Through Table No. (4) we note that the statistical indicators of the results of the pre and post measurements of the control group for all the studied variables indicated the existence of statistically significant differences between the pre and post measurements that the value of (sig) was less than the level of significance (0.05), and thus we accept the alternative hypothesis that It states that there are statistically significant differences between the pre and post tests for the control group group and in favor of the post tests.

• Results of dimensional tests of research variables for the experimental and control group

Table(5)the results of the dimensional tests of the study variables for the experimental and control group

unit of measurement variables		Experimental group		control group		T-test value	Level of error	Type of significance	
		Mean	SD	Mean	SD				
Hormones	T4	116.03	2.54	106.63	1.62	19.50	0.0082	sig	
	T3	24.175	0.023	22.475	0,876	5.960	0.0034	sig	
	cortisol	41.763	0.953	39,421	1,421	10.48	0.004	sig	
	Testosterone	430.01	7.252	427.882	17.957	18.89	0.007	sig	
	Cpk	13.1	0.58	13.1	0.58	8.46	0.003	sig	
	Heart pulse rate	81.85	0.68	76.85	0.68	10.25	0.002	sig	
Special Strength	, maximum strength,	Arms	9.177	0.427	9.177	0.427	7.739	0.004	sig
		trunk	7.61	0.101	7.61	0.101	5.934	0.013	sig
		legs	4.655	0.661	4.655	0.661	5.143	0.014	sig

	Strength of endurance	Arms	10.25	0.88	10.25	0.88	8.66	0.003	sig
		trunk	10.75	0.957	10.75	0.957	3.806	0.032	sig
		legs	10.5	0.63	10.5	0.63	13.00	0.001	sig
	flexibility	Arms	21.5	0.95	21.5	0.95	7.3	0.006	sig
		trunk	20.75	1.25	20.75	1.25	11.8	0.002	sig
		legs	20.75	0.58	20.75	1.5	9.53	0.003	sig
Achievement			1.42	0.117	1.18	0.02	3.806	0.032	sig

Table (5) we note that the statistical indicators for the results of the dimensional tests for all the research variables studied and for the experimental and control groups showed that there are statistically significant differences between the dimensional measurements in favor of the experimental group. What confirms this is the value of (sig) shown in Table (5) for all variables Where the research was less than the significance level (0.05), we accept the alternative hypothesis that states that there are statistically significant differences between the scores of the telemetry and the experimental group in favor of the telemetry.

Discussing the results of the pre and post tests for the experimental group and the control group:

The results in Table (3) (4) indicated that there are significant differences between the results of the pre and post tests for the experimental group for all variables and in favor of the post tests for the members of this group, and the reason for the appearance of the results is shown in this way as follows:

- The results indicated that there are significant differences between the pre and post test for the experimental group and in favor of the post test. The researchers attribute that improvement in the recovery training course that helped increase the adequacy of the physiological muscles and restore their activity and the activity of the nervous system, and the improvement in the effectiveness of neural instructions, which leads to impeding access Nerve signals and their failure to reach inside the muscle fibers smoothly, and this reduces the possibility of rapid contraction and relaxation of the muscles, and then the level drops (Howard G. Knuttgen& other; 2003, p: 60). Thus, the recovery course helped in reducing some of the body's internal reactions that are affected by the training pregnancy and getting ready for the next training unit, and recovery is the functional state that the individual goes through after physical work and until returning to a normal state. "He confirms (Zahir, 2006): Healing is the critical and important factor that allows for high performance, training is determined by a mixture of excitement and healing (Zahir: 2006, p. 312).

It is also worth noting that determining the length of recovery periods was consistent with the size of the effort, the loads and training stresses, which allow as much as possible to complete the healing process, in addition to that it was derived from the fatigue of the players themselves after direct access by the researchers to

what the players train in their daily units and follow Measure in that so that recovery is appropriate or appropriate to the intensity of the training load, which is one of the types of rapid recovery that occurs at the end of the training unit . Ibrahim(2008) states that one of the most effective ways to achieve such goals is to use different healing recovery methods. 2008, p.131).

In addition, it is worth noting that the recovery training course used has shown its effectiveness in the recovery processes, the balance of vital energy and the rebuilding of energy sources in a shorter period of time, which was characterized by the rebalancing of the building processes in the metabolism as this led to an increase in the breakdown of creatine phosphate for energy production. According to what was mentioned (Al-Bishtawi, 2010, p. 246). The physical fitness of an athlete is different from one person to another. The higher the individual's physical fitness, the shorter the time period for the return of normal enzyme activity, and the lower the physical fitness, the shorter the time period.

As for the control group, and through what is mentioned in Table (5), it has been proved that there are differences between the pre and post tests and in favor of the post test, and the researcher attributes that to the development to the players 'commitment and continuity in the performance of training units, as well as the training curriculum presented by the trainer which helped to show these differences In addition to the competition between the two groups, and despite this development of the control group, the development was less than the experimental group and all the research variables studied and the table (). The researchers attribute that as follows:

- Hormonal (T3, T4): The researchers attribute the results of these results to the fact that the recovery training course led to a rise in temperatures and an increase in neurological reflexes and associated devices, accompanied by sweating, and this leads to a greater blood flow that will lead to direct stimulation of the heart and thyroid gland, which It is a catalyst for the production of thyroxine, as the high blood flow leads to the activity of this gland, and this is confirmed by (Narrator and Solomon, 1988) that the increased activity of the thyroid gland will lead to an increase in the activity and efficacy of the rest of the body's systems, the exchange of thyroid secretions and their stimulation by the body's systems and stimulation Thyroid parts of the body and the accompanying activity of all cells of the body, since the thyroid gland is responsible for the metabolism in cells (Al-Rawi, Solomon: 2008, p.25)

As regard the hormone cortisol, the researchers attribute the results to that the recovery training course developed with the training curriculum according to scientific foundations and the legalization of periods of rest and recovery training course has worked to increase the level of concentration of the hormone cortisol as (cortisol rises with the severity of pregnancy and that the increase in its level in the blood occurs with pregnancy. High intensity only (Australian, 1994).

As for the testosterone hormone: the researchers attribute these differences as a result of the recovery training course that contributed to increasing the renewal of protein and amino acid stores inside the cells and thus contributed to the increase in the percentage of growth hormone (the growth hormone secretes directly the transfer of some amino acids through the cell membranes into the cell and increases the concentration Amino acids in cells and are partly responsible for protein synthesis ((Guyton and Hall, 2017, p. 123), as is consistent with what he indicated (Australian, 1994) (the hormone actively contributes to protein accumulation) (Australian, 1994. p43)).

With regard to the body changes variables and achievement: the results indicated that there are significant differences between the pre and post tests and in favor of the post test. The researchers attribute that improvement in the recovery training course that worked to reduce the load and stress in the nervous and muscular systems as a result of the intensity of their daily training, which worked on Events of physiological adaptations that increased their ability and made it easier for them to receive information on how to implement it on the one hand, and to restore the ability of the body's systems to perform them as required without decreasing the level on the other hand. (Al-Ali and Fathi, 2008) believes that “ recovery training courseization after physical effort for the purpose of reducing the amount and intensity of lactic The accumulated muscle that works to reduce fatigue (Al-Ali, Fathi; 2008, p. 188).

In addition, the indirect effect on the rest of the physiological variables helped the emergence of these results, as the increase in the speed of renewal of energy stores needed for performance and thus contributed to the increase in the manufacture of protein and amino acids inside cells and thus contributed to an increase in the percentage of growth hormone (the growth hormone is secreted in the form Direct transfer of some amino acids through cell membranes into the cell and increases the concentration of amino acids in cells and is partly responsible for protein synthesis (Australian, 1994.p43).

It should be noted that physical development is the basis for the development and adaptation of the functional apparatus .Results of Table (5) indicated an improvement in the proportions of Physiological changes in general for the player and thus this was reflected in the player's body changes.

IV. Conclusions and Recommendations

Conclusions

1. The recovery training course used by the experimental group has a positive effect on improving Physiological changes (T4-T3-cortisol-testosterone-- cpk - Heart pulse rate).
2. The recovery training course used by the experimental group has a positive effect on improving the body changes (the maximum relative strength of the arms, trunk and legs, the strength endurance of the muscles of the arms, trunk and legs) and achievement in terms of For post-tests compared to pre-tests for weightlifting teenagers.
3. The recovery training course has the advantage of a positive effect compared to the control group in improving Physiological changes(T4-T3-cortisol-testosterone--- cpk - Heart pulse rate) among the weightlifters.
4. The recovery training course has the advantage of a positive effect compared to the control group in improving body changes(maximum strength, and strength endurance) and achievement for weightlifters.

Recommendations:

The researchers recommend the following:

1. The recovery training courseis an essential equipment as highly effective means of healing for the players.

2. The use of the two recovery Training course after the training modules for their importance in speeding up physical recovery.

3. Attention to recovery in all its stages and the need to use advanced means and technology to achieve the necessary recovery for players.

References

1. Anis Malik Al-Rawi and Riyadh Rashid Suleiman: Al-Adwiyya Vital Activities, Baghdad, Ministry of Higher Education and Scientific Research Press, 2008.
2. Hussein Ali Al-Ali and RafeaSalihFathi: Theories and Applications in Mathematical Physiology: Baghdad; Faculty of Physical Education ; 2008.
3. Abdel-Rahman Abdel-Hamid Zaher: The Physiology of Massage and Sports Recovery, 1st Edition: Cairo; Book Center for Publishing, 2006.
4. Abdul Karim Mahmoud; Design of a fitness measuring battery for advanced students in the Police College, Master Thesis, College of Physical Education, University of Diyala, 2007.
5. Guyton and Hall: The reference in medical physiology, translated by Sadiq Al-Hilali, World Health Organization, 2017.
6. Laila El-SayedFarhat: Sports tests for individual games, 2018.
7. Muhammad Hassan Allawi and Muhammad NasreddinRadwan. Kinetic Performance Tests, 1st Edition, Cairo, Dar Al Fikr Al Arabi Press, 2001.
8. Muhammad Reda Ibrahim Al-Madamagh: The Field Application of the Theories and Methods of Sports Training, 2nd Edition: Baghdad; Faculty of Physical Education ; 2008.
9. MuhannadHussain Al-Bishtawi, Ahmed Ibrahim Al-Khawaja: Principles of Sports Training, 2nd Edition, Amman, Wael Publishing House, 2010.
10. Australian Sports medicine foundation: the textbook of Sports nutrition, hightstown, Nj, mcgraw-hill,1994 .
11. Howard G. Knuttgen& other; Strength and power in sport: Library of Congress Cataloging-in-Publication Data, 2003.
12. Karu TI. Multiple roles of cytochrome c oxidase in mammalian cells under action of red and IR-A radiation. IUBMB Life. 2010.
13. Loturco I, et al. Effects of rays emitting clothing on recovery after an intense plyometric exercise bout applied to elite soccer players: a randomized double-blind placebo-controlled trial. Biol Sport. 2016;3
14. MuhammeedHussienUbied ,The effect of training loads by forced reps and descending pyramid training methods in development of body changes , motor stream of weight and snatch lift achievement for advanced lifters, Master of Physical Education,2015.
15. Santana-Blank LA, et al. Phase I trial of pulsed laser device in patients with advanced neoplasias. Clinical cancer research. 2002.