



RESEARCH ARTICLE

EFFECTIVENESS OF A MUSCLE STRENGTH DEVELOPMENT PROGRAM ON ANABOLIC ANDROGENIC STEROIDS FOR WEIGHTLIFTERS

1,*Mohamed Abd-Elrahim Badawy and 2Mohamed Mohamed Ali

¹PhD Researcher at Sports Health Sciences Department, Faculty of Physical Education, Minia University, Egypt

²Assistant Prof. at Sports Health Sciences Department, Faculty of Physical Education, Minia University, Egypt

ARTICLE INFO

Article History:

Received 16th August, 2020
Received in revised form
29th September, 2020
Accepted 17th October, 2020
Published online 30th November, 2020

Keywords:

Muscle Strength, Anabolic Androgenic Steroids, Weightlifters, Egypt.

ABSTRACT

Aim: The current study aimed to identify the effect of a muscle strength development program on anabolic androgenic steroids for Egyptian weightlifters. **Methods:** The researchers used the experimental approach with the design of one group and the application of pre and post measurement to suit the nature and purpose of the research. Sample of the research is represented of Seven (7) male weightlifters (Mean age \pm SD: 21.7 \pm 2.6 years; Height \pm SD: 173.3 \pm 5.2 cm; Weight \pm SD: 79.1 \pm 9.6 kg) from Sohag Governorate, Egypt. **Materials:** The researchers used a set of muscle strength, biochemical tests and physiological measurements for the weightlifters. **Results:** Muscle strength training of all kinds can be relied upon to activate the body's physiological, biochemical, anthropometric, physical and technical capabilities to achieve the highest benefit from it, as it plays an important and fundamental role in reaching the player to the highest possible sporting achievement in the sport of weight lifting.

Copyright © 2020, Mohamed Abd-Elrahim Badawy and Mohamed Mohamed Ali. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Anabolic steroids with male anabolic steroids have male effects represented in the development and maturation of secondary male characteristics in addition to their anabolic effects, which lead to an increase in protein formation within cells, which results in an increase in the building of skeletal muscle.

This may be due to the presence of androgen receptors in abundance in them and thus the possibility of increasing their mass and strength, and cholesterol represents the main substance for all steroid hormones, as it is obtained from food or by its synthesis by many cells that make up steroid hormones. (4: 362) (8: 1448). Testosterone is one of the steroid hormones that are secreted from the Leydig cells in the testicles and the adrenal cortex in men, while the adrenal cortex is the main source of testosterone in women, and among the steroid hormones that are secreted from the Leydig cells in the testicles and the adrenal cortex in men, testosterone is the strongest male hormone and its secretion rate ranges from 2.5 - 11 mg / day in an adult, while the rate of excretion is 0.25 mg in women, and the hormone testosterone works on the growth of muscles and bones in males. (1: 532). Here, the importance of the relationship between physical exercise and the percentage of lipoprotein and male hormones, as physical training improves the level of HDL, due to the presence of male

hormones in boys, and it has been shown that the hormone (testosterone and estrogen) positively affect the improvement of LDL after physical training for ten weeks, so Muscular strength training that depends on the use of advanced devices, training methods and advanced methods, and takes forms of multiple exercises in which resistance and appropriate weights are used are among the best ways to develop and increase muscle strength. (5:246) (6:41). The researchers noted that after puberty and up to the age of about 25 years, players lack the elements of maximum strength and endurance of strength and strength distinguished by speed and explosive force as necessary, which gives them an advantage to win advanced positions in these games, which players must be distinguished by a better external body shape and greater specialized strength. This is as a result of neglecting high-intensity resistance training in training programs to prepare players. This was reflected in the decline on the physical and technical levels, and accordingly it was necessary to raise the players' efficiency in the physical elements referred to above in order to bring about a change in muscle strength rates and thus improve performance. Therefore, it was necessary for the researchers to conduct this research which aims to study the effect of a muscle strength development program on anabolic androgenic steroids for weightlifters. So, this research may contribute to directing the interest of researchers to conduct scientific studies similar to the use of high-intensity resistance training with other sports players, as well as research and uncover the real biological causes behind the levels of change and improvement.

*Corresponding author: Mohamed Abd-Elrahim Badawy, PhD Researcher at Sports Health Sciences Department, Faculty of Physical Education, Minia University, Egypt.

With highlighting the influence of the muscle strength development program on anabolic androgenic steroids and the improvement of the physical performance level (maximum strength, speed characterized by speed, strength endurance) for weightlifters.

TERMS OF THE RESEARCH

Steroid hormones: They are the hormones secreted from the testicles, ovaries and adrenal cortex and are derived from cholesterol, and they have the ability to dissolve in fats, penetrate the cell membrane and bind to their receptors and directly activate some DNA genes to synthesize new proteins, and these hormones also play an important role in metabolism For carbohydrates, mineral salts, body water balance and reproductive system functions. (3: 136)

Anabolic Steroid: They are synthetic substances or compounds that work in a similar way to the sex hormone (testosterone) and have the ability to bind to its receptors, and are taken by athletes with the goal of increasing body mass and muscle strength. (7: 224)

MATERIALS AND METHODS

Method of the research: The researchers used the experimental approach with the design of one group and the application of pre and post measurement to suit the nature and purpose of the research.

Participants: Seven (7) male weightlifters (Mean age \pm SD: 21.7 \pm 2.6 years; Height \pm SD: 173.3 \pm 5.2 cm; Weight \pm SD: 79.1 \pm 9.6 kg) from Sohag Governorate, Egypt volunteered to participate in this study, and they were informed about the aims and procedures of the study.

Applying the research: After determining the sample and testing the data collection tools and confirming its validity and reliability, the researchers applied it on all the sample individuals. The application period was from 26/06/2018 to 24/09/2018.

Statistics: An SPSS statistical package (version 22) was used to analyze the data. The collected data was processed using the percentage, correlation coefficient, Tyo-Kyi-test, Mann-Whitney non-parametric test, Wilcoxon Lab Parametric Test and the percentage and chi square.

RESULTS

It is clear from Table (1) that: There are statistically significant differences in the percentage change between the pre and post measurements of the research sample in: muscle strength, biochemical tests, and physiological measurements of the weightlifters under study in favor of the post measurements.

It is clear from Table (2) that: There are statistically significant differences in the percentage change between the pre and post measurements of the research sample in: the technical performance Level of the weightlifters under study in favor of the post measurements.

DISCUSSION

The current study shows a decrease in testosterone concentrations at the end of the program and through the post-measurements of the sample under investigation, from the concentrations recorded by the pre-measurements in the beginning of the study for the testosterone biochemical variable of the sample under study, as the testosterone that is produced in abundance as a result of high resistance training is consumed Firstly, with the continuation of the training dose despite its continuous increase, which is originally reflected in the increase in protein quantities that result from the catabolism resulting from training and the construction resulting from the stimulation of testosterone to compensate for that catabolism, this shows an improvement in the ability of the muscle to produce strength of all kinds.

As for Table No. (11), which indicates an improvement in percent change percentages, which indicates improvement in general in the percentages of the variables under investigation and improvement rates for biochemical variables for the players, the research sample from the weightlifters under investigation is in favor of the post measurement. As for Table No. (11), which indicates the existence of a percentage improvement in the sample of weightlifting under consideration in the physical variables (maximum strength of the push-pull muscles with arms - the maximum strength of the push-pull muscles with the legs - the maximum strength of the pull-ups in the back - the force characterized by velocity (strength Explosive) Throwing a medical ball weighing 5 kg from the back of the head with the arms from standing with the legs open - the force characteristic of speed (explosive force) the vertical jump - carrying the force (sitting from lying down squatting for 1 minute) and this is an indication of the improvement of muscular strength of all kinds subject to the current research, which is strength Maximum strength, characteristic of velocity (explosive force) and endurance of force refer to achieving the goal of the program set up because it has a positive effect on the muscle strength component, and here the general ratios indicate an improvement in the weight sample significantly in the physical variables under investigation.

As for Table (11), which indicates the improvement in the percentage change of the weightlifting sample under consideration in the physiological variables (pulse at rest - systolic blood pressure - diastolic blood pressure), this reference to improvement indicates that the goal of the program for which it was established has been achieved and so. Because it has a positive effect on physiological variables. As for Table No. (12), which indicates the percentage improvement of the weightlifting sample under consideration in the technical variables, for weightlifting skills (snatch - jerk), this reference to improvement indicates the achievement of the goal of the established program because of its positive impact on the technical variables. This indicates the reflection of the increase in muscle strength in all its components and parts, and here the general ratios indicate that there is a significant improvement in the sample of weightlifting players in the technical variables under consideration, given the rate of skill improvement of the weightlifting sample, and that fulfills the fourth hypothesis.

Table 1. Percentage change in muscle strength and biochemical tests and physiological measurements of the weightlifters (N = 7)

VARIABLES	TESTS	PRE-TEST	POST-TEST	PERCENTAGE CHANGE
MUSCULAR STRENGTH	Push muscles	100.00	155.00	%55
	Leg muscles	59.29	100.00	%67
	back muscles	76.07	97.14	%28
	Throwing a medical ball	6.28	7.44	%18
	Vertical jump	38.57	47.00	%22
BIOCHEMICAL TESTS	Sit down	37.57	47.57	%27
	serum cholesterol	172.14	155.71	-%10
	HDL	47.86	51.86	%8
	LDL	103.76	91.97	-%11
	cortisol- AM	12.20	8.46	-%31
PHYSIOLOGICAL MEASUREMENTS	total testosterone	6.07	5.20	-%14
	Free testosterone	19.88	13.99	-%30
	Pulse at rest	75.00	64.14	-%14
	Systolic blood pressure	114.29	111.43	-%3
	Diastolic blood pressure	71.43	66.43	-%7

Table 2. The percentage change in the technical performance Level of the weightlifters (N = 7)

VARIABLES	TESTS	PRE-TEST	POST-TEST	PERCENTAGE CHANGE
TECHNICAL PERFORMANCE	Snatch	63.57	72.86	%15
	Jerk	93.93	103.93	%11
	Total	157.50	176.79	%12

Conclusions

Based on the data collected by the researchers and in light of the objectives and hypotheses of the research and the methodology used in it, and based on the results demonstrated by the study, the following conclusions were reached:

-) Muscle strength training of all kinds can be relied upon to activate the body's physiological, biochemical, anthropometric, physical and technical capabilities to achieve the highest benefit from it, as it plays an important and fundamental role in reaching the player to the highest possible sporting achievement in the sport of weight lifting, which is consistent with a study Ghigi Arelli (2009) (2).
-) The muscle strength development program (maximum, characterized by speed, endurance force) used in the research showed a significant improvement in the physical, physiological, biochemical, and technical variables under investigation in the weightlifting sample.
-) The muscle strength development program affected the sample adversely in some points. The increase in strength training with high intensity and resistance reduces the concentration of testosterone in the blood, as well as cholesterol, as well as low-density fats and morning cortisol, in the biochemical variables, and the decrease in the heart rate during rest in the physiological variable.
-) The muscle strength development program affected the sample directly at some points. The increase in strength training with high intensity and resistance increased the concentrations of high-density lipids in the biochemical variables, as well as the rates of muscle strength of all kinds and made a remarkable improvement in the technical level of the sample.

Acknowledgement

The Researchers offer sincerely thanks and great appreciation to all those who contribute to make this work to appear to its fullest, particularly the experts in the field.

REFERENCES

1. Friedl K. E., Kraemer W. J. and Rogol A. D. (2005): Effects of testosterone and related androgens on athletics performance in men In the Endocrine System in Sports and Exercise. Eds. Malden, MA: Blackwell Publishing, pp.525-539.
2. Ghigi arellijj (2009): The effects of a 7-wk heavy elastic band and weight chain program on upper body strength and upper body power in a sample of a division a football player, J. strength Cond. Res 23 (3), :756-764.
3. Jack H. Wilmore, and David L. Costill (1999): physiology of sports and exercise, 2nd ed, p.159- 172.
4. Kochakian CD (1993): History, chemistry and pharmacodynamics of Anabolic-androgenic steroids Wien Med. Wochenschr, 143:359-369.
5. Salamah, Bahaa (2008): Biochemical properties of sport physiology, Dar Al-Fikr Al-Arabi, Cairo. (In Arabic)
6. Salamah, Bahaa (2009): Physiology of Exercise, Dar Al-Fikr Al-Arabi, Cairo. (In Arabic)
7. Thiblin I, Runeson B, Rajs J. (1999): Anabolic androgenic steroids and suicide. Annals of clinical Psychiatry ,11:223-231.
8. Wilson J (1996): Androgen in Hardman, Limbird, eds, Goodman and Gilman's the pharmacological basis of therapeutics. 9th edition. New York: Mcgraw-Hill, 1441-1457.
