

The effect of a training program on the development of the maximal strength for weightlifting beginner's performance

Khaled Abdel-Raouf EBADA

Department of theory and applications combats and individual sports, Physical Education of sport in Port Said University, Egypt
E-mail: kebada@phyd.psu.edu.eg

ABSTRACT

This study aims to set a training program of maximal strength development and know the effect of training program on the achievement level of performance. The study has been applied to a sample conducted of (10) weightlifting beginners in Ismailia / Egypt. The range of age is from (13.20 ± 0.78 years), length is from (155.50 ± 10.38 cm), and the weight is (69.18 ± 10.28 kg) for the weightlifting beginners. The researcher used the experimental approach to design one group; the experiment was applied to the suggested training program which consists of exercises similar to the motor performance of the Snatch, Clean & Jerk skills and the exercises for developing the maximal strength of muscles. Maximal strength training program was trained at every training session for three months (3 x per week) and the training session lasted 2 hours. The results revealed the effectiveness of the training program, increasing the maximal strength muscles as well as improving achievement level of performance for weightlifting beginners.

Key Words: Maximal strength, training program, snatch, clean and jerk, performance, weightlifting beginners

INTRODUCTION

By using various methods of force divided into maximal strength, explosive strength, reactive power and strength endurance sense (3,14,15,23,44). The different training goals are formed by certain types of training and methods. Closer to these types of force, is to refer to the consequences of relations: maximum strength, explosive strength, reactive power and muscular endurance are to develop different training methods. Explosive strength and reactive power depend heavily on the maximal strength (3,15). The nervous control of the neuromuscular system, the so-called intramuscular coordination, which is expressed in the ability, arbitrarily as soon as possible to enable the existing potential for power is of particular importance to quick and reactive power. To a lesser extent, also the muscular endurance of the maximal strength is dependent on Martin el al. (29), Joch and Ückert (20).

In weightlifting, the technique to optimal use of the dumbbell an optimal orbit to move as well as the power of the way of lifting consists (8). The ability of an optimal force production has significant impact on performance. The power development is significantly affected by the optimal position of the body position and the joint angles in the different stages of the movement (35).

When the maximum power is reached, the organism only to 10% is supplied with oxygen. During the dynamic and static work of highest intensity the highest degree of energy can be achieved by respiratory arrest and burden (47). The

influence of hormones on the increase in muscular strength and the energy of children and young people is of great importance. Muscular work altered hormone levels. So the levels of norepinephrine in the blood can double after a medium-sized and heavy work, the number of growth hormones. The Kortisolspiegel increased only after intensive training. In training and competitions with higher loads athletes resort increasingly to pharmacological means, to make the body more efficient. So-called synthetic sex preparations are used in some countries, which increase the natural male sex hormone testosterone as Nerabol, Dianabol, Retabolil and others, products. They have anabolic properties, i.e., they result to a rapid reactivation of the organism after charges. The development of the power of the type of activity as well as the intensity and the State depends on Tsolakis el al. (40), Grosser el al. (12). The use of such artificial substances is forbidden and is regarded as doping.

The contraction involves always an isometric and a concentric share when weightlifters. The contraction is so long isometric met until the muscularly evolving power of the existing load. Only when the power is optimal, the weight of the dumbbell moves. The acceleration-effect shares power development is the less, depending on the load is closer to the maximum strength (15).

The values of the maximum force of the static force performance of people are reached very much, which force values of this during a dynamic work. There are no major differences between the maximum power and the maximum weight that can be raised in the same motion (35,38). In

weightlifting, the size of the upper weight is tearing or poking between 35 and 55% of isometric force measured in critical situation with squats of 135 degrees (37).

Many recreational sports and in particular weightlifting fast movements in an eccentric way of working come about with often eccentric maximal strength is necessary. By Ehlenz et al. (10) eccentric maximal strength is "the concentric and eccentric strength in shortest possible coupling of both phases of the work, so in a strain-shortening cycle." This means that a muscle in tense State is stretched against the direction of his work, what is known as eccentric contraction and is again contracts then (concentric contraction). This occurs in the initial stage in the weightlifting, so that the knee extension in a specific range of knee angle can develop to the highest possible power. Shifts the power tips in the direction of the smaller angle of the knee during a workout with long ongoing deep squats see Tihanyi (37), Danisch and Bensch (7). The technique in the Snatch, clean and jerk, bent the knee joint and stretched the knee lines muscles thereby. Then, the knee joint is stretched. It applies eccentric strength training, which can contain for example the forementioned low jumps to improve of the strain-shortening cycle Cf. Ehlenz, et al. (10).

From the literature, we know three forces: the explosive strength, muscular endurance, and the maximal strength (11,21). The greatest impact on performance in weightlifting is the maximal strength undoubtedly to and seconds the strength (36). The goal of weightlifters in the competition is a maximum weight of weight - in the framework of the prescribed rules of practice - to the high line (14,42).

The methods standard in the training were used to determine of objective and subjective changes of selected and deemed relevant characteristics, which causes through a three-month, controlled weight lifting training in children's and youth's weightlifter with strength training.

The present work is to make a contribution to assess the currently controversial importance of weight lifting training in children and adolescents. Strength training with free weight was carried out at every training session. This global objective should be achieved by editing the following questions: How do changes affect the max. Time force and services in maximum weightlifting the body development of children and youth weightlifting after a three-month weightlifting training.

MATERIALS AND METHODS

The study was conducted / applied on weightlifting Ismailia / Egypt on a sample of (10) beginners. The area of age (13.20 ± 0.78 years), length by (155.50 ± 10.38 cm), and the weight is (69.18 ± 10.28 kg) for the beginners weight-lifting. The researcher used the experimental approach of design group, the experiment has been updated so that skills and exercises for the development of maximal strength of the muscles are the proposed programmers of exercises which tear the similar to the mobile performance and encounter.

The researcher to measure maximal strength and performance level of the skill of Snatch and clean&jerk sample individuals who search through reference survey done by the researcher for reference and research in the sport of weightlifting to determine methods of measuring the maximum level of achievement and skill Snatch and clean&jerk who were possible to the following tests that have been used in many research's and studies and tests (Power Snatch, Snatch Pull, Clean classic, Power Clean, Clean Pull, Jerk from the stand, Power Jerk from the stand, Front Squat, Back Squat (2,13,18,19,33,34).

The investigation found that all weightlifting children and youth were examined at the start of the training period and during the course of the training, and after three-month training. The investigation began to end of the 1st competition period competition period and part of the 2nd transitional period included the 1st period of transition, as well as the 2nd The temporal classification of study found in the plan in the Egypt weightlifter Association for children and young people held usual periodization.

The end of the investigation was identical for all tested 10 subjects and extended a total of nine appointments, a week in the pre-test and post-test week. The maximal strength training program was trained at every training session (3 per week) and the training session lasted one to two hours.

The advantages and follow-up took place Monday and Wednesday in a week time corridor before and after the three-month weightlifting training program in the Ismaily - Egypt, each Saturday, Monday and Wednesday. This was to ensure that the subject was examined each on two dates at the same time as possible. The advantages and follow-up had the same result. In pre-and follow-up examination following were measured: Max one-time power and maximum performance in weightlifting (16,40,45,48).

Experimental study, a two-time repeat test was developed intended to check the maximum performance in the strength training and technology performance. To do this, the maximum strength training of weightlifting in childhood and adolescence were examined.

The children and young people normally go to the school and train the prescribed training program with the weight not there, but only in the Club. You have no other sports. The actual net time of the training is 33-96 minutes (gross, two hours) (9).

The scope of the training load is determined by the number of training units per week and their duration. In childhood and adolescence three workouts per week every 2 hours meet at the beginner stage duration during the entire course of the training cycle (30). After two years of training, four training sessions are scheduled for the 2nd stage of the preparation period of the same duration (2 hours). Thus the scope of the training work increases week quite significantly. 3-4 training days are provided for the general preparation stage 2 hours a week each. For the stage (II) special preparation and for the competition period there are four training days to each 2-2.5 hours; in the transitional period, still 2-3 training sessions each are 2 hours per week see Lukjanow and Falamejow (28), Carl (5), Worobjow (47), Lear (27), Ebada (9).

Training Program

The training program on the development of the maximal strength for beginners weightlifting performance

The objective of the program	The training program on the development of the maximal strength for beginners weightlifting performance
Program duration	The program continues for a period of 12 weeks (3) day after day weekly units
Age group	Age group 12-14 years
Training period	Period setup
Training method	Ring training

Table 1. Statistics-test for the maximal strength (after Wilcoxon) for the beginners weightlifting between pre-and post-test

	Variables		Pre-test		Post-test		z	Asymp. Sig. (2-tailed)
			Average	S.	Average	S.		
Maximal strength 1RM	Power Snatch	Kg.	47.45	3.08	53.50	2.41	-2.911	0.004*
	Snatch Pull	Kg.	70.25	4.77	75.00	4.85	-2.814	0.005*
	Clean classic	Kg.	73.00	4.21	75.80	4.23	-2.827	0.005*
	Power Clean	Kg.	71.70	13.43	74.40	13.16	-2.859	0.004*
	Clean Pull	Kg.	85.20	7.00	87.40	6.86	-2.877	0.004*
	Jerk from the stand	Kg.	73.00	4.83	75.90	4.45	-2.913	0.004*
	Power Jerk from the stand	Kg.	73.50	2.41	75.40	2.22	-2.850	0.004*
	Front Squat	Kg.	90.00	10.00	93.90	9.57	-2.850	0.004*
	Back Squat	Kg.	98.70	6.07	102.80	7.19	-2.831	0.005*

The Z= value ± 1 , 96 at the level of 0.05 (double sided)

Statistical analysis

The statistical analysis of experimental data: the Wilcoxon test is done with the help of statistics software - Pro programmer SPSS, version 18, for independent samples, the mean values of two independent variables compared to example data two measurement values.

RESULTS

Tests of the difference between the point table (1) maximum strength, as well as the Significance from the Wilcoxon test for the youth weight lifting between pre-and post-test after three-month weightlifting training.

Table 1 shows the results: significant statistical differences to test maximal strength (after Wilcoxon) for the beginners weightlifting between tribal and standard dimensional maximum muscle strength tests of muscles involved in snatch, clean & jerk. Where the value of < 0.05 P in all variables search which shows statistically significant differences between tribal and dimensional standard for dimensional measurement.

Table 2. Statistics-test for the performance of the snatch and jerk (after Wilcoxon) for the beginners weightlifting between pre-and post-test

Variables		Pre-test		Post-test		z	Asymp. Sig. (2-tailed)
		Average	S.	Average	S.		
snatch	kg	58.60	11.27	61.40	11.41	-2.877	0.004*
Clean and Jerk	kg	71.70	13.43	76.20	13.53	-2.825	0.005*
Total results (Snatch, Clean and jerk)	kg	130.30	24.62	137.60	24.88	-2.823	0.005*

The Z= value ± 1 , 96 at the level of 0.05 (double sided)

Table 3 shows the results of the statistics test for the snatch and jerk performance as well as the Significance from the Wilcoxon test for beginners weightlifting in the pre-and post-test. Three significant differences between the two have been identified in the pre-and post-test test on the performance of the travel and poking. The null hypothesis can be discarded. In the snatch, jerk and overall performance total results (snatch, Clean and jerk) was $p < 0, 05$.

DISCUSSION

All weightlifting children and youth were the maximum performance in weightlifting at the start of the training period and during the course of the training, and after three-month training. The comparison was referring to a test at the start of the training period (pre-test) and a test to the end of the training period (post-test). The comparisons were differentiated with regard to group.

Maximum of muscle mass be rendered the performance is used as the main achievements of the generation of maximal strength that is required for maximum performance in weightlifting. Therefore, it is understandable that in adult top weightlifting the relative muscle mass with approximately 50% of body mass far above the average of adult men is, that have only a weighting of about 35% due to reduced requirements under the technological environment. Similarly, it is apparent that is between the performance in weightlifting and body weight a highly significant correlation is ($r = 0.80$ to 0.93). For this reason it is useful and actionable to put research and diagnostics of power values for maximum performance in relation to body weight (17,24,49). In contrast to the young people, significant performance (maximum weight) in the snatch and jerk could be identified in the children by the three-month training. The small increase in performance with the children can

bring back children probably primarily to the low volume and/or the low intensity of the training still not load familiar. In addition, the low still in this age anabolic effects due to lack of testosterone production of influence are. It was observed that the lifting techniques, relatively low learning curve, not significantly improved in this for complex motor actions, so that they would contribute to performance. The significance increase in performance among young people is due mainly to the recent very favorable physiological conditions. During this age the testosterone production reached extremes, which explains the strength gains by anabolic effects (muscle hypertrophy). What influenced the improved lifting techniques to play is not determinable; the effect will be rather than as a low estimate. Even, the highly significance increase in the (15 to 19) year old Weightlifters performance means that the group is significantly increased. This example shows the appropriateness of there made groups, thereby allowing a differentiated evaluation of training effects and raises the diagnostic value of the investigation (9).

The results of this study to be brought also are the conservative and scientific approach of the training of competitive services in children in the right light. No way, we suggest that force or weightlifting training in children and adolescence under all possible conditions and circumstances is useful, but individual circumstances such as physical fitness, interest etc. must be taken into account see Byrd et al. (4).

Statistics show that the starting age in weightlifting with the level of performance in context is available. Age in the training process is deep; the chance to achieve excellence in adulthood is the greater. Weightlifter of the master class in the former USSR began training with an average of 14.2 years. According to successful weightlifter and Olympic champion

should be started at the age of 12.4 years. Other experts are of the opinion that the weight lifting can be started with 11.4 years (26).

In the English literature Ajan (1), Vorobyev (41), Westcott (44) advocates, that can be started with a methodological weightlifting training in ages 13-14. Recommendations for the selection of suitable children and young people, as well as for the design of the training are given. Explaining the main anatomic-physiological and psychological characteristics of children and young people development process and proposals for an appropriate exercise program.

In another English literary source Rachael and Picone (33), however, children and young people recommend that not to start before the age of 12. with the practice. This age is often seen as a chronological marker for the biological maturity phase of girls is in general reached 12 years and boys at 14. Because the skeleton is not yet fully trained, it was affected that weightlifting as a high risk of injury and damage to the muscle-skeletal system or even normal growth long. Therefore is recommended by many experienced Weightlifters to wait until after puberty with participation in strength training programs.

In German literature Lukjanow and Falamejow (28), Worobjow (47), Klimt, Betz et al. (25), De Marées (8) advocated the theory that the weightlifting training and take part in competitions in good time in childhood and adolescence must begin, to succeed later. It is advised to start with a special preparation in the ages of 13-14. It still no performance-related should be held competitions in weightlifting 14 years of age. In student competitions, the loads in the snatch and poking at 60% - 90% of own body weight should be limited. In favors of Carl (5) as the beginning of Weightlifting trainings from the age of 10.

After Kanizner (22), the Weightlifting training is to begin at the earliest age of 8 in Austria. The training is organized not by the ÖGV and takes place exclusively in the clubs. There the children are cared for by trained exercise leaders, teaching rooms and trainers. The ÖGV influences the design of the training only indirectly through the regulation of betting and the student classes. Since the children in this age group only to maximum 3 times a week a train, the

training closely follows the events of the competition.

Micheli (31) advocates, with the power development in children about weight training prior to the start puberty and this is under good conditions, and to understand which includes the use of appropriate equipment and a specialized oversight. This would ensure a security that would be too compared with other children's activities. It is also Micheli (31) considers that carried out such training, results puberty improved resilience and strength before. The evidence, whether this increased strength is a special advantage for later movement performance or improved resistance leads to a reduced number of injuries in sports activities, must be submitted. To avoid injuries and damage to the weightlifting training, the observance of rules for implementation is necessary.

The results showed statistically significant differences at the level of 0.05 where the value of $P < 0.05$ maximal muscle strength and the skill level of performance for beginners in weightlifting muscles working in skilled snatch and clean & jerk who between tribal and dimensional standard for research sampling for dimensional measurement. This progress is attributable to the impact of researcher training program for the development of maximal muscle strength that contains similar exercises for performances of weightlifting skill performance, leading to improved performance of the skill level of the sample and be consistent with the results of a study by Winchester et al. (46), Clive et al. (8), which showed that the improvement of the skill level of performance in weightlifting depends on development capacity resulting from the force and speed.

CONCLUSIONS

The results showed improving performances increase the effectiveness of the training program the maximal strength level of performance for beginners weightlifting muscles.

Achieved sample search increased moral tests horsepower of the muscles involved in skill snatch and clean & jerk for the implementation of the training program for the development of maximal strength which contains similar exercises for performance.

RECOMMENDATIONS

Take advantage of the proposed training program for the development of maximal strength of muscles involved in my snatch clean & jerk in weightlifting. use similar exercises for performances of snatch, clean & jerk in the weightlifting training programs for beginners in weightlifting. The Egyptian Federation Technical Committee – application and dissemination of the results of this study to all regions of the Weightlifting Federation in Sunni stages 12-14 years.

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Appendix 1. The training program on the development of the maximal strength for beginners (12-14 years) weightlifting performance

Weeks	Day	Exercises	Intensity	Repetition	Sets	Rest between exercises	Terminal rest
Week 1	Saturday	Power Snatch, Back Squat, Power Clean, Snatch From Knee Clean and jerk	78%	3	2	10sec.	1min
	Monday	Power Snatch, snatch, Back Squat, Clean and jerk, Snatch From Knee	80%	3	2	10sec.	1min
	Wednesday	Snatch Balance, Snatch, Front Squat, Clean Pull, Clean and jerk	78%	3	2	10sec.	1min
	Warm-up : Exercises in unit intensity 40% - 4 repetitions- 2 groups from Maximum weight player (1) time lift						
Week 2	Saturday	Power Clean, Snatch Pull , snatch, Clean and jerk, Hang Power Clean	80%	2	3	10sec.	1min
	Monday	Power Snatch, Snatch, Back Squat, Power jerk, Clean and jerk	80%	2	3	10sec.	1min
	Wednesday	Power Snatch, Snatch Pull, Snatch, Split jerk Clean and jerk	80%	2	3	10sec.	1min
	Warm-up : Exercises in unit intensity 45% 6 repetitions 1 groups from Maximum weight player(1)time lift						

Weeks	Day	Exercises	İntensity	Repetition	Sets	Rest Between exercises	Terminal rest
Week 3	Saturday	Power Snatch, Power Clean Back Squat, Snatch, Clean and jerk	85%	2	4	10sec.	1min
	Monday	Snatch Pull, snatch, Back Squat, Hang Power Snatch, Clean and jerk	85%	2	4	10sec.	1min
	Wednesday	Power Snatch, Power jerk, Snatch, Clean Pull, Clean and jerk	88%	2	4	10sec.	1min
	Warm-up : Exercises in unit intensity 50% - 5 repetitions- 1 groups from Maximum weight player (1) time lift						
Week 4	Saturday	Power Snatch, Snatch Pull, Snatch, Power jerk, Clean and jerk	85%	2	3	10sec.	2min
	Monday	Power Snatch, Snatch Pull, Snatch, Split jerk, Clean and jerk,	85%	2	3	10sec.	2min
	Wednesday	Power Snatch, Hang clean, Snatch, Clean Pull, Clean and jerk	85%	2	3	10sec.	2min
	Warm-up : Exercises in unit intensity 40% - 4 repetitions- 2 groups from Maximum weight player (1) time lift						
Week 5	Saturday	Power Clean, Back Squat, Hang Power Snatch, Snatch, Clean and jerk	80%	3	4	10sec.	1min
	Monday	Power clean, Snatch Pull, Snatch, Split jerk, Clean and jerk	80%	3	4	10sec.	1min
	Wednesday	Power Snatch, Hang clean, Snatch, Power jerk, Clean and jerk	80%	3	4	10sec.	1min
	Warm-up : Exercises in unit intensity 45% - 6 repetitions- 1 groups from Maximum weight player (1) time lift						
Week 6	Saturday	Snatch Balance , Back Squat, Snatch , Split jerk, Clean and jerk	83%	3	3	10sec.	2min
	Monday	Power Snatch, clean Pull, Snatch, Split jerk, Clean and jerk	85%	3	3	10sec.	2min
	Wednesday	Power Snatch, Power Clean, Snatch, Front Squat, Clean and jerk	83%	3	3	10sec.	2min
	Warm-up : Exercises in unit intensity 50% - 2 repetitions- 2 groups from Maximum weight player (1) time lift						
Week 7	Saturday	Power clean, Snatch From Knee, Back Squat, Snatch, Clean and jerk,	85%	2	4	10sec.	2min
	Monday	Power Snatch, Power Clean, Snatch, Hang Power Snatch, Clean and jerk,	85%	3	4	10sec.	2min
	Wednesday	Power Snatch, Power Clean, Snatch, Snatch Balance, Clean and jerk,	85%	2	4	10sec.	2min
	Warm-up : Exercises in unit intensity 45% - 6 repetitions- 1 groups from Maximum weight player (1) time lift						

Weeks	Day	Exercises	İntensity	Repetition	Sets	Rest Between exercises	Terminal rest
Week 8	Saturday	Power Clean, Front Squat, Snatch From Knee , Snatch , Clean and jerk	85%	2	4	10sec.	2min
	Monday	Power jerk, clean Pull , Snatch From Knee , Snatch , Clean and jerk	90%	1	5	10sec.	2min
	Wednesday	Power Snatch, Clean Pull, Snatch, Front Squat, Clean and jerk	85%	2	4	10sec.	2min
		Warm-up : Exercises in unit intensity 50% - 4 repetitions- 2 groups from (1) time lift					Maximum weight player
Week 9	Saturday	Power Snatch, Back Squat, Snatch From Knee , Snatch, Clean and jerk	85%	3	4	10sec.	2min
	Monday	Power Snatch, Power Clean, Hang Power Snatch, Snatch, Clean and jerk	90%	1	7	10sec.	2min
	Wednesday	Power Snatch, Front Squat, Snatch, Split jerk, Clean and jerk	85%	3	4	10sec.	2min
		Warm-up : Exercises in unit intensity 40% - 4 repetitions- 2 groups from (1) time lift					Maximum weight player
Week 10	Saturday	Snatch pull, Back Squat, Power jerk, Snatch, Clean and jerk	85%	2	4	10sec.	2min
	Monday	Power Snatch, Back Squat, Hang Power clean, Snatch, Clean and jerk	85%	2	4	10sec.	2min
	Wednesday	Power Snatch, Snatch, Front Squat, Clean Pull, Clean and jerk	85%	2	4	10sec.	2min
		Warm-up : Exercises in unit intensity 45% - 6 repetitions- 1 groups from (1) time lift					Maximum weight player
Week 11	Saturday	Power Snatch, Power Clean, Back Squat, Snatch, Clean and jerk	85%	2	4	10sec.	2min
	Monday	Power Snatch, Back Squat, Hang Power Snatch, Snatch, Clean and jerk	100%	1	6	10sec.	2min
	Wednesday	Power Snatch, Power Clean, Snatch, Front Squat, Clean Pull	90%	1	7	10sec.	2min
		Warm-up : Exercises in unit intensity 50% - 4 repetitions- 2 groups from (1) time lift					Maximum weight player

Weeks	Day	Exercises	Intensity	Repetition	Sets	Rest Between exercises	Terminal rest
Week 12	Saturday	Power Snatch, Snatch Pull, Snatch, Front Squat, Clean Pull	85%	3	4	10sec.	2min
	Monday	Power Snatch, Power Clean, Snatch, Power jerk, Clean and jerk	90%	1	7	10sec.	2min
	Wednesday	Power Snatch, Snatch, Front Squat, Clean Pull Clean and jerk	85%	3	4	10sec.	2min
Warm-up : Exercises in unit intensity 45% - 6 repetitions- 1 groups from Maximum weight player (1) time lift							

cf. Ebada (9), Ajan (1).