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Effect of explosive strength training modules on muscle hypertrophy in bodybuilders

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Abstract

This research is experimental in nature. So use experimental design for this study. Select twenty one subject for this study. The twenty one subjects selected from Punjab those who participated in bodybuilding state competition. Twenty one male bodybuilders will be selected for this research divide in three groups. Three experimental groups performed in ten week training and the data collected by the pre- test and post-test of all three experimental groups. shows a comparison of mean value between Pre-test and post-test of Bmi and skin fold. Mean value of Bmi Pre-test 102.28 and post-test is 89.57 and mean value of skin fold pre-test 22.53 and post-test 22.36. After applying t-test, there is a difference found between pre-test and post-test of Bmi and skin fold. The calculated value of pre-test and post-test of Bmi is 1.31 and skin fold 0.24 is lower than the table value (1.725), we accept the hypothesis. There is no significant difference between pre and post explosive training on muscle hypertrophy. This study shows that there is no significant difference found between pre and post-test of Bmi and skin fold and hypothesis is accepted. There is no significant difference between pre and post explosive training on muscle hypertrophy.

Keywords: Maximum strength, explosive strength, muscle hypertrophy

Introduction

Today most of people going to gyms and health clubs, in these people more are young persons. Young boys and girls want to become a muscular physique, but most boys will want to become a bodybuilders, Bodybuilding is a famous sport in these days all over India. Bodybuilding is the use of progressive resistance exercise to control and develop human musculature. An individual who engages in this activity is referred to as a bodybuilder. In competitive amateur and professional bodybuilding competitions, in competitions bodybuilders appear in lineups doing specified poses. Later perform individual posing routines for a panel of judges who rank competitors based on criteria such as symmetry, muscularity and conditioning. Bodybuilders prepare for competition through a combination of fat loss, more muscles, oils and tanning colors which makes their muscular definition more distinct. In bodybuilding most known bodybuilders include Atlas, Steve, Reg Park, Arnold Schwarzenegger, Lou Ferrigno and Prem Chand Degra (India). Young boys want to become a famous bodybuilder so for this aim they all are doing weight training to increase the body muscle hypertrophy.

Muscle hypertrophy, or muscle cell enlargement, is a topic of great debate and interest in all fields of health, fitness and sports. How the body responds to muscular overload to elicit muscle growth is still under much scientific investigation. Many types of training induce muscle hypertrophy. This is evidenced by the fact that athletes in numerous sports exhibit wonderful muscular development even though they follow different training protocols. With this in mind, it makes sense to examine contemporary understandings of muscle hypertrophy and highlight some effective training approaches. Skeletal muscle hypertrophy is defined as an increase in muscle mass, which in the men and women comes as a result of an increase in the size, as opposed to the number, of pre existing skeletal muscle fibers.

In minimum time increase muscle hypertrophy it is mandatory coach or bodybuilder choose right periodization model for individual training, but no any strict rule or method for choose right periodization module for bodybuilders, so in these days bodybuilders face this problem.

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Periodization is simply a term applied to planning training sessions and arranging those sessions in an orderly manner. Specifically periodization is planning training programs in successive small units ranging from one week to a full year. Each segment of training like skill, speed, strength, stamina, endurance, flexibility and fitness etc can be programmed into a periodized training module; training program is usually planned with two specific periods the preparation period and the competition period. These two periods are further subdivided into the general preparation phase, followed by the specific preparation phase, then the pre-competitive phase followed by the competitive phase. Complete training program can span from three months to twelve months. The twelve months program is called the yearly training plan. The training plan is usually developed from the first week of training of the new season until the last competition of the season with the start and end point established within the year, the total time is then divided into micro cycles. The micro cycles are grouped in meso cycles and the meso cycles grouped in macro cycles. These are then assembled into phases to complete the training plan. Bodybuilder most use strength training for muscle hypertrophy, strength is the ability to overcome resistance or to act against resistance. Strength types are maximum strength, explosive strength and strength endurance. Maximum strength is the ability to overcome or to act against maximal resistance. Explosive strength is a combination of strength and speed ability mean ability to overcome resistance with high speed. Strength endurance is ability to overcome resistance or to act against resistance under conditions of fatigue. Bodybuilders use different type of training add in their training plan for example first two week strength endurance and after that four week muscle hypertrophy, some bodybuilder use first explosive strength and some are use maximum strength. So the research problem is right combination periodization module for bodybuilders for fast muscle hypertrophy.

Statement of the Problem

To find out a solution for fast and effective module for muscle hypertrophy state the research problem is Effect of explosive strength training modules on muscle hypertrophy in bodybuilders

Literature Review

Linear periodization is the traditional and earliest form of periodization. This was originally proposed and involves a steady progression from high-volume, low-relative load training at the start of the program through to low-volume, high-relative load training at the end. A variant of linear periodization is reverse linear periodization in which the opposite sequence is followed. It is worth noting that volume and relative load are the most commonly manipulated training variables but essentially there is no reason why other variables cannot also be periodized, such as frequency, range-of-motion and proximity to failure, rest period and exercise selection. For example, escalating density training is essentially a form of linear periodization in which a training variable is altered progressively over time. The purpose of this study was to investigate the effect of concurrent strength and endurance training on strength, endurance, endocrine status and muscle fiber properties. A total of 45 male and female subjects were randomly assigned to one of four groups strength training only (S), endurance training only (E), concurrent strength and endurance training (SE), or a control group (C). Group S and E training 3 days a week and the SE

group trained 6 days a week for 12 weeks. Tests were made before and after 6 and 12 weeks of training. A significant increase in capillary per fiber ratio was noted after 12 weeks of training in group SE. No changes were observed in testosterone, human growth hormone or sex hormone binding globulin concentrations for any group but there was a greater urinary cortisol concentration in the women of group SE and decrease in the men of group E after 12 weeks of training. These findings would support the contention that combined strength and endurance training can suppress some of the adaptations to strength training and augment some aspects of capillarization in skeletal muscle.

Found that both fat-free mass and muscular CSA at individual sites were very good predictors of power lifting ability. Hypertrophy is also important for elderly people, as low levels of muscle mass are strongly correlated with a loss of functional independence and mobility and an increased risk of disability and functional impairment. Schoenfeld *et al.* (2010)^[7] Regimented resistance training has been shown to promote marked increases in skeletal muscle mass. Although muscle hypertrophy can be attained through a wide range of resistance training programs, the principle of specificity, which states that adaptations are specific to the nature of the applied stimulus, dictates that some programs will promote greater hypertrophy than others. Research is lacking, however, as to the best combination of variables required to maximize hypertrophic gains. The purpose of this study was to investigate muscular adaptations to a volume-equated bodybuilding-type training program vs. a power lifting-type routine in well training subjects. Seventeen young men were randomly assigned to either a hypertrophy-type resistance training group that performed 3sets of 10 repetitions maximum (RM) with 90seconds rest or a strength-type resistance training (ST) group that performed 7 sets of 3 RM with a 3 minute rest interval. After 8 weeks, no significant differences were noted in muscle thickness of the biceps brachii. Significant strength differences were found in favor of ST for the 1RM bench press and a trend was found for greater increases in the 1RM squat. It is generally assumed that the hypertrophic response to the magnitude of the mechanical loading (as expressed by relative load) is non-linear in so far as there appears to be a definite threshold below which no hypertrophy can occur and a threshold above which little or no further hypertrophy occur in response to increasing relative load. The existence of a threshold of relative load below which no meaningful stimulus for hypertrophy will occur has been assumed largely upon the empirical observation that people generally do not experience hypertrophy from carrying out activities of daily living unless such tasks represent a significant challenge to them, as they can do for frail, elderly populations.

Need of Study

These days' bodybuilding competitions are held very frequently in a year so bodybuilders have to gain and maintain their body muscle mass in very short intervals.

- 1) Increase muscle mass in short period.
- 2) Injury prevention
- 3) Time and energy saving
- 4) Prevent from the intake of banned products.

Objectives of study

1. To study the effect of explosive strength training module on strength training and muscle mass training on muscle hypertrophy in bodybuilders.

- To study the effect of explosive strength and muscle mass training on muscle hypertrophy in bodybuilders.
- To find out best training module for muscle hypertrophy in bodybuilders

Scope

These days’ bodybuilding competitions are held very frequently in a year so bodybuilders have to gain and maintain their body muscle mass in very short intervals. This study will be helpful for bodybuilders to find out the best training periodization to increase muscle mass in short time period. In this way this study has the scope not only in bodybuilding but in other sports and games also which muscle hypertrophy (muscle mass) is required.

Delimitation of Study

- The study will be delimited to male bodybuilding players of Punjab.
- The study will be delimited to 21 male bodybuilders. (7, 7, 7 in three experimental groups).
- All subjects must have get place in Punjab bodybuilding competitions of Punjabi amateur body building association (PABBA) with age ranged 20 to 25 years.
- The study will be delimited total 10 week training module.
- Diet and environmental condition not control.

Research hypothesis

There will be no significant difference in effects of explosive strength training module on muscle hypertrophy in bodybuilders.

Methodology

Research design

This research is experimental in nature. So use experimental design for this study. All the twenty one subjects will be selected from Punjab those who participated in bodybuilding state competition. Twenty one male bodybuilders will be selected for this research divide in three groups. Three experimental groups performed in ten week training and the data will collect by the pre- test and post-test of all three experimental groups.

Tool-Technique

For study purpose choose

Weight measure

Purpose: To measure the weight of the subject.

Equipment: Digital weight scale, paper and pen.

		excellent	good	average	below average	poor
Normal	Male	60-80	81-90	91-110	111-150	150+
	Female	70-90	91-100	101-120	121-150	150+
Athletic	Male	40-60	61-80	81-100	101-130	130+
	Female	50-70	71-85	86-110	111-130	130+

Measurements and scaling

It is the mathematical teaching or process of gathering, describing, organizing, analysis and interpreting numerical data. It is a basic tool of measurement and research. In the field of physical education statistics turned to be an essential tool. For the better interpretation of the results and the presentation of data, the following methods used, The data collection will statistically analyze by T-Test, the level of significance set as $p < 0.05$ in this study.

Procedure: Body weight is taken on a weighing machine with the subject clothed minimally. The accuracy of the machine is checked before the subject stand still in the centre of the platform and the reading is recorded. A portable person weighing machine will be used in this present study. The zero of the scale will checked before taking each measurement.

Score: The weight of the subject will be measured in kilogram (kg).

Body Mass index

Purpose: To measure the Body Mass Index.

Equipment: Standard height scale, Digital weight scale, paper, pen. Procedure : It will calculate manually by the formula $BMI = \frac{\text{The Weight in Kilograms}}{\text{the Square of the Height in Meters (km/m}^2\text{)}}$, for e.g. An adult weight 70 kg and height 1.75 m will have $BMI = \frac{70(\text{kg})}{1.752(\text{m}^2)} = 22.9$.”

Score: The above mention formula will be used to calculate the Body Mass Index.

Skin fold Measurement

Taking skin fold measurement is a common method for determining body fat composition. Accurate measurement technique is important. Here is the standard technique that is used. You should read this information in conjunction with the description of each of the standard measurement sites.

Equipment: skin fold, tape measure, paper and pen

Procedure: Estimation of body fat by skin fold thickness measurement. Measurement can use from seven different standard anatomical sites around the body. The right side is usually only measured (for consistency). The tester pinches the skin at the appropriate site to raise a double layer of skin and the underlying adipose tissue, but not the muscle. The calipers are then applied 1 cm below and at right angles to the pinch, and a reading in millimeters (mm) taken two seconds later. The mean of two measurements should be taken. If the two measurements differ greatly, a third should then be done, then the median value taken. Because of the increased errors involved, it is usually not appropriate to convert skin fold measures to percentage body fat (%BF). It is best to use the sum of several sites to monitor and compare body fat measures. In order to satisfy those who want to calculate a percentage body fat measure, there is a sample of equations for calculating this here. Below is a table of general guidelines (based on personal experience) for using total sum (in millimeters) of the seven main skin fold sites (triceps, bicep, subscap, supraspinale, abdominal, thigh and calf).

Norms

		Mean	S.D	t- value
BMI	Pre-test	102.28	13.69	1.31
	Post-test	89.57	11.98	
SKIN FOLD	Pre test	22.53	4.98	0.24
	Post test	22.36	5.03	

Table: shows a comparison of mean value between Pre-test and post-test of Bmi and skin fold. Mean value of Bmi Pre-test 102.28 and post-test is 89.57 and mean value of skin fold pre-test 22.53 and post-test 22.36. After applying t-test, there

is a difference found between pre-test and post-test of Bmi and skin fold. The calculated value of pre-test and post-test of Bmi is 1.31 and skin fold 0.24 is lower than the table value (1.725), we accept the hypothesis. There is no significant difference between pre and post explosive training on muscle hypertrophy.

Conclusion

This study shows that there is no significant difference found between pre and post-test of Bmi and skin fold and hypothesis is accepted. There is no significant difference between pre and post explosive training on muscle hypertrophy.

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