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# The Effect of Combination of Strength Arm Muscles Following Exercise Maximum Congestion Backlash

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**Abstract**

Strength muscle, increased volume muscle and keep it is one of the most important factors in athletes and sports. Thus, as a result of injury, aging, disease and intolerance more pressure to increase strength, use the following exercises to increase muscle size and strength recommended maximum. The aim of this study was to evaluate the effect of combined strength and sub maximal exercise congestion arm strength muscle in response to students' physical education city Meshgin Shahr. Methods: 24 students selected randomly and were divided into four groups of six that one group students with 20%1RM with restriction of blood flow(cut off blood flow to the arm with a tourniquet during move), two group with 20%1RM, three group with 70%1RM , four group without doing any exercise (control group) were selected. Sessions of three weeks each with three sets of ten repetitions were. They were the pre-test and post-test and data using spss software and repeated measure ($P \leq 0.05$) and ANCOVA analysis was performed to remove the Type I error. Results showed that in the one group ($P = 0.001$) and three group ($P = 0.003$) were significant impact, but in two group ($P = 0.102$) and four group ($P = 0.060$) showed no significant effect. The findings suggest that sub maximal exercise with blood limits can also be like 70% of one repetition maximum increases muscle strength.

**Keywords**: hypertrophy, submaximal exercise, limits blood flow, weight training

**1.Introduction**

Resistance Training activities are being incorporated in nearly all comprehensive exercise programs. While most health and fitness professionals recognize the acute program variables utilized in Resistance Training activities (sets, reps, intensity/load, volume, rest, exercise selection, exercise order, etc.) One of the most important research and propose to increase muscle mass and strength by America College (ACSM) is that the minimum weight and pressure to increase strength and muscle mass 65 to 70% of one repetition maximum (1 RM) is. The new method used to increase muscle size and strength exercises are very low intensity loads (20% 1RM) with limits blow follow. A growing body of research has demonstrated the effectiveness of exercise (low-intensity resistance training) combined with blood flow restriction for increased muscular strength and hypertrophy. Blood flow restriction as an accessory to a variety of different exercise modes (low-intensity resistance exercise) has recently become a popular research topic. Hypothetically speaking, the potential mechanisms for these adaptations may Include, hypoxia-induced additional or preferential recruitment of fast-twitch muscle fibers, greater duration of metabolic acidosis via the trapping and accumulation of intramuscular protons (H+ ions) and stimula tion of metaboreceptors, possibly eliciting an exaggerated acute systemic hormonal response. external pressure-induced differences in contractile mechanics and sarcolemma deformation, resulting in enhanced growth factor expression and intracellular signalling , metabolic adaptations to the fast glycolytic system that stem from compromised oxygen delivery, production of reactive oxygen species that promotes tissue growth, such gradient-induced reactive hyperemia after removal of the external pressure, which induces intracellular swelling and stretches cytoskeletal structures that may promote tissue growth, and activation of myogenic stem cells with subsequent myonuclear fusion with mature muscle fibers and etc (3).

Low-intensity (20 –50% of 1 RM) resistance training, combined with restricted venous blood flow from the working muscle (Kaatsu resistance training), may provide an alternative training method to the traditional high-intensity resistance training programs currently being used(4). In recent years, a number of publications have reported that Kaatsu resistance training can result in significant and rapid increases in muscle hypertrophy (5,6,7). A previous study reported that increased leg circumference, an index of muscle swelling, was more pronounced in blood flow restriction than in non- blood flow restriction immediately after low- intensity knee extension exercise(8). Because blood flow restriction requires the use of an elastic cuff that is placed at the proximal end of the limbs, the restricted blood flow is only applicable to appendicular muscles. Consequently, previous blood flow restriction training studies have focused on the physiological adaptations of appendicular muscles. However, the effect of low-intensity blood flow restriction training on non-flow-restricted trunk musculature has not been explored. Our previous study indicated that neuromuscular activity during low-intensity blood flow restriction bench press exercise increases

not only in the blood flow restricted arm muscle (triceps brachii) but also in non-restricted chest muscle (pectoralis major) compared with same exercise without blood flow restriction (12).

**2.Method**

A quasi-experimental methods that for this the effect of the independent variable (submaximal exercise with blood flow restriction) in the experimental group on the dependent variable (maximum strength) was measured with pre-test and post-test. The sample of the study, 24 students were Meshgin shahr city school physical education that randomly selected and randomly divided into 4 groups of 6 student where Group 1 Exercises 20% of one repetition maximum per person with restricted blood flow, group 2 with 20% of one repetition maximum any individual, group 3 with 70% of one repetition maximum for each student, group 4 without any resistance training for 3 weeks and 5 days a week and each session 3 repeat 10, In the biceps with dumbbells and only trained with the right arm. 48 hours ago maximal strength right arm, height, weight, age as one repetition maximum test was measured as before.

*Table 1 Separation of categories*

| *BMI* | *Weight (kg)* | *Height(cm)* | *Age(year)* | *Subjects Features* |
|---|---|---|---|---|
| *23.91±3.85* | *75±10* | *172±9* | *16.5±0.5* | *20%1RM with Restriction of blood flow* |
| *22.86±5.82* | *7405±6.5* | *176±6* | *16.5±0.5* | *20% 1 RM* |
| *22.96±4.44* | *71±11* | *172.5±7.5* | *16.5±0.5* | *70% 1 RM* |
| *20.91±4.01* | *64.5±14.5* | *171.5±6.5* | *16.5±0.5* | *Without any exercise* |

After three weeks of training were taken again after the test . According to the normal distribution (Kolmogorov-Smirnov test) were used for the analysis of parametric tests and to changes within the group and between groups and between pre- and post-test by repeated measures was used for the condition existed sphericity and a significant degree of pre and post-test groups, group 1 ($p = 0.001$) and group 3 ($p = 0.003$) were significant effects of exercise. But the group 2($p = 0.102$) and group 4($p = 0.060$) were not significant training effect. Statistically significant difference was set at $p \leq 0.05$.

**3.Results and Discussion**

Increase muscle strength when old age, disease and injury, one of the most important concerns of athletes and non-athletes and those who are looking for a better life. The ACSM is very useful recommendations that the intensity of at least 65 al 70% of one repetition maximum pressure is to increase muscle strength. As well as many studies have shown that high intensity 65% of one repetition maximum increases muscle size and strength to be increased. It can restrict blood and very low-intensity exercise to the same conclusions that 70 percent of maximal strength training will result achieved. Practice with 20% of one repetition maximum by limiting blood flow to the hemostatic when running increases the maximum power that can be replaced by other strength training.

The findings show that the restriction of blood flow with submaximal exercise increases muscle strength as well as high intensity workouts and ACSM recommend that a minimum intensity to increase to 65 to 70% of one repetition maximum was announced that the cause. For people such as sports injuries, the elderly and those who can not tolerate high-intensity this method it is proposed to increase the maximum power. 70% of one repetition maximum-intensity exercises also increases muscle strength, but those exercises practiced with intensity 20 percent experienced a significant increase in muscle strength arm as well as those who did not exercise any power in these three weeks had not done any significant increase in power did not (control group). This method of strength training to increase muscle strength, body parts can be cut off or restrict the flow of blood to be used. It should be noted that when implementing the restrictions only apply bloodstream.

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