

# Full body training as a means of increasing muscle strength and body weight of power fitness persons

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## Abstract

**Objective of the study** was to determine the effectiveness of FULL BODY training and its effect on increasing muscle strength and mass in people involved in strength fitness.

**Methods and structure of the study.** The scientific experiment was conducted on the basis of the Graphite fitness center in Aramil from 2019 to 2021. The experiment involved 14 clients of the fitness center, aged 19-30 years. Participants were randomly divided into two groups of seven. The first group trained according to the SPLIT methodology, according to which exercises were performed for two or three specific muscle groups per workout. The second group used the FULL BODY technique, in which one exercise per training session was performed per muscle group.

**Results and conclusions.** The data obtained in the course of the research work indicate the advantage of FULL BODY training in terms of increasing muscle mass and strength in people involved in strength fitness over SPLIT training, with an equal training volume. In particular, the FULL BODY group showed a significantly greater increase in muscle mass compared to the SPLIT group - 11.25% vs. 5.66%, as well as a significantly greater increase in muscle strength - in barbell squats 35.03% vs. 16.09%; in the bench press - 33.33% versus 20.97%. According to Student's t-test, these differences are considered significant and significant ( $p < 0.05$ ). The results obtained indicate a significant advantage of FULL BODY training. Thus, the conducted study showed the effectiveness of the experimental technique.

**Keywords:** *strength fitness, FULL BODY training, SPLIT training, muscle strength, muscle mass.*

**Introduction.** Currently, the fitness industry is a rapidly developing area in Russia. Among the whole variety of fitness, strength fitness can be singled out separately - this is a type of strength training in anaerobic mode using your own body weight, as well as free weights [5]. It is power fitness that is aimed at strengthening muscles and increasing muscle strength. Having high rates of strength development is important not only for athletes, but also for people who are not involved in sports. The results of a major scientific review, which has collected more than 140 scientific studies, have been published in the Annals of Medicine journal. Research results suggest that doctors, when assessing a person's health, should take into account the state of his muscles, and consider muscle mass as a new important indicator of human health [6].

Having studied the available methods in strength fitness that allow you to increase muscle strength and mass, we found that the main and most common methods are SPLIT and FULL BODY.

SPLIT (from the English. "Split" - split, divide into parts) is a method in which the student works out a specific muscle group in training.

FULL BODY (from the English "full body" - the whole body) is a training method in which muscle groups of the whole body are worked out in one session. According to foreign data, FULL BODY training is superior to common SPLIT training. Due to the fact that the existing scientific studies are of a short-term nature, the authors considered it necessary and possible to develop and conduct their own study on the benefits of FULL BODY training as part of a longer experiment.



**Objective of the study** was to determine the effectiveness of FULL BODY training and its effect on increasing muscle strength and mass in people involved in strength fitness.

**Methods and structure of the study.** The scientific study was conducted on the basis of the «Graphite» fitness center in Aramil in stages from 2019 to 2021. The experiment involved 14 clients of the fitness center, aged 19-30 years. Participants were matched for relatively equal baseline strength and training experience and randomly divided into two groups of seven. The first group trained according to the SPLIT methodology, according to which exercises were performed for two or three specific muscle groups per workout. The second group used the FULL BODY methodology, in which one exercise per training session was performed per muscle group. Other variables such as exercises performed, number of workouts per week, total training volume, rest interval, etc. were constant.

A complex of interrelated methods was used: analysis and generalization of literary sources on the problem under study, anthropometric methods, testing, experimental work, bioimpedance analysis, methods of mathematical statistics.

**Results of the study and their discussion.** Analysis of the scientific and methodological litera-

ture showed that there are several scientific theories of increasing muscle strength and mass during strength fitness. These are the studies of leading scientists in the field of theory and methodology of physical culture and sports: V.N. Seluyanova, D. Vader, T. Bompá [4, 2, 1].

After analyzing the existing methods and programs of strength fitness, having studied the advantages and disadvantages of each of the programs, we have developed a FULL BODY training program for clients aged 19-30, taking into account the conditions existing in the «Grafit» fitness center in Aramil, Sverdlovsk region. The training program consisted of 18 exercises for the main muscle groups. Participants were instructed to abstain from additional exercise throughout the study. Participants performed the same exercises and reps each week. Specific sets of exercises for SPLIT and FULL BODY are given in Table one.

Training took place three times a week for six months. The subjects performed the exercises in three sets, a total of 18 sets per session. Each set consisted of 8-12 reps with 90 seconds of rest between sets. The approaches were carried out until the moment of short-term concentric muscle failure - the inability to perform one more concentric repetition while maintaining the correct technique [3]. The load was

**Table 1.** Contents of SPLIT and FULL BODY training programs

Protocol	Day 1	Day 2	Day 3
SPLIT	Bench Press * 3	Traction of the upper block with a wide grip * 3	Barbell squats * 3
	Dumbbell press on an inclined bench * 3	Traction of the lower block with a narrow grip * 3	Lunges with dumbbells * 3
	Reduction of hands with dumbbells lying on a horizontal bench * 3	Barbell pull to the stomach in a tilt * 3	Leg curl in the simulator * 3
	Lifting the bar for biceps while standing * 3	Extension of the arms to the triceps in a crossover * 3	Sitting dumbbell press * 3
	Lifting dumbbells on biceps standing * 3	Extension of arms with dumbbells sitting from behind the head * 3	Breeding dumbbells to the sides while standing * 3
	Lifting the barbell on the biceps on the Scott bench * 3	Extension of the arm with dumbbells while standing in a tilt * 3	Barbell pull to the chin * 3
FULL BODY	Bench press * 3	Dumbbell press on an inclined bench * 3	Barbell squats * 3
	Traction of the upper block with a wide grip * 3	Traction of the lower block with a narrow grip * 3	Reduction of hands with dumbbells lying on a horizontal bench * 3
	Lunges with dumbbells * 3	Leg curl in the simulator * 3	Barbell pull to the stomach in a tilt * 3
	Lifting the bar for biceps while standing * 3	Lifting dumbbells on biceps standing * 3	Lifting the barbell on the biceps on the Scott bench * 3
	Extension of the arms to the triceps in a crossover * 3	Extension of arms with dumbbells sitting from behind the head * 3	Extension of the arm with dumbbells while standing in a tilt * 3
	Breeding dumbbells to the sides while standing * 3	Barbell pull to the chin * 3	Barbell pull to the chin * 3



adjusted for each exercise as needed on successive sets, which was a guarantee of failure in the subject in the target rep range. The repetition rate was performed with controlled concentric contraction and approximately two seconds of eccentric contraction. Attempts have been made to gradually increase the loads lifted each week as part of maintaining the rep range. Thus, the total training volume in both groups was the same.

For the first time, we have conducted the longest study ever, lasting six months, which directly assesses the hypertrophic response to different training frequencies of a muscle group. The data obtained indicate the advantage of FULL BODY training in terms of increasing muscle mass and strength in people involved in strength fitness over SPLIT training with an equal training volume. In particular, in the FULL BODY group, a significantly greater increase in muscle mass was demonstrated compared to the SPLIT group: 11.25% versus 5.66%, that is, almost twice. In addition, in the FULL BODY group, a significantly greater increase in muscle strength was demonstrated compared to the SPLIT group: in barbell squats - 35.03% versus 16.09%; in the bench press - 33.33% versus 20.97%. These indicators indicate a significant advantage of FULL BODY training. According to Student's t-test, these differences are considered significant and significant ( $p < 0.05$ ).

An additional result of the survey was that in the FULL BODY group throughout the study, the level of muscle soreness was significantly lower than in the SPLIT group. This suggests that SPLIT participants experienced more muscle damage and supports the theory that muscle damage is not a mechanism for muscle growth. In addition, during the survey, the subjects in the FULL BODY group showed a more positive attitude towards classes, the desire to skip training occurred less frequently than the subjects in the SPLIT group.

As a result of the analysis of literary sources and our research, practical recommendations were formed on the use of individual training programs when doing strength fitness.

1. Exercise intensity should be around 70% of 1RM. Intensity in strength training refers to the weight of the weight.

2. The range of repetitions should be from 6 to 15. This range indicates that the work is carried out at sufficient intensity.

3. The range of approaches for each muscle group

should be from 10 to 20 per week. Warm-up approaches are not included in this range.

4. The optimal frequency of training is three times a week.

5. Training should line up from more difficult exercises to easier ones. This approach is necessary in order not to violate the technique of the exercise.

6. Sufficient rest between sets is essential. Rest should provide the trainee with recovery for the further planned number of repetitions with the same intensity.

7. Do not strive for soreness in the muscles. Krepatura in the muscles after training is not associated with muscle growth. Moreover, maximum muscle growth occurs when krepatura is minimal. Therefore, it is necessary to strive for progress, and not for subjective morbidity.

8. If there is a sufficiently severe pain in the muscles, it is necessary to postpone the training of this muscle group. Firstly, there are chances to violate the technique of performing exercises, and secondly, this will not bring further development.

9. Do not chase the weight of the shells. By itself, increasing the weight on the bar is not something fundamentally necessary for muscle growth. This is only a consequence of growth, that is, the muscle becomes larger and is able to cope with more weight. The progression of the load is not only about increasing the weight on the bar. You can adjust the pace of the exercise, rest time, number of repetitions, approaches, concentration, and more.

**Conclusion.** In the course of the study, a methodology was developed based on FULL BODY training, which, unlike the classical methodology, was built in such a way that all major muscle groups were trained at each lesson. A positive dynamics of the tested indicators was revealed in both groups, but in the experimental group it is more pronounced. Thus, the conducted study showed the effectiveness of the experimental technique. The results obtained are recommended to be used both in the practice of fitness trainers and for people who lead a healthy lifestyle and wish to improve their health.

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