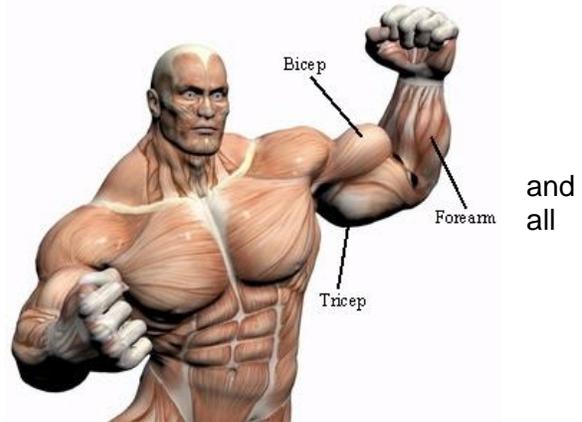


## Bro-Split Versus Total-Body Training: Which Builds More Muscle?

Split routines are pretty much synonymous with bodybuilding. A recent survey of 127 competitive bodybuilders found that every respondent trained with a split routine. Every one! Moreover, 2/3 of respondents trained each muscle only once per week (what is popularly known as a “bro-split”) and none worked a muscle more than twice weekly. The theory behind such routines is that growth is maximized by blasting a muscle with multiple exercises from multiple angles and then allowing long periods of recovery.

Things weren't always this way, though.

Old-school bodybuilders such as Steve Reeves and Reg Park swore by total-body routines, working the major muscles each and every session over three non-consecutive days-per-week. Proponents thought that the greater training frequency was beneficial to packing on lean mass.



Thing is, the choice to use one type of routine or another has been almost exclusively based on anecdote and tradition. Surprisingly little research has been carried out on the topic, and no study had directly compared muscle growth in a total-body routine versus a bro-split.

Until now.

My lab carried out a controlled experiment to investigate the effect of training frequency on muscular adaptations. The study was recently published in the *Journal of Strength and Conditioning Research*. Here's the scoop.

### What We Did

Nineteen young men with an average of more than 4 years lifting experience were randomly assigned to a resistance training program using either a total-body (all muscles worked in a session) or split-body routine (2-3 muscle groups worked per session). The program consisted of 21 different exercises spread out over a 3 day-per-week training cycle. The volume of the routines were matched so that both groups performed an equal number of sets and reps over the course of each week. All subjects performed 3 sets of 8-12RM per exercise. Training was

carried out for 8 weeks. The table below shows the program design for both routines.

**TABLE 1.** Training protocols.

Protocol	Day 1	Day 2	Day 3
<b>SPLIT</b>	Bench press ×3 Incline press ×3 Hammer chest press ×3 Lat pulldown (wide grip) ×3 Lat pulldown (close grip) ×3 Seated row ×3	Squat ×3 Leg press ×3 Leg extension ×3 Stiff-leg deadlift ×3 Hamstrings curl ×3 Good morning ×3	Shoulder press ×2 Hammer shoulder press ×2 Upright row ×2 Hammer curl ×2 Barbell curl ×2 Preacher curl ×2 Cable pushdown ×2 Skull crusher ×2 Dumbbell overhead extension ×2
<b>TOTAL</b>	Squat ×3 Stiff-leg deadlift ×3 Bench press ×3 Lat pulldown (wide grip) ×3 Shoulder press ×2 Hammer curl ×2 Cable pushdown ×2	Leg press ×3 Hamstrings curl ×3 Incline press ×3 Lat pulldown (close grip) ×3 Hammer shoulder press ×2 Barbell curl ×2 Skull crusher ×2	Leg extension ×3 Good morning ×3 Hammer chest press ×3 Seated row ×3 Upright row ×2 Preacher curl ×2 Dumbbell overhead extension ×2

Subjects were tested pre- and post-study. We used B-mode ultrasound to measure the thickness of the biceps, triceps, and quads, and assessed maximal strength via 1RM for the back squat and bench press. Subjects were advised to consume their normal diets and we monitored food intake by analysis of a self-reported diary.

### What We Found

Subjects in both groups significantly increased hypertrophy in the arm and leg muscles. That said, muscle mass increased significantly more in the biceps/brachialis for the group performing total body training compared with those in the split routine group. There was a trend for greater increases in the quads (i.e. vastus lateralis) and the effect size – a measure of the “meaningfulness” of results – markedly favored the total body group. Although no significant between-group differences were found in triceps thickness, the effect size again showed an advantage to total body training.

With respect to strength, both groups significantly increased 1RM performance in the bench press and squat from baseline. There were no significant between-group differences in either of these measures, although the effect size for the bench press did seem to favor the total body group.

### How Can You Use This Info?

On the surface it would seem that a total-body routine is superior to a one-muscle-per-week bro-split for building muscle. All of the muscles we investigated showed greater growth from a higher training frequency. For the biceps, these results were “statistically significant,” meaning that that there was a greater than 95% probability that results did not occur by chance. While results in the quads and triceps did not reach “significance,” other statistical measures indicate a pretty clear advantage for the higher frequency routine. These results would seem to be consistent with the time-course of protein synthesis, which lasts approximately 48 hours (there is even some evidence that the time course is truncated as one gains lifting experience). Theoretically, repeated spiking of protein synthesis after it ebbs would result in greater muscular gains over time.

Before you jump the gun and ditch your split, a few things need to be considered when extrapolating results into practice.

First and foremost, it's important to remember that the study equated volume between conditions. This was done to isolate the effects of frequency on muscular adaptations – an essential strategy for determining causality. However, a primary benefit of a split routine is the ability to increase per-workout volume while affording ample recovery between sessions. Since there is a clear dose-response relationship between volume and hypertrophy, total weekly volume needs to be factored into the equation. Certainly it's possible that a split routine with a higher weekly volume would have performed as well or even better than the total body routine. Or perhaps not. We simply don't know based on the current literature.

In addition, the vast majority of subjects in the study reported using a split routine as the basis of their usual workout programs, with muscles worked just once per week. This raises the possibility that the novelty factor of the total body routine influenced results. There is in fact some research showing that muscular adaptations are enhanced when program variables are altered outside of traditional norms. It's therefore conceivable that participants in the total body group benefited from the unaccustomed stimulus of training more frequently.

### **Drawing Evidence-Based Conclusions**

Given the available info, here's my take on how the findings can be applied to your training program. There does seem to be a benefit to more frequent training sessions if max muscle is the goal. In this regard, it's best to directly work each muscle at least twice a week; any less and you're probably not stimulating protein synthesis frequently enough to optimize hypertrophy. Training each muscle three times a week, at least for periods of time, may provide additional benefits for spurring further gains.

Given the novelty factor, it's reasonable to speculate that periodizing frequency over the course of a long-term training cycle might be the ideal option. Progressing from periods of working muscles twice to three times per week (and perhaps more) and then cycling back again will conceivably provide a novel stimulus that elicits continued gains. But remember: any discussion of training frequency must take total weekly volume into account. Greater training frequencies (from the standpoint of total training sessions per week) using a split routine can be employed to maximize total weekly volume and thus potentially drive greater hypertrophy over time.

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