

Training for Mass, Second Edition

Volume and injury

For those interested enough to consider researching it, the theoretical foundation of high-intensity training makes the notion compelling. The greatly reduced investment of time should appeal to anyone. But there's another factor that by itself should provide ample reason for any bodybuilder to consider abandoning the orthodox strategy for the brief, intense, and infrequent alternative: Volume training is a recipe for disaster. Bodybuilders stand a much greater chance of sustaining a severe injury by performing a high number of sets.

This conclusion is supported by four factors: simple numerical comparison of the opportunity for injury, the consideration of raw data, my own personal experience, and the experiences of other bodybuilders. We'll start with the most subjective, since my own personal experience provides a good example of this idea. As a former competitive bodybuilder, I placed well in or won contests at a weight that would now put me in the Super Heavyweight class of the National Physique Committee (the NPC Super Heavyweight category was created after I retired from competition). I have also been able to maintain what I believe to be a respectable level of development for the decade-plus since last stepping on a competition stage. Since I began bodybuilding training more than 25 years ago, the vast majority of this time I've used the high-intensity strategy. I have also successfully avoided serious injury, all the while taking note of a fair number of volume-training bodybuilders—personal acquaintances and well-known professionals alike—who went down with torn muscles, damaged rotator cuffs, and shot knees.

It was made obvious to me during this time that the human body is not some invincible machine that can take all the punishment you can throw at it. Homo Sapiens have very real physical limitations. Due to its very nature, volume training can excessively damage muscular tissue and wear down joints. Combined with inadequate recovery time, a small, barely noticeable injury can eventually turn into a nuisance and in the worst of cases, disablement—such as an acute severe injury like a complete muscle tear. In some instances, the ultimate result is a capitulation of the effort in its entirety: Deprived of the ability to continue training as before, the bodybuilder will quit lifting weights altogether, and all the energy spent and especially the time devoted will be forever lost—and there are few things more tragic. Some bodybuilders opt for surgery to correct the tear. Others, for whatever reason, leave the muscle in its disfigured state and compete anyway, advertising to whomever might be watching the fact that the human body can and will break down. All learn the hard way that a torn muscle has to be reattached quickly or it will forever remain as-is.

Granted, high-intensity trained bodybuilders are not impervious to injury, as evidenced by Dorian Yates' 1994 bicep tear. However, Yates was performing an exercise that's particularly dangerous for that muscle: heavy reverse-grip barbell rows. Biceps appear to be particularly fragile, and a reverse straight bar (fully supinated or underhand) grip places a maximum amount of stress on that muscle. With the conventional overhand grip, the far more durable brachialis muscle bears the brunt of the load. Of course, lifting any type of

heavy weight, regardless of the style of training or precision of execution, creates the possibility of injury. Yet Yates' case remains the exception.

It is further interesting to note that worn-down biceps have been known to tear outside of the gym: by lifting heavy objects, fighting, throwing a football, or even bowling! Apparently these muscles can be sufficiently traumatized in the gym, and later, a sudden incidence of stress will precipitate the tear. Hamstrings torn during sprints are a similar example. It's also significant to note that these outside-the-gym injuries belie the notion that muscle tears, when they happen, are the result of using a particularly heavy weight and nothing else. Although tears often take place during heavy sets, they have been known to occur during warm-ups as well. Muscles tears are, quite literally, where overuse reaches a breaking-point. Unlike back strains or similar injuries, muscle tears are due more to overuse through a high volume of work rather than single incidences of lifting very heavy weights.

Unfortunately there have not been any scientific studies to specifically compare the rate and severity of weight-training injuries for the purpose of assessing the relative safety of the two styles in question. However, a large and growing number of real-life examples support the claim that the potential for injury increases with the amount of sets performed. But in addition to these anecdotes, a study comparing rates of injury between powerlifters and bodybuilders provides related evidence. In his article entitled "Minimizing Weight Training Injuries in Bodybuilders and Athletes," first published in *Topics in Clinical Chiropractic*, Ben Weitz, DC, noted the following:

Many weight training injuries may be related to stressing the same joints repeatedly until muscular or tendinous failure occurs. Repeatedly training to failure without any periodization or cycling of the intensity or duration of the workouts increases the risk of tendinitis and other injuries. So, too, does the large volume and frequency of training.¹³

He further noted:

...there is some evidence that power lifters and Olympic lifters may actually have a slightly lower rate of injuries than bodybuilders. For example, despite using much heavier weight in the bench press than bodybuilders, power lifters seem to have a lower incidence of pectoralis major tears. Reynolds and colleagues (who performed the study) concluded that part of the problem was the total volume of work that bodybuilders perform.¹⁴

What makes this conclusion most compelling is Weitz's description of a typical amount of volume involved with a normal bodybuilding subject's training:

...it would not be unusual for a bodybuilder to perform five different exercises for his or her chest with four to five sets of each exercise using 6 to 15 repetitions. At least two or three of these sets will typically be taken to failure (ie, the point at which no more repetitions [reps] can be performed). Advanced techniques are also often employed. These techniques include forced reps, cheating reps, drop the weight sets, negatives, and supersets.¹⁵

In the higher-volume subjects mentioned in the above paragraph, Weitz describes a workout in which up to 15 sets are taken to, or beyond, failure. It's not unheard of for bodybuilders to perform double this.

That there is a greater incidence of injury among these people should come as no surprise to anyone. To provide an opposite example, my current chest routine consists of taking a total of two sets beyond failure: One set of Smith machine inclines and one set of Hammer Strength decline presses. That's it: two sets—and the results have been very good. Despite the fact that I will rest as many as ten days between each chest workout, I often feel as though I would be overtrained if I were to perform more sets.

It's easy to imagine that the accumulation of wear-and-tear will contribute to a higher rate of injury among volume versus high-intensity trainers, especially considering that high-intensity training by itself does not imply the use of very heavy weights, as is the case with powerlifting. In fact, the amount of weight used by the high-intensity and high-volume camps is not significantly different. Volume-trainers with excellent recovery abilities are sometimes quite strong. But a clear and objective way to compare the risk of injury between the two styles can be based on a simple comparison of the amount of training itself, or the sheer amount of opportunity for injury.

An injury can come at any time, during any set. My two-set chest workout, apart from obviously being very low volume, is also fairly infrequent: I train chest about once every nine days. To contrast this, quite a few bodybuilders perform about 20 working sets for chest. Of these, let's suppose that half are so-called "finishing" movements such as dumbbell and machine flyes. These exercises tend to involve fewer muscle fibers and less weight, so the risk of injury with each is low. We will therefore eliminate these from the comparison. The volume trainers are now left with ten sets per workout that carry a risk of injury. And since many of these people train on a four-on, one-off split, we can calculate the following: Supposing that all lifters in this example (my own workout included as the high-intensity version) take a total of one month off from training over the course of a year, here are the total number of workouts and sets performed during that year:

High-intensity: 36 training sessions, 72 sets

Volume training: 66 training sessions, 660 sets

We can see that the volume trainer has more than nine times the opportunity to suffer major injury (in this case, a pectoral tear) than his high-intensity counterpart. This does not even take into account the greater predisposition to injury that the volume trainer carries due to wear-and-tear. This accumulating damage will often manifest itself as the less dramatic but equally disabling rotator cuff injury—a common occurrence among people who have been lifting for several years.

Studies measuring rate of injury among athletes and bodybuilders include muscle tears, various rotator cuff problems, and a host of other occurrences. What's most telling about these studies is the simple fact that they almost always reflect the number of injuries per hours of activity. For example: In 1995 and again in 2000, according to The American Journal of Sports Medicine, there were 2.6 injuries reported per 1000 hours of activity.¹⁶ As incredible as it may sound, there are some volume trainers that exercise as many as 1000 hours in a single year. Since wear-and-tear is cumulative, these people (or those training even half as often) should consider major injury to be an eventuality.

For someone with an unrelenting desire to become a success in bodybuilding, it seems that a complete muscle tear would be no less than a horrible nightmare. When you're an athlete or a bodybuilder who has suffered a serious injury, your thoughts are consumed with a desire to be uninjured; to go back in time and change things; to curse fate; to seek blame. In the real world, these tears require immediate surgery, long layoff and rehabilitation periods, and the torn muscle is very rarely returned to its previous state. And of course, huge hospital bills await the victim that doesn't have good medical insurance.

The growing list of bodybuilders who have torn muscles should be enough to scare anyone into thinking long and hard about his training approach. The number of these people I personally know stands at eleven. Famous examples that have been acknowledged, reported, or displayed publicly include Lee Priest (bicep), Johnny Fuller (pec), Tom Platz (bicep), Kevin Levrone (pec), Rich Gaspari (lat), Francis Benfatto (pec), Alex Federov (pec), Milos Sarcev (quad), Jean-Pierre Fux (both quads), Shaun Crump (pec), Toney Freeman (pec), Adorthus Cherry (pec), Markus Ruhl (partial inner-pec tear), and Victor Martinez (torn patellar tendon). Ronnie Coleman, according to rumors, may have at least partially torn his tricep and lat muscles. The list even includes, of all people, the ponytailed exercise machine infomercial wheeler-dealer Tony Little, who clearly appears to have torn a bicep. Numerous other high-level amateur or professional bodybuilders are rumored to be among the casualties listed above. If this number seems excessive, stay tuned. More are certain to follow. If you're reading this and you're an avid or aspiring bodybuilder, and you're also convinced that volume training is the way to go, beware. You may one day join them. You have been warned.

Granted, other factors are almost certainly in play. As far as whether chemical enhancement was a factor in any of the injuries mentioned above, draw your own conclusions. Whatever the case may be, many if not all of the people listed above regularly performed high-volume workouts. An equal, possibly much greater number have incurred the unnecessary wear-and-tear of redundant and excessive strenuous exercise and make do with persistent joint pain. Many passionately sang the praises of high-volume workouts.

Human skeletal muscles were designed to efficiently meet the needs of the nomadic hunter/gatherer, because for the majority of time people have occupied this planet, that's what we did to survive. Our muscles and their attachments were never intended to absorb the punishment of long and heavy weightlifting workouts, day in and day out, for years. The incidence of injury among bodybuilders of the 20th and 21st centuries provides ample testimony to this claim. It has been well-established that despite the nonexistent theoretical foundation of volume training, and faced with evidence that high-intensity training is effective, some people still refuse to forsake the volume approach. But forget the logic. Forget the proof. If there is just one reason why bodybuilders should at least *try* high-intensity training, this is it: It's safer.