

What Speed of Movement Should I Use? by Ian King

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by Ian King | Fri, Mar 01, 2002

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If you don't already have Ian King's 'Get Buffed!™' book, you've probably heard about it. It's definitely one of best-received books about weight training on the market. Here's what legendary American bodybuilder Dave 'The Blonde Bomber' Draper (Mr America, Mr Universe, Mr World) recently said about the 'Get Buffed!' book:

"Ian King has gained a great deal of popularity amidst the hard-working and smart-working core of bodybuilders who want a more complete understanding of the "why" and "how come" beneath the surface of muscle building. He gives the student of weight training insight into every practical question he or she would ever ask about getting bigger, stronger and leaner: how to determine the true training effect of working out; how to gauge how long, how often, how many exercises, sets and reps and in what order; training duration, speed and cadence of reps, fatigue and recovery.

Like stacking forty-five pound plates on an Olympic bar, The King goes on and on teaching truths and expelling doubts. "Get Buffed" is a muscle builder's reliable fact reference."

— Dave Draper

We're excited to announce the release of the **THIRD EDITION** of the *Get Buffed!*™ book. Get Buffed! is over 300 pages long and contains over 100,000 words of solid, effective and ready to use information that outlines Ian's strength training methods. It's for anyone who lifts weights and wants to benefit from applying some of concepts.

The text is pretty much as per the earlier editions, but the front cover is new. If you want to learn more about the book, check out Ian's web site at GetBuffed.net. To order the Get Buffed! book, go to the *T-mag* online shop! The following chapter is from the book and we present it as a sample of the kind of info the book contains:

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Chapter 12 What Speed of Movement Should I Use? Most of Them!

Had I asked this question ten years ago, no one would have known what I was talking about (except the athletes I trained at that time)! There was simply no focus on speed of movement, or the term *tempo*, which has been popularized in the US.

However, it seems now that so many people are familiar with and use the number system I created in the 80's. It also appears to me that no one is using speed timings and the periodization of these in the manner that I had intended.

The speed of the movement determines a number of things, including the amount of tension developed, the use of mechanical energy (such as the stretch-shortening cycle), and the load. Put simply, the slower the movement, the lower the load but the greater the muscular work.

The faster the movement, the greater the load potential, but the muscle load is reduced (relatively speaking) and mechanical energy is increased. If you want to maximize the load lifted, you use the mechanical energy to your benefit. If you want the muscles to do more of the work, you negate the mechanical energy by techniques such as slowing down the speed of movement.

The time from the start to the end of a set can be called the time under tension (TUT). The speed of movement is one factor that determines the TUT (reps and range are others). The common interpretation of training effects from 'time under tension' is as follows:

Figure 42 - Common interpretation of time under tension (TUT).

TUT	Dominant Training Effect
1-20 seconds	Speed strength/maximal strength
20-40 seconds	Maximal strength/hypertrophy
40-70 seconds	Hypertrophy/muscle endurance

To communicate how fast or slow I wanted an athlete to move the load in strength training, I developed a numbering system in the 80's. I was first influenced by Arthur Jones and Ellington Darden. They were the first I had seen to attach numbers to training programs. It was my recognition of the pause between eccentric and concentric, and the impact that varying this has on the training effect, that completed the picture. The primary role of controlling the pause between lifting and lowering weights is simply to negate or exploit the effects of the stretch shortening cycle (SSC).

Maybe you don't know what the stretch shortening cycle is. As an example, walking employs the stretch shortening cycle. When your foot hits the ground, the quads go through an eccentric (lengthening) cycle, an isometric cycle, and then a concentric (shortening) cycle. If the transition from eccentric to isometric to concentric is performed quickly, the resultant

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concentric contraction is a lot more powerful than if no prior eccentric action was performed. If the transition is long, the elastic energy is dissipated.

Another way I use to impress what impact the stretch shortening role has is to get someone to bend at the knees and hips as if they were going to jump, pause for a few seconds and then jump. Then I get them to do it again, *without the pause*. You would expect them to jump higher without the pause, as this allows them to use the elastic energy available.

Taking advantage of the stretch shortening cycle is a great thing if you're an athlete doing specific speed or speed-strength training. But for optimal muscle hypertrophy, taking advantage of it is not always optimal.

Australian biomechanist Greg Wilson did some great research in the 1990s in quantifying the role of the SSC. He found that if you do a conventional bench press with an eccentric or lowering phase that was about a second, it took a full four-second pause in between the eccentric and concentric to completely eliminate the stretch shortening cycle, i.e. if you lower the bar and you rest it on top of your chest for a period of less than four seconds, you're still getting an added boost from all the elastic energy.

The only real work you'll do is during the last third of the concentric movement! If, however, you negated all that elastic energy by taking a four-second pause, you had to work all that much harder — recruit that many more muscle fibers — to lift the bar. All things being equal, this may mean more muscle growth.

So why don't more people do it this way? Because using the elastic energy offers "fools gold" — when you take advantage of the stretch shortening cycle, you can lift more weight. And if you focus on what load you are lifting at the expense of an awareness of what the muscles are doing — don't expect the best results in terms of muscle growth. Basically, I don't want to know how much you lift — this really tells me nothing as I don't know what percentage of the lift is mechanical energy! What is more important is whether the muscle is being trained optimally in the lift! And this usually has more to do with a controlled speed than the load.

So is using elastic energy bad? Of course not. I recommend using all speeds — the real issue is how you periodize the speed (I tend to go from slow to fast over time) and which speed you spend the most time at. This is critical. You need to know which speed of movement you respond best to. Which ever one you use, a little rule of thumb is this: the lowering time should be longer than the lifting time. So don't be lazy — control that lowering!

Another important point to remember is that being aware of the movement speed allows you also to control this variable. There is little value in increasing the load in a subsequent workout if you also change the speed — who knows whether you are getting stronger or working harder? You may well be just using more elastic energy!

An example of using inappropriate movement speeds was when athletes started doing weight training in the '60s and '70s, using traditional bodybuilding movements and traditional bodybuilding speeds. They typically did slow concentric movements. Unfortunately, doing a slow lift didn't always transfer over to the sports they were playing. They should have been using more explosive concentric movements.

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I believe that bodybuilders also can benefit from using explosive concentric movements. If you intentionally accelerate a weight, you'll develop more functional power, and you'll also possibly recruit more muscle fibers, leading to greater hypertrophy. This is not to suggest explosive concentric movements need to dominate the bodybuilders training — just that there is a place for it.

I have watched English bodybuilder and former Mr. Olympia Dorian Yates train on video and he uses quite a controlled lifting speed. In fact he appears to be attempting to avoid acceleration during the concentric phase. This is definitely an option, but I lean to spending more time with an explosive concentric. Maybe it is my sport involvement that influences this.

I use a three (3) number system to communicate speed of movement in strength training. More recently there have been moves by some to use four (4) numbers. I am not sure if this is borne out of need, or a desire to be able to claim the concept as their own! Whilst you can argue the technical correctness of four numbers, from my experiences, I don't like to finesse too much until the basics are perfected! The middle number generally applies to the pause at both ends of the eccentric and concentric movements. More information is not always needed — what is needed is something that works!

An example would be 3:1:1. All the numbers refer to seconds. The first number relates to the eccentric phase. The second or middle number to the pause or isometric contraction duration between the eccentric and concentric contraction. The third number refers to the concentric phase.

The fact that the first number always refers to the eccentric contraction can cause some confusion in the trainee as a percentage of strength exercises commence with the concentric contraction, especially the pulling movements such as the chin ups. However, once they become familiar with the system it works excellently. In brief, most pushing movements commence with the eccentric contraction, and most pulling movements commence with the concentric contraction.

Another less common criticism (one I used to get more so in the early 1990s) is that it is too complex and the movements should be "just done." Yes, the system does need to be understood by the program writer (I suspect this to be the greatest challenge to these critics); and yes, it does need to be explained to the trainee. No, it doesn't have to be executed with perfection — it is just a guideline (so don't get out your metronome!). And finally, ignoring the varying training effects that arise from varying movement speed is like throwing out 25% of your potential strength adaptations. As you please....

Where I believe most get it wrong is this. For those concerned about power (rate of force development), I don't recommend using anything less than a fast or attempted-to-be-fast concentric contraction for some 80-90% of total training time. A lack of awareness of the "need for speed" (attempted acceleration) in the concentric phase in the power athlete may result in an adaptation to a non-specific rate of force development.

This is the same non-effective and perhaps detrimental training effect that occurred when athletes first started using strength training and using the bodybuilding methods way back decades ago — a total lack of awareness of the need for a fast/attempted-to-be-fast concentric contraction. Therefore, the power athlete cannot afford to spend more than 10-20 % (as a

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generalization) of their total strength training time using numbers greater than 1 as the third number.

Additionally, when the number one does appear as the third number, the power athlete must have it reinforced — this means to try and go fast! And when the asterisk (*) is used [in a written program in lieu of a number] — it [the movement] must look fast!

The second most common error is for the program writer to compile a sequence of numbers which, when combined with the reps written, result in a time under tension that is not specific to their intended training outcome, e.g. 421 x 10 reps (=70 sec) for maximal strength! The major groups of speed combinations I use are as follows (see Figure 43). You may note that only one out of five (or 20%) of the combinations use a deliberately slow concentric phase.

Figure 43 - The major groups of speed of movement combinations I use in my strength training program design

Eccentric Speed / Time	Pause Speed / Time	Concentric Speed / Time
very slow and controlled	long	slow and controlled
slow controlled	medium	fast / attempt to be fast
medium controlled	short	fast / attempt to be fast
fast controlled	nil	fast / attempt to be fast
fast	nil	fast / attempt to be fast

These are some of the keys to my unique numbering system that I feel are overlooked or not understood by some who have copied it. To provide guidelines as to the training methods that these speed of movement combinations are most suited to, the following figure is provided. This figure also provides ranges of speeds that are suited.

Figure 44 - The speed of movement combinations suited to various strength training methods.

Eccentric Speed / Time (seconds)	Pause Speed / Time (seconds)	Concentric Speed / Time (seconds)	Training Methods Most Suited to these Speed Combos	Examples of SOM Combos
very slow	long	slow and	stability /	8 : 0 : 46 :

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and controlled		controlled	control & general fitness; metabolic - end hypertrophy	1 : 34 : 2 : 13 : 1 : 3
slow controlled	medium	fast / attempt to be fast	general fitness; metabolic - end hypertrophy;	3 : 2 : 1
medium controlled	short	fast / attempt to be fast	neural - end hypertrophy; metabolic - end maximal strength	3 : 1 : 12 : 1 : 1
fast controlled	nil	fast / attempt to be fast	neural - end maximal strength; explosive power	2 : 0 : 11 : 0 : 1
fast	nil	fast / attempt to be fast	explosive power; quickness / SSC	10* *0*

Finally, I want to stress this — it is not so much a matter of finding out which is the best speed. Rather, finding out the most effective way to periodize the speed, and which speed to spend most of the time doing. If you take time to check out my program design examples later in this book you will see I tend to periodize from slow to fast, and that a rep TUT of about 5-6 seconds (3:1:1) is about my average.

To order Ian King's Get Buffed book, log on to the Biotest on-line [store](#).