

## **How to Increase Strength 10% in One Workout**

How can a skinny 150-pound Russian bench press 500 pounds? How can a wiry karate master break a stack of boards? How can a gymnast perform an iron cross on the rings, his body rigid as welded together steel beams?

The answer is the skill of strength. Indeed, strength is a skill, the skill to tense one's muscles harder. Regardless of your goals, be it getting stronger without putting on an ounce of weight, getting massively muscled and powerful, or simply toning up, learning the secrets of the strength-skill will help you get there faster. Give the following "high tension techniques" a shot and you will see an immediate jump in your strength, guaranteed.

### **1. Irradiation**

Perform a set of one-arm strict curls with a dumbbell that allows about five solid reps and make sure that your elbow stays at your side and does not drift back. Note how many reps you have done in good form. Rest for 5min.

Do another five but with one difference: on the way up crush the dumbbell to pulp. You cannot help noticing that your pipe has suddenly gotten a jolt of extra energy, as if your tensing forearm has sent some juice up into your biceps. Which is exactly what has happened. Whenever a muscle contracts, it irradiates "nerve force" around it and increases the intensity of the neighborhood muscles' contraction. *Irradiation* is one of the so-called Sherrington Laws. Its effect is strongest in your hands. You are bound to do a few extra reps in this set when you are crushing the handle.

Make a fist. A tight fist. A white-knuckle fist! Note that as you grip harder the tension in your forearm overflows into your upper arm, and even your shoulder and armpit. You will increase your strength in any upper body exercise by strongly gripping the dumbbell, the barbell, the pullup bar, the floor, etc.

"Pushing" exercises take some knack but in the "pulling" ones the effect is immediate.

### **2. Bracing**

A decent arm-wrestler loads all his muscles with high-strung tension before the ref yells "Go!" A top arm-wrestler will load even before he grips up with his or her opponent. And an amateur who waits for the referee's command to pull before turning on his biceps finds himself pinned without knowing

what has hit him.

According to Russian sports scientists, isometrically tensing your muscles before a dynamic contraction can improve your performance by up 20% (Verkhoshansky & Siff, 1996)! This “bracing” technique is one of the secrets of gymnasts’ strength. Note how a gymnast will tense his body before he grabs the rings or some other apparatus instead of waiting for the load to be upon him.

Here is how to make use of this powerful technique in common strength exercises.

Before picking up a heavy weight you are about to curl, take a breath and tense your whole body, especially your midsection, as if you are about to do a plank. Keep the tension for the duration of the set.

On a heavy bench press tense up your whole body, from your fingers to your toes, and take a big breath before you have even unracked the bar. Don’t lose that tension while you are positioning the bar over your chest and later lowering and lifting it. As powerlifters say, stay tight!

On the barbell squat “zip” up your whole body with tension before unracking the bar. Don’t lose that tightness when you are walking out the weight. If you must breathe, breathe very shallow, “sip” air.

In parallel bar dips tense your pecs hard, as if squeezing a pec deck, before descent.

### **3. Successive Induction**

Once you have braced, lower the weight taking take advantage of another one of the Sherrington Laws, that of *successive induction*. According to this law, a contraction of a muscle—say, the triceps—makes its opposite number—in our case, the biceps—stronger than usual for a short time afterwards. (In geek speak, “an agonist is facilitated by the preceding contraction of its antagonist.”)

Let the same one-arm curl be the testing range of the effects of successive induction. Keep practicing irradiation on the way up and add successive induction on the way down. Here is your new trick. Instead of lowering the dumbbell with the braking strength of your biceps, try to “push” the weight down and away from you with your triceps. Imagine that you are doing a triceps cable pushdown with a reverse grip.

Of course, you will still have to keep your biceps tensed as well, otherwise the weight will rocket down to the floor. Ideally, cramp your biceps before the negative. This adds another strength benefit, now you can stretch your tensed biceps like a rubber band.

### ***The science of the “rubber band effect”***

Of all combinations of the three types of contraction an eccentric contraction which followed an isometric one showed the highest values of tension (Semyonov, 1968). I believe that this has to do with some peculiarities of maximal force production. It is pretty much scientific dogma these days that muscular force is generated by actin and myosin filaments overlapping each other and forming *cross-bridges*. Guyton (1984) speculated that once the actin and myosin filaments have maximally overlapped, more tension can be realized by spiralling of the myosin filaments. A change in the length of the pitch of the actin helix may also boost force production during a very intense muscular contraction (Verkhoshansky & Siff, 1996). Both processes can be compared to twisting a rubber band after it has fully contracted. I believe that when a lifter flexes to the point of cramping before getting under the weight, he “zips” up his cross-bridges and twists his “rubber bands”. It enables the muscle to store high amounts of elastic energy as the descending weight stretches the bands and the twists in the bands on the way down. Not surprisingly, Russian research (Zakharyants, 1962) showed that the ability to store and use the tension loaded into the muscles in the yielding phase of the movement separated elite athletes from the “also-rans”. Powerlifting great Ernie Frantz whose book had the rare honor of being translated into Russian always knew that the key to lifting a big weight is the amount of tension built up in the muscles before the barbell is even unracked. "I turn myself into a rubber band," says Frantz, "I am ready to accept the weight and toss it back up."

You are guaranteed to squeeze out an extra rep or two with this technique! And these reps will be super strict because now you have two “motors” to control the weight instead of one. The technique also dramatically reduces the joint stress.

It is easy to apply the active negative technique to the bench press. First cramp your pecs, then without relaxing them, “row” the barbell into your chest while forcing your chest out to meet the bar.

In addition to making you stronger through activating your muscles more intensely and making a better use of elastic energy, active negatives will be of

tremendous psychological help on heavy attempts. You may have seen bodybuilders tentatively feel their way down when trying a max bench or squat. More often than not, they end up too fatigued and psyched out to come up. An active negative will allow you to descend with confidence—and stand up with a personal record.

#### **4. Power Breathing**

Bruce Lee used to say that martial arts rely more on “breath strength” than “body strength”. Indeed, cranking up the “breath strength” will boost the “body strength”. Enter the *pneumo-muscular reflex*. (Zatsiorsky, 1995)

The effect of breathing patterns and the intra-abdominal pressure (IAP) on strength is oddly ignored by most Western strength training authorities. Yet compressed or “power breathing” is one of the most powerful ways of increasing muscular strength in existence! Think of your brain as a music player. Think of your muscles as speakers. Where do you think the amplifier is?—In your stomach. Special *baroreceptors* measure the intra-abdominal pressure and act as the volume control knob. When the IAP bottoms out, the tension in all your muscles drops off. In my stretching book I explain how to take advantage of this phenomenon and make dramatic gains in flexibility overnight. On the other hand, when the internal pressure goes up your nervous system gets more excited and the nerve cells supplying your muscles become “superconductors” of the commands from your brain. So by cranking up the IAP volume knob you automatically get noticeably stronger, in every muscle in your body and in any exercise!

There are different ways to power breathe, grunting being the simplest and most appropriate for explosive efforts.

Hissing is great for steady efforts. Just press your tongue behind your teeth and hiss, trying to contract the abdomen as hard as possible. It is important to press hard with your tongue in order to leave only a very small opening for the escaping air.

Think of your mouth as the nozzle of an air hose. When it is relaxed your air flows out freely and builds up no pressure. But when you press your tongue against your teeth, as if to make the sound “tsss”, it is as if you have plugged the end of the hose with your thumb. Suddenly very little air can escape and the pressure inside the hose goes way up. And with it your strength.

Don't rush your power breath as this would drop the pressure. And don't purse your lips as they teach in some exercise classes, it is a weak way to

breathe. “Hiss, don’t kiss”, chuckles Jon Engum, a 7<sup>th</sup> Dan in Taekwondo and a Senior RKC instructor.

Practice power breathing standing and you will get an exceptional abdominal workout. We have measured the activation of various waist muscles by power breathing in at Prof. Stuart McGill’s lab at the University of Waterloo in Canada and the numbers were off the charts. For instance, without any external load whatsoever, the internal obliques were firing with an intensity of up to 175% of a maximal isometric contraction!

To get an even stronger contraction pulse your hissing exhalation, trying to build up more pressure with every short hiss until you are almost out of air. Press your shoulders down and try to keep the pressure in your stomach rather than your head.

When you are ready to apply power breathing to lifting, pick a simple exercise like the same one-arm curl. Then try to “lift the weight with the pneumatics of your breath”, visualize sending the compressed air into your fist. Practice to perfectly synchronize the exhalation and the lift or “match the breath with the force”. Make sure not to exhale all of your air; you need some for spine stability. Note that the hissing style power breathing is not recommended for exercises like squats or deadlifts; grunts work better there.

Vorobyev (1977) determined that both holding one’s breath and groaning increases strength. Screaming is not bad either. According to by Ikai and Steinhaus (1961), subjects who shouted during exertion got a respectable 12.2% strength boost!

If you are serious about your power breathing, work on you inhalation as well as exhalation. Always inhale through your nose rather than mouth and attempt to draw the air low into your belly or, as martial artists visualize, “breathe into your groin”.

### **Breakthrough research on breath holding**

McGill et al. (1995) has discovered that, contrary to the conventional wisdom, high intra-abdominal pressure helps to REDUCE the risk of a stroke in extreme efforts. An elevated pressure of the spinal fluid “pushes against the blood pressure”. The scuba is a good analogy. The pressure of the water would have crushed the diver’s rib cage if not for the regulator issuing air compressed to the same degree as the water at the given depth. The pressure of the air restrains the pressure of the water. Refer to professor’s

book *Ultimate Back Fitness and Performance* (backfitpro.com) for a technical explanation.

That said, high-tension and power-breathing techniques are still not appropriate for people with heart problems or high blood pressure. Consult a physician.

## **5. Loaded Stretching**

I often hear this question: "I am confused about stretching. Some sources say stretching is a must for strength athletes while others say it is a waste of time or worse. Some say stretch between your sets, others don't..."

Different stretching protocols have different effects. Hence the confusion. Relaxed stretching is what Americans usually think of when they hear the word "stretching". You relax the muscle and then try to lengthen it. This type of stretching makes the muscle temporarily weaker. Which is why some coaches recommend stretching the antagonists between sets of strength exercises, e.g. stretching the triceps to strengthen biceps curls. Because the opposing muscles create less drag you become temporarily stronger by taking your brakes off. As John McCallum commented about a man with strong biceps in his classic 1960s column in *Strength & Health* magazine, "His arms bend easier than most people's."

The Russian import Loaded Stretching is the stuff that literally builds strength. It is also practiced between sets but is applied to the agonists rather than the antagonists—the engines rather than the brakes. Using the same curl example, you would stretch the biceps rather than the triceps with LS.

Don't try to either relax or contract the target muscles. Carefully but powerfully stretch them with some external force. The original Soviet study by Mironenko (1973, 1974) used a specialized device that was later replaced in Russian gyms with kettlebells or partner resistance. The stretch, which should be set up to be felt in the belly of the muscle rather than in the tendons or the joints, must be intense, even painful, and held steadily for 10 sec or so.

### ***How does Loaded Stretching work?***

It is unclear how Loaded Stretching works. Vorobyev (1977) who supervised the above cited studies speculated that the external energy applied to the

muscle during the stretch is somehow stored within the muscle chemically. He cited the second law of thermodynamics that does not allow for energy to disappear but rather insists on its conversion from one form to another. According to a more recent hypothesis, Loaded Stretching is “slow plyometrics” that potentiates the neural wiring of the muscle. But whatever the explanation, LS was shown to lead to instant strength gains of up to 9.4% and long-term strength gains as well (Efimov, 1977).

Here is how to apply this technique to the curl. Stand facing away from a barbell loaded for the bench press. Grab the bar your palms face down shoulder width. Lock your elbows and tilt your body forward. Aim to feel more stretch in your biceps than your pecs. Stay there for 10sec. A minute later do a heavy set of curls with a pair of dumbbells or a barbell.

To strengthen your pecs for the bench press do the same stretch but grab the bar wider, force your chest open, and zero in the load on the pecs.

Instant power to you, Comrade!

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