

Starting Strength

The Ultimate Strength Exercise

Isotonic-Isometric Contraction, part II

by

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Isometrics flourished in the early sixties. Olympic weightlifters, bodybuilders, and strength athletes embraced the new concept that Dr. John Ziegler had designed. It was not really a new idea. Dr. Ziegler used research from the '30s to put together his program for athletes. Athletic directors at colleges and universities and coaches of a wide variety of sports quickly endorsed it. It was easy to learn, took up little space, no barbells, dumbbells, or extra equipment was needed, thus eliminating clutter, and the system was so streamlined that an entire football team could go through a program in thirty minutes. Or less. And best of all, sports medicine personnel and team trainers considered it a safe form of exercising. Team doctors and trainers had, for the most part, condemned all forms of weight training at that point in time.

In the Olympic weightlifting community, isometrics was a hot topic from coast to coast. Primarily because Doc Ziegler had put together the program with this group of athletes in mind, and also due to the tremendous success of his first two test subjects, Bill March of the York Barbell Company, and Louis Riecke of New Orleans. So lifters from Los Angeles to New York were found pushing, pulling, and pressing against a stationary bar in some type of power rack. A great many were homemade, but York was also selling them like hotcakes.

I was training at the Dallas Y when the isometric wave hit. We didn't have a power rack in our tiny weight room, but SMU, which I was attending, had built ten isometric racks under the stadium on campus. On my non-lifting days, I would use one of the racks and go through the program which was presented in the isometric course sold by the York Barbell Co. The racks were enclosed by a wire fence, although I never could figure out why – what was there to steal? The racks were made from 2x10s that were fixed to a piece of plywood and secured at the top with a 2x4. Solid iron bars were then inserted in the holes drilled into the 2x10s at two inch intervals and then the athlete would proceed to do an isometric contraction.

I would wait until the football team had finished their workouts, climb the fence and go through a session in the dark. Well, almost dark. There was a light over the door of the apartment for the night watchman about thirty yards away. Because of his presence, I made very little noise, but it wasn't difficult. I would ease the bar into the holes I wanted, do my contraction, slip the bar out and place in the next position I wanted, and so on until I completed my session. I was usually in and out of there in less than twenty minutes. On a few occasions, I had to hide in the shadows as the night watchman came in and out of his apartment. I never got caught, and doubt it would have mattered if

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I had. But having to be sneaky only added to the experience.

Fellow lifters have told me similar stories because they all did them in one form or another. We really believed we had to if we wanted to keep up with our competitors, and perhaps even make gains like March and Riecke did using the system. This went on for almost half a decade, then word leaked out that while March and Riecke had indeed been using isometrics and then a more advanced form of the system called isotonic-isometrics, they had also been taking an anabolic steroid called Dianabol, which Doc Ziegler had helped CIBA Pharmaceuticals develop. That changed everything. Soon, lifters from all parts of the country were making gains similar to those that Riecke and March had made, and those lifters quickly discovered that it didn't matter what type of routine they used as long as they were taking the drug.

The collective consensus was that any form of isometric exercise was no more than a smoke screen. What had actually brought about the amazing progress of Ziegler's two test subjects was Dianabol and not pushing and pulling against a set bar. The entire deal was no more than a scheme of Hoffman's to market his courses on isometrics and his power racks. Which was the truth. The use of the strength-enhancing drug had been kept secret. Both Hoffman and Ziegler believed this was best. Hoffman, because it gave his York lifters a huge advantage over their opponents and winning was everything to him. Keeping Dianabol under wraps also allowed him to sell a shitload of racks and make a great deal of money. He wouldn't make a dime on Dianabol.

Ziegler had an entirely different reason for keeping the drug a secret. He firmly believed that Olympic weightlifters and other athletes trying to get stronger would abuse the dosage once they started taking the little pink pill. He knew the majority of them had obsessive personalities and would soon be taking dosages that could be dangerous to their health. His prediction proved to be right on the mark.

Steroid usage spread across the country and was not confined to the sport of Olympic lifting. Track and field athletes loved steroids and pro wrestlers began taking them like candy. Football teams often made them available alongside vitamins at the training table. Black market sources and unscrupulous doctors providing the necessary scripts for the drug were plentiful.

Meantime, using isometrics or the more advanced isotonic-isometrics fell completely out of favor. Perhaps the only strength athletes who continued to incorporate isos into their programs were the Olympic lifters at the York Barbell Club. They understood how the routine worked and knew that it brought results, with or without steroids. The result being that those lifters who were taught the system directly from Doc Ziegler or a student of Doc's ended up being the only people who really knew how to teach it to others.

It's an extremely useful method of getting stronger, yet there are only a few left to pass on this information. March and Riecke, of course, then there is Smitty, Bill St. John, Tony Garcy, Tommy Suggs, and myself. Most of the rest are gone: Ernie Pickett, Jeff Moyer, Dr. Gourgott, Russ Knipp, Homer Brannum, Vern Weaver, and Bednarski. I may have missed a few, but not many, and you get the idea. The concept has merit and needs to be passed on. That's why I teach all of my advanced strength athletes how to do isotonic-isometrics. Pure isometrics also work, but not nearly as well as isotonic-isometrics.

Before I get into how to use the program, a bit of background might be beneficial. On an isometric contraction, the muscles don't shorten as they do in an exercise done with a barbell or dumbbell – in other words, when an isotonic movement is done. In an isometric contraction, all muscle energy is used in tension and none in movement, which helps the maximum amount of

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strength. The basic program as set forth by Ziegler was to do three positions for the overhead press, three for back squat, and three more for pulling, plus toe raises. But with a bit of imagination, any exercise could be helped using an isometric contraction: leg curls, good mornings, curls, flat and incline benches and so on.

One rep is done per position, and once you locked the bar in a contraction you put in 100% effort for an 8-12 count. You were encouraged to move fast and take short rest periods between positions. Short and sweet. Perfect? Well, not quite. Pure isometrics had a few drawbacks. It was difficult to determine if you were, in fact, exerting 100%. Secondly, as Ziegler pointed out, no one can actually exert 100% unless he's under dire stress. Like being trapped under an overturned car. The aspect of isometrics that I didn't like was that what I did in the rack couldn't be translated to what I was doing on the lifting platform. I also found them boring. I liked the feel of moving weights. Yet despite all these negative points, pure isometrics can bring results. My pull improved considerably after I went on an iso routine in college.

However, moving the bar a short way before locking it into an isometric contraction is far superior to pure isos. Ziegler determined this early on, and that was the program he had Riecke do, and he also switched March to this type of rack training as well.

Ziegler quickly found out that moving the bar a short distance before locking it against a set of pins and holding it for an isometric contraction was much more productive than pure isos. It eliminated the guesswork of whether the athlete was putting his full effort into the movement. Either the bar stay fixed to the upper pins or it didn't. This meant that if the athlete couldn't hold 315 up against the pins for the required count, he had to lower the poundage. One of the cardinal rules that Ziegler repeated over and over was that time was more critical than the amount of weight on the bar.

Another advantage of moving the weight isotonicly before locking into an isometric contraction was that the athlete could gauge his progress from workout to workout. If an athlete started out using 185 for the start position for overhead presses and at the end of the month was handling 225, he knew for certain that he was getting stronger in that position. That was highly motivational and in contrast to pure isos where there wasn't any tangible proof that you were making progress, other than having one or more lifts in the program move up. Then, you couldn't be certain why it had improved.

There was also the motivation factor in regards to the psychology of numbers. In strength training, everything revolves around numbers: sets, reps, time spent training, rest period, workload, and top-end lifts. It's much more satisfying to be able to lock 365 against the pins while doing a middle-position clean pull than it is to do the same thing with a pure isometric contraction, for several reasons. Doing an isotonic-isometric movement requires that the athlete control the bar, and if it isn't fixed perfectly he will be unable to hold it against the top pins for the required count. And his body has to be in the same position as it would be doing a squat, clean, snatch, or press. Otherwise, the benefits will not carry over to those exercises.

Isotonic-isometrics holds force the athlete to concentrate much harder than with a pure isometric contraction and this means that the nervous system is involved to a much greater extent. This is the main reason that isotonic-isometrics are more demanding than pure isos, and take more time to recover from a strenuous session.

The best way to incorporate isotonic-isometrics into your routine is to do them for just a couple of exercises at first. From here on, I will refer to isotonic-isometrics as simply *isos*. Keep in mind that this is a different form of strength training, and like any other physical discipline there's a learning

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curve. The more you practice doing them, the more proficient you will become and the more benefits you will derive from doing them. There's a lot more to doing them correctly than meets the eye, so be patient as you learn the technique.

The very first thing to understand about these is to make very sure that the muscle groups that you're planning on working are warmed up and ready for the stress ahead. Even though you may be huffing and puffing from doing other exercises, you must have the group you're about to work with isos primed and ready. Perhaps you did squats first in your program and plan on doing one or two pulling positions for your clean in the rack. Do a few sets of power cleans to ready those groups for the isos. In addition, while an athlete is learning how to do isos, I have him do two warm-up sets in the rack before hitting his work set.

This is done in this manner: the athlete has decided to do a middle pull, so he places a set of pins right at mid-thigh with a second set as close to the lower ones as possible. If the pin placements in the rack you are using are three or four inches apart, you may have to resort to standing on a 2x4 so that you don't have to move the bar so far. For the isotonic portion of the movement to be effective, the bar only has to move an inch or two. More makes the exercise a great deal more difficult.

My sample athlete plans on using 325 for his work set, so he starts with 225. He straps onto the bar and takes a moment to ensure that his grip, foot spacing, hip, back, and shoulder placement are exactly the same as when he is pulling a heavy clean through the middle range. If the body positioning and line of flight of the bar are not exactly the same as when the clean is done, the isos will have little or no effect on the lift.

Now he pulls the bar to the upper pins, but he doesn't bother to hold it there. He merely taps the pins and lowers the bar back to the starting position. Rep two is the same as the first, tap then lower the bar. On the third he has an option: he can either tap the bar twice and then lock it into an iso hold or go right to the iso hold on the first rep. Once he locks into the iso contraction, he must apply all the force he can muster into the bar and hold it tightly for a short five second count. Remember, he's still warming up. For his second warm-up, he uses 275 and follows the same procedure as he did for the first set. Tap the upper pins three times and hold for a short count on the third rep, or go right to the iso hold on the first rep.

Now he's ready for the work set with 325. Again, I allow an option while he's getting the feel of this type of exercise. He can tap the upper pins once or twice before locking into the iso hold or he can go after it on the first rep. Most like to tap the higher pins at least once to make sure they're pulling the bar in the right line, but either way brings the same results. But on this final work set, he must hold the bar in an iso contraction for much longer than he did on the warm-up sets, no less than eight seconds and no more than twelve. If he is unable to hold it for at least eight seconds, he needs to lower the weight. If he can hold for twelve seconds, he should use more weight the next time he works that position.

The middle pull on the clean is the very best position to teach an athlete how to do isos. It's a very strong position for nearly every strength athlete and particularly so for Olympic and powerlifters. Here are some form points: Make sure your straps are snug because you're going to need them. Check your body mechanics and make sure that your frontal deltoids are out in front of the bar, and your feet are exactly where they should be. Take a breath, drive your feet down into the platform, and ease the loaded barbell up against the top pins. Many try to jerk the bar upward into the pins, but this doesn't work because the bar will dance away and crash to the lower pin. Ease it upward and fix it against the top pins. Once you have it locked firmly in place, start applying more and more pressure into it. When

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the count hits five lean into it even harder, and at that point every muscle in your body should be fully contracted, from your feet to your traps. Whenever you hit an iso perfectly, you'll feel an electric shock shoot up through your traps. That's what you're after – a maximum contraction.

What you attempt to do on any iso contraction is to bend the bar. Sometimes, it feels as though you actually are, although it's most likely wishful thinking. While Doc Ziegler was right about not being able to put out 100%, with practice you can come darn close. At the end of the contraction, don't let the bar crash down to the lower pins. Rather, take a couple of deep breaths and lower the bar in a controlled fashion. This provides even more strength in the form of a negative movement.

While on the subject of breathing, the rule is simple: you must hold your breath for the duration of an isometric contraction. If you breathe, you diminish your ability to apply maximum force to the bar. That's because inhaling and exhaling causes your diaphragm to relax, which creates negative intrathoracic pressure.

Take a deep breath as you lock the bar up against the top pins and hold in the air until you've reached the desired count. I should note that Doc Ziegler thought that a short count of 6-8 seconds was sufficient, but it has been my experience that most athletes do not start putting their full effort into the iso hold until after 4 or 5 seconds, so they need a longer count to insure that they get the most out of the exercise. Once you've reached the desired count, exhale and inhale.

Holding your breath during an iso contraction usually isn't a problem, except for overhead lifts: presses, jerks, and lockouts. On those lifts, some athletes experience the Valsalva Maneuver. When an athlete holds his breath for an extended period of time while performing a maximum exertion, he hinders the return of venous blood from the brain to his heart. This can result in the athlete blacking out which can be quite dangerous. So as soon as you hit the count you want, take a breath. Once you either inhale or exhale you open the glottis in your throat and this relieves the pressure on the veins that return from the brain. Should you start feeling dizzy while doing an iso contraction, stop and suck in some air. And for that particular position, use a lower count from then on and you'll be fine. Of all the athletes I've taught isos, none have ever experienced the Valsalva Maneuver, but everyone should be aware of it for good reason.

After you have practiced the technique on the middle pull, start using isos to help improve all of your lifts. What you're trying to do is strengthen your weaker areas, and nothing works better than isos because you can isolate a sticking point. Take the bench press for example. Your start and finish are strong, but you're having difficulty in the middle. Set the lower pins in the rack just below that point and the top pins right at the weak point and go to work. In some cases, light weights have to be used because that area is really weak. That's fine. That's what you're looking for. The process of getting stronger and stronger involves deciding what muscle group or groups are lagging behind and giving them direct attention until they are brought up to par.

But in all cases, isos only bring the desired results if you use perfect form while doing a contraction. I once trained an aspiring powerlifter at Tommy Suggs' gym in his garage – the S.A.C. He had a York power rack and I taught the lifter how to do isos for the finish of the deadlift, because that was where he was always failing. He did several sets and was using the proper technique. I told him to do that same position twice a week, on days that he didn't do deadlifts. He also trained at a gym in town, so I didn't see him for a month. I asked how the isos were working and he replied that he couldn't see any difference in his pulling strength. I was puzzled and had him do an iso while I watched. Immediately, I saw the problem. He was leaning way back when he locked into the iso contraction and using the rails on the rack to help him balance the bar. He was also pulling the bar in

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a line that he couldn't possibly use during the execution of a deadlift. If he tried that he'd fall on his ass.

What he had been doing was overloading the bar to impress his buddies in the gym. So I made him lower the bar from 495, which he had been using, to 405. This he barely held for eight seconds. So I told him to pay closer attention to his form than how much weight was on the bar and not to add any weight until he could handle that 405 for twelve seconds and then proceed from there. Within three weeks, his deadlift jumped up by twenty pounds and he was doing isos with 455.

Sometimes an athlete honestly believes that he's using correct form on the isos even when he's not. So it's helpful to have someone watch you to make sure you're doing the isos exactly as you do the exercise with free weights. If there's no one around, use a mirror to check your technique. A slight adjustment in mechanics can make a world of difference.

For isos to be productive, a high degree of concentration is a must. Since you're only doing one iso at any position, you must focus intently on what you're doing for that short span of time. This takes a bit of time to learn and that's why isos become more productive the more you practice them.

Isos are also a great way to get in a workout when time is short. Three positions for any form of pressing, three for pulls, and three more for squats and you're good to go for that day. But they're best for strengthening a weak area. Continually do that and you'll keep making gains, regardless of what you're trying to achieve. And even if you aren't interested in using isos in your own program, learn how to do them so that you can teach others somewhere down the line. In my mind, it's the ultimate strength exercise and it's in danger of being lost. That can't be allowed to happen.

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