

# Training Strength & Power

## 5x5 Progression

If you understand the hypertrophy section about intensity progression, you understand strength training. The only difference is that excessively high repetitions will actually take away from training for strength as a main priority. While there are many different rep schemes you may use, one main scheme seems to be dominant in strength training.

The 5x5 rep scheme work wonders for getting kids strong quickly. This workout starts by the lifters finding a “comfortable” 5x5 weight in basic exercises. They perform the 5x5 three times a week. This 3/week scheme consists of 2 heavy workouts (M/F) and 1 medium (~80% of heavy 5x5 weight) workout (Wednesday). During the heavy workouts, the weight is increased 5lbs or more per workout in all lifts. So in this 4-week period, the lifters will have increased at least 10lb or more per week, or 40lb or more for their 5x5 overall.

This may sound incredibly simple, but it is incredibly powerful. After this first 4 weeks, you shift the 5x5 to a “work-up” 5x5. This means they take 2 “warm-up” 5’s, 2 “work-up” 5’s, and 1 heavy weight 5—that

they keep track of. They still do the medium workout on Wednesday according to the heavy weight on Monday. This allows the lifters to continue weight progression for the entire 8-week period. After these 4 weeks, they should have increased a minimum of 10lb or more per week, or 40lb or more for their single set of 5 overall.

Keep in mind that the kids record their first weight week 1. Then they are “instructed” how to increase weekly. So if a kid blasts all 5x5 he should be increased **at least 10-15lb**. This is usually the case in weeks 1-2 and in weeks 4-5. So it is not unusual for a kid to go up 100lb in a 2-month period with a little added bodyweight to boot. This scheme blends with the HST ideology somewhat.

## Strength/Power 5x5

You need to understand that this program **will not increase weight** the same as the weight gain workouts. This is a good program to get on right after you are done with a weight gain workout. The reason why you don’t gain much weight is because 1) the volume and fatigue is much lower and 2) the medium day is essentially a power day. Let me explain. A 5x5 “heavy” weight is approximately 80% of 1RM. The “medium” weight is 80% of that heavy 5x5 weight, which makes the “medium” weight about 65% or less of 1RM. That is a power weight and won’t fatigue or traumatize the muscles much at all. That percentage (without fatigue or high volume) is of more use for neuromuscular adaptation than for hypertrophy. This medium workout **will** get the lifter better at technique, more powerful (remember, ft-lb/sec); and, thus—**stronger**.

This program works so well and is so simple and easy that you will be tempted to

just run it year round. I did last year. I did so because of my former weightlifting coach's advice to do so. This had my kids stronger than any kids that school had every seen. But they weighed about 5-6lb more on average, and many lost weight. Now a strength coach will say, "So what? They're strong." That is why strength coaches don't coach football or any other sports for that matter.

Athleticism can be built upon with weight training. Take me for instance. Without weight training I would have maxed my weight out about 165-170lb and my vertical would have been around 28" with a 4.75 40. With weight training, I was able to gain up to 227lb with a 31"+ vertical and still about a 4.75 40. Now I could use my athletic ability much better on a football field in heavy contact positions like fullback and linebacker. If I had been a sprinter, jumper, or basketball player, I may have not gained so much weight, but only increased strength and power so that vertical jump was 36"+ and 40 was below 4.5. But, if I had a 22" vertical jump and 5.4 40 to start, it would have been unrealistic to expect weights to lead me to those before stated achievements. In short, genetics is still king of skill position athleticism.

Like I said earlier about size, if two of the strongest 165lb kids in the nation lined up across from a weak, sloth 300lb tackle, they will most likely not get him moved. It is going to be a long night for you if you are trying to double team him out of there. Now if those two kids got up to a "pretty strong" 220lb instead of focusing on being the "strongest" 160lb kids, then you'd put the 300lb sloth into his linebackers. So never substitute strength for size. If you already have a sloth 300lb kid, you can focus **more** on strength with him. He most likely needs some

muscle too. If he is all fat, he won't ever get strong, regardless of the workout goals.

Let's get back to my kids when I trained all strength/power. I seriously had 2-3 kids who could squat 300lb, and those same kids could power clean over 200lb and power snatch over 135lb. This is out of 35 kids. Average vertical was like 19" with highest 4-5 around 23-27". After 4 months of Olympic lifts and 5x5 strength training, the whole team was over 200lb power clean and 135lb power snatch. Most all of the kids could 5x5 well over 225 in Squat. The 2-3 strong ones did nearly 300lb power clean, nearly 225lb power snatch, and did 5x5 with over 365lb in squat. Again, all this occurred without much gain in bodyweight—5-6lb. **Vertical jump did increase by approximately 5 inches on average with highest 4-5 around 28-32"**.

I did not make that program up in my head. It was advised to me by Glenn Pendlay (my weightlifting coach) and Michael Hartman (assistant coach) on a long ride to some weightlifting meet. I believe in giving credit where credit is due. This program is great if you have size or coach another sport. If you are tiny, you will be the *strongest tiny team* getting beat all over the field by doing this workout alone. I'll call this workout the "PHM 5x5" for Pendlay, Hartman, and McAdams, since I modified it somewhat. I've introduced 2 more speed and technique days on Tuesday and Thursday to aid in 1) teaching the positions for the lifts, 2) teaching the full lifts themselves, and 3) speed work. All exercises on Tues/Thurs are light, and rests are about 1 minute between sets. However, you can take the Snatch and C&J up to max or near-max on Thursday every few weeks for records. To max the lifts out, just have them add 5-10lb every attempt after 5 or so. The weight on the lifts should be approximately 60-70% of their 1RM.

## PHM 5x5 Workout

### Monday/Wednesday/Friday

Power Snatch	5x3r
Power Clean	5x3r
Squat	5x5
Bench Press	5x5
Bent Row	5x5

### Tuesday/Thursday

OH Squat	5x2r
Snatch	20x1r
Front Squat	5x2r
Clean & Jerk	20x1r

Mon/Fri      Heavy—Push weights up 5-15lb

Wed            Medium—80% of Mon weight

Tues/Thurs    Position—5 Support Doubles  
Technique—20 Lift Singles

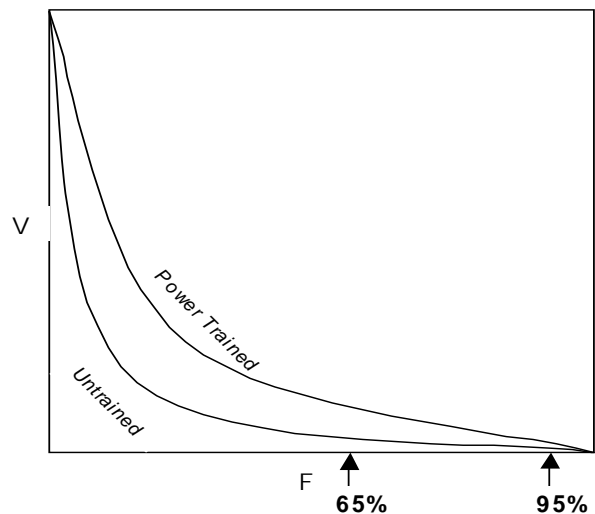
Needless to say, it was very successful at gaining strength and power. Of course this was prior to my best, biggest 7 kids leaving the state, moving to other school districts, becoming ineligible, or injuring themselves. Because of this unforeseen barrage of loser-dom of which I'd only had nightmares, I look back on it and wish I'd worked a weight gain program from the start. We would have had much better depth, JV, and freshman teams. This is how to change your program. Bottom line, don't work strength/power-only for more than a 6-8 week period after a weight gain scheme unless it would **hurt the kids** to gain weight.

## Power Emphasis

I would say the Bulgarian Approach is a neuromuscular, power-based, strength program. The problem with that routine is that it is manipulated for a weightlifter. Aside from non weight gain issue, technique is a major issue. Your kids will not likely grasp full cleans and full snatches for a while after you start.

Squatting and pulling strength is the base of the Olympic lifts. The reason I mention this is because you have to increase force to increase power. Power is the product of force and velocity ( $F \times V$ ). Power output is highest in the Olympic lifts (ft-lb/sec, in previous chapter).

### FORCE/VELOCITY CURVE



The left side vertical line represents speed or *velocity*. So at the top it is limit speed (max speed) in ft per second and at the bottom it is ZERO ft/sec. The bottom line represents resistance, weight, or *force*. On the left side it is ZERO, and it gets larger and larger as you move right until you hit your limit (or max).

Okay, this isn't as hard as it looks. The principle is that as something gets heavier it goes slower. For instance, if you were to jump right now and test it, you would get about around 23-26", assuming you are an average athlete in decent shape. You would leave the ground at a certain speed (ft/sec). If you put on a weight belt that was 25lb, you would lose some inches because your takeoff slowed down. If you increased it to 50lb, you would most definitely lose more inches due to slower takeoff speed or lower *velocity*.

The same holds true for squatting and the speed of the bar with maximum effort. At 95% 1RM it will come up slowly, but at 65% 1RM it will come up much faster. At 30% 1RM you could jump with the bar because the velocity would be much, much higher. This is common sense stuff put into mathematical, physics terms. Research says that if you train at high power levels, you can skew the curve such as the graphic representation, **depending on what range you work.**

**Most coaches are completely oblivious to this knowledge.** You've just taken a big step here. You're no longer one of **them**. They usually train the high end and the low end exclusively since those take no intelligence to test. They test max squat, bench, deadlift, and 40 times. Many coaches I've run into don't even know what a vertical jump means, besides that a kid can or cannot jump. A vertical jump is a *power measure*. The smart strength coach understands these things.

To take advantage of this knowledge you must apply it in context to lifting. Training at 30% weights is ignorant since it is very impractical. How are you going to tell a kid to bench as fast as he can with 30% 1RM without him throwing the bar up in the air? The same holds true for the squat. Some geniuses have circumvented this by having

kids do "jump squats." Those are great for knees and ankles. So are box jumps (jumping down from high ones) by the way. **I'M NOT BEING SERIOUS.** Do not have your kids do those exercises unless you enjoy filling out injury reports.

## Training for Power

To emphasize power you need to teach the Olympic lifts effectively. I've shown earlier how much more effective they are at producing power than alternative means. You may also have timed sets (min/set) with squat and bench where the kids do 8x3r or 10x2r with 65% or less of their max (near 80% of 5x5). This is a more effective variation of the medium 5x5 workout. The minute time is just to speed up the process. They will not be fatigued from it much because the weight is so light. If you do Olympic lifts everyday along with these "timed sets", you will be effectively "power training" your kids. Knowing all of this allows you to know "WHY" you need to do that, for **when** (not if) parents ask.

It is important that you understand that it is even more effective to power train kids while you get them stronger. If they become stronger, they will be more powerful by the skewed force/velocity curve on the force side. This makes their "old" heavy weight a "new" medium weight after a few months of getting stronger. Add to this the power training principles, and you will have similar, dramatic gains that I had with my kids. By adding lots of muscle prior to that, you can really cash in on big power changes along with hitting ability on the football field.

# The Why's to Strength & Power

The reason these approaches work so well is because of specific body adaptation to the stress. Again, this stress is specific—low repetition heavy or high speed exercises with long rests. This causes very little energy system adaptation due to both the lowered repetition and the high rest. This means this type training as a base won't do you any favors late in the 4<sup>th</sup> quarter. But it will get more kids ready to play (depth) so that endurance isn't such an enemy.

This training does affect the **muscle fibers** though. Any hypertrophy that does occur will be specific to type IIB fibers (fastest, strongest) versus weight-gain training (type IIA—medium strength, speed). Along with this, some transformation of characteristics from Type IIA to Type IIB will occur due to strength and power training.

The nervous system also adapts to this training in a different way. In a nutshell, heavy weights (>80%) cause IEMG (nerve electric activation) to increase, thus stronger contractions. This **intensity adaptation** occurs as long as weights increase. So steadily increasing the load should steadily increase IEMG or **neural drive**.

Highly **complex exercises** (more joints involved) cause more central nervous system adaptation to strength than hypertrophy. For example a lateral raise (shoulder isolation exercise) is less complex than a bench press (shoulder, chest, triceps exercise), which is less complex than a Squat (thigh, butt, hams, back, abs), which is less complex than a Clean & Jerk (complete body exercise). This complexity adaptation affects the nervous system's "central" adaptation—meaning coordination and efficiency of movement.

While this is may be a problem with bodybuilder types who do many isolation exercises as a base, this is not a concern for you or me. The reason: we don't use much isolation crap—plain and simple.

Hypertrophy and positive nervous system adaptations are both caused by an **increased frequency** of training. This is the basis of the Bulgarian Training Method and most bodybuilders programming (multiple daily workouts). That is why they train everyday. In short, by training strength and power more often with the same program (split up) you see better results.

When training strength and power, the force velocity curve is skewed toward a new top force (to right) and to a new top power (curve change—like in example). This causes a two-fold increase in power and a synergistic increase in strength. Strength is able to go up due to both force and rate-of--force adaptation. This is the foundation of Westside Barbell and Louie Simmons training and Olympic weightlifting in general. Westside barbell has taken in new lifters, and within months the lifters make new maxes in powerlifting. What is fascinating is that the lifters complete those new max lifts in much less time (= much more power) than their prior results.

In summary, there are a few training-specific adaptations that strength and power training have different from weight-gain training. Exercises can be completed at higher weights with intensity progression (intensity increase) because of lowered repetition and higher rest interval. The training can maintain a higher frequency because of the lowered fatigue levels and overall volume of training. A strength and power training program consists mainly of highly complex exercises because of the "central" nervous system adaptation. All of

these training factors together cause a cumulative effect on the muscle fibers. This effect causes the fibers to have a characteristic transformation to fast twitch. These adaptations all go together to cause some serious changes in the force/velocity curve and the resulting strength and power changes in the lifter. This concludes the **WHY'S** about strength and power training.

\*For more information about strength training and football strategy, visit Robert McAdams' website [www.robertwmcadams.com](http://www.robertwmcadams.com)