

## The Holy Trinity of Strength Training

The back squat, press and power clean are huge parts of the CrossFit program. Legendary lifter and strength coach Bill Starr explains why they're so important for athletes.

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**Bill Starr**

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If you're looking to build brute strength, you need to avoid machines and biceps curls. Instead, focus your time in the weight room on a small number of core exercises that hit the main muscle groups.

It's no surprise to find heavy, low-rep workouts in CrossFit. They've been the core of strength training for years. It's called keeping it simple—and it works.

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*Together with the power clean, the bench press and the back squat are your best bets for gaining a large amount of strength very quickly.*

### **Less Is More in Strength Training**

In the late '60s, when the interest in strength training for football was increasing exponentially, Tommy Suggs and I began traveling to high schools and conventions to give demonstrations and talk with the coaches. Our goal was to teach them how to correctly do the various weight-training lifts and put together a functional program with minimum equipment. We also wanted to find out just what they were doing.

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What stood out in all their programs was that they were doing far too many exercises in a workout. The prevailing idea at that time was that every muscle group, big and small, needed to be given attention in a weight-training session in order to get a stronger body. We took a different route and came up with a simple but effective plan that could be done in a short period of time with minimum equipment.

We selected three exercises: bench press, back squat and power clean. We called them the Big Three.

The Big Three would hit the three major muscle groups: shoulder girdle (upper body), back, and hips and legs. All the lifts would be done for five sets of five. Research had shown the best set and rep formula was four-to-six sets of four-to-six reps, so we chose the median of five-by-five to make it easier for coaches setting up programs for large numbers of athletes.

Tommy and I were both active in Olympic lifting, so it might have seemed natural that we would use the overhead press for our shoulder-girdle exercise. While we believed the press was the best upper-body exercise for athletes, it was getting a great deal of bad publicity at that time. Several newspapers and magazines carried articles by prominent sports medicine doctors who stated that heavy pressing was harmful to the lower back. Plus, word was out that the press was about to be eliminated from official competition for that same reason. Although neither of us believed the press to be harmful when done correctly, we didn't want to deal with that battle. We were already fighting one over full squats and their effect on the knees. The flat bench became our shoulder-girdle primary exercise.

The squat was a no-brainer. It's really the backbone of the program.

The power clean is the perfect lift for any athlete wanting to gain strength, and it has the added benefit of enhancing athletic attributes such as foot speed, co-ordination, timing and balance. The Big Three would be the basic

program for athletes at any level. As they got stronger and the workload increased, other lifts would be added to the routine. Finally, we inserted the heavy-, light- and medium-day concept, which had been around since the '30s.

During the following year, we promoted this program wherever we went and wrote it up in the magazine we edited, *Strength & Health*. At conventions, we demonstrated the three lifts and passed out information on how to put together a program for a large number of athletes. Then we waited for the feedback, wondering what the biggest problems might be. As it turned out, there were none.

At the Kodak National Coaches Convention at the Shoreham Hotel in Washington, D.C., that January, we didn't have to sell the program. The coaches sold it for us.

### **Strength Is About Moving Iron—Period**

The main reason the Big Three—or any other simplicity-based program—works well is that all the energy of an athlete is put into making the large muscles and corresponding attachments stronger. The main problem with



*Don't even think about biceps curls on a machine. Build strength with an O-bar, some bumpers and a lot of determination.*



**How much equipment do you really need?  
Bill Starr says you just need a bar and some weight.**

routines that consist of numerous exercises is only so much energy is available. When it's spread out over a dozen or more movements, none receive much attention. Therefore, we do not get stronger. Oh, maybe a bit stronger, but not nearly enough to make significant gains that would improve sports performance.

The reason why this basic program has survived for so long is because it brings fast results. Of course, the 1976 publication of *The Strongest Shall Survive*, which is based on the Big Three, has helped too.

Nevertheless, this program and others like it often get abused by well-meaning coaches and athletes. More and more exercises get slipped into a strength program, and the primary movements do not get the bulk of attention. Training time gets considerably longer. The results are less notable. Or, in other instances, the basic exercises are replaced with those that aren't quite as demanding. Hang cleans are substituted for full power cleans, for instance, or free weights are replaced by machines in the current mindset.

Although I like some machines, especially the calf and adductor versions, most of the others do not have a place in a serious strength program. The athlete doesn't have to be concerned with balancing the weight when he or she works on a machine. The act of balancing a bar or dumbbell in motion forces the attachments, tendons and ligaments to get involved in the movement, and the strength of any

body part is determined by the attachments much more so than the muscles. Therefore, machines need to be relegated to auxiliary status in a strength routine. Primary exercises need to be done with iron.

Speaking of auxiliary exercises, they should be ignored in the early stages of training. All the effort needs to be put into the three primary, or core, lifts. After two months of building a solid strength base, extra work for the smaller muscle groups can be added to the routine—but not more than two exercises per session. More are often added, usually for the chest and biceps, and the result is an aspiring strength athlete who spends more time on smaller groups than core groups.

Another problem with including too many ancillary movements into a program—and I'm talking about a beginning routine now—is it extends the time spent in the weight room. This has a negative effect on recovery. Recovery is a key factor for anyone attempting to gain strength but is absolutely critical to someone just getting started on this quest. That's why I advise beginners to only train three days a week. Those off days are necessary for the body to recuperate from the new form of stress. It's not just the muscular system that needs rest but also the nervous system. Learning how to perform the various exercises and perfecting them is a mental process, and the day off is not a luxury but a necessity.

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Many overeager beginners start slipping in an extra day of training in order to work their smaller groups. This ends up being a mistake. Even though the workload for that extra day is much less than that of the other sessions, it's still enough to be detrimental. It uses up energy which should be held in reserve for the more demanding workouts and prevents those groups involved from getting the rest they must have.

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In addition, when a beginner expands to training four days a week rather than just three, he typically finds himself in a quandary. Due to his hectic schedule, he has trouble getting into the weight room four times a week. This leads to missing a workout every so often, which leads to less progress and discouragement. It's far better to keep things simple and train diligently three days a week and stay away from the weights on the other days. This doesn't mean you can't do anything physical on the non-lifting days. On the contrary, you should be active: running, swimming, practicing the skills of your chosen sport or participating in some other sport you enjoy.

### **Vary Your Loads to Maximize Gains**

An explanation of the heavy, light and medium concept is needed in order to utilize it properly. The heavy day is self-explanatory. At that session, you handle more weight than in the other two workouts that week, which means you push to the limit on the three exercises in your routine. The goal on the heavy day is to improve the top-end numbers. What you do on the heavy day determines how much weight you will handle on the other two days. The light day always follows the heavy day, meaning the light day usually falls on a Wednesday. The same three exercises will be done in the beginning but less weight will be used.

This serves two useful purposes. It allows you to pay closer attention to your technique on the three exercises, and because the workout is much less taxing, your muscles and attachments will recover faster.

Some like to use percentages to figure out the numbers for the light and medium days, which is fine if you happen to have the time to do it. If you're dealing with 40-plus athletes, the math for a workout can be very time consuming. Here's how I handle it: using the attempts done on the heavy day as your guide, simply make what you did on your third set your top weight for the light day and what you did on your fourth set your top weight for the medium day.

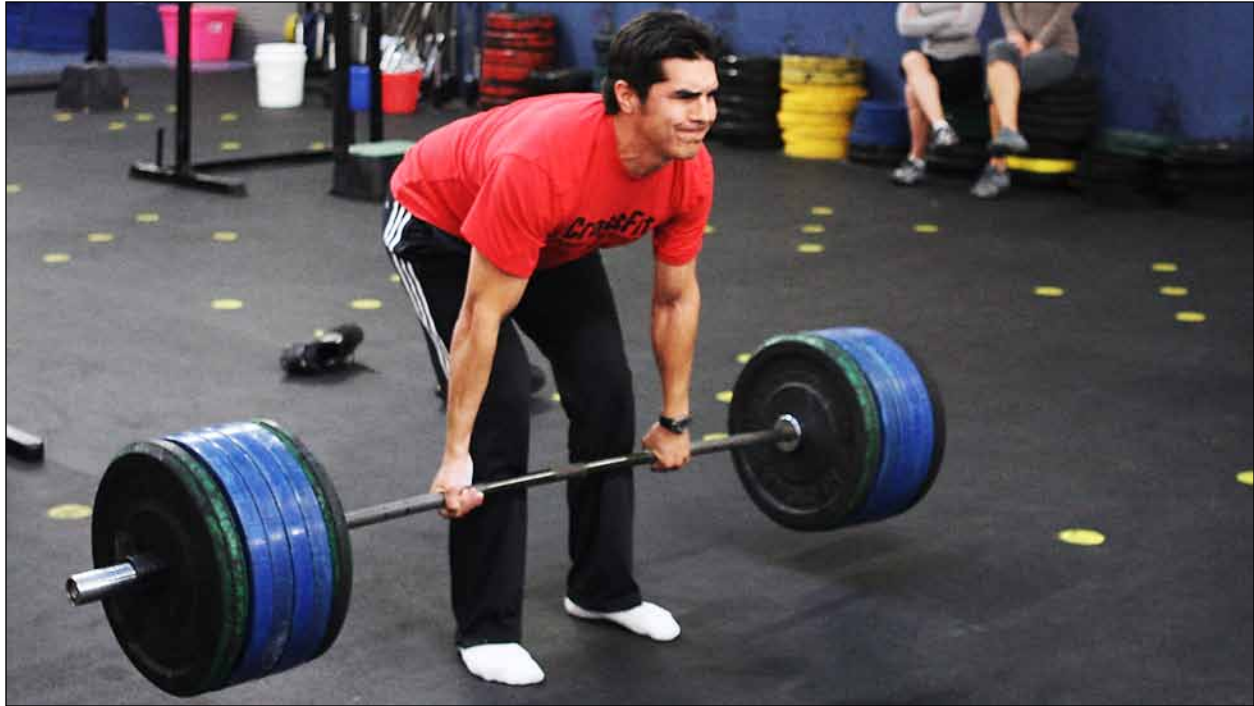
An example might help. Our athlete did the following sets on the back squat on his heavy day: 135, 175, 195, 215, and 225, all for five reps. The third set with 195 will be as heavy as you will go on the squat on your light day, so the sets would be: 135, 155, 175, 185, and 195, again for fives. On your medium day, 215 will be your final set, and the jumps might look like this: 135, 175, 195, 205, and 215 for fives.

You'll note that the last three sets are packed closer together. What this does is increase the total workload just a tad. However, it will work just as well should you choose to use 70 percent for the light day and 80 or 85 percent for the medium day. You're trying to make the light day less difficult than the heavy day by a good margin, and the medium day just a bit less difficult. In the beginning, the disparity need not be much, but one day must be lighter and one medium. Otherwise, progress will not come as quickly.

Also keep in mind what I said about using the light day to perfect technique. When you're able to put your full concentration on the various form points, especially in the power clean and squat, you can improve your technique rather quickly without having to worry about making the attempt.

### **Adding Some Variety to The Big Three**

After six weeks or two months, or when you are confident of your form on the Big Three and have established a firm base of strength, you're ready to make some changes to your routine—or not. Some prefer to stay with just those three basic movements for much longer. However, most like to build in variety, which can be achieved by changing



***Deadlifts can always be worked into a strength program. Triceps kickbacks, on the other hand, should remain absent.***

the exercises. The exception is the back squat. It's key to establishing a sound strength base in the all-important hips and legs. I think it's best to stick with that primary strength builder for six months or more. Then, if you want, you can learn how to do front squats and perhaps lunges, which are excellent substitute for back squats.

At this stage, you do not want to add in other primary exercises. Rather, substitute exercises for the bench press and power clean. For instance, power cleans on your heavy day, good mornings on your light day, and high pulls or shrugs on the medium day.

You might be thinking, "Wouldn't I be using a lot more weight on the shrugs than the power cleans? Shouldn't the shrugs be my heavy day?" No, and the reason is that power cleans are more taxing than shrugs, even though more weight is used on the latter lift. Power snatches could replace power cleans every other week as well.

For the shoulder girdle, begin substituting incline benches and overhead presses for flat benches during the week. Your routine might look like this: flat bench presses on Monday, overhead presses on Wednesday and incline bench presses on Friday.

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When this transition takes place, the question comes up of how to calculate the numbers for the light and medium days. You will no longer be concerned about percentages. The heavy, light and medium concept is now determined by exercise selection. The most weight that can be handled on a shoulder girdle movement is the flat bench. That belongs on the heavy day. The least amount of weight used is the overhead press, which relegates it to the light day. Incline is somewhere in between the flat bench and overhead press, so they fit right into the medium day nicely.

Other exercises can be worked in as you progress, and it doesn't take a Rhodes Scholar to figure out where to place them in the weekly routine. Deadlifts: definitely the heavy day. Bent-over row I'd put on Friday. Weighted dips could be done on either Wednesday or Friday, depending what other upper-body exercises you want to do that week. If it's flat benches and inclines, dip on Wednesday. If it's the flat bench and overhead presses, dips belong on Friday. Keep in mind that you don't need the absolutely perfect

sequence in terms of heavy, light and medium. If you stay with three primary exercises and work them as hard as you can, you're going to get stronger.

You can use this same method to bring in other auxiliary exercises. However, you do not want to exceed two per session. One for the heavy day is a smart idea. Auxiliary movements should be done for higher reps and only for a few sets. For everything except calf raises, two sets of 20 are plenty. For the calves, three sets of 30 is the ticket.

You'll also benefit by working expeditiously, not fast. But don't lollygag either. You need to get in the weight room, get your work done and get out. The heavy days should be completed in an hour and 15 minutes tops, the light day in 45, and the medium workout in an hour. It's very doable when your program comprises just three core exercises and a couple of auxiliary movements.

### Strength Training Is Not Rocket Science

Finally, it's my observation that those in charge of putting together strength programs in high school, colleges and professional sports have reverted back to the same mistakes their predecessors made in the '60s. There are far too many exercises in nearly every program I'm asked to examine. Plus, there are a number of other physical activities attached to the weight workouts: jumping up on boxes, drills on grids for foot speed, pulling ropes, dragging sleds, a circuit with kettlebells, and, of course, some type of plyometrics. What's a workout without plyometrics?

Sounds great on paper, but in reality it doesn't work. In truth, the athletes who are using this multi-layered concept aren't getting that much stronger. They might get a little stronger, but not nearly as much as if they had applied all their energy to moving iron. Those various gimmicks are tiring. That's the rub. They use up energy that should be applied to primary weight movements.

The lack of strength is displaying itself in the large number of injuries in football, especially from the pro ranks on down to the high schools. The pros set the pace in this regard, and they're the most guilty of utilizing gimmicks in place of hard work in the weight room. The reason is simple: strength coaches are afraid that if one of their players gets hurt lifting weights, it may cost them their jobs. They're making a hefty salary, so they dare not take

the risk, choosing instead to occupy their athletes with drills and games while keeping weight sessions on the moderate side.

What they seem to have forgotten is that the very best way to ensure the safety of an athlete in any sport is to make him or her as strong as possible. The athlete can take the hits on the playing field with no ill effects. If a strength coach really wants to do something to improve attributes such as foot speed, quickness, timing, co-ordination and balance, he should teach athletes how to snatch and clean and jerk. Mastering those three high-skill lifts will enhance every athletic quality with the added bonus of creating even greater overall functional strength.

Three is the operative number when designing a beginning strength program: three basic exercises for the three major muscle groups done three times a week. This program is equally useful to those starting back into a strength routine after a layoff, as well as those wanting to maintain a high level of strength fitness at any age.

Simplicity is the key to success in strength training—so keep it simple.



### About The Author

*Bill Starr coached at the 1968 Olympics in Mexico City, the 1970 World Olympic Weightlifting World Championship in Columbus, Ohio, and the 1975 World Powerlifting Championships in Birmingham, England. He was selected as head coach of the 1969 team that competed in the Tournament of Americas in Mayaguez, Puerto Rico, where the United States won the team title, making him the first active lifter to be head coach of an international Olympic weightlifting team. Starr is the author of the books **The Strongest Shall Survive: Strength Training for Football** and **Defying Gravity**, which can be found at [TheAsgard Company Bookstore](http://TheAsgardCompanyBookstore.com).*