
THE

CrossFit JOURNAL

Building the Base of the Strength Pyramid

Many people take the wrong approach to strength training. Bill Starr says the simple, focused approach is the best way to build strength quickly.

By Bill Starr

March 2010

Susannah Dy/CrossFit Journal



When constructing any sort of structure, from a simple shed for the back yard to a stadium that will seat 100,000 people, you need to create a solid foundation first. If this isn't done properly, the structure will not be substantial, nor will it last for very long.

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Strength Pyramid ... (continued)

This same idea applies to the process of developing a strong body. Time and energy must be spent establishing a firm base. I like to think the pyramids of Egypt were built in this manner: they could only go as high as the foundation would support. The same goes for the human body.

In the Beginning, Less Is More

While most of those who embark on a mission to make their bodies functionally stronger understand the logic behind this idea, very few put together a program that will satisfy it, mostly because the real reason they started lifting weights was to obtain bigger arms and chests. So, from the onset, their focus is on their upper bodies and not the entire structure.

Another mistake many coaches and beginners make in this regard is that they include far too many exercises in the routines. The rationale is that every muscle group needs to be given direct attention in order for it to get bigger and stronger. There's nothing wrong with any of the exercises. They're all beneficial—just not at the beginning. The problem with this type of program for someone in the formative stage is that the available energy has to be spread around so much that very little can be put into the more important exercises. As a result, little overall progress is made.

Then there are those who start off using a sensible program containing only a few basic exercises. They become impatient and begin adding in more and more movements—typically for the arms and chest—before their foundations are solid. They might see an advanced strength athlete doing several exercises not on their programs, and because they want to be like that advanced athlete, they start doing them as well. It doesn't work. That advanced athlete has spent several years building his foundation. The beginner has not.

Or beginners read an article in a muscle mag that points out how useful bent-over rows are for the middle back. They want a strong middle back too, so they add that exercise to their ever-growing list. A couple of weeks later, they decide they need to do high-pulls, and so on and on until the scheduled workouts look like a weekly shopping list.



Samantha Dyer/CrossFit Journal

Plyometric/agility movements can fit into a strength program, but Bill Starr recommends they be done on days when no weights are lifted.

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Strength Pyramid ... (continued)

This approach has two drawbacks in terms of making progress. First, those exercises done at the end of the workouts are done with fatigued muscles and attachments and are therefore not productive. Secondly, going through a large number of exercises makes the workouts much too long. It becomes harder and harder to recover from these lengthy sessions, and training on tired muscles soon leads to small dings and sore areas that stay that way for days while the numbers on all the movements steadily decline.

Building a solid foundation is actually a simple process, but that point is usually missed because many coaches and athletes try to make it quite complicated. Complicated has to bring better results than simple, right? It's just the opposite, and that is confusing to many people who are engaged in teaching or trying to improve their functional strength.

The Core Lifts

I'll start with the basics. Keep the number of exercises in a beginning program to just three. There should be one for each of the three major muscle groups of the body: shoulder girdle or upper body, back, and hips and legs. Each of these will receive equal attention because one of the main principles in building a solid base is the various groups have to be in balance with one another, strength-wise. Naturally, one area will make faster progress than the other two, but care must be taken so as not to allow that stronger area to race too far ahead of the rest. When this happens, problems result and gains come to a standstill.

Most who embark on a strength routine that I set up make faster progress on their hips and legs than any other body part. This makes sense. These are the largest groups in the body and they respond very readily to the resistance training. It's also normal for a young athlete to work the



Susannah Dy/CrossFit Journal

Advanced strength athletes can move to a front squat as their primary lower-body movement, but Bill Starr recommends everyone start off with the back squat.

Strength Pyramid ... (continued)

hardest on any exercise he excels at, so he always squats first, and the movement continues to improve. In the meantime, his back strength is not keeping pace although he is making some gains in that area. But if nothing is done to rectify the disparity, his disproportionately weak back will start affecting his squat. How? If any of the various parts of the back—lower, middle or upper—are relatively weak in comparison with the hips and legs, they will not allow the athlete to maintain the proper mechanics during a maximum-effort squat.

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The same thing holds true for someone who is enamored with the bench press. He gives that exercise priority at every session and adds in several auxiliary movements that he believes will help him move more weight. Then, as an afterthought, he goes through the motions on the exercises for his legs and back. It needs to be understood that there must be a balance of strength between the muscles of the upper back and those of the frontal deltoids and chest. Whenever those frontal muscles become a great deal stronger than those that help stabilize the rear part of the shoulder—i.e., the traps and rear deltoids—the shoulder joints will begin to slope slightly forward, causing pain in the shoulders.

There are so many exercises for the different groups that selection often becomes a headache. Not everyone agrees with the ones I prefer, which is fine. Many different exercises suffice as long as they meet the necessary criterion of being a primary movement that is aimed at one of the larger muscle groups.

For the hips and legs, no other exercise can compare to the back squat. I'm talking about the formative stages of training at this point. Once an athlete becomes advanced, the front squat is perhaps even more productive, but in the beginning the back squat is the way to go. For the back, I like the power clean for several reasons. It works all parts of the back equally and does so in a dynamic fashion. The explosive movement forces the muscles and attachments to work in an entirely different manner than more static exercises. In addition, and most importantly to athletes, the power clean requires that the lifter employ a number of attributes, such as coordination, timing, quickness and balance, in order to do it properly and with a decent amount of weight. As he becomes more proficient in performing the movement, those skills improve as he gains strength and are then utilized in other sports endeavors. It's a two-for-one deal. While an athlete gets stronger, he also improves his athleticism—can't beat that.



Susannah D'Costa/Journal

Power cleans are great for building strength but have an added benefit: they improve speed, agility, coordination, balance and a host of other attributes required by the athlete.



***Proficiency with power cleans quickly translates to proficiency with other pulls.
Master the power clean, then move on to full cleans and snatches.***

Another reason why I start my athletes on power cleans, both male and female, is that once they have learned the form on that exercise, they can pick up the technique on many other pulling movements rather easily. Power snatches, clean and snatch high pulls, shrugs, deadlifts, and even full cleans and full snatches are others that benefit from proficiency with cleans.

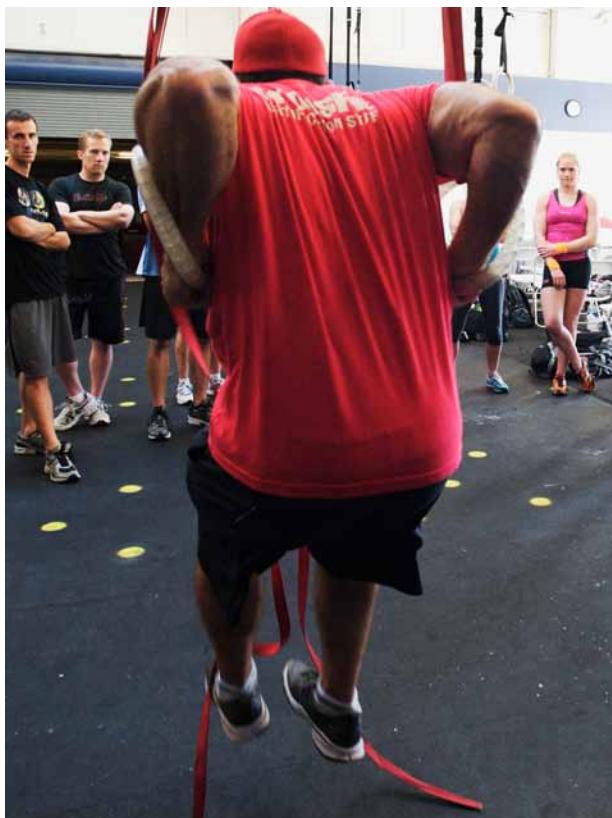
The exercise I select for the shoulder girdle depends on what sport, or sports, the athlete is participating in. For football players, I use the flat bench. It converts to blocking and tackling, and because every high school and collegiate strength program uses and tests for the flat bench, it might as well be done. However, if I could, I would make the incline bench press the standard for those playing football. It develops the shoulder muscles better than the flat bench and is much less stressful to the shoulder joints and elbows because it has to be done in a strict manner. Rebounding the bar and bridging, which are common in the flat version, do not work on the incline because the bar will jump too far out front and cause the attempt to be a failure.

As I've mentioned previously, the reason Tommy Suggs and I chose the flat bench to be our primary shoulder-girdle exercise for The Big Three ([The Holy Trinity of Strength Training](#)) is not because we thought it was superior to the incline but rather because there just weren't any incline benches available in the late '60s. Well, of course some could be found in health clubs and heavy training gyms, but none at all in junior and senior high schools and colleges, which were the places where our target groups worked out.

So now, if there is an incline available, I make that my primary upper-body movement for any beginning athlete. And while I do like the overhead press, the incline is still the better exercise for those just starting out on a strength program because more weight can be handled on that exercise. I've also had a small number of athletes who were unable to do flat or incline benches or even overhead presses. This was usually due to some medical condition and would change once that problem improved. I had them do weighted dips as their primary upper-body exercise if they could do them, and they all could.

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Susannah Dij/CrossFit Journal



Dips are a great upper-body movement, and Bill Starr recommends adding heavy weight to the movement to produce impressive strength gains.

Not many athletes include dips into their routines, and when they do it's always as an ancillary movement. At one time dips were done by both bodybuilders and strength athletes to enhance upper-body strength. Few other exercises work the deltoids and triceps as completely, but dips have to be done with heavy weights in order to produce the desired results.

Stick to Strength First

Recently, I set up a program for a teenager who was playing soccer, basketball and baseball. The three exercises I laid out for his program were back squats, power cleans and incline bench presses. During the learning stage, he would not do any exercises for his smaller muscle groups, which is the temptation of every youngster. The movements for the biceps, triceps, deltoids and calves would be put on hold until the core lifts were greatly improved.

It needs to be noted that the smaller groups are not being completely ignored because they receive attention when the primary lifts are being done. The triceps and deltoids, for example, get ample work from the inclines, the calves and deltoids are very much involved in the power cleans, as are the biceps, and the calves play a major role in the performance of back squats.

There will be plenty of time for specific work on the smaller groups later on, but in the beginning, all the athlete's energy needs to be focused on improving those primary movements. In this same vein of thought, I had him cut back on his running during the initial stages of his strength training. This was in the summer, so he wasn't participating in any of his sports. One of the most common mistakes made by scholastic and collegiate strength coaches, usually at the prodding of the sports coaches, is to include distance running into the conditioning routine at the same time the athletes are just getting started on their strength programs.

Every year, I had to do battle with the sports coaches over this. I tried to convince them to hold off on the running until their athletes had established a solid base of strength. I asked for two months and usually ended up getting six weeks, but that was better than nothing. Running distances in January to be ready for summer practice in August makes no sense. However, building up a surplus of leg strength in January does. Trying to run long distances such as five miles while attempting to improve leg strength at the same time simply doesn't work. There's only so much energy to go around, and if a large portion of it is spent running, then the squat numbers will suffer.

That said, it works out nicely the other way around. Apply all the energy into the weight work and move the squats up 40 percent or more and there will be more muscle to carry the athletes over those distances later on in the spring. In fact, I've had success with football players who listened to me and didn't bother with any form of running until just a month before summer practices started. When an athlete is using 450-500 lb. in the squat, he's going to be able to run not only longer but faster. All he has to do is get his cardiovascular system fit, which can be done in a rather short period of time. Then he's good to go.

Strength Pyramid ... (continued)

I had a female coach come to me and complain that her athletes were getting slower because of the squats. This was in the second week of their off-season conditioning program. They were also running distances twice a week and doing sprinting drills two other days of the week. I told her, "Of course they're moving slower. They're beat. The weight work is all new to them and places a huge demand on their energy and recovery. Running and lifting at this juncture is way too much. Let them get strong, then cut in the running." Reluctantly, she agreed and, sure enough, after the athletes got over their initial soreness and started getting noticeably stronger in their squats, they got faster on the distances and drills.

The same thing happens in many programs with plyometrics and agility drills. These are fine, but they need to be used as auxiliary exercises and not done on the same days as the athletes lift weights. When this occurs, the athletes invariably hold back on their weight work so they will be able to do well on the drills because they know their coaches are keeping a close watch on them. I had some teams spend less than an hour lifting weights, then another 45 minutes doing foot drills through ladders on the floor and hopping up on boxes. They would have been much better off if they would have hit the weights hard for an hour and a half and done the plyos and foot drills on another day. Or they could have waited for a couple of months into the off-season strength program before bothering with the extras.

The bottom line is get strong and all the others aspects of training will fall nicely in place. Try and combine everything at the same time and very little improvement is shown.

How Much Lifting Is Enough?

Three primary exercises done three times a week is sufficient. Early on, rest on the off days, then slowly start adding in some activities that are specific to the sport being played, such as running short distances mainly to keep your stride and your cardiorespiratory system in gear. That's also a good time to improve flexibility and practice the skills utilized in a certain sport.

Research has shown that the best formula for building strength is 4-6 sets of 4-6 reps. For the sake of simplicity, I use 5 sets of 5. At the first session with the weights, do only three sets of five reps. While this may not seem like much, it is if that athlete has never lifted weights before or has been off training for a long time, which is the case for most athletes after a sports season. Few do much in the way of

serious strength training during the season, so they need to approach the next strength cycle as if they had never trained before. Of course, they will respond a great deal faster the second and third time around, but it's still smart to begin conservatively.

At the second workout, do 4 sets of 5 on each exercise and move that to 5 sets of 5 by the end of the week. The athlete should have two goals in the initial phase of strength training: increasing the numbers and perfecting technique. Of the two, perfecting technique is the more important. In fact, it's the most important aspect in terms of making long-term progress. The more precise the form, the more rapid the progress and the less risk of injury—two things every aspiring athlete wants.

For the first three or four weeks, don't be concerned with the heavy, light and medium concept. Go as heavy as you can on all three exercises at every session. However, form must be perfect as you move up the strength ladder. Start using sloppy form just to improve some lift, such as the flat bench press, and that incorrect technique will become so ingrained that seldom does it get set right. To make sure there is no cheating, such as rebounding the bar and bridging it through the sticking point on the bench, pause with the bar on the chest for a brief moment before driving it upward. If this is established from the get-go, it will stick with the athlete throughout his lifetime.

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Susannah DyrCrossFit Journal

Chin-ups are a great auxiliary exercise for the upper back. And yes, they'll work the biceps, too.

The same idea works for the full squat. While learning the lift, have the athlete pause at the deep bottom of the movement. This will teach him to stay extremely tight in that low position and drive into the bar with power rather than using the recoil from rebounding at the bottom. In both instances, the pausing avoids the risk to the elbows and knees because of the rebounding.

Once an athlete has learned correct technique and found out where his limits are on the three exercises, he needs to incorporate the heavy, light and medium system into his program. This need not be complicated. Just make sure a lighter session follows the heaviest one and that the other workout is somewhere in between those two.

Some like to use percentages for the three days: 100 percent, 80 percent and 90 percent, or something along those lines. What I do is much simpler and is very useful for anyone dealing with a large group of athletes: the weight used for the third set on the heavy day will be the final set on the light day. An example. Our lifter did the following poundages for his squats on his heavy day, all for five reps: 135, 185, 215, 235 and 255. On the light day he will do: 135, 175, 195, 205, 215 for fives. For the medium day, he'll take these jumps: 135, 175, 205, 225, and 235 for five, or some variation of these selections.

The main idea behind the heavy, light and medium concept is to allow the body a bit of rest after the heavy day, and the light day is also important because it lets the athlete concentrate more fully on the various form points

of each exercise. Many shun the light day, believing it's a waste of time to handle weights that are not the least bit demanding, but it's really one of the key elements in making the program productive.

Auxiliary Movements—But Just a Few!

At this point, exercises for the smaller muscle groups can be inserted into the routine. Don't, however, go hog wild over this. Add in no more than two a day, and these need to be worked in a different set and rep sequence than what is used for the primary movements. I recommend 2 sets of 20 for everything except the calf raises. Calves have to be punished in order to get them to respond, so 3 sets of 30 are used for those.

The auxiliary exercises I recommend for beginners are: dips, chins, dumbbell presses, straight-armed pullovers, lateral and frontal raises, and calf raises. If seated and standing calf-raise machines are available, use them both because that will result in more thorough development. Curls are conspicuous by their absence, but I have included what I think is the best exercise of all for developing larger and more shapely biceps: the chin. Chins also provide the added bonus of helping to build a wider, stronger upper back. Four sets to limit, then slowly add to the overall number each time they are done. If all the smaller group movements can't be done in a week's time, alternate them over a two-week period.

The Final Pieces: Nutrition and Rest

Building a strong, healthy body requires that the athlete do more than just lift weights, however. He must also have the discipline to regulate other facets of his lifestyle, primarily his diet and rest habits. The very best way to get stronger is to put on functional body weight while attacking the larger muscle groups. Gain body weight and the lifts will go up, and the better the body weight an athlete puts on, the more rapid the progress. This means eating a plentiful supply of wholesome foods, with most of that being in the form of protein. Lots of protein is needed for the muscles, tendons and ligaments to rebuild and get stronger from workout to workout. If a food isn't carbohydrate or fat, then it's protein.

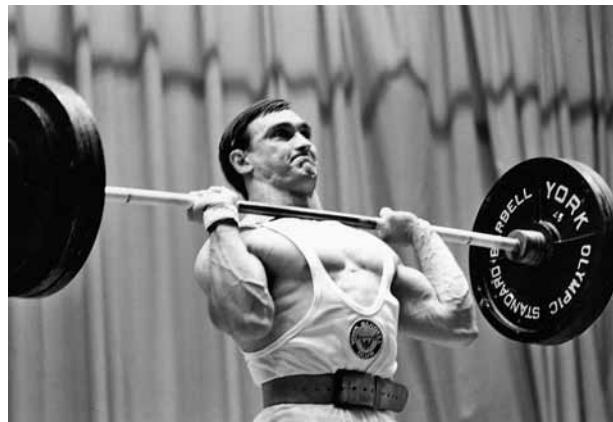
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The rule of thumb for protein intake for hard-training athletes that has been around for a long time is one gram of protein for every pound of bodyweight. This isn't always easy to accomplish from the foods we eat, and that's why most serious strength athletes drink protein milkshakes to supplement their diets. One right after a session in the gym is a good idea because this helps replace the amino acids lost during the exercising. Another before bedtime will aid in the quest of packing on additional pounds, and the protein does a great deal of good things for the body during sleep.

And that's the final piece of the puzzle. Without sufficient rest, the body cannot recover from strenuous work, and strength training, when done with purpose, is very hard work. For beginners, it's often a shock to their systems, so it's extremely important that they get some extra rest while they're building a foundation of strength. When training, get an hour more sleep than usual, at least. In many cases, another hour is necessary to be alert and provide enough energy and drive to allow athletes to do their very best in the weight room.

Eventually, more and more primary exercises will be included in the routine, and the volume of work will be steadily expanded. But that time only comes after the foundation has been firmly established. Build that base of the strength pyramid strong and sturdy, and the rewards will be great.

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Jody Forster

About the Author

*Bill Starr coached at the 1968 Olympics in Mexico City, the 1970 World Olympic Weightlifting 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 [The Asgaard Company Bookstore](#).*