

the
CrossFit
JOURNAL ARTICLES

The Slow Lifts

Part 5: The Deadlift

Mark Rippetoe



I know of no better example of functional strength than a 600-pound deadlift. Except a 700-pound deadlift. That's what strength is: the ability to generate force, and the "functional" part is really just a qualifier. Because when you're that strong, it's functional. That's the part that has the modern "academic" wing of the fitness industry in such a fog just now.

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The Deadlift (continued...)

It is currently fashionable to characterize certain types of training as “functional” and other types of training as something else, maybe “non-functional” or “training that lacks function” or “functionless” training. I have no idea why this has received such attention recently, except that there are several equipment manufacturers that make stuff that is supposed to add “function” to our training. And damned if it doesn’t always involve some sort of instability that the overcoming of provides the benefit.

But more than involving instability (and expensive proprietary devices), it also always seems to involve very light weights. Look, if a guy wants to do his alternate dumbbell presses while seated on a stability ball, that’s fine with me. But my god, you have to use more than the 15-pound dumbbells! Because if you want functional strength, you have to at some point get strong enough to lift more than the 15s. You just do. But this point often gets lost on stability ball day.

And I swear that I actually saw a guy doing 50-pound behind-the-neck lat pulldowns while seated on a Swiss ball. I was out of town, by the way, in a state that begins with a C.

It seems as though whenever we talk about functional strength, we get all hung up on the functional part and forget about the strength part. So I’m going to go out on a limb here and suggest something that may upset the PTs and the ATCs and the exercise physiologists that seem to be so fond of this stuff. My contention is that if you make your deadlift go from 185 up to 400, you have obtained functional strength without the use of anything but a weighted barbell. Furthermore, if you do this, your seated alternate dumbbell stability ball press will go up too, without having to suffer the embarrassment of actually doing it in public.

The deadlift teaches function, because there is no more functional a movement than picking up something heavy. It’s one of the things our bodies

are built to do, and when we do it as an exercise, we get better at using our bodies the way they were built to be used. We just need to make sure we’re doing it right, since when we learn it right as an exercise, it carries over into all the other situations where “functional” is important.

I had a little business venture a couple years ago that was going to make me and Carla, my associate here at Wichita Falls Athletic Club, millions of dollars in a short time. Fistfuls of cash, I tell you. Why, had it worked I wouldn’t be writing this now, because there would just not be enough time. We were going to teach the deadlift to industrial and commercial employees, for the purpose of applying the skill to workplace situations and thus preventing back injuries. The idea was sound, I’m still convinced, but it was not something the corporate human resources people were willing to give up the paper clip money for. We eventually got tired of trying to sell the idea to people who had no idea how a reduction in the incidence of \$500,000 back injuries could save them money. I’m actually glad we got it out of our systems, before we got our faces sued off by a plaintiff’s attorney representing some fat guy with a back injury he got in his garage.

The deadlift has the reputation of being even more hated than the squat. Even people who will actually do their squats will sneak out of the gym before I notice that they haven’t gotten the bar down on the floor. This disappoints me, but I understand. Deadlifts are hard.

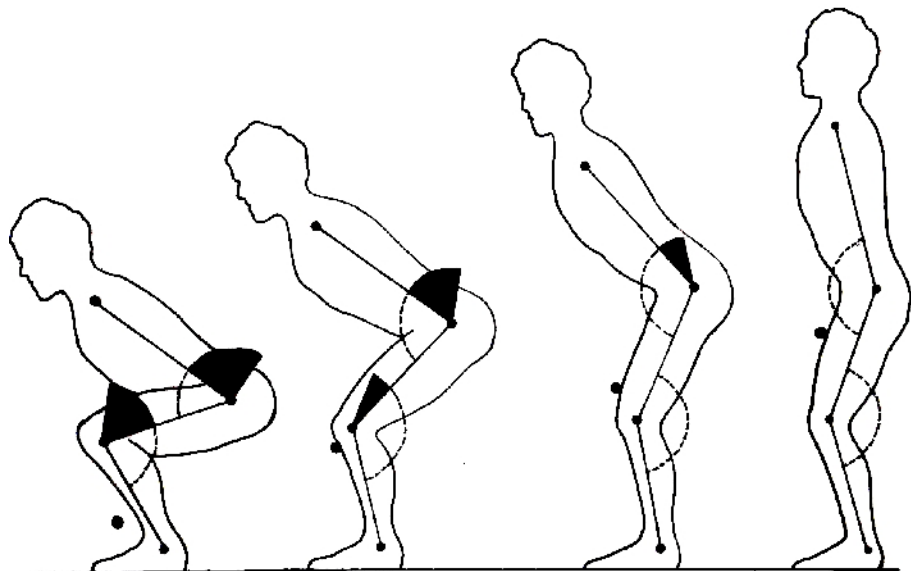


Illustration courtesy of Lon Kilgore

The Deadlift (continued...)

Most people don't like hard stuff. That's why there are more people doing one-arm triceps kickbacks on the wobble board with the 5-pounders than there are people doing deadlifts. And the deadlift is hard to cheat; a squat can be high and people might disagree, but a deadlift is easy to judge.

It is actually a very simple exercise, requiring only a couple of important technical considerations and a willingness to pull on things that would rather not move. The two technical considerations are back position and the bar path.

The lower back needs to be extended, or arched, during the entire pull so the bones of the spine stay in the right position to bear a load safely. The thoracic spine needs to be in a correct position too, best accomplished by keeping the chest up during the pull. The position is the same one that you assume when standing erect normally and correctly, referred to as "normal anatomical position." The low back arch is not natural for some people, and it must be worked on and coached diligently if it is not right. The upper back, "chest-up" position can cause problems with our other main consideration, the bar path, if it is not understood clearly.

When the bar gets heavy, the bar path of a correct deadlift will be essentially vertical. This is because the straight line of a vertical pull is the shortest distance between the floor and lockout, and this is the way your body likes to do heavy deadlifts. There will be an angle, defined by the plane of the flat back as it intersects the floor, that produces the most efficient pull off the floor. That angle will allow the best use of the quads as they straighten the knees for the initial push, it will allow the bar to stay on the shins as it comes vertically up, and it will keep the bar in contact with the legs until it locks out at the top. This back angle will be maintained as the knees straighten out and the bar passes them on the way up, until the hips begin to extend and the knees and hips lock out together.

If the back angle is too horizontal—too parallel to the floor—the net effect is the removal of the quads from the pull. Quads straighten out the knee. That is their anatomical function, but it must occur while the bar is moving up, not before, or the muscle group has not contributed to the pull. Think of it this way: in a good deadlift, the knees push the bar away from the floor, and the hips pull it to lockout. If the knees start out straight (or straighten before the bar rises above them),

you have done a stiff-leg deadlift, an assistance exercise for the hamstrings.

If the back angle is too vertical, the hips will rise before the bar leaves the floor, straightening out the knee without moving the bar up, and pulling the shins back away from the bar so that there is air between bar and shin. This wastes movement, but, more important, it puts the bar in a bad mechanical position to pull, too far away from the hips—the point of rotation around which the force of leg drive is turning. Then the bar either stays too far away from the legs during the pull or it bangs you in the shins as it comes back in line where it should have been. Either way, the pull is inefficient and incorrect.

Furthermore, the most efficient angle will be a little different for everybody, since it depends on individual anthropometry—the differences in the lengths of the segments of the body: the arms, the spine, the femurs, and the tibias. People with long torsos and short legs will have a steeper back angle than people with long legs and short torsos. At the correct back angle, the only things that are constant are the bar in contact with the shins, the shoulders very slightly in front of the bar, and the back locked into normal anatomical position. If you're coaching, don't expect there to be a template that everybody fits. Right is relative.

These effects are observed mainly when the bar gets heavy. At light weights all manner of mistakes are possible because the bar path can be a crooked line and the universe does not care. However, what with gravity being the law, at heavy weights the bar path will

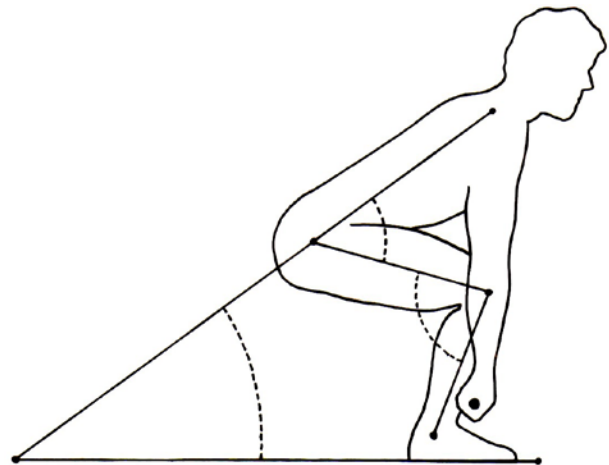


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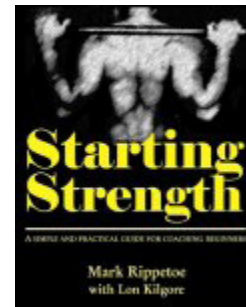
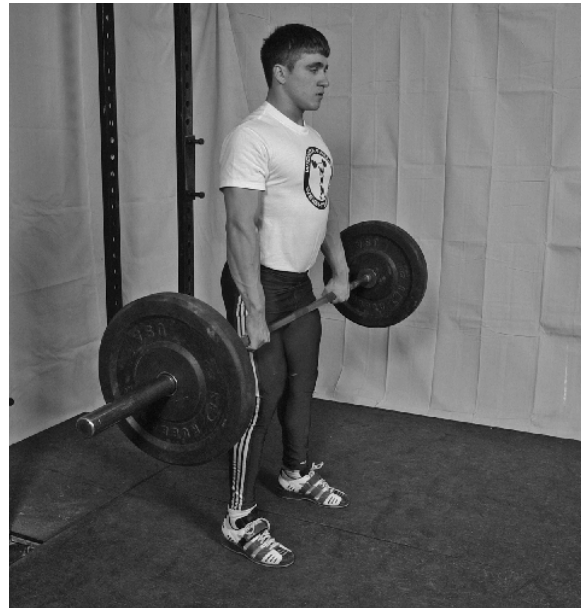
The Deadlift (continued...)

be damned close to vertical, possibly with a very slight arc back toward the legs as it comes off the floor, and you will have to learn to like it and adapt accordingly.

Now, the chest position has an effect on the starting position (sorry if this is getting dry, we're almost through with the concentration part) due to the fact that many people confuse chest-up with back angle. Lifting the chest is a thoracic spine extension, done with the muscles of the upper back. When you lift the chest, you do it by straightening out the curve between the T1 and T8 vertebrae, tightening the upper slips of the longissimus dorsi, and producing an isometric contraction that holds the vertebrae immobile during the deadlift. Theoretically, at least. The whole spine should be protected by this isometric contraction. In effect, the hips and legs generate the movement—they are the motor. The locked back transfers this movement down the arms to the bar—it is the transmission.

This must be understood: the chest-up position has nothing to do with the back angle. The chest can be lifted by the thoracic contraction in any position, standing straight up or bent over at the waist. So can the lower back extension, the movement that tightens the muscles that protect the lumbar spine. This skill needs to be developed so that a tight back position can be assumed whenever it is necessary, in any position, whether deadlifting or picking up the groceries, skiing really fast downhill or staying tight while you hit the nose guard, maintaining a tight torso during a sprint or carrying a charged hose up the third flight of stairs.

This is precisely why the deadlift is as functional as exercise gets. Name a physical movement that applies in more situations or that occurs as frequently as generating force against the ground and transferring it to a load in the hands. Nothing that involves a big yellow ball gets even close.



Mark Rippetoe is the owner of [Wichita Falls Athletic Club](#) and [CrossFit Wichita Falls](#). He has 28 years experience in the fitness industry and 10 years experience as a competitive powerlifter. He has been certified as an NSCA Certified Strength and Conditioning Specialist since 1985 and is a USA Weightlifting Level III Coach and Senior Coach, as well as a USA Track and Field Level I Coach. He has published articles in the *Strength and Conditioning Journal*, is a regular contributor to the *CrossFit Journal*, and is the author of the books *Starting Strength: A Simple and Practical Guide for Coaching Beginners* and the forthcoming *Practical Programming for Strength Training*.

The Deadlift (continued...)

