Rippetoe Goes Off

Mark Rippetoe : 2013

What you need to know

- One barbell and a few basic exercises have packed on strength and size for decades. So why are you isolating tiny muscle groups?
- Your muscles *are* firing, no matter what the physical therapist tells you. You're just weak.
- Think twice before you listen to a physical therapist or rely on his weenie "corrective" exercises.
- You know how to get strong, so stop taking the easy way out and justifying it with big words and questionable science.

One Body, One Barbell

The case for the multi-joint barbell exercise is a conclusive one. It's been tested over decades by the strongest men on earth, and explained quite well by many writers on the subject.
Mastodons like Doug Hepburn, Jim Williams, Doug Young, Roger Estep, Dorian Yates, Karwoski, Magnusson, and Hamman, have used basic barbell exercises with heavy weights to build strength and muscle, the likes of which have never been produced using exercise machines.

The reason is simple and obvious: squats, presses, deadlifts, bench presses, and the Olympic lifts work the whole body at one time, and therefore allow the use of enough weight to make dramatic levels of stress (and subsequently adaptation) possible.
Chopping the body up into its constituent components and then working these components separately lacks the capacity to make things change. The stress that can be applied to one piece at a time never adds up to the same stress that can be applied to the whole thing working *as a system*.
The term "synergy" is the interaction of multiple elements in a system to produce a coordinated effect greater than the sum of the individual effects of the separate elements. The accumulated action of the parts functioning in their anatomically and biomechanically predetermined roles as *components* in the complex system of levers and motors is the very definition of synergy.
It's also the very definition of *coordination*.
The normal functions of the different components of the musculoskeletal system can't be simulated by isolating them and making them work independently of their roles in the system, because such a large part of their function involves their coordinated relationships with all the other components.
Working together is how they function, and nothing else is really "functional."
A car's alternator is a wonderful device for making current for the battery, but without a battery to charge, a car to start, and an engine to turn it, the damned thing is a doorstop.
Everybody already knows this. McRobert, Starr, Steiner, and Gallagher have been telling us this since paper was invented. It's perfectly apparent to anyone who stops for just a second and thinks about it.

Think System, Not Components of a System

So, I have a question. Several, actually.
Why are we, as an entire species, still so fascinated with individual muscle groups? Why are we so happy when we discover, say, in *Gray's Anatomy*, the origin, insertion, and innervation of a muscle belly, and then immediately find a use for this knowledge in the weight room?

"Wow! Look at my flexor digitorum profundus firing! Gimme that 3-pound dumbbell!"
Why can't we, as a species, see the value of *systems* over the *components* of systems?
This inadequacy has many ramifications. For instance, why do we continue to listen to people who tell us that problems which may arise subsequent to injuries *must* be corrected by isolating the injured part and working it separately, when they don't function that way when they're healthy?

Why do the arbiters of all things exercise – the members of the physical therapy profession – insist that injuries must be rehabbed in a way that's completely different from the way that the uninjured component functions?

Why must they divide the body into its constituent components, figure out a way to make that isolated component function all by itself, and then base their rehabilitation exercises on this faulty analysis?

When does the "rotator cuff" externally rotate the upper arm? When your physical therapist hands you the 3-pound dumbbell and carefully explains how to do it. What do these little muscles do the rest of the time? Sleep? Play poker?

Why must an injured knee be rehabbed with "quad sets" and knee extensions, when its function is to allow you to squat down and stand back up, walk, run, and serve as a place for your leg to bend?

<u>What The Hell Does "Not Firing" Mean Anyway?</u>

Why are people suddenly of the opinion that everybody has "imbalances" that are the result of individual muscles within the musculoskeletal system failing to "fire"?

And why do some people think we can teach them to "fire" by using an exercise that makes them do something different than what they normally do in the system?

What does "not firing" actually mean?

I ruptured my Achilles tendon a couple of years ago. There was quite a bit of nerve damage that's just now healing. I also had a nerve block for 24 hours after my first rotator cuff repair. So I know what "not firing" means.
How is it possible that the motor units in a muscle group like the glutes can't be recruited into contraction in a large movement like the squat, where they function as the primary hip extensors? The glutes are, anatomically, *always* involved, unless there's neurological damage.
Do you really think you have to consciously "fire" every single motor unit in every single muscle belly in every movement you make?

How do you "fire" your piriformis and obturator internus? Can you do this and leave out the obturator externus, even though they are innervated from different nerve roots?
How can you possibly extend your hips without "firing" your glutes? Just look at the goddamn things on the anatomy chart and tell me how the hip extends if the glutes don't extend it.
If your hips extend, all the muscles that extend the hips "fire," even though they're innervated differently, because the motor pattern depends on the position of the skeletal components involved.

If your femurs are held in external rotation, the external rotators participate in the movement, because that's what makes them stay in external rotation. *All* of them work, because *all* of them externally rotate.

That's what you're making them do by shoving your knees out. You think about shoving your knees out, not about each of the 25 muscles involved in the shoving.
When you produce a complex movement pattern, like throwing a baseball or doing a snatch, I'll bet you $10,000.00 that you think about something other than "firing" the external rotators at the right time.

I'll bet you think about the implement you're using – the ball or the bar, or where your body is in space during the movement, or more specific cues you have developed over the time you've been doing the sport. Does Klokov think about "firing" his internal obliques when he does a heavy clean?

Your Muscle "Firing." You're Just Weak!

And how about the classic "VMO that's not firing"? First, there is no such thing as the VMO as a separate muscle.

Dissection studies on hundreds of cadavers have proven this conclusively. There are oblique fibers on both the vastus medialis and the vastus lateralis, but neither of these have their own fascial sheath or epimysium, their own innervation, action, or antagonist. All of the quad bellies are innervated by the femoral nerve, which arises from L2-4.

In the words of a better-than-average DPT: "If they all have the same segmental innervation, and they all extend the knee, then how the fuck is it possible to isolate out the function of the VMO?"
And if this is the case, how's it possible that a weak VMO is responsible for "Patellar De-tracking Syndrome"? And how would it then be possible to fix this non-existent problem by teaching a muscle that doesn't exist how to fire with "corrective exercises"?

Might *weakness* be confused with "not firing" – either purposely or through ignorance?
Why wouldn't squats done with correct symmetrical technique solve this problem?
Better yet, how could squats fail to solve this problem? How many athletes that squat 500 are "not firing" their glutes? Hmm?

Are Physical Therapists Frauds?

Why don't physical therapists know these things? Are they this poorly prepared to do their jobs? Is most physical therapy actually fraudulent? Fraud is the intentional deception made for personal gain. Should the standard practice of physical therapy be made a crime? A felony, perhaps?
Now, I'm not saying it should be. I'm just askin'. How about you go to the PT office and they take you back to a big room full of padded tables and perky PT assistants, with the physical therapist running e-stim, ice, hot wax, rubber band curls, 3-pound dumbbell arm rotations, and squeezy-things for your hand... instead of something useful. And then charging you $40 or $50 apiece for these highly effective "therapy modalities."

(Sorry about all the scare quotes, but there are a lot of stupid things being said these days, and I want you to know that I know they're stupid.)
Unless you're prepared to believe that these people are actually this stupid, it *may* be fraud.
The academic program is rigorous, even if it's short-sighted and incomplete, so PTs can't be

stupid. So I'm forced to conclude that most physical therapists are happy enough with the money to intentionally say incorrect things and get paid for it.
Never attribute to malice that which can adequately be explained by stupidity, but don't rule out malice. Especially if there are third-party insurance payments involved.

What Does "Imbalance" Really Mean?

Here's another question. Or twenty.
Must everything always be in balance? What do we mean when we say "in balance"? Not falling down indicates balance, but the meaning here is really symmetrical development of strength.
I know that I'm an animal that displays bilateral symmetry. I understand that one side should be the mirror of the other, and that human perceptions of beauty are intimately associated with symmetry. For example, I am very handsome.

Gross asymmetries are both ugly and functionally inefficient, since a profound level of mechanical bilateral symmetry has evolved. But is it okay that I'm right-handed, that my left eye is dominant, and that my spleen is on the left side only? Should I fix this somehow? Is every asymmetry critical enough to overcome?

And this is really, really important: how can I fix an "imbalance" – an asymmetrical strength development – by performing an exercise using one limb or one side at a time?
Is a unilateral exercise like the Bulgarian split squat (BSS) done one side at a time actually capable of producing symmetrical strength development when each rep of the movement itself is inherently asymmetrical? Can you get better at being "in balance" bilaterally by practicing movements that are not bilateral?

If my right knee and hip extensors are stronger than my left, do I use a submax load on the right? Or do I leave the right side alone and just BSS the left leg? How is this supposed to correct my imbalance when I go back to squats?

How much weight can I BSS compared to my squat? If strength is the production of force against an external resistance – and I'm pretty sure it is – how can I get stronger by doing an exercise that can't be performed with as much resistance because of the fact that it's unilateral?
Isn't the fact that I can always squat more weight than I can single-leg squat using any style of lunge-based exercise awfully important if what we're trying to do is increase the strength of a weak side?

Doesn't each side in a squat have to lift part of the load, and doesn't the total load have to be both lifted and kept in balance during a squat? How can the coordination necessary for this task be developed by doing anything else?

If the balancing and lifting muscles are the same (and they obviously are), don't they both get worked if we use good form when we squat?

If we lift a really heavy weight using good symmetrical technique – with the bar staying over the middle of the foot, the middle of the bar staying directly over the middle of the space between the feet, and the thighs and feet parallel and at mirroring angles – isn't the system in balance?
And aren't all of the components of the system in balance too, doing their anatomically-determined part of the work being done by the whole system?

If a coach is good enough – and many don't seem to be – can't he find for his lifter a weight that's heavy enough to constitute a stress on the weak side, while still being light enough to perform with correct, symmetrical technique? He can if his gym is equipped with the right plates and bars. Do you know what a *titration* is in chemistry? It's where you carefully add small amounts of one substance to a larger volume of a different substance until the amount you've added causes a reaction in the larger volume.

See? You add weight a little at a time until you determine the right amount to use to make the squat hard for the asymmetrically weak side, but still light enough to do with good balanced form. Then you go up slowly from there, always using symmetrical technique, and the weak side catches up to the strong side. Because it has to.

A properly coached lifter will never develop an asymmetry unless he gets hurt.
Proper symmetrical technique should be coached from the inception of a lifter's training. The symmetrical nature of the squat, press, deadlift, bench press, and the clean and snatch – where all the big muscles and all the teensy-weensy muscles have to work together, each one doing the job assigned to it by its position on the skeleton – will prevent "imbalances" from occurring.
But most people can't effectively coach barbell training, so the movements themselves take the blame for the coach's inability to effectively do his job. I once heard a well-respected "strength coach" say that adults can't be taught how to do the Olympic lifts. Maybe not by *him*.

Taking The Easy Way Out

Why can't most people effectively coach the squat, but seem to have no trouble instructing the Bulgarian split squat? The videos are all over the web. So are mine. Which are shorter?
The BSS is easier, isn't it? This is because the BSS is done with lighter weights, and heavy weights are more complicated to coordinate, balance, and lift than light weights, as you may have noticed when you miss a heavy squat.

This also means that heavy movements are harder to coach than movements that are intended to be done with lighter weights. Any heavy multi-joint exercise must be coached correctly and intensively, since there are so many ways to screw it up. There's been a trend recently to minimize the coaching of technique. I've seen the instructions for the squat reduced to: "Put the bar on your back, squat down, and stand back up."
I've seen blatant technique errors at national and international meets go uncorrected by high-level coaches, who should have taken the opportunity to "coach" their lifter but failed to do so, for reasons beyond my ability to understand.

If technique can be coached in a novice, it can be coached in an advanced lifter making a technique error. And if you think advanced lifters don't make technique errors that need correcting, you are a very poor observer. Heavy lifts depend on correct technical execution, because the heavier the weight the more critical technique errors become. If you think about the difference between coaching a leg extension and coaching a squat, you'll see that it's very easy to coach a muscle group, while coaching a movement pattern is much more difficult.

A squat cannot be coached like a "quad set." It can't because in a squat you haven't got the luxury of being able to focus on one muscle group. Hundreds of muscles operate the system of levers we call the skeleton, and the more parts of the skeleton you use, the more useless focusing on one muscle group becomes. What might be an even more important distinction between the BSS and the squat? How about the fact that, left to its own devices, the BSS will improve for a few workouts and then get stuck, but the squat can be improved for years? This is the difference

between a barbell lift and an assistance exercise.
But isn't this also the difference between a systemic stress that has the ability to produce a systemic response and an exercise that's inherently so light that it can't drive adaptation for longer than a few weeks?

And what is the upshot of "light"? Can you think of another word to use here? How about "easy"? Are Bulgarian split squats, and their associated physical therapy-derived isolation movements that can't be done with heavy weights, popular because they're much easier to coach, to perform, to talk about on the internet, and to promote to people for whom a long list of "new" exercises is much more interesting, and therefore of much greater perceived value? Might the fact that they're lighter be part of the unstated reason they're so goddamn much fun?

Devil's Advocate

"Well," you might justifiably point out, "most human movement is *not* heavy, and it's not symmetrical, even though our bodies are bilaterally symmetrical. Look at the way we put up the groceries, play baseball, fight, use a shovel, or chop down a tree. These movements are ipsilateral or contralateral – I know big words, too – so why are you saying that strength must be built symmetrically when it's almost never used that way? And why do I need to squat twice my bodyweight when I never have to do that anyway?"

Because strength is the most general adaptation you can obtain. Strength is called into action any time you produce force, and the stronger you are the more force you can produce, no matter how you got strong.

Not every force application involves maximum force production, but the stronger you are, the better you're able to produce force in situations where your strength must be used repeatedly, quickly, slowly, irregularly, or differently, in positions of balance or imbalance, while fresh or fatigued, recovered or sore, distracted or focused, for a few seconds or a few hours or days. This is why baseball players take steroids.

But the most efficient way to get strong is to lift heavy weights in a bilaterally symmetrical position, which allows the most weight to be lifted and therefore the most strength to be built. This is why baseball players should all be squatting, pressing, and deadlifting correctly with very heavy weights: it makes you strong – like steroids, only much, much better – and doesn't involve a Senate hearing.

There's a pattern here. The more unilateral the exercise, the lighter the weight must be. And the heavier the weight you want to lift, the more uniformly bilateral the movement must be.
The heavier the weight the greater the force that must be produced. Therefore the exercise that allows the greatest weight to be lifted is the one with the greatest potential for getting the muscles involved the strongest.
So, isolation exercises can't make you strong unless you're very, very weak. Do you understand how this affects your decision to base your training on physical therapy?

So, Are You Bored or Just Stupid?

Isn't my tired old advice to stick with basic barbell exercises done with absolutely perfect technique and working up to brutally heavy weight getting just a little boring by now? Isn't variety always better?

After all, if you won't do the workout because you're bored, isn't it better to choose new and exciting exercises you *will* do? I mean, anybody can get their deadlift up to 600, right? What's the big deal? Why *can't* we just do barbell rows? Or dumbbell rows on a bench?

What do you think the guy who rows the 250-pound dumbbell can deadlift? Which dumbbells do *you* row – the 65s or the 85s? Why isn't your deadlift 600? What the hell is wrong with everybody? Has the internet, by enabling everyone to have a voice, rendered everyone with an ear suddenly stupid? We have all the information we need about what works and what doesn't work, and all we have to do is apply it correctly. If you want to figure out a way to make things easier, go ahead. But be honest enough to admit that's what you're doing.