The Core Of The Matter

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"Core training". Now there is a buzz phrase in the fitness and medical worlds these days. Apparently, everyone's got a core strength issue. You have a sore back? Must be caused by your weak core. Lousy golf game? Make your core stronger. Pain with sitting? Must be your weak abdominals. If you're involved with an active population - you've heard it a thousand times. Now you're hearing it with the sedentary population. Before long, core strengthening will be introduced as a solution to heart disease, stroke, and world hunger.

Well, maybe not heart disease - but I digress.
I have to always step back and put on my "mechanical" glasses to view this topic - and when you go back to the basics of biomechanics, it's amazing what you find.

Is there a value to starting any movement or activity with a solid base of support? Yes. Is it the panacea for all things orthopaedic? No.

If I want to learn a sport activity, or any activity for that matter, I need to be able to recruit the muscles necessary - volitionally - and then use them in a sequence or pattern that is appropriate. As I do so, the muscles in question will naturally respond and adapt to the imposed demands of the activity. In all of this, my central nervous system is the primary driving force - if I can't recruit muscle fibers AND recruit them in the appropriate sequence, then I am not going to be able to do the activity correctly. That being the case, either I am going to get very good at doing a movement poorly - or I will risk tissue overload if (and only if) I do "too much, too soon" and then subsequently ignore my body's feedback mechanisms (pain etc). The same is true of maintaining postures such as sitting.

Along with the central nervous system, muscles respond by adapting to the demands of the activity. Yes, I can strengthen them, but if I don't know how or when to use them, it will be a moot point.

Stuart McGill, a leading biomechanist and spine researcher at the University of Waterloo, notes that "for most tasks of daily living, very modest levels of abdominal wall co-contraction (activation of about 10% of MVC or even less) is sufficient" (2004). MVC refers to the maximal voluntary contraction of the muscle - and thus, 10% would not seem to be a very high value. McGill consistently refers to the "motor control system" as a primary element in spine performance.

So does everyone have a weak core? If 10% maximal voluntary contraction is sufficient for most activities of daily living, I would say the answer is "no". If the average sedentary person exposes him/herself to higher loads through more (and frequent) strenuous activities or sustained loads (i.e. sitting posture), then there may be a deficit - but is "strengthening the core" enough to resolve this? Again, the answer would be no - because the whole motor system is responsible. Is "having a strong core" enough to keep someone injury-free? Again, the answer is no - because the body will still be exposed to repetitive and/or sustained loading which may in fact be causative of the pain.

Having said that, let's look at what most "core programs" have to offer. Take a look at what's available in your community. Ask the instructors what types of exercises they do. I am prepared to bet that most will involve a lot of abdominal work.

Most activities require us to be in an upright or erect posture - be it sitting, walking, or running. If you're bending forward, you're still using the muscles of your back to help raise and lower yourself. So why all the emphasis on strengthening the abdominals? Especially when most variants of abdominal strengthening exercises create extremely high intra-discal and intra-abdominal pressures? If we ARE going to maintain our beliefs in the value of core strength, then the abdominals are

not the exclusive solution, perhaps not even the primary point of emphasis. It's a coordinated effort between central nervous system, abdominals, and extensors - dependent upon the individual's required function.

As I am always known to say - it's another example of "form follows function" - in which the form of the body reflects the demands imposed upon it functionally.

But doesn't having stronger muscles help me sit up straight? Not unless you use your brain (again, volitional control) to make those muscles contract. What does this mean? You can't just be strong - you have to actively use those muscles under your own control - meaning that you have to "think" about sitting up straight before any amount of exercise will help!

Is there a place for having a strong core? Absolutely. Being able to translate rotational stresses from upper to lower body - for example, with running or golfing - is definitely of value. But core strength in these activities needs to be in positions that are functional for the participant - in which they learn to "groove" the motor control system within components of their sport activity - and this typically won't involve lying down. Yes, you'd want to work on components - but within the scope of the whole movement pattern.

If we continue to go back to sound training principles, intelligent and progressive application of loading, and simply listening to what the body gives us as feedback, we will continue to progress safely and efficiently. Unfortunately, "core strength" has become more of a buzz phrase than actually getting down to good sensible practices. It's become an all-encompassing excuse for just about everything. The beauty is that it provides a moving target that everyone and anyone (practitioner, coach, and trainer) can address forever and ever, regardless of the cause and effect nature of the onset of symptoms - or the resolution of the same. If we live in fear of "not having a strong enough core" we are effectively handcuffed. Training principles are well understood - and the responses to loading are as well. In order to live well on the planet - or to perform at a higher level - we simply need to apply the science and get down to the core of the matter.

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