Abdominal Hollowing Vs. Bracing

Core stabilization is the ability to contract the muscles surrounding the spine to create a stiffness. This stiffness prevents "energy leaks" during static and dynamic activities, which ensures optimal power with minimal force loads on the spine. Core stabilization is critical for athletes as they move external loads, or even the load of their own bodies in a safe manner. In addition, this aspect is important for those dealing with lower back pain. Recently, there has been controversy in determining which method is the most ideal for creating such core stabilization. One of these techniques is hollowing – picture drawing in the abdomen and trying to suck the belly button into the spine. The latter technique being bracing – picture widening the trunk, not pulling in or pushing out, but simply what you would do if someone was going to punch you in the stomach. So which method is better? Put simply, bracing. Here is why:

Following any sort of low back injury, abdominal hollowing is usually the number one exercise physical therapists prescribe during rehabilitation. Physical therapists have been taught this technique in school, and it has long been accepted as the standard for spinal stability. However, just because something has always been done in a certain way does not equate to it indeed being the best way. The abdominal hollowing technique comes from a group of Australian researchers who published a study in 1999 indicating that in healthy individuals the deep muscles of the core - specifically the transversus abdominis - would activate a fraction of a second before any movement was performed. In other words, before participants would perform a movement, their transversus abdominis would fire. However, when they tested individuals with low back pain, they found that the transversus abdominis had a delayed reaction. This lead to

trying to isolate the muscle in order to fix the altered motor pattern, and this is where the abdominal hollowing technique was born.

The technique was meant to engage the deeper core muscles, without causing the more external abdominal muscles to contract. These superficial muscles include the internal and external obliques, and rectus abdominis. The problem with this is that focusing on single muscles actually creates dysfunction in the spine and is highly problematic. Our muscles work as teams to not only create joint torque, but to also, and more importantly, maintain core stability. There is no single muscle responsible for this. Instead of training muscles as a team and how they function in real life, hollowing aims to instead activate a single muscle in isolation. Research does show that hollowing will in fact produce increased activity in the transversus abdominis, but at a cost. Yes, you are getting a greater activation from your transversus abdominis, but you are also causing a weakening of the external and internal oblique muscles, as they are essentially inactive in order for hollowing to occur. This leads to a less stable spine, meaning a greater chance of injury - the exact opposite effect of what we want.

This leads us to the exemplary method of core stabilization: abdominal bracing. Abdominal bracing was a term first coined by Dr. Stuart McGill, who was and still is a leading expert in spine mechanics. While bracing your abdomen, you are simultaneously co-activating all of the muscles in your core in addition to your lats, quadratus lumborum, and back extensors. This means the entire abdominal wall is activated from all angles, sides, and directions. This causes the three layers of your core muscles (internal and external obliques, rectus abdominis, and transversus abdominis) to actually physically bind together. Such binding enhances the stiffness and stability of the core to a much greater degree than what would otherwise be produced by the sum of each individual part. According to McGill, this is known as

superstiffness. It is this stiffness that provides us with 360 degrees of spinal stability, making us injury resilient and helping us achieve optimal performance. This proves that abdominal bracing / stiffness is key for spinal stability and spine health. Having a stiff core eliminates micro-movements in the joints that lead to spine and tissue degeneration. Without stiffness, these micro-movements would gradually eat away at our nerves, which would eventually cause pain and perhaps disability. Stiffness braces these micro-movements and takes away the pain, essentially building an armor for the spine.

When it comes to spinal stability, all of our muscles work together and play an important role. These muscles must be balanced in order to be able to withstand large loads placed upon them to keep us injury free. Training single muscles leads to the exact opposite effect, which causes an unstable, injury prone spine. This is why when training core stability, whether following an injury or during training, we should never focus on isolating a single muscle. Instead, bracing and the activation of our entire abdominal wall should be practiced. If you need help concerning specific exercises to activate your core / increase your core stiffness, do not hesitate to ask one of your coaches at Reignited!

References

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