

How to Use a Belt (Properly)

I have the opportunity to speak all across the county on weightlifting and rehabilitation and am often asked, "When should one use a belt"? What I am not asked, and what is the more important question, is "HOW does one use a belt"? It always surprises me how often I encounter an athlete, even a high-level competitive weightlifter or powerlifter, who does not know how to use a belt. Weightlifting belts can be a powerful accoutrement for training when used properly; unfortunately, encountering an athlete who actually knows how to maximize the belt is becoming increasingly rare.

To fully understand how to use a belt, we need to discuss how the body stabilizes for movement. The term core is often thrown around in gyms and rehab clinics all over the country, but it is rarely understood. To keep it simple, the 'core' is comprised of three structures which attach to the spine and pelvis - diaphragm, abdominal wall and pelvic floor. Together these structures form a functional pressure cooker of sorts. The lid of the pressure cooker is the diaphragm, a dome-shaped muscle attaching to the spine and the ribcage which separates the chest cavity from the abdominal cavity. The wall of the functional pressure cooker is the abdominal wall made up of the transverse abdominus, external oblique and internal oblique. These structures function like a corset wrapping around the abdomen and connect the pelvis to the ribcage. The bottom of this pressure cooker is the pelvic floor which is made up of a web of muscles attaching the sacrum (tail bone) to the innominates (funky-looking bones which are your hip bone, your pubic bone and your butt bone all in one) holding the pelvis together.

Because all of these structures are contractile, they have the ability to expand and contract to control the volume within the abdominal cavity. If we have control over the volume of the abdominal cavity, we have control over the pressure (*Ideal gas law - $PV=nRT$*). Pressure within the abdomen (IAP) is THE foundation of all movement and is what using a belt is all about.

Here's how it works. The diaphragm concentrically contracts pulling the central tendon down towards the pelvis. As the central tendon descends, the contents within the abdomen press against the pelvic floor and outward into the abdominal wall. If the abdominal wall expands, the volume of the abdominal cavity does not change, which means the pressure remains constant. If, however, more pressure is necessary to execute the task (say you are cleaning 100K), then the abdominal wall will contract, resisting this outward-pushing force to decrease the volume of the abdominal cavity. Because pressure and volume are inversely related, the smaller the volume of the abdominal cavity, the greater the pressure within this cavity.

What is indispensable in this process (and yet often overlooked) is the **outward**-pushing force created by contraction of the diaphragm. This outward-pushing force is the keystone of all movement. Proper usage of a belt is all about maximizing the magnitude of this outward-pushing force (IAP) to increase the stability of the spine during strenuous tasks like maxing out in the dead lift.

What a belt does is replace the abdominal wall in the stabilization process. It is stronger, and stiffer, enabling us to generate more IAP because it can resist a greater magnitude of this outward-pushing force. The greater the force within the abdominal cavity, the greater the pressure pushing the spine against the belt, squeezing it and locking it in place. When you are using a belt, you need to consciously maximize pressure within the abdomen, not just "tighten up" like most athletes do. This is accomplished by concentrically contracting the diaphragm to increase the force pushing outward into the abdominal wall – as opposed to outdated and yet prevalent

strategies which involve drawing the stomach inward. Drawing the stomach inward does activate the abdominal wall, but not the diaphragm and it certainly does not increase IAP to any significant degree. What needs to happen is the diaphragm needs to contract and the pelvic floor and abdominal wall need to eccentrically activate to resist the outward-pushing force created by the descending diaphragm. Here, we have maximal activation of the entire abdominal pressure cooker instead of just the abdominal wall.

To generate an optimal amount of IAP (whether with or without a belt), the diaphragm must be parallel to the pelvic floor. In this posture, the ribs are down and the spine and pelvis are in a neutral position. With this parallel relation, the diaphragm and pelvic floor are able to oppose each other to maximize the magnitude of this outward-pushing force. What is important to note here, and where virtually everyone messes up, is that this outward-pushing force must push equally in all directions, not just forward. This is referred to as circumferential activation of the abdominal wall because it activates the full circumference of the abdominal corset. Most athletes do not (cannot) circumferentially activate their abdominal wall because they overuse their spinal erectors to stabilize which hyper-extends their lumbar spine and tilts the pelvis forward, pulling the diaphragm, abdominal wall and pelvic floor out of centration. This is called the extension/compression stabilizing strategy and is pervasive in sports...especially Crossfit. (More on this some other time.)

A common cue that perpetuates this problem is “push your belly into the belt.” This is a good’ish cue, but more often than not, the athlete will inadvertently turn on their spinal erectors, arch their lumbar spine and push their belly forwards into the belt. What needs to happen is the athlete needs to be able to push their lateral and posterior abdomen into the belt without losing a neutral position of the spine. For most athletes, this is actually very difficult. Some of the cues that I find helpful are “push your spine into the belt” and “try to break the belt by pushing your sides into

it.” Both of these cues will get the athlete to generate a lot of IAP and will teach them to circumferentially activate the abdominal wall instead of hyper activating their spinal erectors.

A very effective drill to teach this concept is to roll up a small hand towel so it is about 2” in diameter and place it vertically between the belt and the spine and then have the athlete feel the pressure in the abdomen pushing the spine backwards, crushing the towel between the spine and the belt. What is extremely difficult is maintaining a tall, neutral spine. Most athletes will want to crunch forward which puts their spine in a flexed position (not good) and does not increase the pressure within the abdomen to any significant degree. To avoid this, I will often have the athlete get tall, place my hand on the top of their head and have them crush the towel without losing their head’s contact with my hand. This is a powerful drill because it teaches the athlete to stabilize with IAP, to circumferentially activate the abdominal wall, and to maintain a neutral spine. If you can get your athlete to do this, you can get them to use a belt properly.

So what do we need to remember? 1) proper stabilization is all about maximizing generation of IAP. 2) IAP is generated by the abdominal wall and pelvic floor resisting the OUTWARD-pushing force created by concentric contraction of the diaphragm, NOT by sucking/drawing the abdomen in. 3) Athletes need to activate the full circumference of the abdominal wall (especially the back, which is rather difficult). 4) Since it is so common for athletes to over use their erectors and only push their belly’s forward into the belt, it is important that the athletes can stay tall and crush their spine between the IAP and the belt.

Belts are useful and even necessary tools of the trade that, when used properly, can keep an athlete healthy and push their PRs to new heights. Unfortunately, using a belt properly is more difficult than many realize. So, hopefully this clears up some

confusion and you all can go out, lift more, lift longer, and lift smarter. Now go break some belts!

