



Core Concepts:

Achieving and Maintaining Spinal Health With Stand Up Paddleboarding

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You've already heard that stand up paddleboarding is a great workout for the core muscles. But what does that really mean, and are you actually making your abdominals stronger and your back healthier by getting out and paddling. The answer, as is often the case, is that it depends. It depends on your paddle stroke technique, which in turn determines the position of your lower back and the ability of your core muscles to stabilize your spine. Do it correctly, and you're doing your back huge favors. Use poor technique, and you may accelerate an injury.

Let's start by differentiating between strength and stability. Strength, in strict engineering terms, is the ability of individual elements that make up a system (think bones and muscles), to withstand an imposed force. In physiologic terms, think of this as your ability to either exert a force and move something, or withstand a force placed on you. Stability, on the other hand, is the ability of a system, i.e. your body, to transmit those forces to the ground safely.

In the body, strength and stability work together. The

ability of your lower back muscles, abdominals, and various other small core muscles to lock down your spine in its optimal position, which we call the neutral spine, gives the trunk it's stability. Think of your spine as a radio broadcast antenna. It's pretty tall, thin, and highly unstable on its own. To add stability, the antenna has guy wires that significantly increase the antenna's base of support. This allows the system to transmit forces to the ground without the antenna falling over. Your spine is the same way. Your muscles act as the guy wires and increase the base of support from just a few inches (the perimeter of your lowest vertebrae) to the size of your entire waist. So when you paddle, your core muscles engage and prevent the spine from excessive movement and mechanical strain that will cause an injury over time. Paddle often enough and this system becomes second nature. That is what core stability is all about - keeping the guy wires tight even when you're not thinking about it.

But all of this depends upon you using your body correctly. Let's go back to our antenna analogy. What if we loosen the tension on one of the wires, and tighten an-

other one. Our antenna will bend, exposing weak points that will eventually break down over time or with a repeated force. When you paddle, if you push water with a bent spine, then you subject your back to a repeated force while in a weakened position. Reaching too far forward, improper foot position, or improper paddle length or board width all contribute to small, imperceptible microtrauma that builds upon itself until one day - POP!, you're hurting.

Using proper paddle technique means keeping your spine in a neutral, or straight, position. That does not mean that you must remain bolt upright as you paddle. That would be horribly inefficient, and quite a strain on your shoulders. However, by keeping the knees slightly bent and leaning forward

at the hips, you can position the paddle for a powerful stroke while keeping the spine in its strongest position. The spinal muscles remain at their proper length for maximum strength, which in turn prevents harmful movement at the spinal joints and transfers the force of the paddle stroke all the way down to your feet. You will actually feel your toes digging into the board. Without proper muscle engagement in the trunk musculature, your spine will absorb some of the force and cause aberrant movement of the vertebrae. At best, this makes your paddling slower. At worst, it sets you up for injury.

With this in mind, how do we go about improving the way that we paddle? Let's start by having the right gear. Board width will impact the angle at which you connect



Your core muscles act like the guy wires of a radio antenna, increasing stability



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with the water.. Those under 5'5" should consider using a narrower board for touring (approx. 29-31 inches). Of course , a wider board offers less side to side rocking and is generally easier for beginners, however, it will also limit the ability of a shorter individual from inserting the paddle in the water correctly without leaning to the side. The paddle length is the next consideration. While standing, raise your arm overhead while keeping your spine straight. The top of the paddle should be at the height of the wrist joint. A paddle that is too tall will cause you to lean to the opposite side as you catch the water, while having a too short paddle will make you lean to the paddle side during the power phase of the stroke.

Now we can consider your technique. The paddle stroke has five phases that we will break down in regards to your core stability and spinal health.

Reach:

The further you are able to reach, the more water you can move. With a longer reach, you will travel faster and longer with each stroke. While this is true, reaching too far forward will often mean bending forward at the spinal joints and lengthening the lower back muscles to a point that reduces their ability to support the spine. What this means, potentially, is that the forces are transferred to your spinal ligaments, and worse, your spinal discs. Over time, the tensile forces contribute to microtrauma that can lead to injury. You should reach only as far forward as is comfortable. During this phase, you should actively feel the muscles in the small of your back working to hold the normal spinal curves. Basically,



Don't be this guy. You should shift your weight to the paddle side, rather than bend sideways at the spine.

it should feel like you are sticking your butt out.

Catch:

This is the point at which your blade meets the water. Of course, you want to have a clean entry into the water with little to no splashing. Insert the blade up to where it meets the shaft, keeping the lower back muscles engaged throughout. You should then shift your weight to the paddle side rather than bending sideways at the spine. The rail of the SUP board will dip into the water some. This is where you will know if your paddle length was adjusted properly. If you find that you are bending at the spine, then either your paddle length is too short, your postural awareness needs some attention, or you are getting tired.

Power Phase:

Remember when you learned that a baseball pitcher's power and speed comes not from the shoulder, but from the hip. The same thing applies with your SUP stroke. Don't try to muscle the water with your shoulders - you will be fatigued and sore in no time. Instead, use your hips. The forward and backward motion of the pelvis generates way more power than your shoulders ever could. But in order for that to happen, the core has to be locked down tight. This allows the energy to flow from the hips to the paddle. During this phase, you may feel like you are doing some of your favorite abdominal exercises - planks, 6 inches, etc... That's good. If you don't feel it, then your spine is absorbing energy that is better used for moving water. If you feel that you are getting fatigued too quickly or that it's too difficult, then consider using a paddle with a smaller blade. It's the equivalent

of taking some weight off the barbell at the gym. A typical paddle blade can have a surface area of 90-100 square inches, and the difference between those measurements can be considerable. The smaller blade size can help you keep good form and develop core muscle strength before you upgrade to a larger blade size.

Exit:

This is the part where you take the paddle out of the water. Sounds easy, right? Well, it is, but you still need to keep vigilant about your postural control. Always remember that twisting the spine is the enemy. It causes compression of the discs between the vertebrae that can lead to injury over time, especially when under a load. Although the resistance of the paddle does not weigh much, it is still a load. You should release the paddle from the water just as it passes your ankles. This will prevent any twisting at the spine. It's correct paddle technique in any case, as the angle of the blade causes the efficiency to go way down with a longer stroke.

Paddling truly is a great core workout if you pay attention to your body mechanics, and can be an integral part of maintaining a healthy back, whether you have had an injury in the past or not. Just remember to follow the guidelines above and you'll keep your spine healthy on and off the board.



Keeping the knees slightly bent will allow you to keep your spine straight and reach from the hips

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