

## LUMBAR SPINE INJURIES: SPRAINS, STRAINS, AND STRESS FRACTURES



In the last 20 years, the opportunities for fun and entertainment available to our children have seen a tremendous change. From a simple Apple game called Frogger to a PlayStation that will run your entire entertainment system, entertainment has required

less and less effort from our imaginations and has also likewise alleviated most of the demands on our bodies as well. What's the point? The transition from "playing outside" and "running around the neighborhood" that so many of us grew up with to a mostly seated or reclined position that involves "eye-hand coordination" and "a good thumb exercise," though enjoyable, has also done a disservice to the core stability and strength that our kids used to grow up with. Now if its core stability that you are looking for, refer back to our January 2014 Edition which focuses specifically on how to improve just that.



In contrast, this newsletter is going re-emphasize the importance of core stability by examining the effects and the consequences that come from the lack of it. Simply put, injuries to the lumbar spine can be quite challenging and can require a substantial time to recover. And, in the core-dominated field of athletics, especially high school athletics, these types of injuries have become more and more prevalent.

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## The Pars Stress Fracture

As you evaluate the anatomy of the spine, the anterior curvature (i.e. lordosis) present in the neck and low back and the posterior curvature (i.e. kyphosis) present in the midback are easily identified. Why does the spine have such a curvature you may ask? The answer is quite simple. If, for example, the entire spine was one long straight column, much like a 4x4 8 foot cedar post, anything that is loaded onto that post would subsequently transfer all its weight and mass through that post. While this is effective for bearing weight, the post itself has no backup. If it is ever overloaded, it simply cracks, buckles, and breaks. By contrast, the curvature of the spine allows the body to employ great quantities of the surrounding musculature to provide not only additional strength but subsequent stability as well. Therefore, the curved, muscle-reinforced spine is stronger, more durable, and more flexible than a straight column-like spine could ever be.



Now while the curvature of the spine provides for a tremendous amount of muscular reinforcement, we can also now understand how the lack of appropriate muscle stability subsequently weakens the entire structure. This is where a sedentary lifestyle becomes so dangerous. And, under the stress of athletics, the continued load, particularly on the lumbar spine, can eventually cause the vertebrae to subsequently crack, buckle, and break; thus causing a stress fracture to areas like the pars region.

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## The Pars Stress Fracture cont...

On a closer look at an individual vertebra, the larger body section is specifically designed to support the weight above it. Under normal posture and normal core strength, this support and weight transfer is exceedingly effective. However, when poor posture and a weaker core is present, the placement of this load shifts

posteriorly in the lumbar spine and is now primarily placed on the area known as the pars. This is the posterior portion of the body where each vertebra actually join to the vertebra above and below. As this area is not specifically designed to carry the load, this pars area can eventually fracture under continued load/stress. This condition is commonly referred to as Spondylolysis.



So where are these injuries beginning to turn up more and more frequently?

Sports that involve repetitive pounding such as the running demands of a cross country, track, or basketball athlete; the rotational demands of the baseball, softball, and volleyball athletes; and even the consistent extension demands required for most cheer and dance athletes are all starting to show an increased prevalence of pars stress fractures. Therefore, the necessity of excellent core stability for athletics, along with the importance of maintaining good overall posture in daily live, transcends sport and discipline.

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### Lumbar Sprains and Strains

Unlike the typical ankle sprain or hamstring strain that can be so prevalent in athletics, these types of injuries to the lumbar spine can be absolutely debilitating. A typical ankle sprain may take 1 to 2 weeks for full recovery, but a sprain in the lumbar spine could take months. And, although the average ankle sprain can be propped up or supported with crutches, the sprain to the lumbar spine is under a greater load than that of the ankle and that load can only be partially alleviated by lying down.



The same is subsequently true for muscle strains. While each of us who have ever participated in any form of athletics are familiar with how to stretch and strengthen our hamstring, how many actually know how to stretch and strengthen the muscles of the lumbar spine?

In summary, the lumbar spine is a dynamic and exceedingly strong structure when it has the necessary muscular reinforcements to aid in load distribution. However, the lack of this added strength can be costly. Again, consider reviewing the exercises mentioned in the January 2014 Edition on Core Stability. Likewise, also consider implementing these changes into your pre-season and in-season workout routines. Doing so could literally save you months.

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