

Spine

Spondylolysis (“Spondy” or “Spondee”)

- **What is a Spondylolysis:** A stress fracture or fracture of the pars interarticularis.
- **Mechanism of Injury:** Repetitive hyperextension to the lumbar spine.
- **Diagnosis Made By:** Signs and symptoms, physical exam, and imaging.

How do you get this?

Typically, a Spondylolysis occurs from repetitive hyperextension (traditionally when gymnasts are learning back/front walkovers and back/front handsprings). Risk factors for developing a Spondylolysis are spina bifida occulta, lacking shoulder flexion and hip extension, and sports with repetitive hyperextension. When a pediatric patient presents to a Medical Providers office they need to be worked up and you should receive a diagnosis of why you/your child has back pain. Pars interarticularis injuries are common and occur in up to 47% of young athletes.

Physical Exam

The gymnast will have low back pain (traditionally at L4 and L5), have pain with extension (arching), and a positive stork test.



Diagnostic Images

Sometimes x-rays are performed but more likely an MRI will be ordered. If possible try to obtain a 3T MRI as this will give more detail of the lumbar spine. If the gymnast has a Spondylolysis the MRI will show swelling (inflammation) or a fracture in the pars interarticularis. This is most likely to occur at L4 or L5. If there is a bilateral fracture the gymnast could also be diagnosed with spondylolisthesis (a bilateral fracture of the pars interarticularis causing a slippage of the spine/vertebrae).

Treatment

There are many different forms of treatment. Some treatment suggestions include but are not limited to:

- **Brace:**

- Your provider may recommend a Boston Overlap Brace (BOB) to be worn 23 hours per day (remove for PT, showers/bathing).

- **Physical Therapy (PT):**

- Strength: Antilordotic, core/abdominal strength exercises, pelvic tilt (to neutral position). Lumbar extensors from full flexion to neutral, hip strength (abductor, ER), glute in non-lordotic ranges, lower extremity strength (ankle, calf, hams, and quads), and upper body strength (RC, and peri-scapular strength).
- Range of Motion (ROM): Shoulder forward flexion, hip flexor ROM-iliopsoas and rectus

(avoid extension of lumbar spine), piriformis, ITB, thoracic mobility, hamstring, latissimus dorsi flexibility, and pectoralis and scalene.

- Modalities: Massage, e-stim, heat, ice.
- Other: Proprioception/balance, posture, splits with square hips, and please be sure to avoid any extension of the lumbar spine or any painful maneuvers.

- **Sports Psychologist or Mental Performance Coach**

- **In Terms of Gymnastics:**

- There is traditionally no true gymnastics for 4-6 weeks to allow the back to heal, decrease inflammation, and rest.

Risk Factors for Having Back Pain:

- Abdominal muscle weakness
- Tightness with hip extension, shoulder flexion, and thoracolumbar fascia
- Increased femoral anteversion
- Genu recurvatum (hyperextended knees)
- Increased thoracic kyphosis
- Repetitive motions (specifically extension)

Prevention:

- Splits: Focus on performing splits with square hips. If you can increase your hip/spilt flexibility with proper technique you can decrease the hinging motion from your low back.
- Landing Mechanics: Evaluate your gymnasts landing mechanics. Look to see if they land in a hyperextended position from in their back and see if they can absorb the forces on their landing.
- Bridge: Have your gymnast perform a bridge and look to see if he/she can perform a bridge without excessively hinging from their low back.

Injury Prevention: Proper Technique

Incorrect:

- Temple/triangle position
- Hinging from your low back causing the pressure/force to all be in the low back
- Hips and knees are both flexed



Correct:

- Rainbow position
- Pushing with her shoulders to open up her chest and hinge from the entire spine and shoulders
- Hips are open and legs are straight

