

SPONDYLOLYSIS



■ ■ ■ Description

Spondylolysis is a stress or fatigue fracture of part of the spine (vertebrae) *not* involving the main bearing part (the body of the vertebra). It involves the area of the pars interarticularis (between the facets). Rarely, spondylolysis can be due to an acute traumatic fracture. It tends to occur in adolescent athletes. The stress fracture occurs because the mechanisms of repair fail to keep up with the damage caused by the repetitive force.

■ ■ ■ Common Signs and Symptoms

- Chronic dull ache in the low back, worse with hyperextension and occasionally with flexion (bending at the waist)
- Tightness of the hamstring muscles
- Occasionally, stiffness of the lower back

■ ■ ■ Causes

Spondylolysis is caused by repetitive hyperextension (arching) of the back and excessive hyperextension with rotation of the back; occasionally it is due to great strength of the back muscles. This repetitive or excessive force causes injury that exceeds the bone's ability to heal. Rarely it can occur due to an acute fracture with severe trauma from a sudden blow.

■ ■ ■ Risk Increases With

- Any sport in which movement causes hyperextension (arching) of the back, either excessively with rotation or repetitively, especially football, gymnastics, diving, weightlifting, dancing, rifle shooting, wrestling, tennis, swimming, running, volleyball, track and field and rugby, and contact sports
- Poor physical conditioning (strength and flexibility)
- Inadequate warm-up before practice or play
- Family history of spondylolysis
- Poor technique

■ ■ ■ Preventive Measures

- Use proper technique.
- Wear proper protective equipment and ensure correct fit.
- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
 - Back and hamstring flexibility
 - Back muscle strength and endurance
 - Cardiovascular fitness

■ ■ ■ Expected Outcome

This condition is usually curable with appropriate conservative treatment within 6 months, although it may be much faster (less than 6 weeks in some cases).

■ ■ ■ Possible Complications

- Frequent recurrence of symptoms, resulting in a chronic problem; appropriately addressing the problem the first time decreases frequency of recurrence
- Chronic pain and nonhealing of the fracture
- Delayed healing or resolution of symptoms, particularly if sports are resumed too soon
- Prolonged disability
- Possibly, may progress to spondylolisthesis (slippage or movement of one vertebra on another)

■ ■ ■ General Treatment Considerations

Initial treatment consists of rest from activities that cause the pain (no hyperextension) and medications and ice to relieve pain. As pain subsides, exercises to improve strength and flexibility and to learn proper back mechanics are started. Referral to a physical therapist or athletic trainer may be recommended for evaluation and further treatment, including transcutaneous electronic nerve stimulation (TENS). A back brace may be recommended. Surgery is rarely necessary. It is reserved for those athletes who have persistent pain despite 6 to 12 months of appropriate conservative treatment. Surgery is performed to help the fracture to heal or, more often, to fuse two or more vertebrae together.

■ ■ ■ Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician.

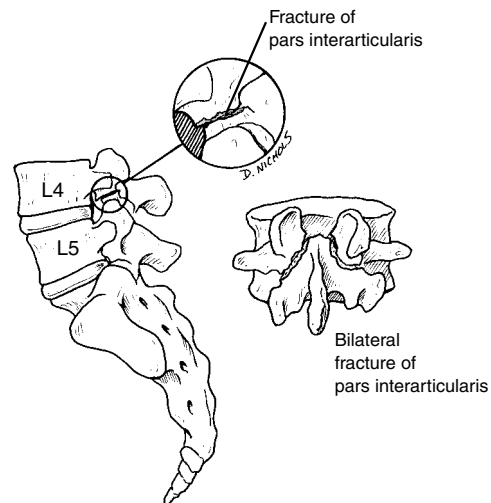


Figure 1

From Shankman GA: Fundamental Orthopaedic Management for the Physical Therapy Assistant. St. Louis, Mosby Year Book, 1997, p. 227.

Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.

- Pain relievers may be prescribed as necessary by your physician. Use only as directed. Do not use any heavy machinery or drive a car while taking these medications.

■ ■ ■ Heat and Cold

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.

- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

■ ■ ■ Notify Our Office If

- Symptoms get worse or do not improve in 2 to 4 weeks despite treatment
- You develop numbness, weakness, or loss of bowel or bladder function
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

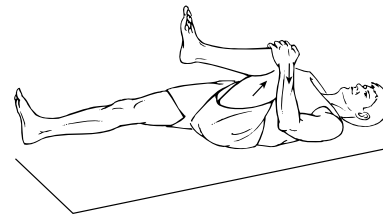
EXERCISES

➤ RANGE OF MOTION AND STRETCHING EXERCISES • Spondylolysis

The exact range of motion and stretching exercises appropriate for you *usually* need to be determined on an individual basis. Emphasis is placed on flexion exercises (rounding your back; pulling your knees to your chest) rather than extension exercises (placing an arch in your back), which increase the stresses on the spine that are related to this type of injury. *The key point to remember is that if any exercise (range of motion, stretching, or strengthening) cause pain to radiate away from your back and toward your buttocks or legs, stop them immediately. The purpose of these exercises is to begin to decrease the intensity and the size of the area of your pain.*

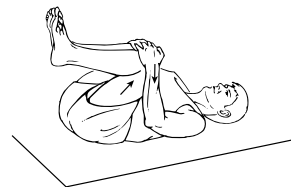
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.
- If pain or other symptoms radiate away from the back toward the buttocks or legs, stop the exercises immediately.



LUMBAR FLEXION • Single Knee to Chest

1. Lie on your back with both legs flat on the floor.
2. Bend one hip and knee up toward your chest.
3. Grasp knee with your hand(s) and pull it gently toward your chest.
4. Keep the other leg flat on the floor while doing this exercise.
5. Repeat with the opposite side.
6. Repeat exercise _____ times, _____ times per day. Hold each repetition 5 to 10 seconds.



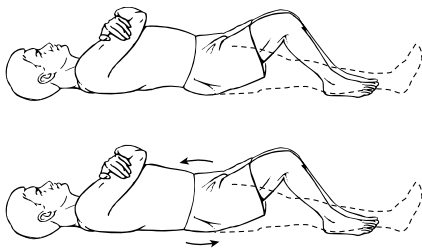
LUMBAR FLEXION • Double Knee to Chest

1. Lie on your back with both legs flat on the floor.
2. Bend one hip and knee up toward your chest and then the other.
3. Grasp your knees with your hands and pull them gently toward your chest.
4. Hold this stretch position for 5 to 10 seconds.
5. Release one knee, allowing the leg to return to the floor, then release the other.
6. Repeat exercise _____ times, _____ times per day.

> STRENGTHENING EXERCISES • Spondylolysis

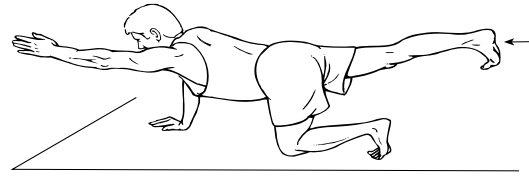
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Although emphasis is placed on strengthening your stomach muscles, other exercises are presented that promote maintaining proper posture and balance of all of the muscles that surround the spine. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



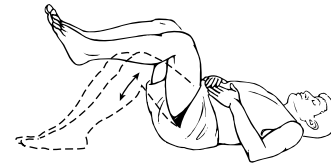
PELVIC TILT

1. Lie on the floor as shown. You may do this exercise with your knee bent or straight. It is harder with the knees straight.
2. Tighten your stomach and buttock muscles and push back flat onto floor. If you do this properly your pelvis will rotate in the direction shown in the diagram. Hold each repetition 15 to 20 seconds.
3. Repeat exercise _____ times, _____ times per day. Do not hold your breath. Count out loud.



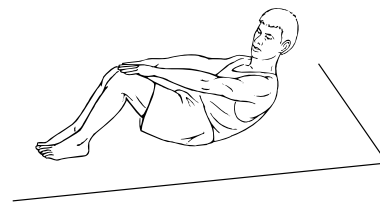
QUADRIPED • Opposite UE/LE Lift

1. Position yourself on your hands and knees.
2. Keep your back flat and parallel to the floor. **Do not allow it to arch or move during this exercise.**
3. Lift your *left* arm up to shoulder height. Hold this position and lift your *right* leg to the same height.
4. Balance and hold this position for 15 to 30 seconds.
5. Return to starting position and repeat with the opposite arm and leg.
6. Repeat exercise _____ times, _____ times per day. Do not hold your breath. Count out loud.



DOUBLE LEG HOLD

1. Lie on your back with your hips and knees bent.
2. Bend your legs/hips toward you as shown.
3. Tighten your stomach muscles and press your back flat into the floor.
4. While keeping your back flat on the floor, *slowly* let your legs back down. When you feel your back start to arch, stop and hold that position. **Count out loud to 15. Do not hold your breath!**
5. Return to the starting position.
6. Repeat exercise _____ times, _____ times per day.



PARTIAL SIT UPS

1. Lie flat on your back with your hands resting on your thighs.
2. Tuck your chin to your chest.
3. Slowly sit up until you touch the top of your knees.
4. Hold this position for a count of 15. **Count out loud. Do not hold your breath!**
5. Return to the starting position.
6. Repeat exercise _____ times, _____ times per day.

> POSTURE AND BODY MECHANICS CONSIDERATIONS • Spondylolysis

Maintaining the most appropriate posture and using correct body mechanics can have a significant effect on back pain. The following are basic suggestions regarding proper posture and body mechanics. These should be specifically discussed with your physician, physical therapist, or athletic trainer. Please remember:

- Good posture minimizes the stress and strain on any portion of your spine.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer.
- Incorporate these exercises and posture principles into all of your daily and recreational activities.



CORRECT LIFTING TECHNIQUES

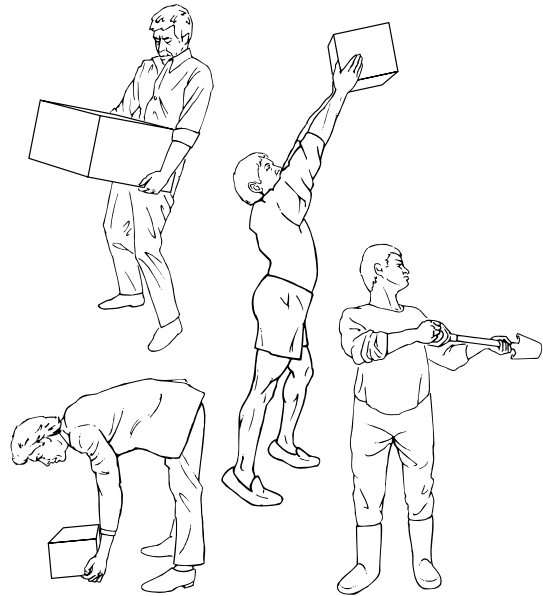
DO:

- Lift with your legs, keeping your back straight.
- Use a footstool for objects that need to be placed or retrieved from high locations.
- Use two people for heavy or awkward objects.



CORRECT SITTING POSTURES

Sit Erect. Use a lumbar roll, cushion, or pillow. Use a chair that has a high enough back to support your back up to your shoulder blades.



INCORRECT LIFTING TECHNIQUES

DO NOT:

- Lift with your legs straight and your back flexed/bent.
- Lift objects that are too heavy over your head.
- Ever lift and twist at the same time.
- Lift an object that is too heavy or awkwardly shaped without help.



INCORRECT SITTING POSTURES

Do not slouch or slump. Maintain a proper position in the chair.

Notes:

(Up to 4400 characters only)

Notes and suggestions