



# The Spine

By Kylee Louies, DPT



The spine provides the major structure that support the body and protects the spinal cord. It allows you to stand up tall, bend over to touch your toes and turn right and left.

## **Bones:**

The spine is made up of 24 bones called Vertebrae. There are 5 parts to the spine including:

- Cervical Spine (neck) C1 to C7; Atlas (C1) and Axis (C2)
- Thoracic Spine (mid back) T1 to T12
- Lumbar Spine (low back) L1 to L5
- Sacrum: 5 vertebrae fused together to connect the spine to the pelvis
- Coccyx: 4 fused vertebrae fused together and is where ligaments attach to the pelvis

## **Muscles:**

Cervical Muscles:

- Sternocleidomastoid: Neck flexion, lateral flexion to same side and neck rotation to opposite side
- Scalenes: Neck flexion and lateral flexion

Thoracic/Lumbar Muscles:

- Erector Spinae muscles: Trunk Extension and Lateral Flexion
- Quadratus Lumborum: Lateral Flexion
- Multifidus: Extends and rotates trunk
- Abdominals:
  - Rectus Abdominis: Trunk Flexion and Lateral Flexion
  - External Obliques: Trunk Flexion, Lateral Flexion, and rotation to opposite side
  - Internal Obliques: Trunk Flexion, Lateral Flexion, and rotation to same side
  - Transverse Abdominis: Exhalation

# How to Keep Your Spine Strong



**Planks:** hold like you are going to do a push up on hands and feet or hold yourself up on elbows and feet

**Superman pose:** lay on your tummy and lift your head, arms and legs off the floor

**Crab walking:** start in sitting then push your bottom up off of the floor by pushing through hands and feet and holding that position while you begin to walk

**Bridges:** lay on your back with knees bent and feet on the floor, keep shoulders and head down while you lift your hips up towards the ceiling

**Ball play:** Have your child seated on top of large gym ball to bounce and tilt in all directions

**Wheel barrow walking:** hold your child's legs while they walk with their arms

## Common Pediatric Spine Conditions:

**Scoliosis:** curvature of the spine causing tightness on one side and weakness on the other side and sometimes pain

*Causes:*

- Idiopathic: or unknown due to coming from genetics and this is type is usually found in children at an adolescent age.
- Congenital: are found at birth but this is rare
- Neuromuscular: coming from muscles and nerves that surround the spine and is usually seen in children diagnosed with Cerebral Palsy, Spina Bifida and Muscular Dystrophy.

**Spondylolysis:** stress fracture of the bones of the spine which can lead to Spondylolythesis;

**Spondylolythesis:** when one bone in your spine moves forward on the bone below it; usually occurs in the lower back; can cause nerves in the back to be pinched. Both Spondylolysis and Spondylolythesis are most often seen in athletes who have to bend their spine backwards often such as gymnasts

**Torticollis:** tightness of the Sternocleidomastoid muscle in the neck causing a child to tilt his/her head to one direction and rotate his/her head to the opposite direction. This is most often seen in infants. The most common causes are abnormal positioning in the womb during pregnancy and birth trauma during delivery

**Spina Bifida:** incompletely formed bone in the spine that may or may not include the spinal nerves and/or the spinal cord; This can be seen when in utero; There is no specific cause but it may be due to: decreased folic acid during pregnancy, genetics, women diagnosed with diabetes, fevers during pregnancy, and women who have to take certain medications for Epilepsy during pregnancy.