
Hip Function and Ambulation

February 2024

How Spina Bifida Affects Moving and Walking

*Some kids and adults with Spina Bifida can walk on their own, while others may need braces or walking devices like crutches or a wheelchair. How a person moves depends mostly on their “**lesion level**,” or where the nerve damage is in the spine.*

What You Need to Walk

To walk, the body needs:

1. **Good alignment** of the spine and hips
 2. **Enough movement** in the hips and spine
 3. **Muscle control** to keep the hip joints steady
 4. **Strength** to move the body forward
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Walking and the Spine

To walk well, your body needs to be lined up so your weight goes through the hips, knees, and feet. But many kids with Spina Bifida have curves in their spine, like:

- **Scoliosis** – spine curves sideways
- **Kyphosis** – spine curves forward
- **Pelvic tilt** – hips are uneven

*These changes can make it harder to walk. About **eight out of 10 kids with Spina Bifida** have some kind of spine curve. Treatment may help keep them walking.*

Hip and Knee Tightness

Some kids may have tightness in their hips or knees. Small knee tightness (up to 20 degrees) is okay, but hip tightness can make it hard to walk and may need surgery.

Moving the Hips and Spine

Your hips and lower back need to move well to help you walk. The knees help too, but not as much. If the spine is stiff (like after scoliosis surgery), it can be harder to shift your weight and walk.

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*Hips need at least **30 degrees of motion** to help move forward. If there's less movement, the pelvis has to work harder to help.*

Controlling the Hips While Walking

*Muscles around the hips help keep you steady when you walk. If the muscles are weak or not working, **braces** can help support the hips.*

How Lesion Levels Affect Walking

Thoracic Level (Upper Spine)

- No muscle control in the hips
- No feeling below the hips
- Braces that go from the foot to the hips (HKAFOs or Hip-Knee-Ankle-Foot Orthosis) are needed
- Special braces like **RGOs** (a type of HKAFO) help with safer, more efficient walking
- Many kids with this level eventually use a **wheelchair** for easier movement

Upper Lumbar Level

- Some hip muscles work (like ones that lift and pull legs together)
- Other muscles are weak or missing
- Kids may lean forward and use crutches or walkers
- Braces like **AFOs** (Ankle-Foot Orthosis) or **KFOs** (Knee-Ankle-Foot Orthosis) help with walking
- Special braces (like RGOs) may also be useful

Lower Lumbar Level

- More muscles are working, including those that help straighten the knees
- Still missing strong hip muscles that move legs apart
- Some kids can walk without hip braces
- Surgery to move muscles (called **muscle transfers**) may help improve walking
- Some kids may walk without help; others may use crutches or walkers

Sacral Level

- Enough muscle control to walk
 - May still need braces or help with walking long distances
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How the Body Moves Forward

Usually, the calf and hip muscles help push the body forward. In kids with Spina Bifida, these muscles may not work.

Thoracic & Upper Lumbar Levels

- *Use arms to move forward*
- *This takes more energy and is slower*
- *Many use wheelchairs over time because it's easier*

Mid & Lower Lumbar Levels

- *Use their body to swing from side to side*
- *This takes a lot of effort*
- *Some use **muscle transfers** to help them walk better and longer*
- *Others may choose wheelchairs as they get older*

Key Takeaways

- *How well a person with Spina Bifida can walk depends on their **lesion level***
- ***Walking** needs strong hips, flexibility, and muscle control*
- ***Braces and devices** like walkers or wheelchairs help support movement*
- *The right support depends on **which muscles and joints** are working*
- *Doctors and therapists keep track of equipment to **make sure it fits and works well***

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This information does not constitute medical advice for any individual. As specific cases may vary from the general information presented here, SBA advises readers to consult a qualified medical or other professional on an individual basis.