



W-SITTING

What is "W"-sitting?

- When sitting on the ground, the child's bottom, knees, and feet are all touching the ground, with the feet resting outside of the knees
- When looking at the seated position from above, it resembles the letter "W"
- Hips rest in flexion, internal rotation, and adduction

Why do kids "W"-sit?

1: Structural Abnormality of the Hips



- **Femoral Anteversion** – when the head and neck of the femur is rotated anteriorly in relation to the transcondylar axis of the femur
- Hip internal rotation is the preferred position (in both walking and sitting), leading to preference for in-toeing and "W"-sitting

2: Core Weakness or Poor Balance



"W"-sitting position results in a larger base of support, which could be used as a compensatory strategy for abdominal and trunk extensor weakness or poor static balance

3: Habit

- Children can begin exhibiting this hip positioning (flexion, abduction, and internal rotation) as early as 6 months in a multitude of positions, including:

- Crawling on hands and knees, with knees positioned outside of hips
- Kneeling with knees outside of hips
- Transitioning from sitting to hands and knees without moving through side-sitting

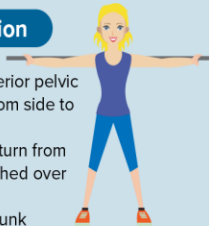
- Many children begin "W"-sitting for a multitude of reasons, but they soon realize that this position requires less muscle activation and achieves more stability, leading to increased reliance on "W"-sitting

3: Pigeon-Toed, or In-Toeing Walking Pattern



- Increased hip internal range of motion, decreased hip external range of motion, and hip abductor weakness can contribute to in-toeing gait pattern
- Some in-toeing gait can be attributed to femoral anteversion

4: Decreased Trunk Rotation



- Poor trunk extension due to posterior pelvic tilt can limit ability to turn trunk from side to side
- Notice the difference in ability to turn from side to side between sitting hunched over and sitting with good posture
- Inability to play while exhibiting trunk rotation can impair body's ability to integrate left and right sides of the body, leading to decreased coordination

5: Delayed or Impaired Fine Motor Development



- Trunk rotation is also important for midline crossing
- Midline crossing and bilateral coordination (integrating movement of left and right side of the body) are important for fine motor development
- Children should begin utilizing both hands in play as early as 8 months when they transfer objects from one hand to another
- Higher level fine motor tasks, such as fastening a button, require more coordinated effort between both left and right hands

6: Stress on Joints

- Resting with the hips in flexion, abduction, and internal rotation, as seen with "W"-sitting, places the hip joint in maximum contact with both bones of the joint
- Excessive time spent in these positions of maximum contact can lead to hip pain as a young adult and osteoarthritis as an adult

7: Back or Hip Pain as an Adult



- Prolonged time spent in any position of poor posture, such as sitting with a posterior pelvic tilt, can cause trunk extensor weakness and excessive loading through specific spinal segments
- >50% of Americans will experience low back pain at one point in their life, with many causes due to trunk extensor weakness and poor sitting posture for prolonged periods of time

- Femoroacetabular Impingement is a cause of hip pain due to excessive contact between the 2 bones of the hip joint (head of the femur and acetabulum/acetabular labrum of the pelvis)
- Excessive friction between these 2 areas can result in hip pain in young adults and predisposes an adult to osteoarthritis
- It is treated through conservative treatments such as exercise and stretching, or surgical options to reduce friction
- Sitting with flexion, adduction, and internal rotation ("W"-sitting) increases the friction between this one area of the hip joint

"W"-sitting Solutions

1: Alternative ways to sit



- Tailor Sitting, or "Criss-Cross" Sitting: sitting with hips in flexion, abduction, and external rotation
- Long Sit: sitting with knees extended and hip flexion, with or without trunk support
- Side-Sitting: sitting with both feet to one side, with one hip in internal rotation and one hip in external rotation
- Squatting: encourages lower extremity and core strengthening
- Prone: laying on belly, supporting self on forearms
- Sitting on a Chair or Low Stool

2: Core Strengthening

- If the underlying cause of "W"-sitting is core weakness, a home exercise program aimed at strengthening the child's core will help the child feel stable in other sitting options

3: Hip Stretching



- Prolonged "W"-sitting can result in shortening of the hip abductors, solei, and hamstring muscles, making it difficult to achieve or maintain alternative sitting postures
- Exercises aimed at stretching muscles that have been shorted will help a child achieve alternative sitting postures

4: Repetition and Verbal Cues

- Consistency with a verbal cue will help a child associate a specific phrase with changing their sitting posture, such as "Fix your legs" or "Criss-cross- applesauce"

5: Seek Help

- Have your child see a licensed Physical or Occupational Therapist
- An experienced therapist will help your child work on strategies to decrease "W"-sitting and increase proper postural positions

What is wrong with "W"-Sitting

1: Decreased Core Activation



- Due to wide base of support afforded with "W"-sitting, less core muscle (trunk extensors and abdominals) activation is required to maintain position
- This wide base of support also limits the child's need to shift weight from side to side during play, resulting in decreased use of lateral and posterior balance reactions

2: Poor Posture



- "W"-sitting encourages excessive posterior pelvic tilt, which can result in slouching
- Excessive hunching over results in minimal trunk extensor activation
- Creates a cycle of poor sitting posture due to muscle weakness, resulting in poor sitting posture

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