



TechTips!

The 90-90-90 Rule With Seating: Throw It Out!

Did you know?

Did you know that years ago, many therapists and schools taught that proper seated positioning consisted of 90 degrees at the hips, knees and ankles? Unfortunately, there are still some that adopt this philosophy. Here is why this is not best practice:

This position is generally not comfortable for anybody!

Try sitting in this position for 10-15 minutes. Even people with normal posture and muscle tone will most likely find that within a short amount of time in this position, they need to adjust their position because of discomfort or pain.

No two bodies are the same.

Anyone who needs help with seating may have a variety of positioning needs. There are considerations for a stable base (providing the best base of support), better function (being able to play, eat, etc.), and comfort. This can include anything from simple seating with enough stability to help a child work at a desk, all the way to complex seating for a child with severe muscle tone or multiple postural deformities.

What is optimal seating?

The basic principles of seating include:

- ✓ *Stabilize the pelvis and trunk to allow for improved mobility and function in the head, arms and legs.* In sitting, the pelvis is the most important body segment to stabilize since it is the “foundation of the building”.
- ✓ *Promote optimal postural alignment.* Neutral alignment (90-90-90) is not always optimal alignment. Optimal alignment depends on joint range of motion, sitting balance, muscle tone, the influence of gravity and movement, and the need for function.
- ✓ *Achieve and maintain good pelvic and spinal alignment.* The position of the pelvis will often dictate the posture of the spine. Parameters to consider include the seat to back support angle, seat to lower leg support angle, seat depth, and foot support placement.
- ✓ *Postural problems usually need to be corrected or accommodated by seating supports.* If a body part has good flexibility it can be corrected to neutral alignment. If it doesn't have good flexibility and is forced past its limitation, “over-correction” can occur, which can result in poor alignment in adjacent body parts, along with discomfort. In those cases, that body part needs to be supported in a position that accommodates or allows for the limitation of motion and doesn't try to correct it.



A couple of (basic) examples

Zachary has low muscle tone and tight hamstrings. His typical posture when he sits in a chair is with his pelvis rotated backward and a rounded back with reduced flexibility. This posture tends to push his head forward, which makes it difficult for him to look up. Zachary may need seating that:

- Allows for his knees to bend more than 90 degrees to accommodate his tight hamstrings (feet tucked further back behind his knees)
- Provides a seat to back angle of greater than 90 degrees to accommodate his rounded spine by letting him “sit back” further
- Possibly tilts back slightly to help bring his gaze upward

Hannah has high muscle tone with adequate hip and knee range of motion but her feet have limited range of motion and push downward. She also pushes her hips and back strongly into extension. She may need seating that:

- Maintains 90-95 degrees of hip and knee flexion to help reduce or correct her pushing into extension
- Accommodates or allows her feet to push downward by giving her foot supports that match the angle of her feet. Trying to force her feet to 90 degrees could result in discomfort and poor alignment of her legs.

Some tips for children who are wheelchair and stroller users

- ✓ Offer a variety of seating and movement experiences during the day if possible while still achieving functional goals. It can be tough to expect a child to stay in the same position for long periods of time.
- ✓ Seating supports need to do their job. Lap belts and shoulder straps should be snug enough to just slide a finger underneath. Shoe holders or ankle straps are there for a reason and need to be used. Poorly supported feet can affect alignment of the legs, pelvis, trunk, and even the head.
- ✓ Consult with an OT or PT before making any adjustments on a wheelchair or stroller. Too many cooks in the kitchen can greatly sabotage the effectiveness of a seating system.

Content for this Tech Tip was adapted from *Wheelchair Seating for Postural Control and Function*, Kelly Waugh, PT, MSPT, ATP, 2014.

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