

Excerpts from Pediatric Seating & Mobility: Hands-on Assessment

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Pressure Assessment: Wiggle Test*

- **Safe:** Fingers can wiggle 5 mm under IT's
- **Warning:** Fingers cannot wiggle, but can slide out
- **Danger:** Fingers are squeezed & cannot slide out





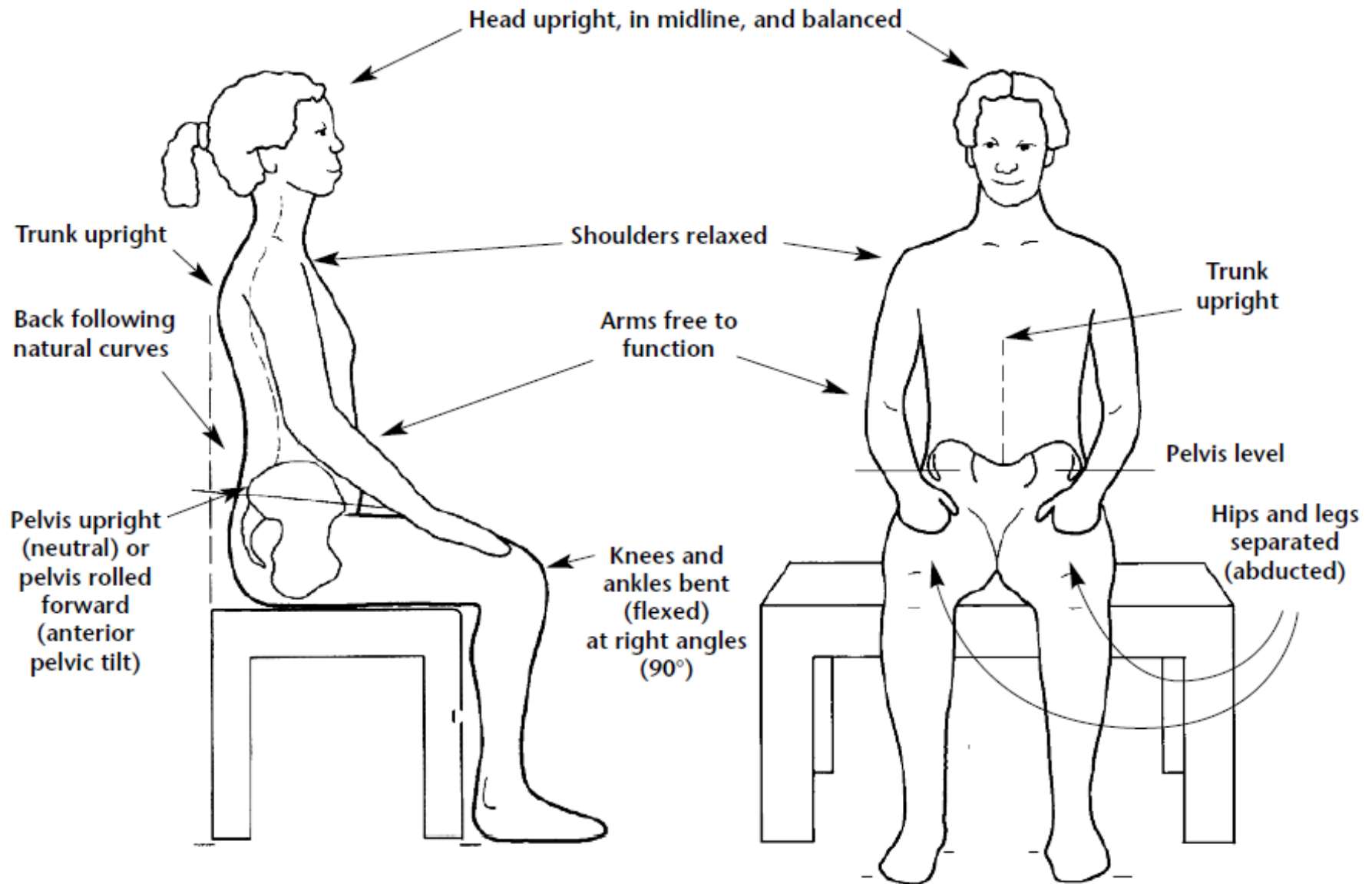
Basic Measurements: Considerations*

- Use a metal retractable tape measure
- Can use clipboards and calipers
- Use foot blocks to position/support the feet
- Have patient sit as upright as possible or in their neutral sitting position (may need support)
- Hold tape measure straight
- Align your line of sight with the tape measure at the correct angle.

Measurement Table

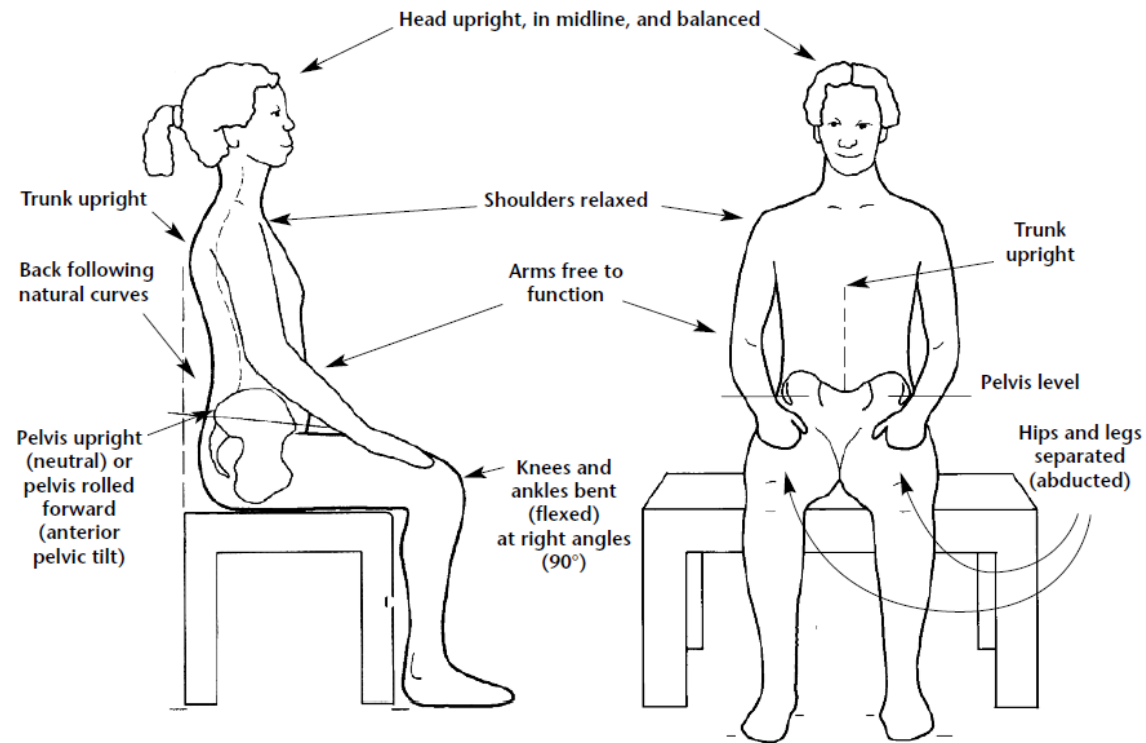
	Body measurement		Measurement (mm)	Change body measurement to ideal wheelchair size	Wheelchair measurement
A	Hip width			Hip width = seat width	
B	Seat depth	L		B less 30-60 mm = seat depth (if length is different, use shortest)	
		R			
C	Calf length	L		= top of seat cushion* to footrests height <i>or</i> = top of seat cushion* to floor for foot propelling	
		R			
D	Bottom of rib cage			= top of seat cushion* to top of backrest (measure D or E – depending on the user's need)	
E	Bottom of shoulder blade				

The Neutral Posture (reference neutral)



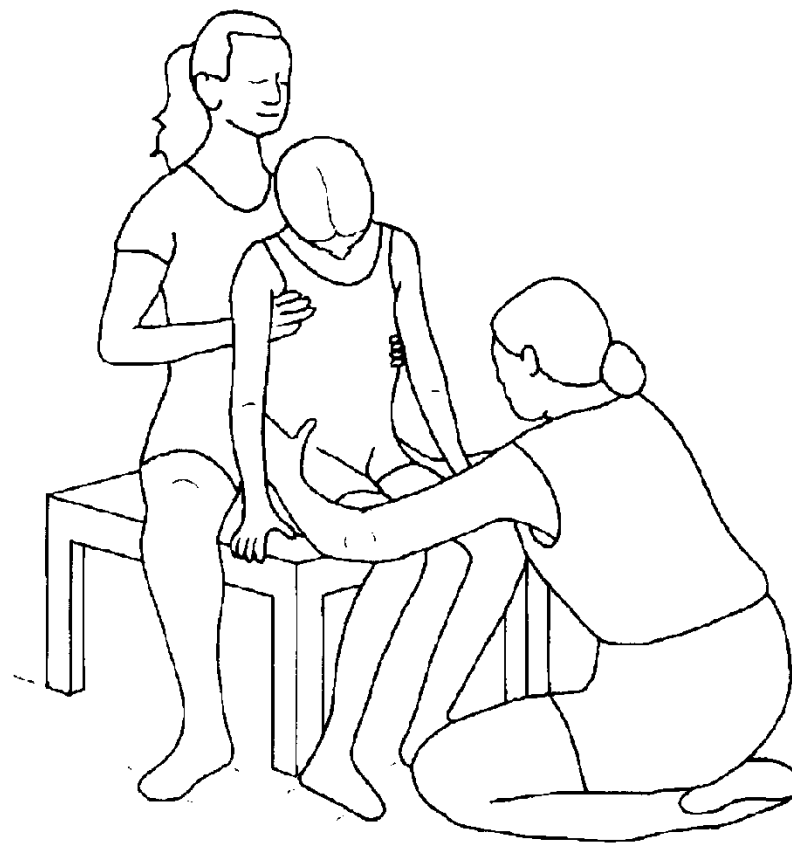
Posture in Present Seating/Mobility System (in relation to THE neutral posture)

- Pelvis
- Trunk
- Hips & legs
- Knees
- Ankles & feet
- Head & neck
- Shoulder girdles
- Arms



Sitting Assessment & Hand Simulation

- Using your hands & body to provide postural support
- Person sits on flat, firm surface with feet supported
- Accommodate for joint limitations (ie. wedge for lack of hip flexion, pelvic obliquity)



Hand Simulation: hints

- The goal is to help the person find HER neutral posture
- This means where she relaxes in your hands
- Quick: take a picture from the front & side



Assessment in Sitting: Flexibility & Postural Support

- First check flexibility as we did in the supine/sidelying position
- Accommodate any lack of flexibility (ie. lack of hip flexion –wedge under buttocks
- Next, use your hands to assess where & how the person needs postural support



Wedge creating
open hip
flexion angle

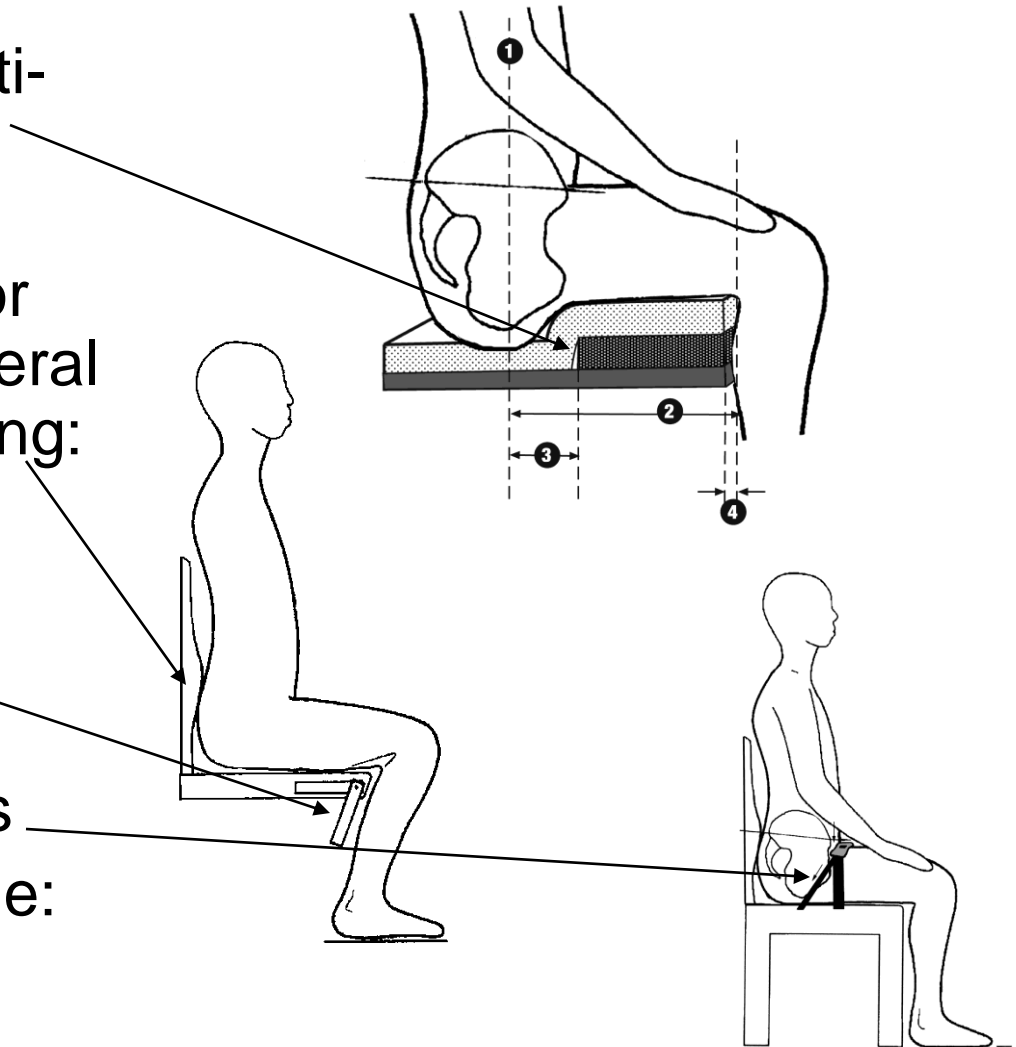


Postural support:

- **Where** are your hands providing support?
- **How much force** or **stability** are your hands providing?
- **In what direction** does the force or stability come from your hands?
- What is the **shape** of the **surface contact area** of your hands?

Demo Seating Recommendations

- Seat cushion: Mild anti-thrust: (Freedom-Designs)
- Backrest with posterior support @ sacrum/lateral pelvis: adjusted at fitting: (Actaback)
- Knees allowed to flex under seatbase
- 4-point seat belt with main pull 90° to thighs
- Seat-to-Backrest Angle: 95°





Excerpts from Pediatric Seating & Mobility: Postural Support Options

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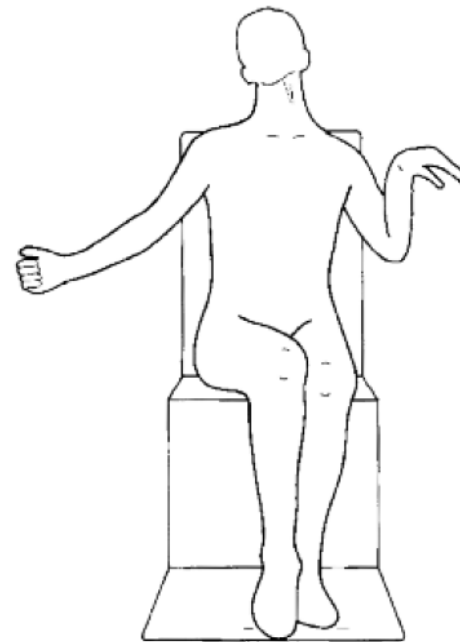
Focus of presentation:

- Seating for children with postural control issues, abnormal tone,
- Not, children requiring pressure relieving cushions (spina bifida, spinal cord injury), or weakness (dystrophies, spinal muscular atrophy)

Back support: Height

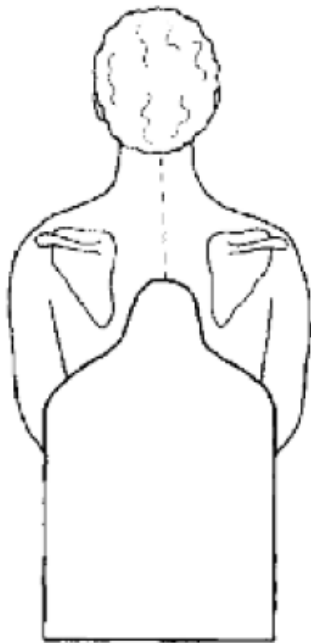


Poor trunk control and balance

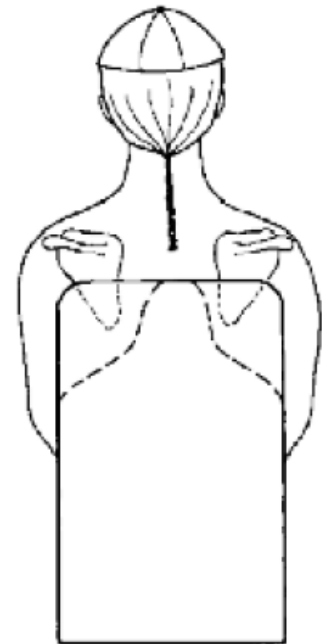


Back support height to the spine of the scapula

If back height to spine of scapula, can contour back support or cut-outs so person can use arms.

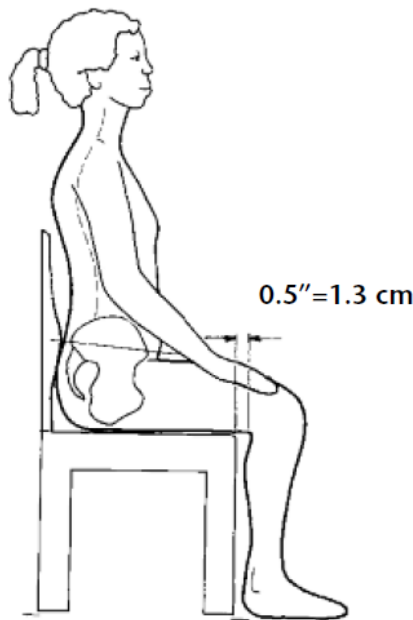


Contoured back support
for scapular relief

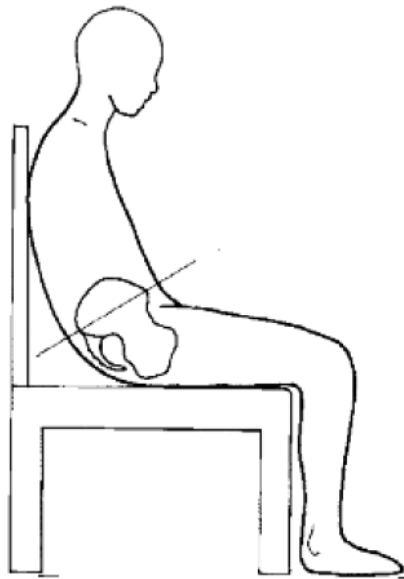


Scapular cut-outs
or reliefs

Seat depth: Back of buttocks to $\frac{1}{2}$ " behind knees



Good seat depth

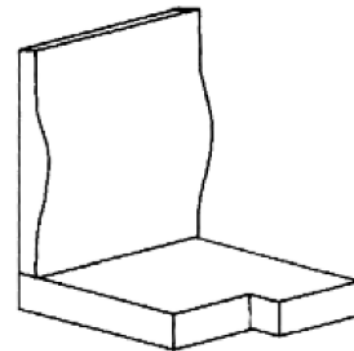
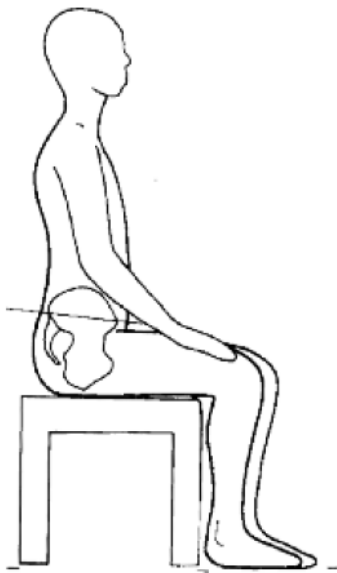


Seat depth too long:
pelvis rolls under



Seat depth too short:
not enough support

Leg length difference: If one leg is 1" longer than the other, the seat depth under longer leg needs to be longer. If not, what happens?



Seat depth longer under the longer leg



Specific Postural Supports

- Begin at the pelvis....if pelvis is not stable, the rest of the body will follow the pelvis.
- The body is a whole, one part affects another...however, we need to address one part at a time.
- We will look at postural tendencies, ie. posterior pelvic tilt – and seating supports.

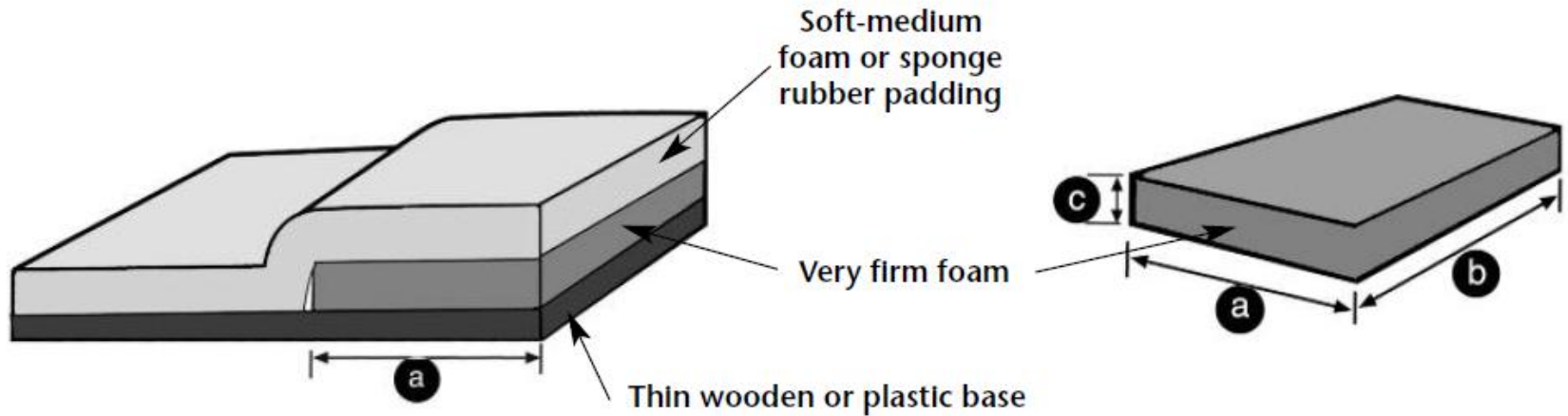


Specific Postural Supports

- Posterior pelvic tilt, thoracic kyphosis, and excessive hamstring tension
- Lateral pelvic tilt (obliquity) and scoliosis
- Pelvic rotation and scoliosis with rotation

*Note: Usually it is a combination of the above...we are breaking it into these categories for teaching purposes

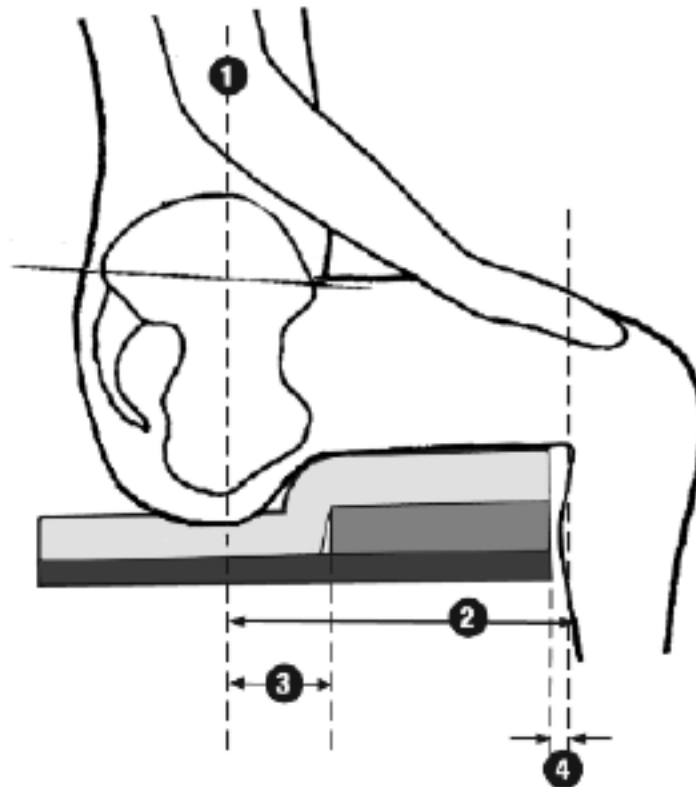
Anti-thrust seat



Anti-thrust seat

Measuring for the very firm pre-ischial shelf (anti-thrust shelf block)¹⁹:

1. Check that the pelvis is upright.
2. Measure from the front of the ischial tuberosity to the back of the knee.
3. Subtract for the softer foam and relax room.
4. Subtract for space behind the knee.



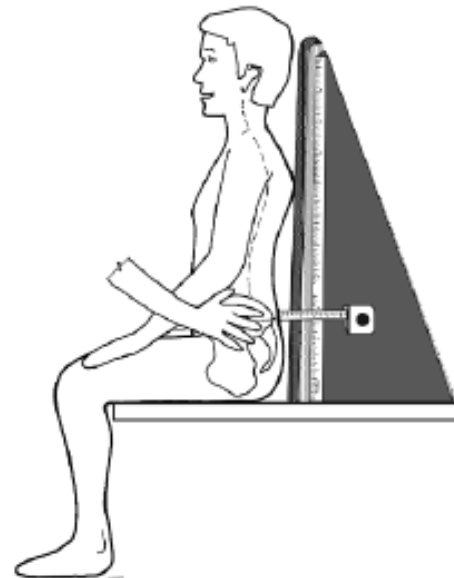
Measurements

Tech Tip: Triangle Tool

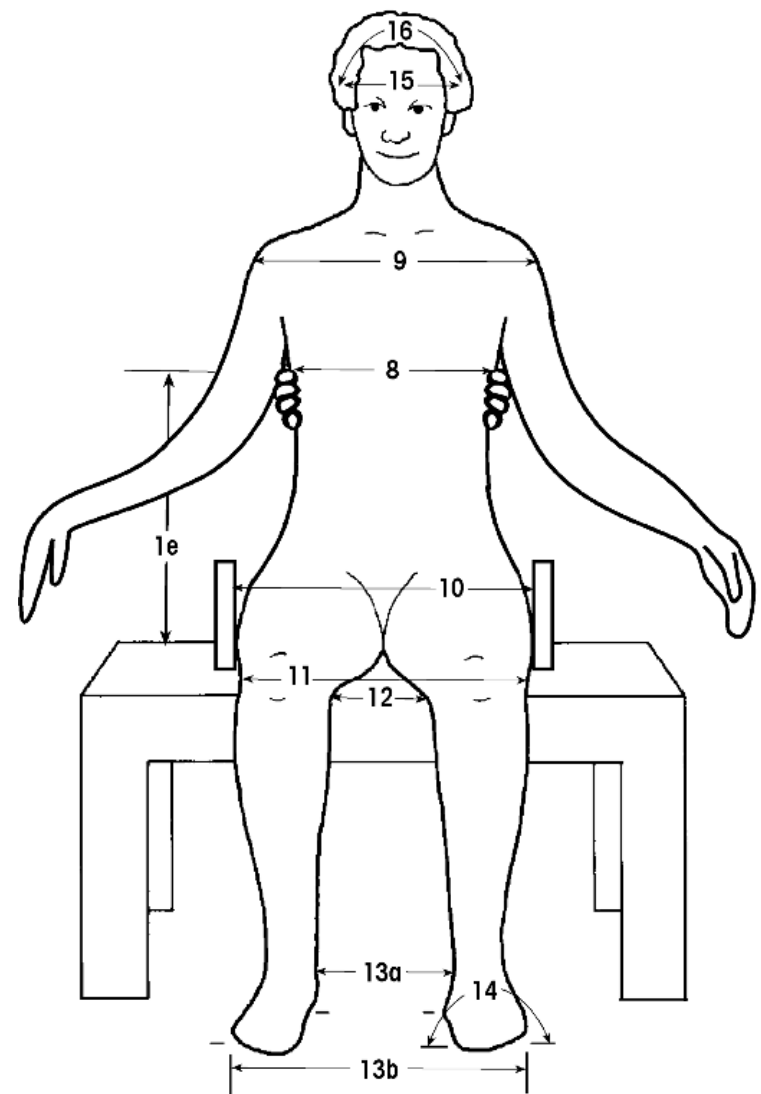
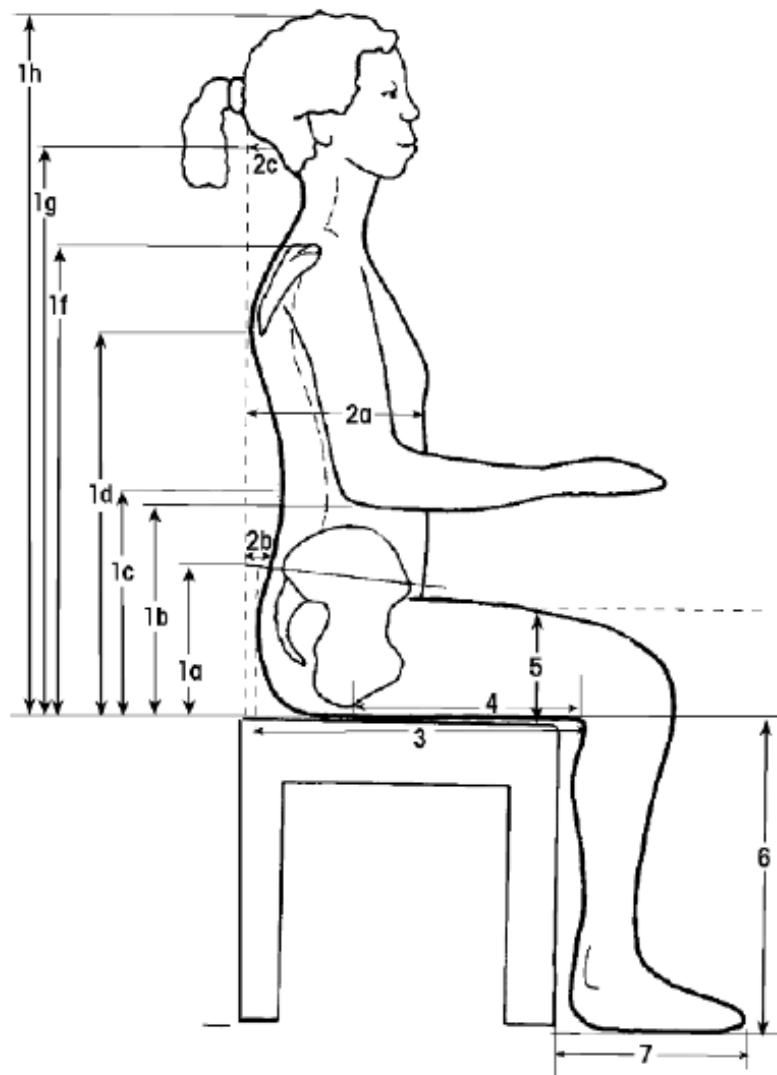
Jamie Noon measures the body using a *triangle tool*.¹ Make a triangular base from 1/8" (7 mm) thick wood, plastic, or foamcore; height 38" (96 cm); width 14" (35.5 cm). Firm foam or rubber is attached to the long side that will be against the person. A measuring tape is attached to the long side facing you so that you can read it. Put the triangle tool against the most posterior or rear aspect of the person. The triangle tool is quite useful for measuring the pelvis to trunk offset, and trunk to head offset, because it allows for the natural rounding forward (kyphosis) of the thoracic spine.



Triangle tool



Measuring with a triangle tool





Excerpts from Pediatric Seating & Mobility: Documentation Requirements for Wheelchairs

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Documentation Requirements for Wheelchairs

Basic Criteria Coverage

All wheelchairs

- Mobility deficit that limits one or more Mobility-Related Activities of Daily Living (MRADL's).
- Mobility limitation cannot be resolved by use of an assistive device.
- Patient's home provides adequate access between rooms and sufficient maneuvering space.

Basic Criteria Coverage

All wheelchairs

- The power wheelchair will significantly improve the patient's ability to participate in MRADL's.
 - Patient intends on using PMD in the home
 - Cognitive status is sufficient to use PMD or the care provider is available and willing to provide assistance if cognition
- Patient/care provider have not expressed an unwillingness to use the PMD.

Specific Criteria for Manual Wheelchairs

- All basic criteria must be met.
- Patient has sufficient upper extremity function and cognition to safely self propel the manual wheelchair
-OR-
- Patient has a caregiver who is available, will and able to provide assistance with the wheelchair.

Justification for Basic Accessories

- Adjustable arm height
 - Needs an arm height that is not available using non-adjustable armrests
 - Patient spends at least 2 hours per day in wheelchair
- Arm Trough
 - Quadriplegia
 - Hemiplegia
 - Uncontrolled arm movement

Justification for Basic Accessories

- Elevating Leg rests
 - Musculoskeletal condition or cast/leg brace that prevents 90degree knee flexion
 - Significant lower extremity edema
 - Meets criteria for a reclining back on wheelchair
- Batteries
 - Two sealed batteries allowed if approved power wheelchair
 - Non-sealed batteries will be denied

Justification for Basic Accessories

- Non-standard seat width and/or depth
 - Physical dimensions of patient not accommodated by standard seat sizes.
- Attendant Control
 - Meets criteria for power wheelchair
 - Patient is unable to operate a manual or power wheelchair
 - Has a caregiver who is unable to operate manual wheelchair , but is able to operate a power wheelchair

Justification for Power Tilt and/or Recline

- One or more of the 3 following criteria
 - High risk for the development of a pressure ulcer and is unable to perform a functional weight shift
 - Needed to manage increased tone and spasticity
 - Utilizes intermittent catheterization and cannot transfer independently

Justification for Basic Accessories

- Electronic interface
 - Patient must have or meet criteria for a speech generating device.
- Anti-rollback device
 - Patient self propels and need the device to manage ramps.
- Safety belt/pelvic strap
 - Patient has weak trunk control or muscle spasticity which require use of the item for positioning

Discussion regarding justifications

- Cushions
 - Pressure relieving
 - Positioning
 - Comfort
- Backrests/back supports
- Adjustable back posts
- Adjustable, removable or swing away hardware
- Headrest
- Lateral Supports
- Thigh guides