



### POSTERIOR PELVIC TILT

- Low or absent tone in the trunk muscles
- Limited hip flexion
- Abnormal (high, low or fluctuating) tone in trunk and/or lower extremities
- Pathological reflexes in lower extremities or trunk
- Decreased lordosis
- Tight hamstrings
- Increased thoracic kyphosis
- Decreased pelvic/lumbar spine range of motion

- Seat depth too long
- Footplates too high (Thighs not loaded sufficiently)
- Footplates too low (Feet not loaded sufficiently)
- Seat-to-floor height too high for foot propulsion
- Footplate position relative to knee does not accommodate tight hamstrings
- Wheelchair does not provide solid base of support (Sling upholstery)
- Back support too upright
- Armrests too low
- Back does not support posterior pelvis



### PELVIC OBLIQUITY

- Asymmetrical trunk muscle strength
- Asymmetrical muscle tone (trunk and/or lower extremities)
- Asymmetrical soft tissue or muscle mass
- Asymmetrical pelvic/femur bone structure
- Asymmetrical hip flexion
- Limited hip abduction and/or adduction
- Limited hip internal or external rotation
- Scoliosis

- No solid base of support
- Wheelchair too wide
- Armrests too low (Upper extremities not supported)
- Seat shape does not support trochanters
- Seat and or back does not provide enough lateral pelvic support
- Footplate position and/or seating angles do not support hip range limitations
- Joystick and/or wheel location inappropriate



### PELVIC ROTATION

- Asymmetrical muscle tone (trunk and/or lower extremities)
- Asymmetrical hip flexion
- Leg length discrepancy
- Posterior dislocated or subluxed hip
- Unilateral foot propeller
- Limited hip abduction and / or adduction range of motion
- Asymmetrical muscle mass in the posterior pelvis
- Scoliosis plus or minus rotation and/or bony deformity

- Trunk not supported
- Back support does not support posterior pelvis
- Seat to floor height too high for foot propulsion
- Seat and or/ backrest contours too narrow
- Wheel set up incorrect for hand propulsion



### ANTERIOR PELVIC TILT

- Tight hip flexors
- Tight quadriceps
- Tightened paraspinals
- Weakened abdominals
- Obesity
- Increased lumbar lordosis

- Anterior femoral angle (Knees lower than hips)
- Back support too upright
- Excessive lumbar contour
- Trunk not supported



### THORACIC KYPHOSIS

*With Reduced Lumbar Lordosis (Full C-Curve)*

- Low or absent muscle tone in the trunk muscles
- Compensation for posterior tilted pelvis
- Spinal fusion or structural spinal deformity
- Diminished head control
- Compensation for visual impairment

- Back does not match shape of posterior trunk
- Back does not support posterior pelvis
- Back support too vertical
- Back support too low
- Seat to back angle too open or closed
- Head support mounted too far forward or too low
- Arm supports too low



### UPPER THORACIC KYPHOSIS

- Diminished disc space in upper thoracic spine
- Hyper extended cervical spine
- Extreme hyper mobility
- Postural deterioration over time
- Diminished head control

- Back support too low
- Arm support too low
- Wheel set up incorrect for hand propulsion
- Back does not match shape of posterior trunk
- Head support mounted too far forward or too low
- Seat to back angle too closed



### SCOLIOSIS

- Asymmetrical muscle tone or strength in the trunk muscles
- Compensation for pelvic obliquity and/or pelvic rotation
- Structural spinal deformity
- Inability to hold the head in midline
- Collapsed lung
- Decreased trunk balance
- Asymmetrical upper extremity strength during manual wheelchair propulsion

- Back does not support posterior pelvis
- Back does not match shape of posterior trunk
- Back does not provide enough lateral support
- Seat cushion does not provide pelvic stability
- Wheelchair does not provide solid base of support (Sling upholstery)
- Upper extremity support is too low, too high or too wide
- Not enough head support
- Joystick or wheel location inappropriate



### INCREASED LUMBAR LORDOSIS

*With Thoracic Extension*

- Low or absent muscle tone in the trunk muscles
- Compensation for anterior tilted pelvis
- Tightened paraspinals
- Obesity
- Hypermobility of lumbar spine
- Compensation for instability

- Anterior femoral angle (knees lower than hips)
- Back too vertical
- Excessive lumbar contour
- Back support too low
- Posterior pelvic support too high
- Back does not match shape of posterior trunk
- Orientation in space not optimal (system too upright)

#### Clinical Assessment Goals

- Identify posture/orthopedic deformities at each body segment.
- Is it fixed or flexible?