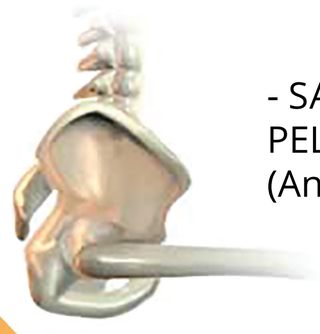
EDUCATION IN MOTION

WHERE THEORY MEETS PRACTICE

PELVIC & SPINAL POSTURES

PELVIS & LOWER EXTREMITIES

	POTENTIAL CLINICAL CAUSES	POTENTIAL TECHNICAL (EQUIPMENT) CAUSES
 + SAGITTAL PELVIC ANGLE (Posterior Pelvic Tilt)	• Low or absent tone in the trunk muscles/low tone/muscle control in pelvis or trunk • Abnormal (high, low or fluctuating) tone in trunk and/or lower extremities • Pathological reflexes in lower extremities/abnormal reflexes in trunk/lower extremities • Limited hip flexion • Decreased lordosis • Decreased pelvic / lumbar spine range of motion • Decreased hamstring ROM	• Seat depth is too long • Footplate position relative to knee does not accommodate tight hamstring • Front end angle/hanger angle doesn't accommodate hamstring range • Footplates too high (thighs not loaded sufficiently) • Footplates too low (feet not loaded sufficiently) • Lack of posterior pelvic/sacral support • Back support too upright • Seat-to-floor height too high for foot propulsion • Armrests too low
 - SAGITTAL PELVIC ANGLE (Anterior Pelvic Tilt)	• Increased lumbar lordosis • Tightened paraspinals • Weakened abdominals • Tight quadriceps • Tight hip flexors • Obesity	• Anterior femoral angle (knees lower than hips) • Excessive lumbar contour • Trunk not supported • Back support too upright
 FRONTAL PELVIC ANGLE (Obliquity)	• Scoliosis • Abnormal reflexes in trunk or lower limbs • Asymmetrical muscle tone (trunk and/or lower extremities) • Asymmetrical trunk muscle strength • Asymmetrical soft tissue or muscle mass • Asymmetrical pelvic/femur bone structure • Asymmetrical hip flexion range of motion • Limited hip abduction and/or adduction • Limited hip internal or external rotation	• Poor base of support - i.e. sling upholstery • Footplates, position and/or seat-to-back angle or front end angle may not match client's available range of motion • Seat shape does not support trochanters • Wheelchair too wide • Seat and/or back does not provide enough lateral pelvic support • Joystick and/or wheel location inappropriate • Armrests too low (upper extremities not supported)
 TRANSVERSE PELVIC ANGLE (Rotation)	• Scoliosis or roto scoliosis • Asymmetrical hip flexion • Asymmetrical muscle tone (trunk and/or lower leg length discrepancy) • Posterior dislocated or subluxed hip • Limited hip abduction and/or adduction range of motion • Asymmetrical muscle mass in the posterior pelvis • Unilateral foot propeller (extremities)	• Trunk not fully supported • Lack of posterior pelvis/sacral support • Seat and or/or backrest contours too narrow • Seat-to-floor height too high for foot propulsion • Wheel set up incorrect for hand propulsion
 SAGITTAL STERNAL ANGLE (Upper Kyphosis)	• Low/absent muscle tone in the trunk muscles • Compensation for posterior pelvic tilt • Diminished head control • Postural deterioration over time • Extreme hyper mobility • Hyper extended cervical spine • Diminished disc space in upper thoracic spine	• Seat-to-back angle too closed • Back support too low • Arm support too low • Back does not match shape of posterior trunk • Head support mounted too far forward or too low • Wheel set up incorrect for hand propulsion
 SAGITTAL TRUNK ANGLE (Kyphosis)	• Low tone/poor muscle control in pelvis or trunk • Compensation for posterior pelvic tilt • Structural spinal deformity • Diminished head control • Compensation for visual impairment	• Back does not match shape of posterior trunk • Seat-to-back angle too open or closed • Lack of adequate posterior pelvis/sacral support/ back does not support posterior pelvis • Back support too vertical • Back support too low • Head support mounted too far forward or too low • Arm supports too low
 SAGITTAL ABDOMINAL ANGLE (Lordosis)	• Low or absent muscle tone in the trunk muscles • Tightened paraspinals • Hypermobility of lumbar spine • Compensation for anterior tilted pelvis • Compensation for lumbar instability • Obesity • Fixed structural deformity	• Anterior femoral angle (knees lower than hips) • Back too vertical • Excessive lumbar contour • Back does not match shape of posterior trunk • Posterior pelvic support too high • Back support too low • Orientation in space not optimal (system too upright)
 SCOLIOSIS	• Compensation for pelvic obliquity and/or pelvic rotation • Asymmetrical muscle tone or strength in the trunk muscles • Decreased trunk balance • Structural spinal deformity • Asymmetrical upper extremity strength during manual wheelchair propulsion • Inability to hold the head in midline	• Back does not match shape of posterior trunk • Back does not support posterior pelvis • Back does not provide enough lateral support • Wheelchair does not provide solid base (sling upholstery) • Seat cushion does not provide pelvic stability • Upper extremity support is too low, too high, or too wide • Joystick or wheel location inappropriate

PELVIS & SPINE

Clinical Assessment Goals:

- ✓ *Identify posture/orthopedic asymmetries at each body segment.*
- ✓ *Is asymmetry reducible or non-reducible?*
- ✓ *Measure angles in frontal, sagittal, and transverse plane .*
- ✓ *Absolute angles measure angles between a line connecting 2 points of reference on the body and a neutral/plumb line .*
- ✓ *Angles which have moved clockwise from neutral axis are (-).*
- ✓ *Angles which have moved counter-clockwise from neutral axis are (+).*

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