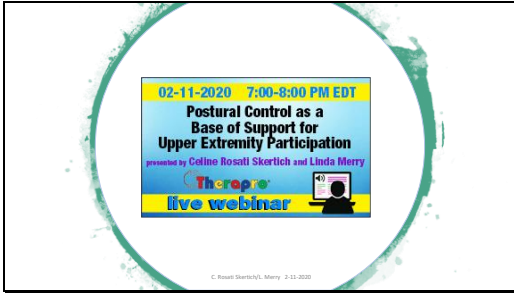


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*Postural Control as a Base of Support for Upper Extremity Participation presented by Celine Rosati Skertich & Linda Merry- February 11, 2020*



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**Learning Objectives**

- Understand the impact postural control has on an individual's participation in everyday tasks.
- Examine the concepts inherent of postural control: base of support, biomechanics and alignment and understand how they impact upper extremity movement.
- Integrate these positioning principles and adaptive strategies to optimize an individual's participation in everyday activities.

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**POSTURAL CONTROL**

- Postural control is defined as the act of maintaining, achieving or restoring a state of balance during any posture or activity. Pollock, AS, Durward BR, Rowe PJ, and Paul JP. *Clin Rehabil*, 2000 Aug;14(4):402-6.
- In other words, it is the ability to control the body's position in relation to the *task* in the *environment*. Schumway-Cook and Woollacott, 2007



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**Purpose Of Postural Control**

- It supports a vast range of daily functions, in addition to supporting internal processes such as breathing, vision, digestion, circulation, temperature regulation.
- Humans need to be able to operate in a variety of environments, for a variety of reasons and hold themselves upright against gravity. (Hong, 2005)
- Its FUNDAMENTAL TO EVERYTHING WE DO!

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**Control Of Posture**

- Involves controlling the body's position in space for the dual purposes of stability and orientation
- **ORIENTATION** is the ability to organize body alignment to perform each specific task.
- **POSTURAL STABILITY** is the ability to maintain the position of the body mainly the COM within the limits of stability.
- The specifics of the stability and orientation vary for each **task** and across different **environments**.

Woollacott & Shumway-Cook, 2001

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**Body Alignment**

"Optimal placement of the body parts so that the bones are efficiently used, and the muscles have to do less work for the same effect."

- Wikipedia

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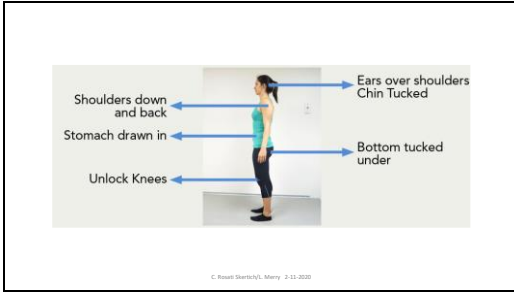
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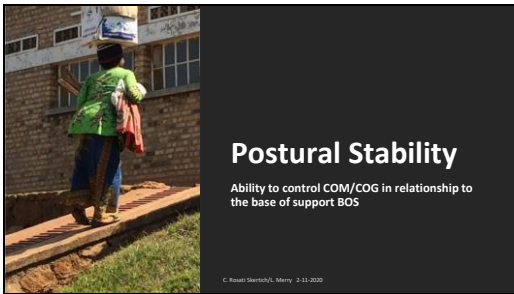
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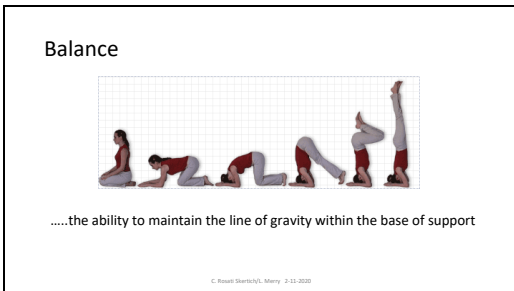
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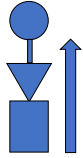
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**Efficient & Effective Movement**

- Stable base of support
- The ability to maintain alignment over the base
- The ability to adjust during movement over your center of mass



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**Things that Affect the COG/BOS**

- Size and position of the base of support: The larger the BOS the more stable. Stability provided if the line of gravity falls approximately midway along the BOS.
- Position of the COG: The closer the body's COG to its BOS, the more stable it is.
- Position changes: any change in a partial COG produces a corresponding change in the common COG.
- Movement transitions involving changing of BOS to a new BOS (sit->stand)
- Movement of COM outside the BOS

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**WHY DOES ANY OF THIS MATTER?**

Because improper body alignment  
OR  
an inadequate base of support  
LIMITS FUNCTION

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**Silver Bullet**

EVEN IN THE MOST MILDLY INVOLVED CLIENT,  
IF THERE IS POOR ALIGNMENT, POOR STABILITY OR  
INABILITY TO SUSTAIN ACTIVITY IN THE POSTURAL  
MUSCLES (POOR ENDURANCE),  
POSTURAL CONTROL IS IMPAIRED  
AND  
**IT WILL AFFECT FUNCTION!**

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**Postural Control & Postural Stability**

provide the "background" control of your body that is necessary for helping you to stay upright and to stabilize your movement.

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**Shoulder's Primary Function**

- Strength & ROM
- Connect hand to body & gets hand in a variety of places
- Reaches and supports



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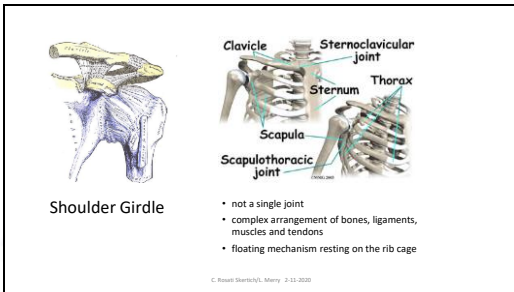
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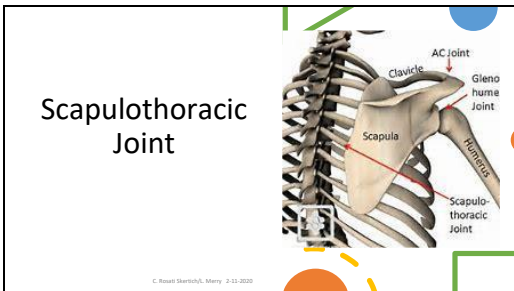
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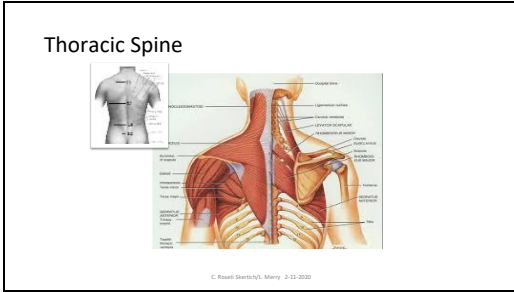
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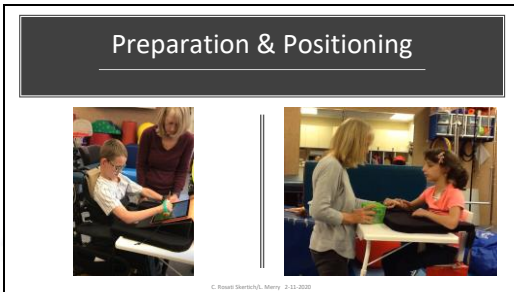
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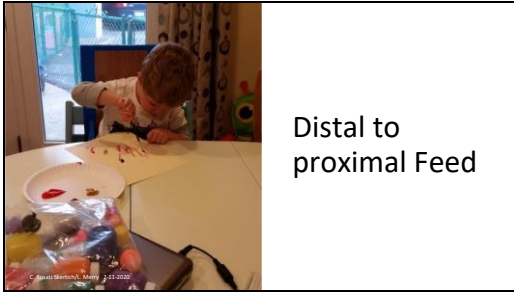
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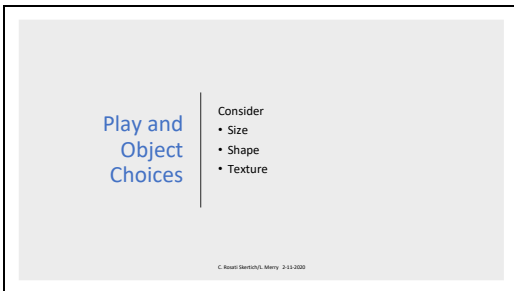
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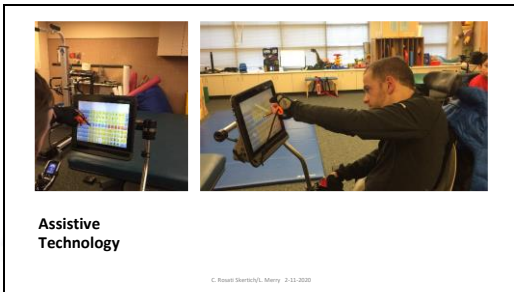
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**Assistive  
Technology**

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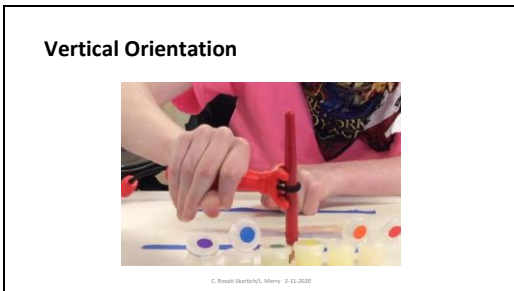
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**Vertical Orientation**

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**Self Initiation  
with support**  
but not hand over hand

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**Arts & Crafts**

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**Cards or Memory Games**

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**Silver Bullets**

- Prepare the base of support
  - ✓ Start with pelvis over hips & symmetrical trunk
  - ✓ Thoracic spine and head upright
- Make sure two hands are on the table with elbows in front of shoulders
- Prepare the arm
  - ✓ Scapular-humeral dissociation and elbow forward
- Object Placement, height, weight, distance, size and orientation matter
- Stabilize objects and support surface.
- Avoid distal demands that result in proximal compensations by using adaptive equipment.

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**Thank you!**

Linda Merry, OTR/L, C/NDT  
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[cskertich@thera-solutions.com](mailto:cskertich@thera-solutions.com)

YOUTUBE  
[youtube.com/functionalhand](https://www.youtube.com/functionalhand)

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