REHABILITATION USING ACTIVITY BASED RESTORATIVE THERAPY (ABRT)

Why Activity?

- "Regular Physical Activity throughout life is important for maintaining a healthy body. Nevertheless, 60% of the global population fails to achieve the minimum physical activity recommendations."

- "Persons with chronic physical condition are at greater risk due to inactivity than able-bodied persons because they are often restricted in performing normal everyday activity such as walking, housekeeping, gardening, shopping, and participating in sports."

Activity Based Restorative Therapy (ABRT)

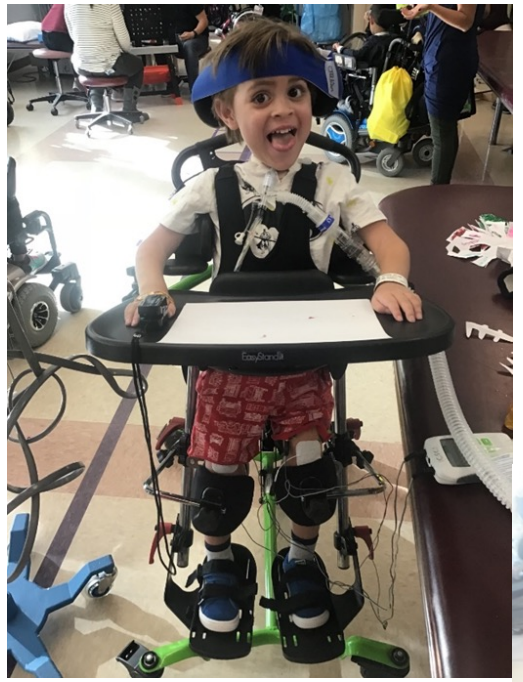
- 5 key components:
  - Functional Electrical Stimulation
  - Locomotor Training
  - Weight Bearing/Loading
  - Patterned Activity
  - Task-Specific Practice
- Plus
  - Aquatic Therapy
  - Vibration
  - Home based/community integration
  - TSCS
  - BFR

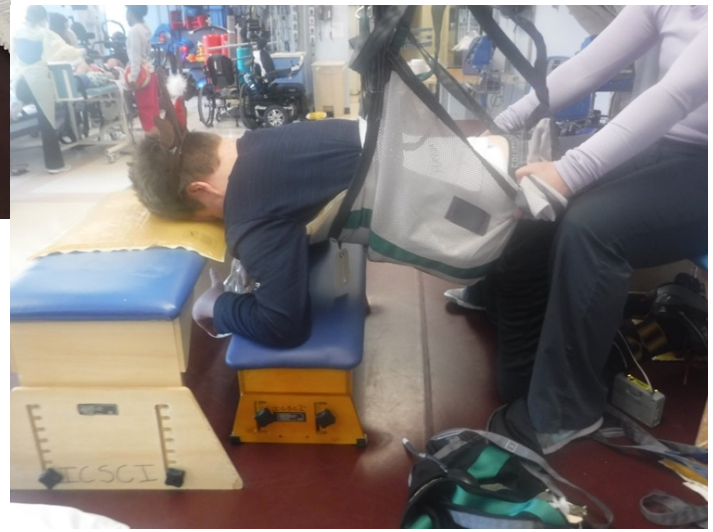
Benefits of FES

- Increased bone mineral density
- Goal for regeneration
- Assists in decreasing atrophy
- Used in combination with other components of ABRT
- Improving blood flow and muscle health
  - Improve and maintain muscle mass during or following periods of inactivity

Weight bearing/Loading

- Loading across a joint while promoting proper joint alignment and muscle co-contraction surrounding the joint
- UE weight bearing can be achieved through:
  - Seated prop
  - Quadruped
  - Prone positioning
- LE weight bearing can be achieved through:
  - Quadruped or tall kneel
  - Standing:
    - With or without assistance
    - With or without bracing- No or minimal bracing preferred
  - Supported standing in standing frame
    - Static stander
    - Dynamic stander
    - Stander with glider component





Locomotor Training

- An activity-based rehabilitative strategy designed to improve sensory, motor and autonomic function, health and quality of life
- Provides sensory cues to re-train neural patterns that will result in effective locomotion
- Emphasizes recovery of motor function using the intrinsic mechanisms of the nervous system, rather than compensatory strategies

Traditional Locomotor Training

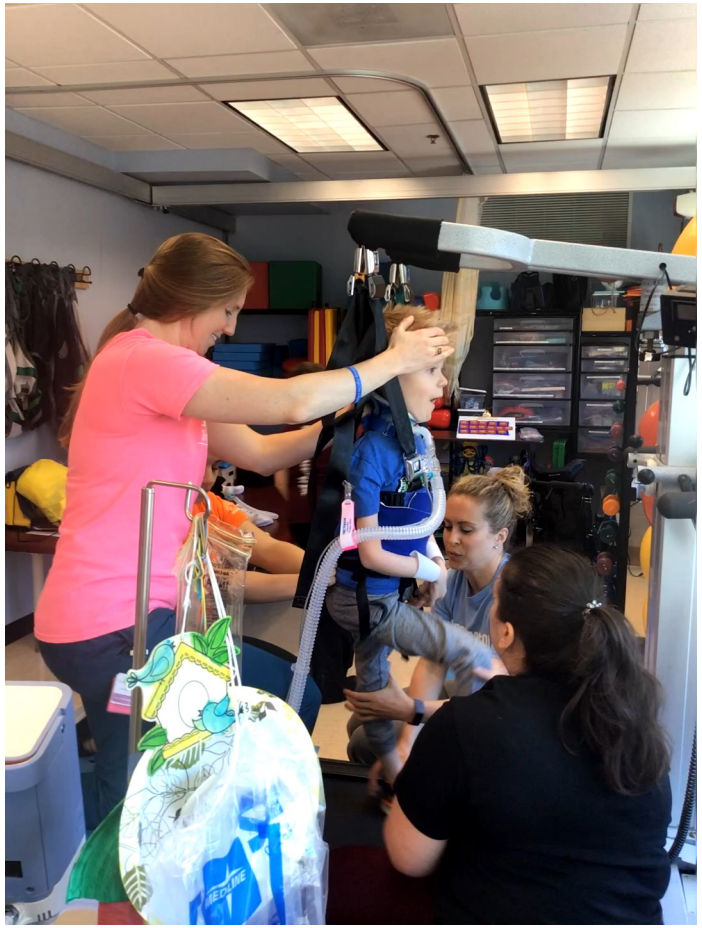
4 Principles of LT:

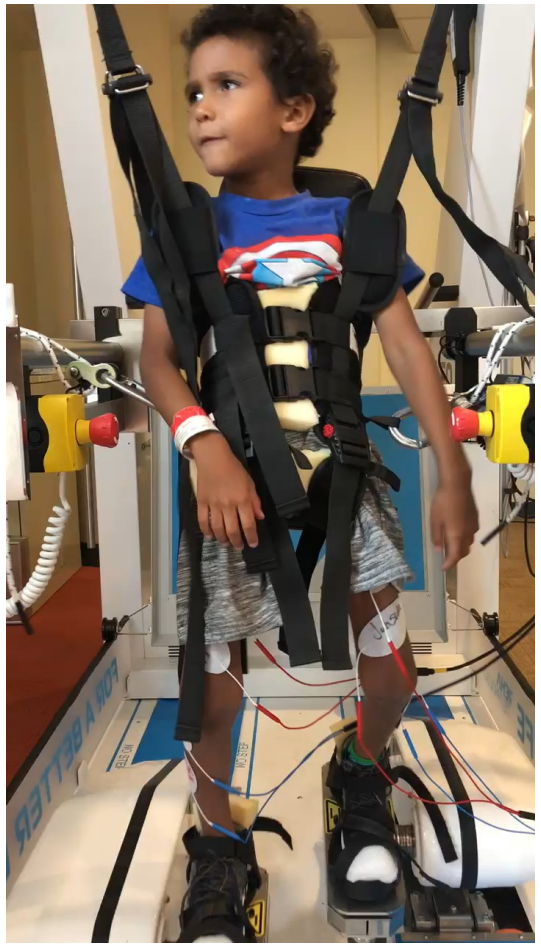
1. Maximize weight bearing on the legs
2. Optimize sensory cues
3. Optimize kinematics for each motor task
4. Maximize recovery; minimize compensation

3 Components to LT:

1. Treadmill training
2. Overground training
3. Community training

Locomotor Training and Robotic Gait Training





Massed Practice: Patterned Activity

- Repetitive task specific and non-task specific activities
- Promote cortical reorganization
  - In CIMT, benefits result from frequency of use of involved side, not constraint of uninvolved side
- Repeated multiple times for multiple hours/days
- Improve strength and ROM
- Perfect practice makes perfect
- Incorporate other components
  - Principles of LT
  - FES

Task Specific Practice

- Practice of context specific motor tasks
- Training functional task rather than impairment
- Paired with feedback
- Goal directed
- Repetition
- Incorporate other components
  - Stand at sink to brush teeth
  - FES to ankle dorsiflexion during gait
  - High repetitions of elbow flexion followed by self-feeding

Don’t Let Bad Habits Persist

- Use it or lose it: Abhorrent patterns and compensatory strategies have to be overcome by rehabilitation
- Patients will figure out how to get things done (ex: tenodesis, one hand, toes, fingers)
- Cortical reorganization responds to non-use as much as therapy
- The body learns what we teach it
- Constraint Therapy

- Remember: ABRT can be applied to all ages
- Key Factors for Kids:
  - Creativity
  - Family centered
  - Individualized treatment plans evolve as the child grows and achieves new milestones
    - There is more than one recipe for success
- Ultimate goal should be increased independence in mobility and function.

Questions?