Treadmill Intervention to Decrease Onset of Walking Time in Pediatric Patients with Down Syndrome

Chris Hartlage and Lee Janasek

Introduction/Background

- Down syndrome (DS) is a disability that causes moderate to severe mental retardation and significant motor delays.
- Delayed development of postural reactions, and low muscle tone contribute to delayed motor skills.
- Friday rotation at All Kids Can
  - Treadmill with a child with Cerebral Palsy
  - Can this be used with Down syndrome?
  - Does the type of training matter?

PICO Question

- Does high-intensity individualized treadmill therapy or low-intensity treadmill therapy lead to an earlier onset of walking in pediatric patients with Down Syndrome?

Methods

  - Keywords
    - Down Syndrome
    - Treadmill Training
    - Intensity
  - Results found
    - 14 were found
    - 2 deemed appropriate for our PICO question (2 RCT’s)

- Google Scholar
  - Keywords
    - Treadmill intensity
    - Down Syndrome
    - “All words in the title”
  - Results Found
    - 2 articles were found
    - 1 deemed appropriate for our PICO question (1 RCT)

Research Synthesized

- 3 randomized control trials were used from the information found
  - Effects of different treadmill interventions on strategy adoption and anticipatory locomotor adjustments, gait development, and developmental outcome.
  - All of the studies used 30 infants.
  - All of the studies divided the subjects into either a “low intensity-generalized (LG)” group, or a “high intensity-individualized (HI)” group.
Results

• Overall the HI treadmill intervention provided better effects
• Specifically:
  – Increased their stepping more over the training
  – Attained motor milestones earlier
  • Milestones: raises self to standing, stands alone, and walks alone
  – Walking as their preferred clearance strategy
  – Produced development gait, normalized velocity and cadence,
    and lower double support percentage

Results Continued…

• HI treadmill intervention provided:
  – Better development of gait patterns
  – Normalized velocity and cadence
  – Lower double support percentage

Discussion

• Easily done in most settings
• Decrease delay to onset of walking
• Gets family involved
• Increase in physical activity and social skills
• Better developmental outcomes
  – Motor and cognitive

Areas for Future Research

• Better protocols for high intensity
  – Could lead to earlier onset
• Addition of orthoses
• Can anticipatory patterns be trained
• How do we take this home?

Questions?

References