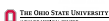




Unique Considerations for Brain Injury Population for Implementation of the Locomotor Training CPG

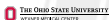
Alicia Almond PT, DPT, NCS
Mallory Kasper PT, DPT, NCS

TBIMS April 2019



Locomotor Training CPG: Purpose

- CPG is out for review by the American Physical Therapy Association (APTA) and the Academy of Neurologic Physical Therapy (ANPT)
- The goal of this CPG was to delineate the relative efficacy of various interventions to improve walking speed and timed distance in individuals > 6 months following these specific diagnoses



2 |

Locomotor Training CPG: Purpose

"The practice parameters should be considered recommendations only, rather than mandates, and are not intended to serve as a legal standard of care."

"The ultimate decision regarding a particular clinical procedure or treatment plan must be made using the clinical data presented by the patient / client / family, the diagnostic and treatment options available, the patient's values, expectations, and preferences, and the clinician's scope of practice and expertise."



3 |

Locomotor Training CPG: Population

- Populations
 - Traumatic Brain Injury (TBI)
 - Stroke
 - Motor incomplete Spinal Cord Injury (iSCI)
- "Chronic injury": > 6 months following an acute-onset, central nervous system injury
- Adults (>18 y.o.a) of both genders and all races / ethnicities



Red Light – Green Light Application

Strong Evidence
Clinician Should Use



Weak Evidence
Clinician Should Use



Strong Evidence
Clinician Should NOT
Use



Action Statement 1



Effectiveness of moderate to high intensity walking training interventions on locomotor functional in persons in the chronic stages following at acute-onset CNS injury

- Clinicians **should use** moderate to high intensity walking training interventions to improve walking speed and distance in individuals with acute-onset CNS injury
- Evidence quality: I-II
- Recommendation strength: strong



Action Statement 2



Effectiveness of virtual reality walking interventions on locomotor function in persons in the chronic stages following an acute-onset CNS injury

- Clinicians **should use** virtual reality training interventions coupled with walking practice for improving walking speed and distance in individuals with acute-onset CNS injury
- Evidence quality: I-II
- Recommendation strength: strong



7 |

Action Statement 3



Effectiveness of strength training on locomotor function in persons in the chronic stages of an acute-onset CNS injury

- Clinicians **may consider** providing strength training to improve walking speed and distance in individuals with acute-onset CNS injury
- Evidence quality: I-II
- Recommendation strength: weak



8 |

Action Statement 4



Effectiveness of cycling interventions on locomotor function in persons in the chronic stages of an acute-onset CNS injury

- Clinicians **may consider** use of cycling or recumbent stepping interventions instead of alternative interventions to improve walking speed and distance in individuals in the chronic stages following acute-onset CNS injury
- Evidence quality: I-II
- Recommendation strength: weak



9 |

Action Statement 5



Effectiveness of circuit training on locomotor function in persons in the chronic stages following an acute-onset CNS injury

- Clinicians **may consider** use of circuit training or combined strategies providing balance, strength, and aerobic exercises to improve walking speed and distance in individuals with acute-onset CNS injury as compared to alternative interventions
- Evident Quality: I-II
- Recommendation strength: weak



10 |

Action Statement 6



Effectiveness of balance training on locomotor function in persons in the chronic stages following an acute-onset CNS injury

- Clinicians **should not** perform sitting or standing balance training directed toward improving postural stability and weight bearing symmetry between limbs to improve walking speed and distance in individuals with acute-onset CNS injury
- Clinicians **should not** use sitting or standing balance training with additional vibratory stimuli to improve walking speed and distance in individuals with acute-onset CNS injury
- Clinicians **may consider** use of static and dynamic (non-walking) balance strategies when coupled with virtual reality or augmented visual feedback to improve walking speed and distance in individuals with acute-onset CNS injury
- Evidence quality: I-II
- Recommendation strength: Strong



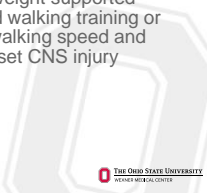
11 |

Action Statement 7



Effectiveness of body weight supported treadmill training interventions on locomotor function in persons in the chronic stages of an acute-onset CNS injury

- Clinicians **should not** perform body weight supported treadmill training versus over-ground walking training or conventional training for improving walking speed and distance in individuals with acute-onset CNS injury
- Evidence Quality: I-II
- Recommendation Strength: Strong



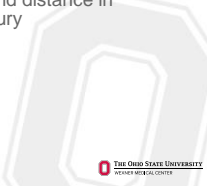
12 |

Action Statement 8



Effectiveness of robotic-assisted walking interventions on locomotor function in persons in the chronic stages following an acute-onset CNS injury

- Clinicians **should not** perform walking interventions with robotics to improve walking speed and distance in individuals with acute-onset CNS injury
- Evidence quality: I-II
- Recommendation strength: Strong



The Ohio State University
WEXNER MEDICAL CENTER

13 |

Final Recommendations for Locomotor Function

Recommendations	Intervention strategies
 Interventions should be performed	<ul style="list-style-type: none"> • Aerobic (moderate to high) intensity walking training (intensities > 60% HR reserve or 70% HR_{max}) • VR-coupled treadmill training
 Interventions may be considered	<ul style="list-style-type: none"> • Strength training of multiple sets and repetitions at >70% 1RM • Circuit training (intensities > 60% HR reserve or 70% HR_{max}) • Cycling training (particularly at higher intensities) • VR-coupled standing balance training
 Interventions should not be performed	<ul style="list-style-type: none"> • Sitting and standing balance without augmented visual input • Robotic-assisted walking training • BWSTT with physical therapist assistance



The Ohio State University
WEXNER MEDICAL CENTER

14 |

Discussion Points

- Exclusions
 - Individuals with significant cardiovascular history
 - Considerations for Anoxic Brain Injuries (ABI)
- Combining data for BI, stroke and iSCI
 - Lack of evidence for Brain Injury
- High Intensity Application
 - Inpatient (Dodd Hall)
 - Outpatient (Martha Morehouse)



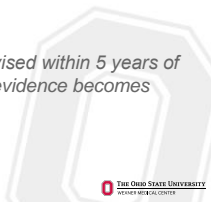
The Ohio State University
WEXNER MEDICAL CENTER

15 |

CSM 2020 – Knowledge Translation

“The Practice Committee of the ANPT has assembled an 8-person committee that will work on specific knowledge translation and implementation initiative for this CPG and will collaborate with members of the CPG development team”

“This guideline will be update and revised within 5 years of its publication, or sooner, as new evidence becomes available.”



16 |

References

- Clinical practice guidelines to improve locomotor function following chronic stroke, incomplete spinal cord injury and brain injury. http://geriatricspt.org/sl_files/269EDCC0-5056-A04E-371811E9A68BC798.pdf



17 | Trade Secret, Confidential, Proprietary, Do Not Copy | OSU/Wexner Medical Center © 2018

Presenters

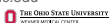
The Ohio State Wexner Medical Center



Alicia Almond PT, DPT, NCS
Outpatient Rehab
Brain Injury Team Lead
Alicia.Almond@osumc.edu



Mallory Kasper PT, DPT, NCS
Dodd Hall
Brain Injury Team Member
Mallory.Kasper@osumc.edu



18 |



Thank you!
