Background
Peripheral Arterial Disease (PAD)
• Narrowing of the vessels secondary to atherosclerotic plaque buildup
• Results in ischemia to extremities which can lead to:
  • Intermittent claudication
  • Decreased distal pulses
  • Impaired healing
Lower Extremity Amputation
• 54% of amputations in the USA are due to PAD, either alone or in conjunction with diabetes (Kalapatapau V. et al)
• Transtibial and transfemoral most common
• Best outcomes with multidisciplinary approach
Body Weight Support (BWS) Systems
• Commonly used in patients after stroke or incomplete spinal cord injury
• Methods: treadmill or over-ground
  • Over-ground allows for assistive device training and varying terrains
• Parameters: high-intensity, high-repetition, task-specific
• Lack of research investigating BWS systems in individuals with lower extremity amputations

Case Description
Patient History
• 66 year old male presented to skilled nursing facility one month following left transtibial amputation due to gangrene
• Co-morbidities: PAD, diabetes mellitus, CHF, COPD, HTN, kidney disease, metastatic lung and liver cancer
• Premorbid status: employed as town manager, community ambulator limited to 100-150 feet; utilized walking stick on uneven terrain

Systems Review
• Impaired musculoskeletal system (decreased strength)
• Impaired neuromuscular system (decreased balance and ability to ambulate)

Body Weight Support (BWS) Systems

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Interventions
Neuromuscular Re-Education
• Standing Statics
  • Identifying new planes of stability
• Standing Dynamic
  • Diadaxis (move to perturbed control)

Gait Training
• Over-ground body weight support system

Therapeutic Exercise
Seated bilateral leg exercises:
• Right: marching, knee extension and flexion, dorsiflexion, plantar flexion
• Left: marching, knee extension and flexion

Discussion
• Functional outcome measures indicated decreased fall risk and increased functional mobility.
• Use of over-ground BWS systems may be a safe and effective method for gait training in patients with lower extremity amputations.
• Future studies should be performed to determine the benefits and limitations of gait training using an over-ground BWS systems in individuals with lower extremity amputation.

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References