Subacute Physical Therapy Management for Abnormalities of Gait and Mobility Following an Acute Accident with Farm Equipment: A Case Report

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Background & Purpose

- Workers in the agricultural industry experience 243 injuries per day that result in lost work time, with five percent of these resulting in permanent impairments.[1]
- Functional decline can occur as a result of prolonged hospitalizations. [2]
- Endurance and strength of the lower extremities, mobility, and tolerance for ambulation are decreased in this population.[2] PT interventions can target these impairments to improve functional ability. [2,3]
- The purpose of this case report is to describe the PT management used in a subacute setting to improve functional ability, mobility, and gait in a patient who experienced deconditioning due to prolonged hospitalization following an accident with farm machinery.

Case Description

- 61 year-old male dairy farmer
- Accident with manure spreader
- **Neuromuscular:** intraventricular hemorrhage of left occipital horn, seizures, mild traumatic brain injury
- **Musculoskeletal:** B hip fractures, transverse process fx, L ribs 5-7 fx
- **Cardiopulmonary:** pneumothorax, pneumomediastinum
- **Integumentary:** L forearm degloved
- **Other:** dysphagia, MRSA, hx ventilator use
- PMH unremarkable
- Supportive family and friends

Examination and Outcomes

Table 1: Outcomes after 12 weeks of physical therapy.

	Evaluation	Discharge
Sit-to-stand	Fully dependent with use of chair lift	Mod I from lower surfaces
Gait	Unable to tolerate	300ft with RW and CGA
Balance	CG sitting at edge of bed	SBA during static standing with AD nearby
Stairs	Unable to tolerate	Nine 6.5” steps with B rails and CGA

Interventions

Phase 1
- Seated strength routine
- Sitting balance
- Core strength
- Slideboard transfers

Phase 2
- Quadruped over exercise ball
- Thoracic spine flexibility
- High kneeling
- Co-treatment with Occupational Therapy

Phase 3
- Sit-to-stand transfers
- Stand-pivot transfers
- Vehicle transfers
- Gait training in parallel bars
- Stair training

Phase 4
- Dynamic gait activities
- Gait training with bariatric rolling walker
- Gait training with rollator
- Static and dynamic standing balance
- Cardio equipment
- HEP to perform in room
- Home assessment

Figure 1: Sit-to-stand transfer with spring-loaded wheelchair seat

Figure 2: Gait training in parallel bars. Note external rotation of left lower extremity

Conclusion

- Vast functional improvements over 12 weeks of therapy
- Ambulating with RW or rollator about 300ft CG/SBA
- L hip AA flexion 104 degrees
- Mod I in sit-to-stand
- Ascend/descend nine 6.5 inch steps with B railings and CG
- Mod I/ I in bed mobility

Discussion

- Gait and functional training were appropriate due to goals
- High motivation and family support were positive factors
- Coordination with OT, SLP, nursing led to outcome
- Little is written in the literature about the role of physical therapy following traumatic, complex injuries, so it was difficult to develop an evidence-based program
- More evidence needed to determine prognosis

References

1. Occupational Injuries and Illnesses and Fatal Injuries Profiles Database Queried by Industry for Agriculture, Forestry, Fishing and Hunting. Bureau of Labor Statistics (BLS), United States Department of Labor Web site. https://www.osha.gov/dsg/topics/agriculturaloperations/ Accessed August 2016.

2. Kortebein P. Rehabilitation for hospital-associated deconditioning. *Am J Phys Med* Rehabil 2009;88:66–77.

3. Kinney LaPier TL, Sirotnak N, Alexander K. Aerobic exercise for a patient with chronic multisystem impairments. *Phys Ther.* 1998; 78:417-424.

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