A Comprehensive PT Program Utilizing an AlterG® Treadmill for a Patient with Lower Extremity Fractures and Charcot-Marie-Tooth Disease: A Case Report
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**Unique**
- People with Charcot-Marie-Tooth (CMT) disease have a greater risk of falls and subsequent fractures due to lower extremity stiffness, muscle wasting, and balance impairments.1
- Positive pressure treadmill systems, such as the AlterG®, are commonly utilized for orthopedic patients, as they allow for early mobility with decreased symptoms.2,3
- Minimal research exists that has investigated use of the AlterG® in patients with lower extremity fractures and CMT.

**Description**
- 54-year-old female teacher with a 30-year history of CMT
- The patient sustained fractures to her left fibula, tibia, and talus.
- At initial evaluation (IE) the patient was partial weight bearing with the use of crutches and a step-to gait pattern.
- A comprehensive rehab program included manual massage techniques, therapeutic exercises to increase strength, and stretching to increase flexibility.5,6,7
- Gait training, using the AlterG® began four weeks after IE and concentrated on early weight bearing, and progressively increasing ambulation speed with an emphasis on proper biomechanics.

**Observations**
- Left ankle dorsiflexion increased from 0° to 8°
- Knee flexion increased from 90° to 110°
- Girth measurements improved 22 cm to 20 cm
- MMT left quadriceps improved from 2/5 to 4/5
- Progressed from partial weight bearing with crutches to ambulation without an assistive device or limp
- Patient returned to work without restriction

**Conclusion**
- A comprehensive physical therapy program including the early implementation of the AlterG® for a patient with multiple lower extremity fractures and CMT disease resulted in increased function and decreased reported pain.

**Acknowledgements**
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**References**

**AlterG® Progression**

- **Stage 1**
  - <75% Body Weight
  - 1-5 min

- **Stage 2**
  - 80-90% Body Weight
  - 5-12 min

- **Stage 3**
  - 90-100% Body Weight
  - 10-20 min

**Exercise Progression**

- **Stage 1**
  - Trampoline Weight Shift
  - Total Gym Leg Press

- **Stage 2**
  - Resistance Band 4-Way Hip
  - Total Gym Leg Press

- **Stage 3**
  - Resistance Band Push Away
  - Machine Leg Press

**Figures**
- Fig 1: AlterG® positive pressure treadmill
- Fig 2: Anterior ankle and tibia at IE
- Fig 3: X-Ray of an ORIF
- Fig 4: Medial ankle at IE with Charcot Foot

**Numeric Pain Rating Scale at Worst (Score out of 10)**

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**Lower Extremity Functionality Scale (Score out of 80)**

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