

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.



Fig 1: AlterG® positive pressure treadmill⁸

Purpose

- The purpose was to investigate a comprehensive physical therapy program including the use of the AlterG® treadmill for a patient with multiple lower extremity fractures and CMT disease.

Foundation

- CMT is a common neurological condition with an increased risk of falls affecting 1/2500 individuals.^{1,4}
- CMT patients have a 1.5x greater risk of a fall.
- The AlterG® promotes vital early mobility for CMT patients due to its unique ability to decrease joint forces and pain.⁴ (Fig 1)
- There is a scarcity of information regarding the most effective rehab protocol for a patient with lower extremity fractures and CMT disease.

Description

- 54-year-old female teacher with a 30-year history of CMT
- The patient sustained fractures to her left tibia, fibula, 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.



Fig 2: Anterior ankle and tibia at IE



Fig 3: X-Ray of an ORIF⁹

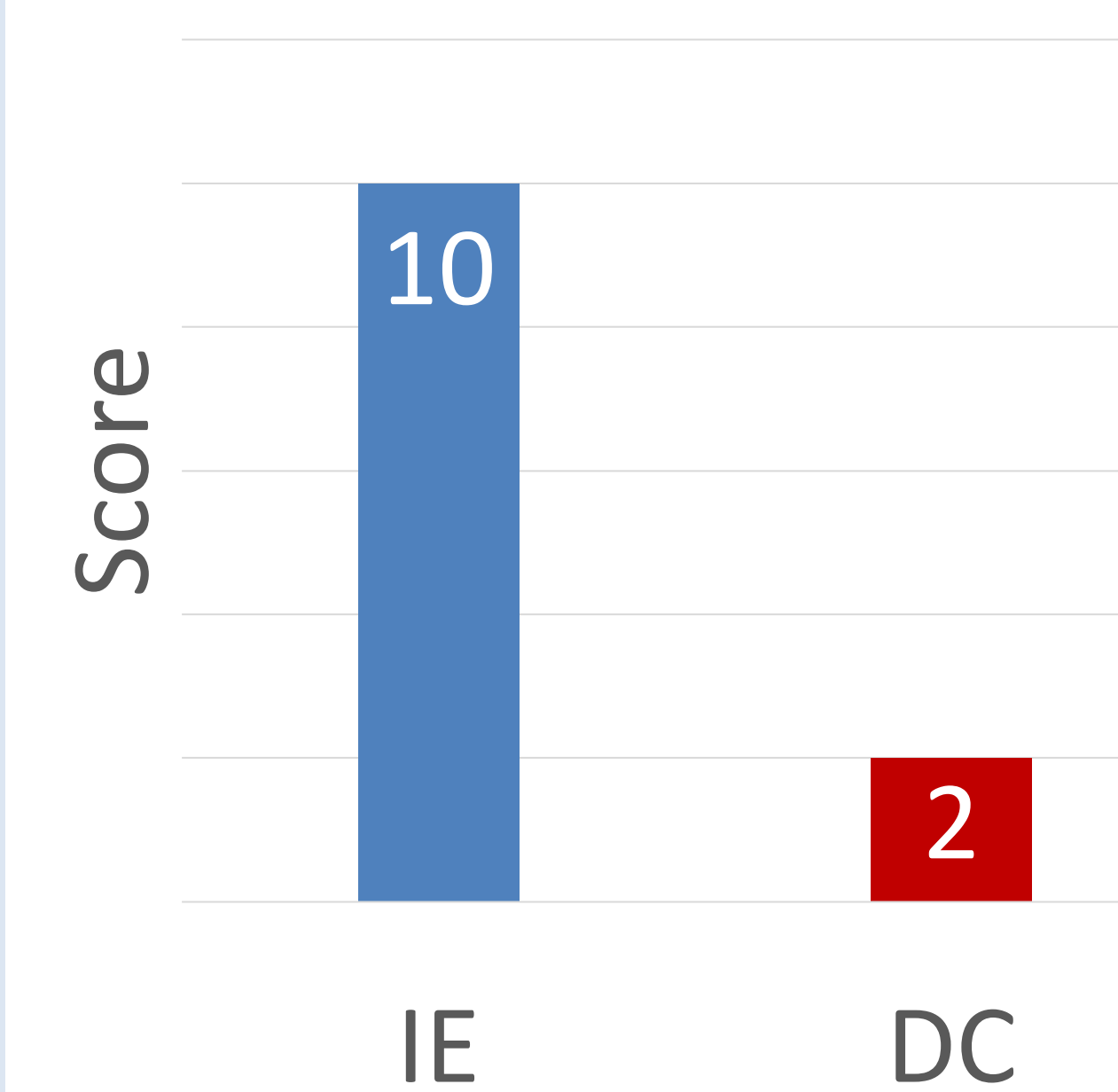


Fig 4: Medial ankle at IE with Charcot Foot

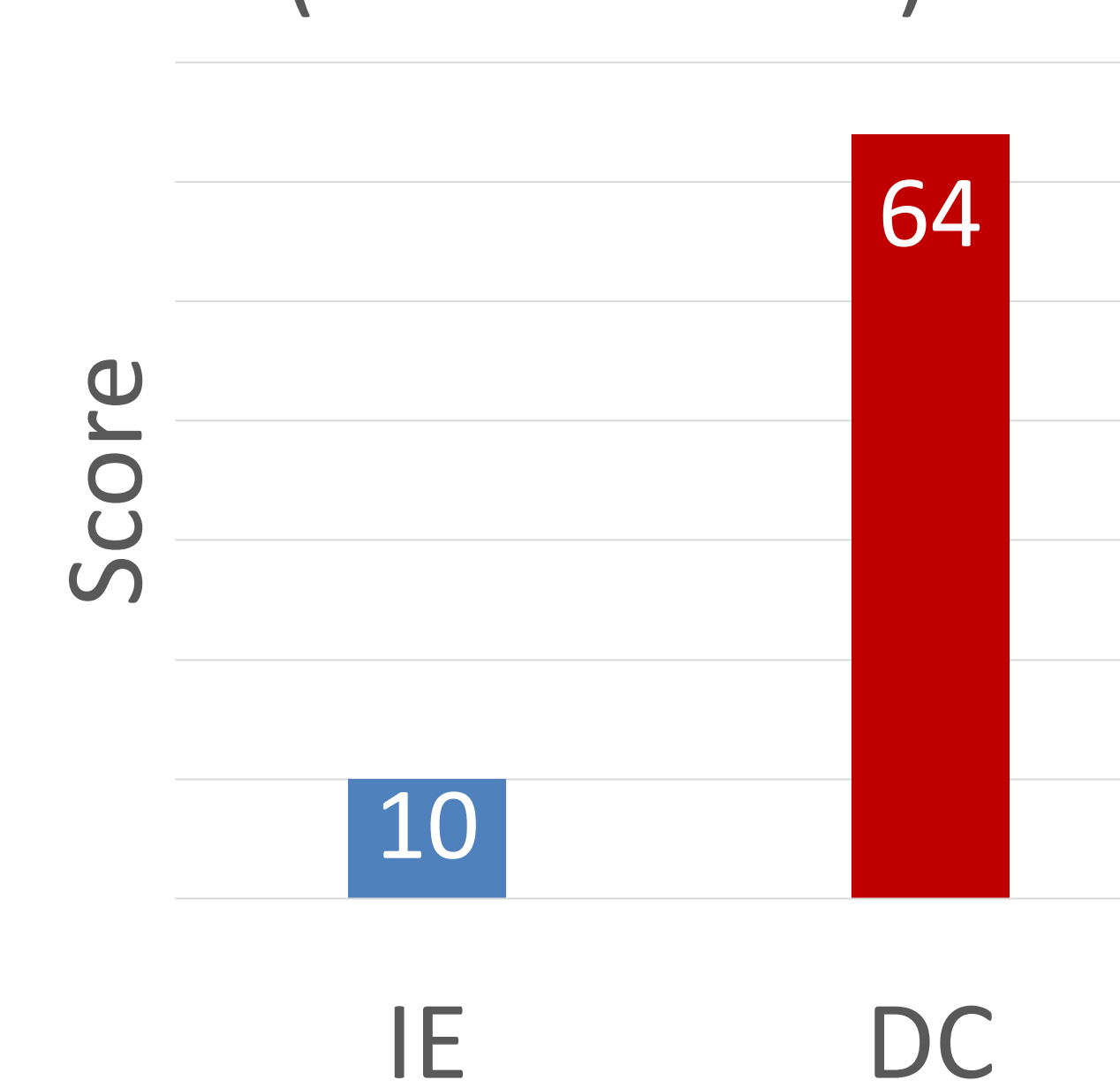
Observations

- 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

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



Lower Extremity Functionality Scale (Score out of 80)



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.

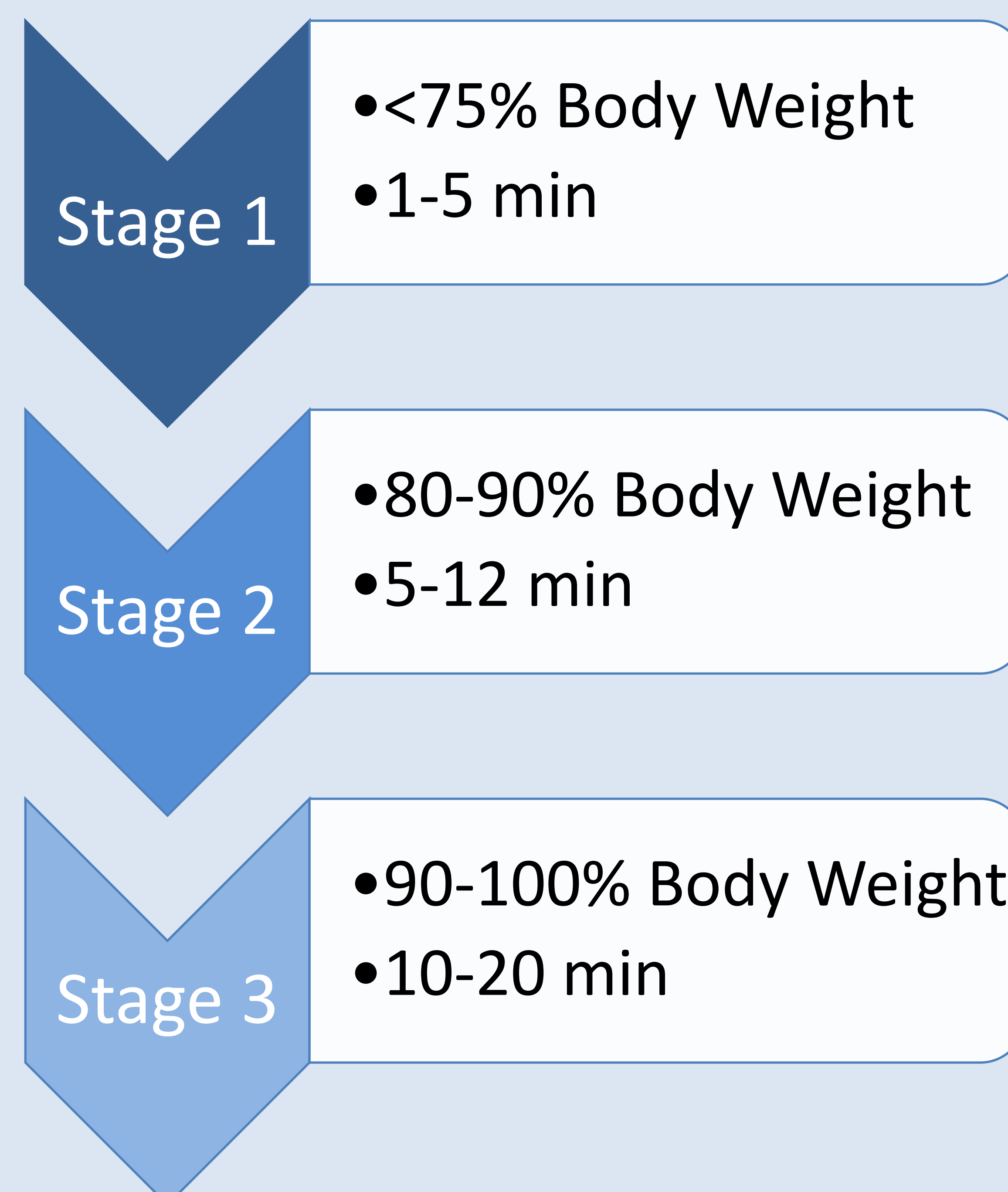
Acknowledgements

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AlterG® Progression



Exercise Progression

