Comparing the Effectiveness of Teaching Partial Weight-Bearing Between Two Methods  
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ABSTRACT

Background and Purpose: To evaluate the effectiveness of teaching individuals specific partial weight-bearing (PWB) in stance using the scale-technique and the hand-pressure technique.

Method: Participants were instructed in each technique at 20 lbs of weight-bearing as instructed by the scale- or hand-pressure technique.

Results: A chi-square of 1.69 was less than the critical value of 3.84, indicating the frequency of trials ≥25 lbs. was not significantly different between the two PWB instruction techniques.

Discussion/Conclusion: No significant difference exists between the scale-technique and the hand-pressure technique in effectively teaching unilateral lower extremity partial weight-bearing.

INTRODUCTION

Adherence to partial weight-bearing (PWB) guidelines has important implications for orthopedic and neurologic patient populations. The amount of a patient’s restricted weight-bearing is prescribed by their physician and instructed by the physical therapist (PT). The physical therapist must teach PWB to patients with vast differences in presentation: primary diagnosis, systemic and cognitive impairments, and ambulatory devices.

Proper performance of post-operative PWB on the affected lower extremity will optimize recovery time and decrease complications such as malunion or loosening of a prosthesis and wound healing time (Hurkmans, Bussmann, Bends, Verharr, & Stam, 2012; Chow & Cheng, 2000). Adherence to prescribed PWB instruction may also improve edema management, blood circulation, and proprioceptive feedback (Chow & Cheng, 2000).

METHODS

The physical therapist spent ≤2 minutes instructing each participant in 20 lbs of PWB using the predetermined PWB instruction method and unilateral LE. Following this instruction period, the participant was instructed to march for five seconds in stance. Then, the participant performed three trials, attempting to replicate 20 pounds of weight-bearing as instructed. This sequence was then repeated using the alternate PWB instruction technique. During the testing trials, the participants were blinded to the results.

Hand-Pressure Technique
• Participant instructed to place their foot atop the PT’s palm and place 20 lbs of downward force in the physical therapist’s hand
• Depending on the force the PT asks the participant to increase, decrease or maintain until 20 lbs was produced as perceived by the physical therapist

Scale-Technique
• The participant stood on 2 Detecto eye level physician scales, one lower extremity on each platform
• The participant was instructed to place 20 lbs through the targeted lower extremity
• The force was adjusted with verbal and visual cues from the physical therapist and scale

RESULTS

The 28 participants performed 3 trials of each technique for 168 trials in total. 29/84 of the scale-technique trials (29.8%) were ≥ 25 pounds versus 33/84 (39.3%) PWB trials following the hand-technique. A chi-square of 1.69 was less than the critical value of 3.84, indicating the frequency of trials ≥25 lbs. was not significantly different between the two PWB instruction techniques.

The mean difference from zero between the two conditions was found. The 28 participants bore nearly 4 lbs. less weight after instruction in the scale-technique than after instruction in the hand-pressure technique. Participants bore less weight on average following instruction in the scale technique (M=22.85 lbs., SD=7.31) than in the hand-pressure technique (M=26.72 lbs., SD=13.83). However, the difference was not deemed significant. The 95% CI is from -9.16 to 1.41.

DISCUSSION

This research reaffirms a problematic reality found in previous research: The most commonly performed PWB instruction techniques endure in practice despite a lack of evidentiary support for their effectiveness. The outcome of this research supports previous research findings of the hand-pressure technique and the scale-technique as poor options for partial weight-bearing instruction. Future studies may look at alternative methods yet to be designed.

CONCLUSION

No significant difference exists between the scale-technique and the hand-pressure technique in effectively teaching unilateral lower extremity partial weight-bearing. Further, neither the scale-technique nor the hand-pressure technique was as effective as instructed methods for partial weight-bearing, as measured by data observed from the 28 participants.