

Early Motion and Directed Exercise (EMADE) versus Usual Care, Post Ankle Fracture Fixation: A Pragmatic Randomized Controlled Trial

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Purpose: Ankle fractures are one of the most common injuries treated surgically. However, over 20% have functional restrictions or ongoing pain 6 months following injury. Usual care postsurgery is around 6 weeks of cast immobilization. This is known to be associated with disuse atrophy and joint stiffness, and an alternative strategy is a removable splint and early directed physiotherapy-based rehabilitation. Our objectives were to (1) develop an early motion and directed exercise (EMADE) physiotherapy intervention and (2) determine the outcomes of EMADE versus immobilization at 12 weeks following operative fixation.

Methods: Patients were recruited following surgery into a pragmatic randomized control trial (RCT) testing usual care against the EMADE program. We recruited 157 with surgically fixed Weber B ankle fractures. The EMADE physiotherapy intervention (between weeks 2 and 4 postsurgery) combined non-weight-bearing progressive home exercises with manual therapy, advice, and education. The usual care group received plaster cast immobilization. The primary outcome was the Olerud-Molander ankle score (OMAS) questionnaire at 12 weeks postsurgery (minimal clinically important difference [MCID]: 10 OMAS points). Secondary measures included the EQ-5D-5L (EuroQol 5 Dimensions 5 Levels). The protocol was registered and published. Follow-up was to 12 months and a range of secondary outcomes and patient experience data were collected in addition to the primary outcome score.

Results: 130 participants returned their 12-week postsurgery data, achieving 80% power to detect a change at the MCID level. At the primary outcome of 12 weeks, group mean OMAS scores were 62.0 and 48.8 (standard deviation [SD] 21, 22.5) favoring EMADE ($P < 0.001$). There were no intervention-related or unexpected adverse events, including instability or wound breakdown.

Conclusion: This RCT yielded both clinical and statistical outcomes in favor of the EMADE physiotherapy intervention over the usual care of 6 weeks immobilization, in surgically fixed Weber B ankle fracture patients.

