

## Effects of Early Weight-Bearing after Open Reduction and Internal Fixation of Unstable Ankle Fractures

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### INTRODUCTION:

This study is to ascertain differences in functional outcomes and complications of patients with unstable ankle fractures treated with open reduction and internal fixation and allowed to bear weight early at two weeks postoperatively compared to the traditional nonweight-bearing period of six weeks.

**METHODS:** This study is a multi-surgeon, multi-institution, prospective randomized controlled trial. From 2019 to 2021, 107 patients with unstable ankle fractures who underwent open reduction and internal fixation were enrolled. All bimalleolar and trimalleolar fractures were included. Patients who underwent syndesmotomic fixation were excluded. Patients were randomized into early- and late-weight-bearing groups. Patients in the early weight-bearing group were placed in a camboot and instructed to bear weight at their two-week postoperative visit. Patients in the late weight-bearing group were placed in a camboot and instructed to not bear weight until their six-week postoperative visit. All patients completed the Olerud-Molander and SF-36 functional scoring forms at their respective 6-week, 3-month, 6-month, and 12-month postoperative visits. Complications and return to the operating room, if any, were noted at each visit. Results of the early and late weight-bearing groups were analyzed by independent sample student t-tests and Pearson's chi-square tests.

**RESULTS:** Six weeks postoperatively, patients in the early weight-bearing group had improved Olerud-Molander Ankle Scores compared to their late weight-bearing counterparts ( $55.71 \pm 19.95$  vs.  $38.75 \pm 19.34$ ,  $P < 0.001$ ). Additionally, at this time period, these patients had improved outcomes in the Physical Functioning ( $58.33 \pm 23.34$  vs.  $30.18 \pm 25.39$ ,  $P < 0.001$ ), Physical Role Limitation ( $39.22 \pm 40.39$  vs.  $22.77 \pm 32.08$ ,  $P = 0.036$ ), and General Health ( $82.06 \pm 18.47$  vs.  $73.48 \pm 19.02$ ,  $P = 0.020$ ) components of their SF-36 scores. Three months postoperatively, patients in the early weight-bearing group had significantly higher scores in the Physical Functioning components of their SF-36 scores ( $78.60 \pm 18.50$  vs.  $67.08 \pm 23.04$ ,  $P = 0.011$ ). One year postoperatively, patients in the early weight-bearing group had improved overall pain scores ( $93.33 \pm 12.48$  vs.  $83.53 \pm 18.90$ ,  $P = 0.018$ ). At the latest twelve-month follow up, there were no significant differences among the two groups in general complications, wound complications, return to the operating room, or removal of hardware.

**DISCUSSION AND CONCLUSION:** Compared to patients who remained non-weight-bearing for six weeks following operative fixation of their unstable ankle fractures, patients who were instructed to bear weight at two weeks had significantly better functional scores at six weeks, better emotional scores at six months, and improved pain at one year. Additionally, there were no observed differences between the two groups with respect to postoperative complications, return to the operating room, or removal of hardware. Given these results, we encourage early weight-bearing in appropriate patients two weeks following operative fixation of unstable ankle fractures.