**Early Weight Bearing Is Associated with Improved Gait Metrics Within 6 Months of Fracture Fixation: An Analysis of iPhone Health Data**

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**Purpose:** There is interest in accelerated weightbearing protocols after certain lower extremity fractures; however, little is known about how this might affect gait over time. We hypothesized that early weightbearing is associated with improved gait outcomes after controlling for confounders.

**Methods:** The cohort study included 74 adult patients with lower-extremity fracture (mean age, 46 years [SD 19]; 43% female) who underwent surgery. For inclusion, patients were required to have a unilateral injury and at least 6 months of follow up. Postoperative weightbearing status was classified as early weightbearing (as tolerated within 3 weeks post-fixation [n = 27]) versus delayed (non- or limited weightbearing for >6 weeks post-fixation [n = 47]). The primary outcome was step count measured by the Apple iPhone Health application within 12 weeks of injury. Secondary outcomes were walking speed and asymmetry measured by the smartphone and an extended observation to 26 weeks post-injury. Outcomes were compared by weightbearing group, controlling for pre-injury mobility, age, sex, open fracture, and fracture location.

**Results:** Daily step counts within 12 weeks of injury were significantly higher in the early weightbearing group (mean 1723; 95% CI, 1179–2267) compared to the delayed weightbearing group (mean, 673; 95% CI, 330–1016; mean difference, 1050; 95% CI, 373–1727; p = 0.002). The secondary outcomes did not differ between groups within 12 weeks of injury. However, by 26 weeks after injury, early weightbearing patients had faster walking speeds (mean difference, 0.13m/s; 95% CI, 0.04–0.22; p = 0.004) and less walking asymmetry (mean difference, –12.2%; 95% CI, –21.3% to –3.1%; p = 0.008) than delayed weightbearing patients.

**Conclusion:** To our knowledge, this is the first study assessing the association of weightbearing status with gait after fracture fixation using iPhone data. Even after controlling for confounders, smartphone-collected step counts were markedly higher in early versus delayed weightbearing patients within 12 weeks of injury. Interestingly, the benefits of early weightbearing on walking speed and symmetry were realized closer to 6 months post-injury. Clinicians should be aware that weightbearing decisions might have benefits beyond the initial postoperative period.

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