

Table S2. Study Characteristics and Primary Outcomes of Included RCTs^a

| Study Country (Bone or joint) | Participants | N | Weight bearing timeline/precautions | Standardized outcome measure scores | Non-union/mal-union rates | Healing time |
|--|---|------------------|---|---|--|-----------------------------|
| Ahl et al. Sweden (ankle fractures) | <u>Injury Description:</u> 46 dislocated lateral malleolus fractures; 53 bimalleolar fractures; all with ATFL rupture. <u>Fixation:</u> ORIF <u>Age:</u> 55 years (19-81) F, 45 years (17-86) M | 99 (61F, 38M) | Early versus late WBing groups. <u>Early:</u> Started post-operative day one (N = 49). <u>Late:</u> 4th-5th week post-operative (N = 50). Both using a below knee cast. | -- | 15/99 displacement of malleoli, 10 of which were minimal (<1mm). Fracture re-dislocation in three pts (2 in late WBing group; does not specify the third but was a trauma). | All healed at 18 months. |
| Chen et al. China (calcaneal fractures) | <u>Injury Description:</u> Unilateral displaced intra-articular calcaneal fractures <u>Fixation:</u> Percutaneous leverage and minimally invasive fixation <u>Age:</u> 40.3 years (study group) and 38.7 years (control group) | 72 | <u>Study group:</u> NWB post-operative days 0-3, day 3 rolling bottle under foot, WBing at week 3 (5 kg x at least 30 min), progressed gradually, full WBing at 12 weeks. <u>Control group:</u> Partial WBing week six, full WBing after x-rays usually 12 weeks post-operative. | American Orthopedic Foot and Ankle Society (AOFAS) Ankle-Hindfoot Scale scores (assessed at post-op 12 months; 88.7+/-7.6 study group, 81.4+/-11.5 control group (t = 2.920, p = .003). | -- | -- |

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| | | | | Time to return to work: 2 weeks post operative, Late WBing Group = 33%, Early WBing Group = 16% (p=.05); No difference at any other point in return to work (48% at 6 weeks, 80% at 3 mons, 94% at 6 mons, 98% at 12 mons). Ankle Functional Outcome (Olerud/Molander ankle scores): Late WBing Group 32, Early WBing Group 45 (p=.0007) at 6 weeks; no statistical difference at subsequent visits and 1 year all achieved similar mean outcomes. Health Outcome SF-36: Physical Late WBing Group 42, Early WBing Group 51 (p=.0008), Mental Late WBing Group 54, Early WBing Group 66 (p=.0008), no difference at 3 months, 6 months Function Early WBing Group 79, Late WBing Group 72 (p=.07), Mental at 6 months Early WBing Group 84, Late WBing Group 79 (p=.08); 12 months Function Early WBing Group 85, Late WBing Group 79 (p=.04), Mental Early WBing Group 87, Late WBing Group 83 (p=.09). | | |
| Dehghan et al Canada (ankle fractures) | <u>Injury Description:</u> Unstable ankle fractures (lateral malleolus, medial malleolus, bimalleolar, trimalleolar) <u>Fixation:</u> ORIF <u>Age:</u> 41.9 years | 110 (51F, 59M) | N = 54 Late WBing Group, 56 Early WBing Group. <u>Late WBing Group:</u> NWB, immobilization in below knee fiberglass cast at 2 weeks. WBing as tolerated at 6 weeks in boot orthosis weaned over 2-4 weeks. <u>Early WBing Group:</u> WBing as tolerated at 2 weeks post op in boot orthosis, ankle range of motion 4 times/day while weaning boot at 6 weeks over 2-4 weeks. | No loss of fixation or reduction in either group. | -- | |
| | <u>Injury Description:</u> Extra-articular fractures of the distal tibia <u>Fixation:</u> Ilizarov fixation versus plate osteosynthesis <u>Age:</u> 32.6 years (plate osteosynthesis group) and 32.8 years (Ilizarov fixation group) | | <u>Plate osteosynthesis group:</u> NWB with immobilization initially with progression to partial WBing upon clinical and radiological exam. <u>Ilizarov fixation group:</u> Wbing as tolerated starting post-operative day 1. | Two hardware failures in plate osteosynthesis group. None in Ilizarov fixation group (Statistically different between groups). | Plate osteosynthesis group average 196.5 days. Ilizarov fixation group average 130 days. (Statistically different between groups). | |
| Fadel et al Egypt (distal tibia) | | 40 (16F, 26M) | | | | |
| | <u>Injury Description:</u> Tibial shaft fractures <u>Fixation:</u> Intramedullary nail <u>Age:</u> 23.2 years (experimental group) and 26.5 years (control group). | 12 (6 per group) (2F, 10M) | Walk twice/day for 20 minutes with walker or crutches; 15% Wbing month 1, 15% month 2, Wbing as tolerated in month 3. Experimental group received noise stimulation on skin surface. | -- | -- | |
| Franco-de-la-Torre et al Mexico (tibial shaft) | | | | | -- | |

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| | | | | Short Musculoskeletal Function Assessment (SFMA) administered post op each visit (first 2 weeks). SMFA averages at 6 weeks: Function Wbing as tolerated 35.9, NWB 35.3 (p= 0.90); Bothersome Wbing as tolerated 33.9 NWB 36.6 (p=0.63); Daily activity Wbing as tolerated 54.8, NWB 54.4 (p=0.96); Emotion Wbing as tolerated 29.7, NWB 35.1 (p=0.32), Arm and Hand Wbing Aas tolerated 5.4, NWB 5.1 (p=0.89); Mobility Wbing as tolerated 44.2, NWB 41.0 (p=0.55). SMFA averages at union: Function Wbing as tolerated 24.4, NWB 24.4 (p=0.98); Bothersome Wbing as tolerated 23.7 NWB 24.6 (p=0.90); Daily activity Wbing as tolerated 31.7, NWB 30.9 (0.91); Emotion Wbing as tolerated 27.5, NWB 31.9 (0.43), Arm and Hand Wbing as tolerated 2.5, NWB 2.1 (p=0.74); Mobility Wbing as tolerated 32.4, NWB 30.9 (p=0.78). | | |
| Gross et al United States of America (tibial shaft) | <u>Injury Description:</u> Tibial shaft fractures <u>Fixation:</u> Intramedullary nail <u>Age:</u> WBAT group: 41.8 years. NWB group: 36.1 years | 86 patients with 90 fractures (WBAT: 9F) (NWB: 9F) | Immediate Wbing as tolerated (50 fractures) vs NWB x 6 weeks (40 fractures). | | Four non-unions: NWB 3, Wbing as tolerated 1 (p=.34). No implant failures. Three delayed unions: NWB 2, Wbing as tolerated 1. | No difference in time to union (Wbing average 22.1 weeks; NWB average 21.3 weeks; p= .76). |
| Li et al China (calcaneus) | <u>Injury Description:</u> Sanders IV calcaneal fractures <u>Fixation:</u> ORIF <u>Age:</u> Observation group: 39.18 years Control group: 38.75 years | 84 (77M, 39F) | <u>Control group:</u> Range of motion exercises and isometrics while NWB initially. Partial Wbing between 13-24 weeks with progressive increase to full Wbing. <u>Observation group:</u> Same exercises but started partial Wbing (25% bodyweight) at four weeks. This increased progressively. Progressed to full Wbing by post-operative week 13. | Maryland Foot Function Scores and American Orthopedic Foot and Ankle Scores (AOFAS) compared before surgery and at weeks 6, 12, and 24 weeks post-operative. Both were significantly higher in the observation group as compared at 6, 12, and 24 weeks post-operative (< 0.001). | No significant difference in angles of Böhler or Gissane between the two groups post-intervention. | -- |
| Sanders et al Canada (lateral malleolus) | <u>Injury Description:</u> Weber B closed isolated fractures of lateral malleolus <u>Fixation:</u> ORIF versus plaster or fiberglass cast or brace <u>Age:</u> 41 years | 81 (40F, 41M) | <u>Operative group:</u> NWB 2 weeks, then early mobilization with protected Wbing removable cast 3-6 weeks, patient tolerance. <u>Non-operative group:</u> Protected Wbing 6 weeks with cast/splint. Both groups trained on axillary crutch use by a physical therapist. Cast and brace discontinued in both after 6 weeks. Full Wbing encouraged for both at this time. | Short Form 36 (SF-36) Physical Component Summary (PCS), 12-weeks operative group 66.6 +/- 18.4 versus non-operative group 60.0 +/- 19.0; joint-specific Olerud-Molander assessment (OMA) of ankle function, 12-weeks op group 61.4 +/- 23.4 vs. non-operative group 56.8 +/- 23.8; (12-weeks had the greatest differences here, but they were not statistically significant. All assessed at first clinic visit, then at 6, 12, 24, and 52 weeks. | Eight in non-operative versus 0 in op group (delayed/non-union). One op versus 8 non-operative (malalignment). | -- |

^a RCTs = randomized controlled trials; ATFL = anterior talofibular ligament; ORIF = open reduction internal fixation; F = female; M = male; Wbing = weight bearing; NWB = non-weight bearing