

**Table S3. Study Characteristics and Primary Outcomes of Included Non-RCT Studies<sup>a</sup>**

Study Country (Bone or joint)	Participants	N	Weight bearing timeline/precautions	Standardized outcome measure scores	Non-union/mal-union rates	Healing time
Braun et al Germany (proximal femur)	<u>Injury Description:</u> Intertrochanteric femur fractures in participants 65 or older <u>Fixation:</u> Cephalomedullary nail osteosynthesis <u>Age:</u> 81.6 years (65- 98)	22 (16F, 6M)	OpenGo pedobarography insole; daily gait and max/average amount of WBiing recorded; physical therapy 30 minutes/day; immediate full WBiing allowed with assistive device and WBiing as tolerated with activity; average max WBiing of 124.7% bodyweight observed.	--	--	--
Cunningham et al United Kingdom (tibia)	<u>Injury Description:</u> Tibia fractures <u>Fixation:</u> External fixation <u>Age:</u> Not reported	27	WBiing as tolerated with measurement of force every two weeks.	--	--	--
Ehlinger et al France (peri-prosthetic femur)	<u>Injury Description:</u> 12 prosthetic hip fractures, 1 between hip prosthesis and knee, 4 with knee prosthesis <u>Fixation:</u> Locking compression plate <u>Age:</u> 76.7 years	17 (15F, 2M)	Immediate full WBiing on 10 cases, with partial Wbiing (20 kg) 3 cases, NWB 6 weeks 4 cases.	--	--	--

Eid and Deif Egypt (femur)	<u>Injury Description:</u> Group A: Single fracture of femoral shaft Group B: Double fractures of femoral shafts					
	<u>Fixation:</u> Group A: Kuntschner clover-leaf IMN Group B: IMN x 2 (N=2); IMN + ORIF (N=1)	106 Group A: 103 (37F, 66M) Group B: 3 (1F, 2M)	Both groups used axillary crutches for NWB after 2-3 weeks. WBing determined by radiographic exam. Some with straight cane with questionable callus. Full WBing with bridged callus.	--	14 non-unions out of 103 operations, 11 M/3 F. Increased non-union with earlier WBing (4-6 weeks statistically higher than those after). Group B: 0/3 middle fractures united, others did in 6-8 weeks.	--
Eingartner et al Germany (peri-prosthetic)	<u>Injury Description:</u> Periprosthetic fractures of the femur		Bed rest 1 week-10 days; partial WBing (20 kg) at 14 <sup>th</sup> day; increased Wbing 10 kg/week starting week 12. Reduction in use of axillary crutches at 6 months.	Harris Hip Score, average = 70.5 points (29-95). Follow-up at average of 53.9 months (15-140)	1 delayed/non-union resulting in bone grafting	--
	<u>Fixation:</u> IMN <u>Age:</u> 71.2 years (43-86 years)	21 (13F, 8M)				
Kim et al South Korea (tibia, fibula)	Patient 1: 47 y/o M, tibial pilon fracture with ORIF. Patient 2: 79 y/o M, tibia-fibula fracture with IMN & ORIF. Patient 3: 33 y/o M, tibial plateau fracture with ORIF	3	3 weeks NWB, Week 1-4 training twice/day, specific percent bodyweight unique to each patient, with body weight support using a lower-body positive-pressure treadmill; Week 1 20-40% bodyweight, gradually increased 10-20%	10-meter Walking Test post training & 6-month follow-up 15.96 & 9.34 (patient 1), 19.73 & 11.93 (patient 2), 26.96 & 8.77 (patient 3). Timed Up-and-Go Test post training & 6-month follow-up 17.15 & 11.2 (patient 1), 18.67 & 12.37 (patient 2), 25.57 & 8.54 (patient 3). Berg Balance Scale pre, post, and 6-month follow-up for patient 1, 37, 41, & 52. Post and 6-month follow-up 36 & 44 for patient 2. Six-month follow-up for patient 3 was 48.	0	--

Martinez et al United States of America (proximal tibia)	<u>Injury Description:</u> Closed proximal tibia fractures <u>Fixation:</u> Fracture bracing <u>Age:</u> 36.3 years	108 (19F, 89M)	Progressive WBing as tolerated after discharge with above-the-knee splint. 1 week out, prefabricated functional brace if swelling and acute pain gone. Postponed another week if not (range 4 days to 19.1 weeks, mean 11 days). Progressive WBing as tolerated with axillary crutches. 1 week follow-up post splint application.	--	12% healed with >6 degrees of frontal plane angulation. 2.8% non-union rate. 8 pts (8.4%) had > 10 mm shortening.	Average 17.1 weeks (range 6.6-40.5 weeks)
Millar et al Australia (tibial plateau)	<u>Injury Description:</u> Tibial plateau fractures <u>Fixation:</u> ORIF <u>Age:</u> 50.9 years +/- 13.1	20 (11F, 9M)	WBing as tolerated immediately post-operative with axillary crutches as needed for 6 weeks.	Knee Injury and Osteoarthritis Outcome Score (KOOS) - no sport/recreation categories completed. Significant improvements between 3 and 6 months across pain, symptoms, and activities of daily living. Six months to 2 years saw improvement in the symptoms section. Significant difference at each domain at 2 and 6 months when compared to 2 years. Gait speed significantly improved at all timepoints except 1 & 2 years.	--	--
Ohsawa et al Japan (proximal femur)	<u>Injury Description:</u> Intracapsular femur fractures <u>Fixation:</u> Non-operative: assertive early WBing versus conventional rehabilitation <u>Age:</u> Range 79-92 years AG: 86.7 years CG: 87.9 years	20 13 AG (12F, 1M) 7 CG (6F, 1M)	WBing as tolerated within the first month after beginning of rehab (once patient could sit in wheelchair for endurance purposes).	<u>Pre-hip Function:</u> Face pain scale- AG 0, CG 0 (p = 1) ROM- AG 4, CG 3.7 +/-0.5 (p = 0.373) Ambulation FIM- AG 5, CG 5 (p = 1)  <u>Post-hip Function:</u> Face pain scale- AG 12.6 +/-4.8, CG 10 (p = 0.390) ROM- AG 4.1 +/-0.3, CG 3.9 +/-0.7 (p = 0.324) Ambulation FIM- AG 18.2 +/-7.9, CG 9.4 +/-4.3 (p = 0.00135)	--	--

Ostermann et al Germany (distal femur)	<u>Injury Description:</u> Unicondylar femur fractures					
	<u>Fixation:</u> Open anatomic reduction, temporary fixation with Kirschner wires; definitive fixation with cancellous screws	24 (5F, 19M)	1 week out allowed to "eggshell" weight bear. Full WBing allowed after 6-8 weeks if no concomitant injuries.	Neer score: 20 excellent (average 91 units), 3 satisfactory (average 77 units), 1 unsatisfactory.	--	--
Schildhauer et al Germany (calcaneal fracture)	<u>Injury Description:</u> Depression-type calcaneal fractures		Full WBing 8-12 weeks vs full WBing 3-6 weeks but only progressed to full WBing if first few patients were able to perform full WBing at 12 weeks successfully (i.e., the first 3 patients were not allowed to fully weight bear until 12 weeks. After achieving good clinical results, patients 4-16 were allowed to transition to full WBing at 8 wks. Last 3 patients were full WBing at 3 weeks).	Kerr Calcaneal Score (Pain 36 points, Work 25 points, Walking 25 points, Walking aid 14 points) Average Kerr Calcaneal Score: 80.2 (Range 48-100). WBing 8 or 12 weeks post op averaged score 81.4; WB 3, 4 or 6 weeks post operative average score 78.9 (p = 0.56).	No loss of reduction at 3 weeks seen.	--
	<u>Fixation:</u> ORIF augmented with calcium phosphate cement	32 (32M) with 36 fractures				
Thewlis et al Australia (tibial plateau)	<u>Injury Description:</u> Partial articular tibial plateau fractures		WBing as tolerated immediately post-operative with assistive devices for balance and comfort.	Gait speed: Significant improvement over time, 2, 12, 26, and 52 weeks, with the mean differences at 2-26, 2-52, and 12-52.	--	--
	<u>Fixation:</u> ORIF	9 (4F, 5M)				
Zhang et al China (calcaneal fractures)	<u>Injury Description:</u> Intra-articular calcaneal fractures		Initiated WBing functional exercise in boot within 24 hours, increased after 2 weeks, 3-4 weeks with crutches, WBing without assistive device in 8-10 weeks.	Reported outcomes: 53 excellent, 41 good, 9 fair, 4 poor.	--	--
	<u>Fixation:</u> Reduction with external fixation in calcaneus fixation boot	102 (27F, 75M) with 107 fractures				

<sup>a</sup> Non-RCT = non-randomized controlled trial; F = female; M = male; WBing = weight bearing; NWB = non-weight bearing; IMN = intramedullary nail; ORIF = open reduction internal fixation; AG = assertive group; CG = conventional group.