*International Journal of Research and Review*
*[Indexed, Peer-Reviewed Journal]*
*Volume 13; Issue: 1; January 2026*
*Website: www.ijrrjournal.com*
*Review Paper* *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

# Impact of Early Weight Bearing After ORIF of Ankle Fractures: Systematic Review and Meta-Analysis

**Kadek Gede Bakta Giri[1], I Gede Mahardika Putra[1], Made Ramanda Bramasta Pramana[2]**

[1]Orthopaedic and Traumatology Department, Faculty of Medicine, Udayana University/Prof. Dr. I.G.N.G. Ngoerah General Hospital, Denpasar, Bali, Indonesia
[2]Resident of Orthopaedic and Traumatology Department, Faculty of Medicine, Udayana University/Prof. Dr. I.G.N.G. Ngoerah General Hospital, Denpasar, Bali, Indonesia

Corresponding Author: Kadek Gede Bakta Giri

**DOI: https://doi.org/10.52403/ijrr.20260123**

## ABSTRACT

**Background**: Ankle fractures are common lower-limb injuries often requiring open reduction and internal fixation (ORIF). Early weight bearing (EWB), defined as initiating partial or full loading within six weeks postoperatively, may accelerate recovery. This systematic review and meta-analysis compared EWB with late weight bearing (LWB) regarding ankle function, return to work/daily activities, and complication rates.

**Methods**: PubMed, MEDLINE, EMBASE, and CENTRAL were searched for randomized controlled trials (RCTs) published between 2020 and 2024. Outcomes included standardized ankle function scores at 6, 12, 24–26 weeks, and 1 year, plus time to return to work/daily activities and complication rates. Risk of bias was assessed using the Cochrane tool. Meta-analyses applied fixed- or random-effects models depending on heterogeneity.

**Results**: Four RCTs (n = 398) were included. EWB improved ankle function at 6 weeks (SMD 0.66; 95% CI 0.46–0.87; $p < 0.001$), 12 weeks (SMD 0.39; 95% CI 0.03–0.76; p = 0.04), and 24–26 weeks (SMD 0.46; 95% CI 0.02–0.89; p = 0.04). No difference was observed at 1 year (SMD 0.20; 95% CI −0.29–0.70; p = 0.42). EWB shortened time to return to work/daily activities (MD −0.81 weeks; 95% CI −1.46 to −0.16; p = 0.01). Complication rates were comparable (RR 1.06; 95% CI 0.39–2.92; p = 0.90).

**Conclusion**: EWB enhances early and mid-term ankle function and accelerates return to activity without increasing complications. Long-term outcomes are similar between EWB and LWB. Larger, high-quality RCTs are needed.

***Keywords:*** ankle fracture, ORIF, early weight bearing

## INTRODUCTION

Ankle fractures represent the most frequent lower-limb fractures and rank among the most common fractures globally. These injuries often lead to muscle contractures around the ankle, limiting joint mobility and hindering daily activities.1 Unstable displaced or dislocated fractures are particularly common and typically require surgical management. The standard operative approach remains open reduction and internal fixation (ORIF).2 Although many patients achieve good surgical

outcomes, insufficient postoperative weight-bearing rehabilitation can result in complications such as soft-tissue contracture and osteoporosis of the ankle, ultimately impeding functional recovery.3

Early weight bearing (EWB) defined as initiating partial or full weight bearing within six weeks after surgery and has demonstrated several advantages. Early mechanical loading of the operated ankle helps stimulate fracture healing and enhances functional recovery.4 Studies among manual laborers have shown significantly better ankle function and mobility scores at six weeks in those who received EWB compared with non-weight bearing protocols.5 Similarly, research by Smeeing et al. reported superior restoration of ankle morphology, range of motion, and walking ability in patients who followed EWB protocols.6

Despite these benefits, late weight bearing (LWB) which defined as weight-bearing initiation at six weeks or later, remains the predominant rehabilitation strategy after ORIF. The traditional LWB approach is considered safer in preventing loss of reduction or fixation failure, thereby reducing the need for reoperation.7 However, relying solely on LWB may slow functional recovery and increase rehabilitation costs due to prolonged recovery periods. Consequently, there is growing interest in EWB as a way to accelerate return to daily activities and work.8

Controversy still persists regarding the mid- and long-term effects of EWB after ankle fracture surgery.9 Some studies have reported better functional outcomes and earlier return to activity within the first 12 weeks for EWB, whereas others found benefits only within the initial six-week period, with no difference in long-term function or time to resume work.10,11 These inconsistencies highlight the need for more clarity regarding EWB's sustained functional benefits and practical impact on patient recovery timelines.

Given these uncertainties, the present meta-analysis compares EWB and LWB with respect to postoperative ankle function particularly at 12 weeks and beyond, as well as time to return to work or daily activities. Additionally, although prior reviews generally support the safety of EWB, isolated reports have indicated higher complication rates than with LWB. Therefore, this study also evaluates complication rates to better determine the relative safety profile of EWB.

## METHODS

### Search Strategy

The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guideline statement was followed when doing the research. From 2020 to 2024, a thorough search was conducted to find studies that might be included in this analysis. PubMed, MEDLINE, EMBASE, and CENTRAL are the databases that are used. Researcher using a combination of keywords such as "ankle fracture", "ORIF", "early weight bearing". The reference lists and abstracts were checked separately by reviewers. Conflicts amongst reviewers about whether to include or not include a study will be settled by consensus and, if necessary, discussion with an outside reviewer. This research will include studies that employ full-text, are in English, and compare all weigh bearing intervention on open procedure of ankle. This meta-analysis examines the impact of EWB compared with LWB on post-fracture rehabilitation, specifically assessing ankle function, the duration required to return to work or normal activities, and the incidence of complications.

### Inclusion Criteria

The criteria for including studies were as follows: (1) Study that evaluate effect EWB versus LWB on rehabilitation outcomes after ankle fractures treated by ORIF through RCT studies; (2) English language studies; (3) Studies published within 2020-

2024 which this timeframe was utilized to compare the most recent and cutting-edge EWB application; (4) Study that report outcomes measurements such as ankle function, the duration required to return to work or normal activites, and incidence of complications. Excluded from consideration were studies not treating the ankle fracture with ORIF, not involve weight bearing, or not reporting relevant outcomes (Table 1).

**Table 1. PICO Criteria for Inclusion Study**

| | **Inclusion** | **Exclusion** |
|---|---|---|
| Patient | Participants were patients diagnosed with ankle fractures who underwent operative management using ORIF techniques | Studies where ankle fractures were not treated with ORIF (e.g., conservative casting, external fixation only, percutaneous fixation) |
| Intervention | Patients initiated weight bearing on the injured ankle during the initial 6 weeks after surgery, whether through partial weight bearing using toe-touch support or full weight bearing with full sole contact | EWB interventions not performed during the first 6 weeks post-operatively OR<br>Interventions that do not involve actual weight bearing, such as passive ROM exercises, physiotherapy-only protocols, or aquatic therapy |
| Control | Began weight bearing beyond 6 weeks after surgery or maintained complete non–weight bearing | Control groups that do not represent LWB, such as:<br>Weight-bearing starting before 6 weeks,<br>Unclear or mixed timelines,<br>Non-standardized immobilization protocols without postoperative WB data |
| Outcome | Reported outcomes had to include at least one standardized ankle function measure (such as the Olerud–Molander, AOFAS, or Baird–Jackson score), along with data on postoperative complications and the interval before patients resumed employment or daily living tasks | Studies lacking extractable or quantifiable outcome measures suitable for meta-analysis |
| Design | Randomized controlled trials (RCTs) with full-text available in English and sufficient quantitative data for extraction | Non-randomized studies, observational studies, case reports, case series, conference abstracts, reviews, or meta-analyses |

**Table 2. Main characteristics of the included studies (2020-2024)**

| **No** | **Author (Year)** | **Country** | **Age of subjects** | **Gender distribution** | **Weight bearing start time** | **Form of ankle movement** | **Outcome indicator** |
|---|---|---|---|---|---|---|---|
| 1 | Li et al (2021)[12] | China | E: 39.18 ± 7.30 | E: Males 25, Females 19 | E: Post-operative 4 weeks | Proactive | AOFAS Score |
| | | | C: 38.75 ± 8.33 | C: Males 22, Females 20 | C: Post-operative 13 weeks | | |
| 2 | Park et al (2021)[13] | South Korea | E: 42.7 ± 14.2 | E: 78 (gender not reported) | E: Post-operative 2 weeks | Proactive alliance passive activity | Olerud-Molander score, time to return to work/life and complication rate |
| | | | C: 43.1 ± 14.2 | C: 69 (gender not reported) | C: Post-operative 6 weeks | | |
| 3 | Schubert et al | Australia | E: 46 ± 14 | E: Males 13, Females 12 | E: Post-operative 2 | Proactive alliance | Olerud-Molander score, complication |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | (2020)[14] | | | | weeks | passive activity | rate |
| | | | C: 42 ± 16 | C: Males 16, Females 9 | C: Post-operative 6 weeks | | |
| 4 | Smeeing et al (2020)[15] | Dutch | E: 39.51 ± 14.60 | E: 78 (gender not reported) | E: Post-operative 5 days | - | Olerud-Molander score, time to return to work/life and complication rate |
| | | | C: 37.8 ± 13.7 | C: 37 (gender not reported) | C: Post-operative 6 weeks | | |

**E : Experimental group; C : Control group**

## Quality Evaluation

Every manuscript was subjected to an impartial review by reviewers. Any disparities found were settled by thorough debate and consensus. The seven Cochrane criteria for assessing risk of bias in the "Risk of bias" assessment tool—which include selection, performance, detection, attrition, reporting, and other bias—will be used by the same independent reviewers to evaluate the quality of the included studies (Figure 1 and Figure 2).

## Data Synthesis

For every study that was found and included, data extraction was gathered using specified tables under the headings of fundamental characteristics and results. Review Manager was used to carry out quantitative analysis once the data were available. Forest plots were used to display the results. In each study, the mean difference for continuous outcome and odds ratio for dichotomous outcome with a 95% confidence interval (CI) was calculated. When the heterogeneity (I2) was less than 10%, a fixed-effects model was employed; when the heterogeneity was greater than 10%, a random-effects model was utilized.

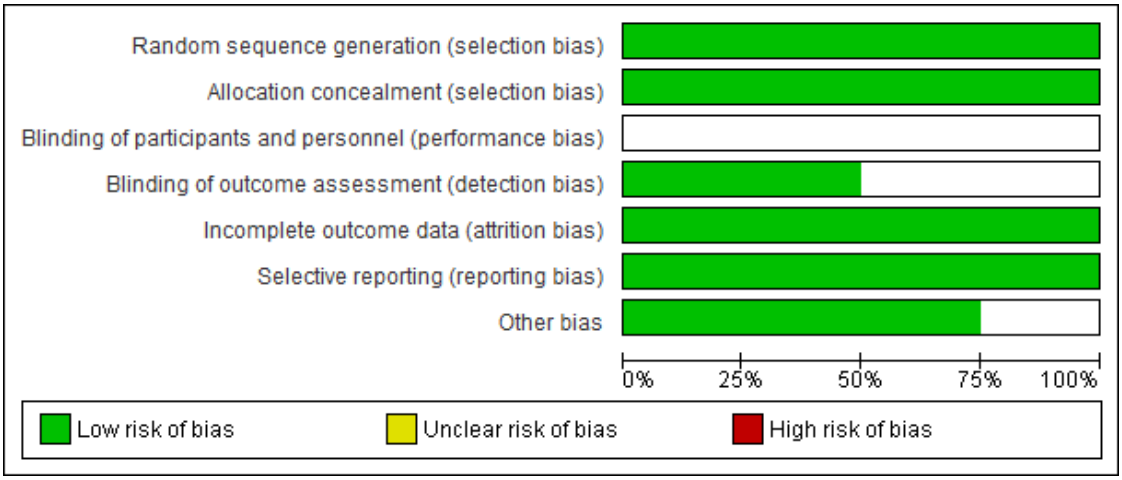


**Figure 1. Risk of Bias Graph**

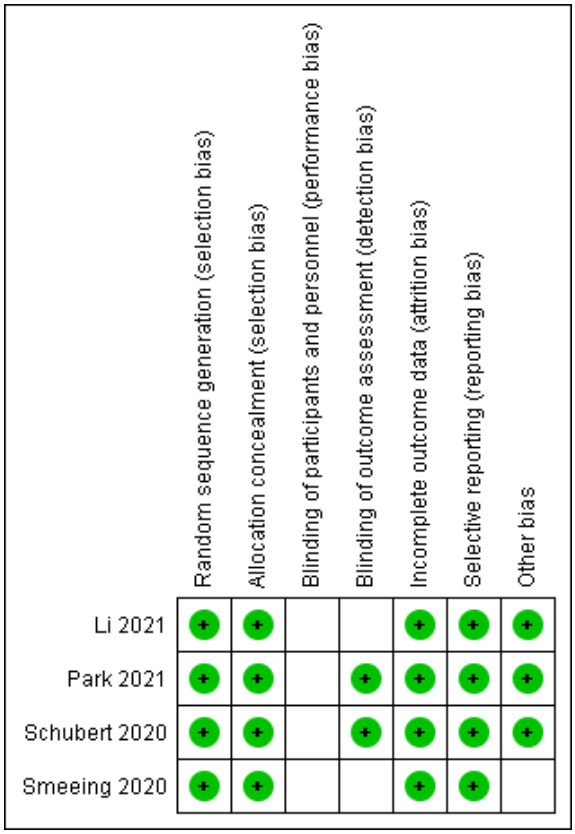


**Figure 2. Risk of Bias Summary**

## RESULT

### Literature search, study selection, and study characteristics

768 records were found using the electronic search across several databases. Following the steps of removing duplicates, screening, and excluding research, the final four studies were incorporated into the qualitative synthesis. The remaining papers were eliminated because they weren't in English, had different methods, or didn't have enough appropriate outcomes (Figure 3). There were 398 patients in all in this meta-analysis, 225 of whom had EWB and 173 of whom had LWB. The age range of the patient was 39–46 years old (Table 2).

### Ankle fracture recovery 6 weeks after surgery

Four included articles reported functional outcomes at 6 weeks after ankle fracture surgery for both intervention modalities. Because heterogeneity across studies was negligible (df = 3, $I^2$ = 0%, p = 0.71), a fixed-effects approach was chosen. The meta-analysis showed a clear advantage for EWB, with significantly improved ankle function scores over LWB (SMD 0.66, 95% CI 0.46–0.87; p < 0.001). The findings are summarized in Figure 4.

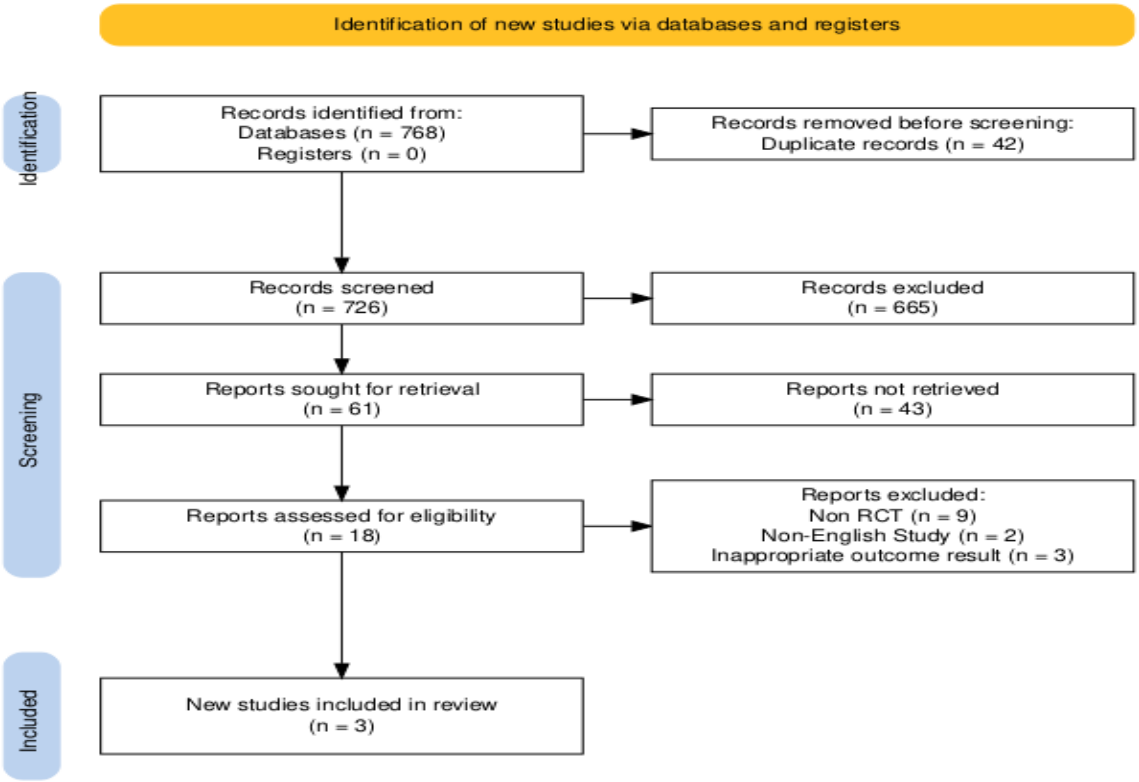


**Figure 3. PRISMA flowchart for the included study**

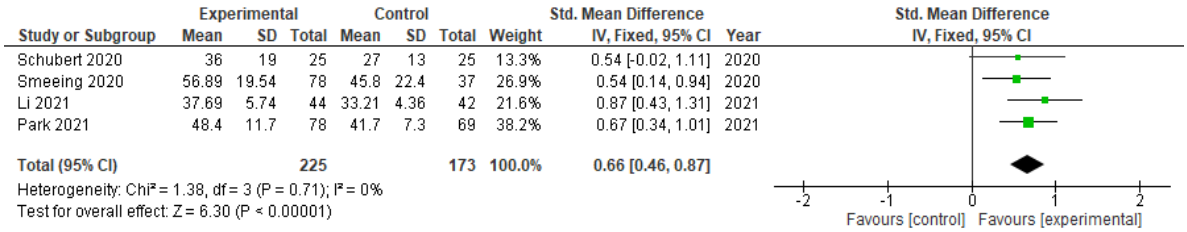


**Figure 4. Ankle function 6 weeks post-surgery**

**Ankle fracture recovery 6 weeks after surgery**

Four included articles reported functional outcomes at 12 weeks after ankle fracture surgery for both intervention modalities. The heterogeneity analysis showed high heterogeneity (df = 4, I2 = 67% and p = 0.03), so a meta-analysis was performed using a random-effects model. The meta-analysis showed a clear advantage for EWB, with significantly improved ankle function scores over LWB (SMD 0.39, 95% CI 0.03–0.76; p < 0.04). The findings are summarized in Figure 5.

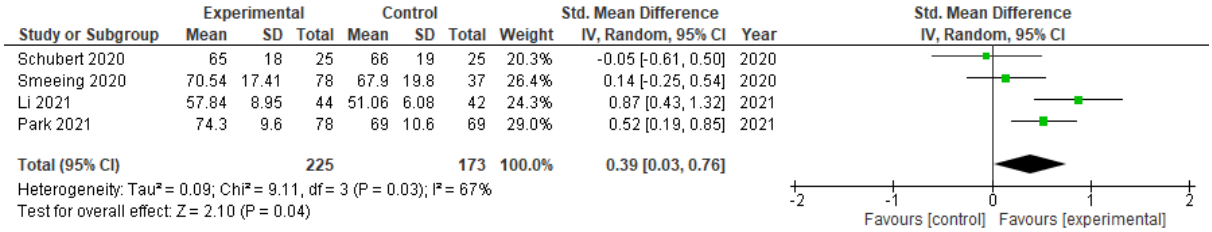


**Figure 5. Ankle function 12 weeks post-surgery**

**Ankle fracture recovery 24-26 weeks after surgery**

Three included articles reported functional outcomes at 24-26 weeks after ankle fracture surgery for both intervention modalities. The heterogeneity analysis also showed high heterogeneity (df = 3, I2 = 63% and p = 0.04), so a meta-analysis was performed using a random-effects model. The meta-analysis showed a clear advantage for EWB, with significantly improved ankle function scores over LWB (SMD 0.46, 95% CI 0.02–0.89; p < 0.04). The findings are summarized in Figure 6.

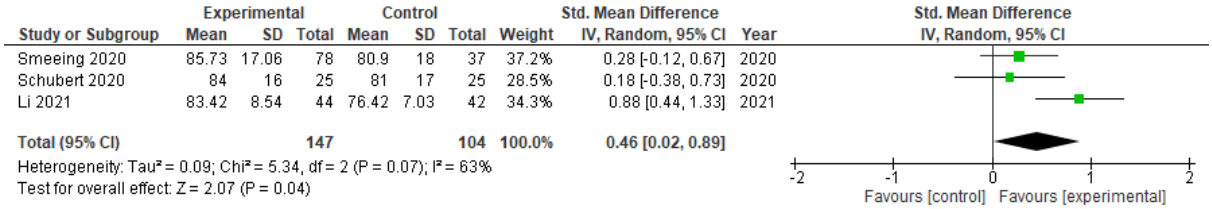


**Figure 6. Ankle function 24–26 weeks post-surgery**

**Ankle fracture recovery 1 year after surgery**

Two included articles reported functional outcomes at 1 year after ankle fracture surgery for both intervention modalities. The heterogeneity analysis showed high heterogeneity (df = 2, I2 = 73% and p = 0.05), so a meta-analysis was performed using a random-effects model. The results of the meta-analysis indicated that there was no difference in the recovery of ankle function between the EWB group and the LWB group at the first year post-operatively (SMD = 0.20, 95% CI: −0.29–0.70 and p = 0.42). The findings are summarized in Figure 7.

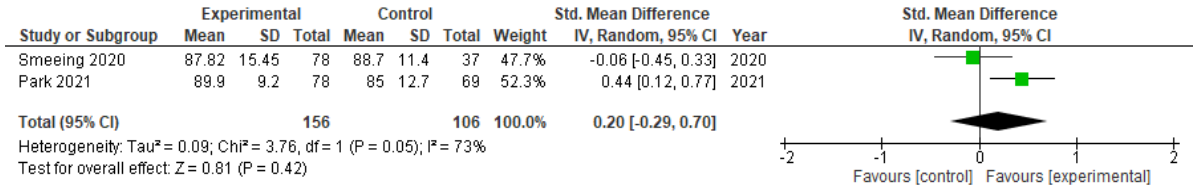


**Figure 7. Ankle function 1 year post-surgery**

### Time to return to work/daily life

Two studies reported the time, measured in weeks, required for patients to resume work or daily activities. The heterogeneity assessment demonstrated substantial variability across studies (df = 2, $I^2$ = 83%, p = 0.01), leading to the use of a random-effects model for the meta-analysis. Overall, the meta-analysis showed that EWB was associated with a significantly shorter time to return to work or daily activities compared with LWB (MD = −0.81, 95% CI −1.46 to −0.16; p < 0.01). Full results are presented in Figure 8.

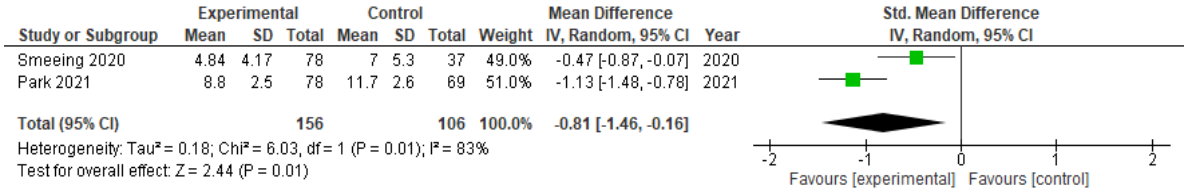


**Figure 8. Meta-analysis results of the time to return to work/life.**

### Complication rates

A total of two studies provided data on the number of patients experiencing complications in each intervention group, with specific details summarized in Figure 9. The heterogeneity assessment demonstrated minimal variability among the included studies (df = 2, $I^2$ = 0%, p = 0.76), allowing the use of a fixed-effects model for the meta-analysis. The pooled analysis showed no significant difference in overall complication rates between the EWB and LWB groups (RR 1.06, 95% CI 0.39–2.92, p = 0.90). Subgroup analyses of specific complications likewise revealed no meaningful differences in the incidence of deep vein thrombosis (RR 2.18, 95% CI 0.36–13.38, p = 0.40), or superficial infections (RR 0.68, 95% CI 0.19–2.46, p = 0.56) between EWB and LWB. The detailed results are presented in Figure 9.

## DISCUSSION

This review demonstrated that patients undergoing EWB after surgery experienced notably better improvements in ankle function compared with those following LWB protocols. However, by one-year post-operation, the difference between the two approaches was no longer statistically meaningful. EWB was also associated with a faster return to work or daily activities, while complication rates did not differ significantly between groups.

All included studies showed that EWB significantly enhanced ankle function at six weeks post-surgery, with minimal interstudy variability, aligning with previous meta-analytic findings.12-15 These earlier studies similarly concluded that EWB promotes superior early rehabilitation outcomes. Dehghan et al. further reported greater ankle mobility at six weeks in the EWB group,16 although EWB did not appear to reduce postoperative pain, a finding supported by both Yang et al.17 and Schubert et al.14 Biomechanical and physiological research provides additional support such as finding by Eric et al.18 that demonstrated EWB causes minimal displacement and appears safe, while basic science studies by Gardner et al.19 and Jan-Hung et al.20 highlight the role of mechanical loading in promoting bone healing and remodeling.

At 12 weeks and again at 24–26 weeks, this meta-analysis found higher ankle function

scores in EWB recipients that also consistent with Sharma et al.10 who reported improved outcomes for EWB at 10–12 weeks but no longer-term differences. In contrast, Khojaly et al. observed no advantage for EWB at three months.11 These discrepancies may stem from differing postoperative time classifications and variation in included trials. The present review incorporated more recent studies reporting 12-week functional outcomes, many favouring EWB. Additionally, several randomized trials not eligible for pooling due to missing standard deviation data also indicated higher function scores at 12 weeks in the EWB group.

This study conducted a subgroup analysis of 12-week postoperative outcomes based on the type of ankle mobilization to help identify potential sources of heterogeneity. Variability decreased within the subgroups involving active movement alone and active combined with passive movement, and meaningful differences emerged between these categories. The findings indicated that patients performing active exercises with EWB had better ankle function scores than those using combined active-passive exercises. This may relate to passive movements exceeding the joint's physiological limits, which some reports have associated with increased risks of poor wound healing and infection. Such adverse effects can contribute to joint swelling and pain, thereby potentially lowering functional evaluations. More robust randomized controlled trials are needed to clarify this, particularly regarding the specific role of ankle mobilization in EWB protocols.21

This meta-analysis also demonstrated no functional difference at one year between patients undergoing EWB and those following LWB. These findings imply that EWB does not compromise long-term recovery and is equally effective as conventional LWB in the later rehabilitation phase, a conclusion reinforced by several retrospective studies not included in the quantitative analysis.

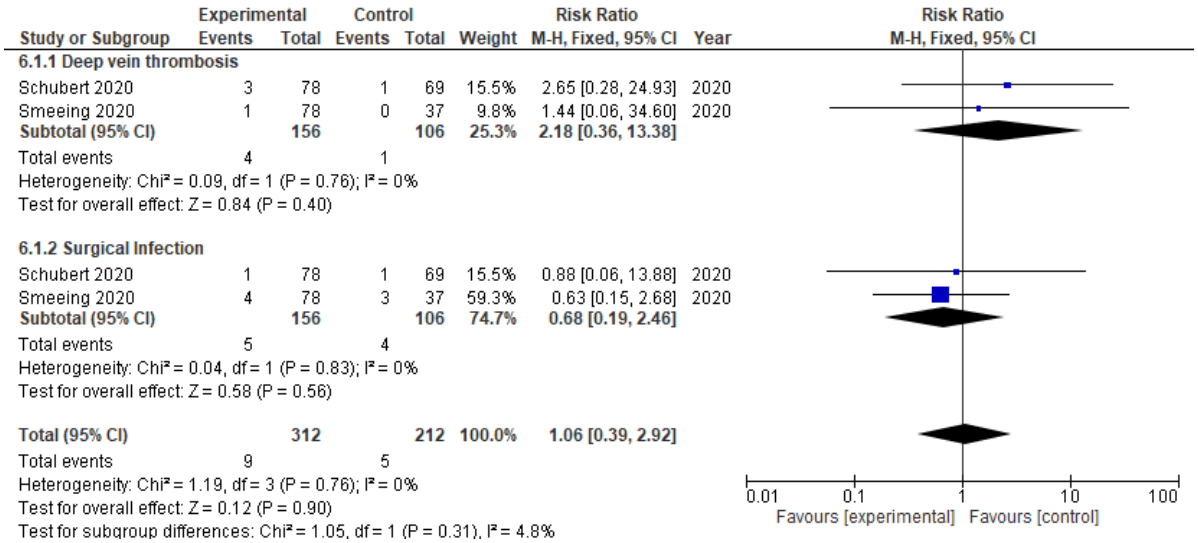


**Figure 9. Results of the meta-analysis of complication rates**

Beyond functional scores, this review identified differences in the time required to resume work or daily activities: individuals in the EWB group returned earlier, which may improve patient convenience and lessen financial burden. Cunningham et al. similarly reported accelerated return-to-work times among physically active individuals using EWB.22 Some studies have reported no difference between groups, indicating that multiple factors influence readiness to return to work; therefore, more research is necessary to determine the economic advantages of EWB.

Complication rates also warrant attention. This meta-analysis found no significant

difference in overall complication rates between EWB and LWB, aligning with previous evidence. A large multicentre retrospective study by Bando et al. further showed similar frequencies of superficial infections, nonhealing fractures, skin blistering, neurological issues, and delayed wound healing between groups, while deep infections and reoperations were less frequent in EWB patients.23 Collectively, these findings support the conclusion that EWB is at least as safe as traditional LWB in postoperative ankle fracture rehabilitation.

This study also has several limitations. First, although ankle function rating scales were used as the primary outcome measures, their total scores do not capture more detailed aspects of ankle performance, making it unclear which specific functional components are most influenced by EWB. Second, several included studies relied on the AOFAS scale, a tool that has been criticized for limited accuracy, notable interobserver variability, and a tendency to produce non-informative conclusions. As a result, the use of AOFAS scores may reduce the overall reliability of the study's findings. Finally, several included studies carried a high risk of bias, especially performance bias. Due to the nature of the intervention, blinding participants was challenging, yet still important given the subjective elements of the outcomes assessed.

## CONCLUSION

In conclusion, EWB appears to enhance ankle function following surgical treatment of ankle fractures, and its effectiveness may vary depending on the type of ankle motion performed during rehabilitation. Patients undergoing EWB do not demonstrate poorer functional outcomes than those following LWB protocols, and they are able to resume work and daily activities sooner. Additionally, the complication rate associated with EWB is comparable to that of conventional LWB approaches, indicating that EWB offers a similarly high level of safety.

***Declaration by Authors***

**Ethical Approval:** Not applicable

**Acknowledgement:** None

**Source of Funding:** None

**Conflict of Interest:** No conflicts of interest declared.

## REFERENCES

1. Hermena S, Slane VH. Ankle Fracture. [Updated 2025 Feb 15]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-.
2. Patel S, Dionisopoulos SB. Current Concepts in Ankle Fracture Management. *Clin Podiatr Med Surg*. 2024;41(3):519-534.
3. Li Y, Xie L, Li W. Effect of early partial weight-bearing rehabilitative exercise on postoperative functional recovery of sanders IV calcaneal fractures. *Am J Transl Res*. 2021;13(7):8316-8322.
4. Wang C, Li C. Early weight-bearing after ankle fracture surgery: a systematic review and meta-analysis of functional outcomes and safety. *J Orthop Surg Res*. 2025;20(1):785.
5. Cunningham, Brian P., Anthony J. Dugarte, Dylan L. McCreary, Harsh R. Parikh, Jackson S. Lindell, Benjamin R. Williams, Megan Reams, and Fernando A. Pena. 2021. "Immediate Weightbearing After Operative Treatment of Bimalleolar and Trimalleolar Ankle Fractures: Faster Return to Work for Patients with Nonsedentary Occupations." Journal of Foot and Ankle Surgery 60(1): 11–6.
6. Smeeing DPJ, Houwert RM, Briet JP, et al. Weight-bearing or non-weight-bearing after surgical treatment of ankle fractures: a multicenter randomized controlled trial. *Eur J Trauma Emerg Surg*. 2020;46(1):121-130.
7. Passias BJ, Korpi FP, Chu AK, et al. Safety of Early Weight Bearing Following Fixation of Bimalleolar Ankle Fractures. *Cureus*. 2020;12(4):e7557.
8. Yao Y, Li G, Li J, et al. Short-Term Outcomes of Enhanced Recovery after Surgery (ERAS) for Ankle Fracture Patients: A Single-Center Retrospective Cohort Study. *Orthop Surg*. 2023;15(3):766-776.
9. Quadlbauer S, Pezzei C, Jurkowitsch J, et al. Rehabilitation after distal radius fractures: is there a need for immobilization and physiotherapy? *Arch Orthop Trauma Surg*. 2020;140(5):651-663.
10. Sharma T, Farrugia P. Early versus late weight bearing & ankle mobilization in the postoperative management of ankle fractures: A systematic review and meta-analysis of

randomized controlled trials. *Foot Ankle Surg*. 2022;28(7):827-835.
11. Khojaly R, Rowan FE, Hassan M, Hanna S, Mac Niocail R. Weight-bearing Allowed Following Internal Fixation of Ankle Fractures, a Systematic Literature Review and Meta-Analysis. *Foot Ankle Int*. 2022;43(9):1143-1156.
12. Yu Li, Xie Lin, and Li Wei. 2021. "Effect of Early Partial Weight-Bearing Rehabilitative Exercise on Postoperative Functional Recovery of Sanders IV Calcaneal Fractures." American Journal of Translational Research 13: 8316–8322
13. Jae Yong Park, Bom Soo Kim, Yu Mi Kim, Jae Ho Cho, Young Rak Choi, and Hyong Nyun Kim. 2021. "Early Weightbearing versus Nonweightbearing after Operative Treatment of an Ankle Fracture: A Multicenter, Noninferiority, Randomized Controlled Trial." The American Journal of Sports Medicine 49(10): 2689–96
14. Schubert, Jonathon, Lambers Kaj T. A., Kimber Cheryl, Denk Katharina, Cho Matthew, Doornberg Job N., and Jaarsma Ruurd L. 2020. "Effect on Overall Health Status with Weightbearing at 2 Weeks vs 6 Weeks After Open Reduction and Internal Fixation of Ankle Fractures." Foot & Ankle International 41: 658–665.
15. Smeeing DP, Houwert RM, Briet JP, et al. Weight-bearing and mobilization in the postoperative care of ankle fractures: a systematic review and meta-analysis of randomized controlled trials and cohort studies. PLoS One. 2015;10(2): e0118320.
16. Dehghan, Niloofar, McKee Michael D., Jenkinson Richard J., Schemitsch Emil H., Stas Venessa, Nauth Aaron, Hall Jeremy A., Stephen David J., and Kreder Hans J. 2016. "Early Weightbearing and Range of Motion versus Non-weightbearing and Immobilization after Open Reduction and Internal Fixation of Unstable Ankle Fractures: A Randomized Controlled Trial." Journal of Orthopaedics Trauma 30(7): 345–352.
17. Yang, Chengfu, Zeng Hongxia, and Dou Yingxia. 2013. "The Influence of Early Weight Bearing Exercise on Postoperative Function and Fracture Healing of Unstable Ankle Fracture Patients." International Journal of Traditional Chinese Medicine 35(5): 394–396.
18. Eric W., Sirisreetreerux Norachart, Paez Adrian G., Parks Brent G., Schon Lew C., and Hasenboehler Erik A. 2016. "Early Weightbearing After Operatively Treated Ankle Fractures: A Biomechanical Analysis." Foot & Ankle International 37(6): 652–658.
19. Gardner, Michael J., van der Meulen Marjolein C. H., Demetrakopoulos Demetris, Wright Timothy M., Myers Elizabeth R., and Bostrom Mathias P. 2006. "In Vivo Cyclic Axial Compression Affects Bone Healing in the Mouse Tibia." Journal of Orthopaedic Research 24(8): 1679–1686.
20. Jan-Hung, Liu Chao, You Lidan, and Simmons Craig A. 2010. "Boning up on Wolff's Law: Mechanical Regulation of the Cells that Make and Maintain Bone." Journal of Biomechanics 43
21. Sernandez, Haley, John Riehl, and Joshua Fogel. 2021. "Do Early Weight-Bearing and Range of Motion Affect Outcomes in Operatively Treated Ankle Fractures: A Systematic Review and Meta-Analysis." Journal of Orthopaedics Trauma 35(8): 408–13
22. Cunningham, Brian P., Anthony J. Dugarte, Dylan L. McCreary, Harsh R. Parikh, Jackson S. Lindell, Benjamin R. Williams, Megan Reams, and Fernando A. Pena. 2021. "Immediate Weightbearing After Operative Treatment of Bimalleolar and Trimalleolar Ankle Fractures: Faster Return to Work for Patients with Nonsedentary Occupations." Journal of Foot and Ankle Surgery 60(1): 11–6.
23. Bando, Kosuke, Yasuhiko Takegami, Toshihiro Ando, Takayuki Sugino, Toshifumi Sato, Tomoki Fujita, and Shiro Imagama. 2023. "Early Weight Bearing and Mobilization Decrease Perioperative Complications in Patients after Ankle Fracture; the Retrospective Multicenter (TRON Group) Study." Journal of Orthopaedic Science 28(3): 651–5.

How to cite this article: Kadek Gede Bakta Giri, I Gede Mahardika Putra, Made Ramanda Bramasta Pramana. Impact of early weight bearing after ORIF of ankle fractures: systematic review and meta-analysis. *International Journal of Research and Review*. 2026; 13(1): 242-251. DOI: *https://doi.org/10.52403/ijrr.20260123*

******