OSSO VR

Osso VR Clinical Compendium

A clinically validated training and assessment platform.

Randomized Trial of a Virtual Reality Tool to Teach Surgical Technique for Tibial Shaft Fracture Intramedullary Nailing.

Blumstein G et al. J Surg Educ. 2020 Jul-Aug;77(4):969-977.

Methods

Procedure for Evaluation: Tibial intramedullary nail insertion.

Medical students were randomized to two training groups:

- N=10 Standard Surgical Guide
- N=10 Osso VR Module

Each group was assessed on procedural competency using a SawBones model.

Evaluation Methodologies:

- Global Assessment 5-Point Rating Scale
- Percentage of steps completed correctly

Two proficiency checkpoints

- Primary skill assessment after first training
- Two-week knowledge retention check

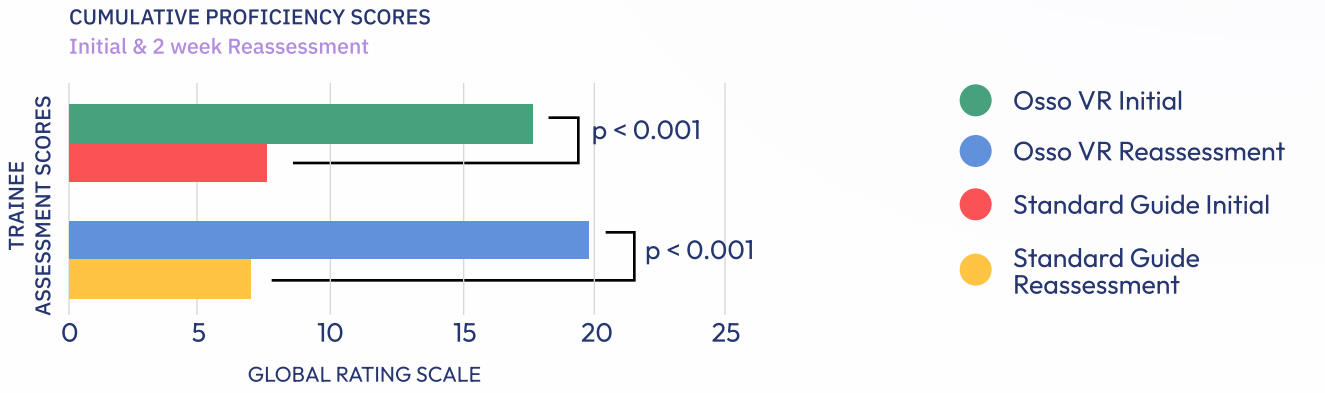
Results

Compared to the traditional training method, the Osso VR trained cohort had

38%
more procedural steps completed correctly
(p = 0.002)

20%
faster test completion
(p = 0.002)

at 2 weeks
Retesting showed significantly higher knowledge retention
(p < 0.001)



Key Findings

Osso VR-trained participants **had significantly better performance scores** that were 230% of those of the standard guide cohort (p<0.001)

VR training allows participants to train in an **autonomous, safe, and cost-effective environment.**

The findings **demonstrate the value of VR surgical training** and support a larger role for the platform in surgical education

> “VR training was more effective than a passive surgical guide in our model of simulated tibia intramedullary nailing for novice medical students.”

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Virtual Reality Training in Unicompartmental Knee Arthroplasty: A Randomized, Blinded Trial

McKinney B, Dbeis A, Lamb A, Frousiakis P, Sweet S. J Surg Educ. 2022; 79(6):1526-1535.

Methods

Procedure for Evaluation: Unicompartmental knee arthroplasty (UKA)
Orthopedic residents, with no prior VR or UKA experience, randomized to two training groups:

- N=11 Standard Surgical Guide
- N=11 Osso VR Module

Each group was assessed on procedural competency using a SawBones model.

Evaluation Methodologies:

- Adapted Global Assessment 5-point Rating Scale
- Percentage of steps completed correctly
- Procedure completion
- Time

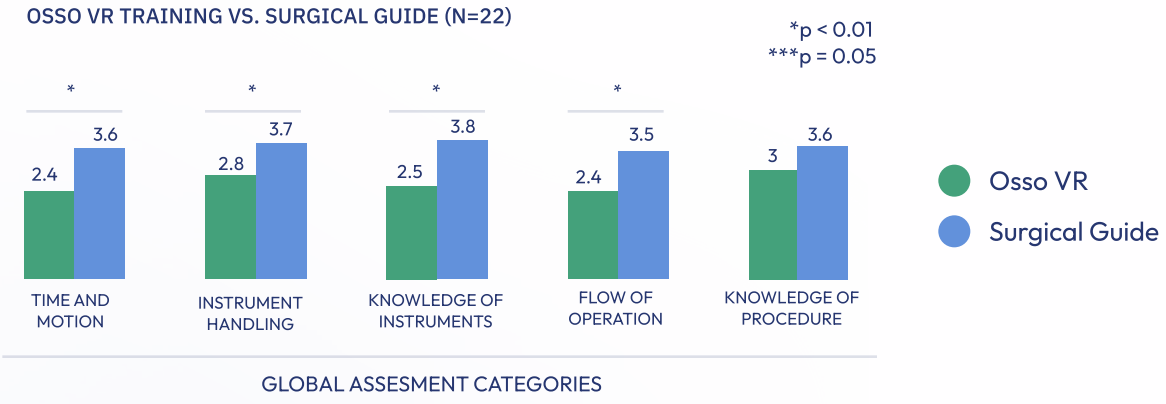
Results

Compared to the traditional training method, the Osso VR trained cohort had

67%
fewer errors ($p < 0.01$)

92%*
procedural step accuracy

25%
25% faster procedural completion ($p < 0.01$)



Key Findings

Osso VR-trained residents **performed better** that were 230% of those of the standard guide cohort ($p<0.001$)

Across all 5 global assessment categories, **the Osso VR trained cohort performed better**, with 4 of 5 categories reaching statistical significance.

Survey questionnaires completed by trainees **demonstrated positive feedback** with a trend toward virtual reality training.

> “Residents who trained with the immersive VR executed significantly more steps correctly and completed their training and the procedure in faster time.”

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Does Virtual Reality Improve Procedural Completion and Accuracy in an Intramedullary Tibial Nail Procedure? A Randomized Control Trial

Orland MD, Patetta MJ, Wieser M, Kayupov E, Gonzalez MH. Clin Orthop Relat Res. 2020 Sep;478(9):2170-2177.

Methods

Procedure for Evaluation: Tibial intramedullary (IM) nail insertion.

Medical students randomized to three training groups:

- N=8 Standard Surgical Guide
- N=8 Osso VR Module
- N=9 Osso VR + Surgical Guide

Inclusion criteria: Active medical student, no prior VR experience, no IM nail procedural experience.

Each group was assessed on procedural competency using a SawBones model.

Evaluation Methodologies:

- Percentage who completed procedure
- Percentage of steps completed correctly
- Number of hints needed
- Completion time

Results

Compared to the traditional training method, the Osso VR training cohort had:

44%
fewer errors
(p = 0.02)

21%
faster procedural
completion time (p = 0.03)

PROCEDURAL COMPLETION

The Osso Vr Cohort Demonstrated Significantly Higher Procedural Completion

Key Findings

Osso VR–trained participants had **significantly better performance scores** that were 300% of those of the standard guide cohort (p=0.01).

Compared to traditional training methods, Osso VR **had better outcomes across all measurements.**

Osso VR is a viable method to assist in learning procedural workflow and movements for surgical procedures.

> “Virtual reality increased both procedural accuracy and the completion proportion compared with a technique guide in medical students.”

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Experience Using Immersive Virtual Reality Simulation During An AO Trauma Regional Course In Latin America.

Berezowsky C et al. J. Musculoskeletal Surgery and Research. 2022; 6:278–282.

Methods

Location: Large-scale regional trauma course

Procedure: Depuy Synthes TFN-ADVANCED™ Proximal Femoral Nailing System (TFNA)

Attendees: 120 course participants & 52 faculty members

VR training structure:

- 12 assigned faculty to immersive virtual reality (IVR or VR) activity
- 20 participants per course rotation
  - Participants completed 2 rotations:
    - 30 minutes in VR simulation training*
    - 30 minutes with traditional hands-on exercises
  - A five-minute tutorial around hardware was performed.

Upon completion of the session participants answered a survey on the VR training experience.

Results

74 participants completed the survey (62%).
Median age of participants was **33.86** (range: 27–64 years of age).

76%
stated vr was helpful in the learning process

62%
said vr simulated training was realistic

92%
want to use vr training regularly

Key Findings

VR surgical training is a **viable training modality** for large scale training courses and educational events.

As the technology matures, a **systematic implementation plan** is key.

VR surgical training is **realistic and helpful in learning** a procedure, with the faculty seeing improved performance during hands-on workshops at the course.

Greater than 90% of participants would like to use VR training in the future.

> “Some participants also mentioned that they felt that they knew the steps better after using IVR simulation.”

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