

# Effectiveness of simulation-based training in fracture fixation for Orthopedic education

**AUTHORS: DR. DHRUV SHARMA, DR. DINESH KUMAR**  
Pramukhswami Medical College, Karamsad, Anand, Gujarat  
Email dhruvsince85@gmail.com | Mobile: 8085740444

## Theme: Innovation in Education

### BACKGROUND

Surgeries involving implants constitute nearly 60-70% of orthopedic procedures. Traditional teaching, involving theory, observation, and OT assistance, is often insufficient for skill mastery. Literature suggests a blended approach of theory, simulation, and OT experience offers improved outcomes.

### OBJECTIVE

To evaluate the effectiveness of hands-on training in a simulated environment for fracture fixation using implants.

### METHODS

A simulation session was developed using bones from the anatomy department and implants from the orthopedic department. Session included guided self-reading followed by supervised practical sessions and debriefing. Practical sessions involved fixation of deliberately fractured bones. Residents were instructed to make their own plans for fracture fixation in small groups followed by performance of actual fixation. Focus was to learn by intentional errors and to observe its effect on fracture fixations. Feedback was collected from students anonymously using Google form and from faculty in face to face discussion.

*12 Residents of 4 from each year were trained for a single session after taking informed consent.  
Abstract was sent for IEC approval.*



### RESULTS

On Feedback collected using a Likert scale, 83% residents enjoyed the session, 83% perceived session to increase their understanding of principles and 91% felt that instrument and implant handling skills had improved. Residents also felt that the session helped to improve communication skills, team work in a setting of informal interaction with faculty and co-residents. They suggested that such session be conducted for other skills sets also. Faculty also observed improved student performance in fracture fixation.

### CONCLUSION

Simulation-based training is an effective, acceptable, and feasible method for improving student competency in fracture fixation.

### REFERENCES

1. Lateef, Fatimah. Simulation-based learning: Just like the real thing. Journal of Emergencies, Trauma, and Shock 3(4):p 348-352, Oct-Dec 2010. | DOI: 10.4103/0974-2700.70743
2. Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-Based Learning in Higher Education: A Meta-Analysis. Review of Educational Research, 90(4), 499-541. <https://doi.org/10.3102/0034654320933544>