



© J ORTHOP TRAUMA SURG REL RES
18(3) 2023
Opinion

Advancements in surgical education in orthopedics: A mini review

NIKHIL YADAV

B. Pharm, Anand Engineering College, Agra, Uttar Pradesh, India

Address for correspondence:

Nikhil Yadav, B. Pharm, Anand Engineering College, Agra, Uttar Pradesh, India
Nikhilyadav2888@yahoo.com

Statistics

Figures	00
Tables	00
References	00

Received: 03.03.2023; Manuscript No. jotsrr-23-103906;
Editor assigned: 05.03.2023, PreQC No. jotsrr-23-103906 (PQ);
Reviewed: 15.03.2023, QC No. jotsrr-23-103906 (Q);
Revised: 18.03.2023, Manuscript No. jotsrr-23-103906 (R);
Published: 23.03.2023, DOI. 10.37532/1897-2276.2023.18(3).99

Abstract

Orthopedic surgery is a complex and demanding field that requires specialized training and skill development. Over the years, surgical education in orthopedics has undergone significant advancements to meet the evolving needs of trainees and patients. This review article aims to explore the latest developments in surgical education within the field of orthopedics, including virtual reality and augmented reality technologies, simulators and surgical skills labs, cadaveric dissection, online learning platforms, and team-based learning. These advancements have transformed the way orthopedic surgeons are trained, leading to improved surgical proficiency and patient outcomes.

Keywords: Surgical skills, dissection, virtual reality

INTRODUCTION

Orthopedic surgery is a specialized branch of medicine that focuses on the treatment of musculoskeletal conditions. The training of orthopedic surgeons has traditionally relied on a combination of didactic lectures, hands-on experience, and mentorship. However, recent advancements in surgical education have revolutionized the learning experience, providing trainees with innovative tools and techniques to enhance their skills.

VIRTUAL REALITY (VR) AND AUGMENTED REALITY (AR)

Virtual reality and augmented reality technologies have gained significant traction in surgical education. These immersive technologies offer trainees a realistic virtual environment to practice surgical procedures and improve their technical skills. VR and AR platforms provide interactive experiences that enhance spatial awareness, decision-making abilities, and hand-eye coordination. They allow trainees to simulate complex procedures and receive real-time feedback, enabling them to refine their techniques before performing surgeries on actual patients. Moreover, VR and AR technologies have the potential for remote learning and collaboration, bridging the gap between trainees and expert surgeons.

SIMULATORS AND SURGICAL SKILLS LABS

Simulators and surgical skills labs have become integral components of orthopedic surgical education. These labs provide trainees with hands-on opportunities to practice surgical techniques on realistic models, anatomical specimens, or synthetic bone models. Through repetitive practice and deliberate feedback, trainees can develop muscle memory, improve their technical proficiency, and gain confidence. Simulators also allow for the safe exploration of complex procedures and the development of innovative techniques before applying them to patients. Additionally, surgical skills labs promote teamwork and communication skills among trainees, preparing them for the collaborative nature of orthopedic practice.

CADAVERIC DISSECTION

Despite the emergence of newer technologies, cadaveric dissection remains a fundamental component of orthopedic surgical education. Cadaveric dissection offers a unique opportunity for trainees to study human anatomy in a hands-on manner, allowing them to appreciate anatomical variations and understand surgical approaches. It provides a realistic representation of tissue textures and helps trainees develop

a comprehensive understanding of the musculoskeletal system. Combining cadaveric dissection with other educational modalities, such as virtual reality or simulators, can further enhance the learning experience.

ONLINE LEARNING PLATFORMS

The rise of online learning platforms has transformed the accessibility and flexibility of surgical education. These platforms offer a wide range of educational resources, including recorded surgeries, lectures, interactive modules, and case discussions. Trainees can access these materials anytime and anywhere, allowing for self-paced learning and the ability to review and revisit topics as needed. Online platforms often incorporate assessment tools, enabling trainees to evaluate their progress and identify areas for improvement. Moreover, these platforms facilitate global collaboration and knowledge sharing among orthopedic surgeons.

TEAM-BASED LEARNING AND INTERPROFESSIONAL COLLABORATION

Orthopedic surgery is a multidisciplinary field that requires effective teamwork and collaboration. Integrating team-based learning into surgical education programs fosters interprofessional collaboration and communication skills among trainees. Team-based learning activities, such as case discussions, surgical simulations, and problem-solving exercises, provide trainees with the opportunity to work closely with colleagues from different disciplines, enhancing their ability to function effectively within a multidisciplinary healthcare team. This collaborative approach prepares trainees to navigate complex patient scenarios and optimize patient care.

DISCUSSION

Advancements in surgical education within the field of orthopedics have transformed the training of future orthopedic surgeons. The integration of virtual reality and augmented reality technologies, simulators and surgical skills labs, cadaveric dissection, online learning platforms, and team-based learning has revolutionized the learning experience and improved surgical proficiency. Embracing these advancements allows for safer, more efficient, and better-informed orthopedic surgeons, leading to improved patient outcomes and the advancement of the field as a whole. Continued research and innovation in surgical education will undoubtedly shape the future of orthopedic surgery, further optimizing the training and skills development of orthopedic surgeons.