

**Editorial****Innovations and emerging trends in orthopedic technology**Jayant Sharma¹ ¹Dept. of Orthopaedics, Index Medical College and Research Centre, Indore, Madhya Pradesh, India**Received:** 25-10-2025; **Accepted:** 05-11-2025; **Available Online:** 20-11-2025

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The evolution in Orthopedic technology has come a long way, revolutionizing the diagnosis, treatment, and recovery of many musculoskeletal conditions.

2. 3D Printing

3D-printing technology applied to advanced orthopedics has enabled physicians to create customized instruments and implants that are specifically tailored for the patient. For example, orthopedic doctors can now create custom hip and knee implants using a medical-grade 3D printer. They can also create 3D-printed models that are used to plan out procedures, resulting in improved patient outcomes.

3. Robotic-Assisted Surgery

Orthopedic doctors can execute joint replacement treatments with more accuracy and precision because to robotic-assisted surgery equipment. These devices lower the chance of patient complications and minimize errors during orthopedic surgery by offering real-time feedback and navigational assistance. Robotic-assistant systems are proven to be useful tools in the operating room, but a person must still oversee the surgery.

4. Augmented Reality (AR)

Orthopedic surgery is one of the many useful applications for this technology. With the help of augmented reality,

orthopedic surgeons may see the patient's anatomy in real time and receive unprecedented visual instruction. Additionally, because AR simulates a surgical setting more accurately, it is utilized in orthopedic surgery training during practice exercises.

5. Smart Orthopedic Implants and Wearables

In the orthopedic field, it has always been difficult to determine how well a tailored implant or joint replacement works. With the introduction of wearable technology and smart orthopedic implants, orthopaedicians can now get comprehensive input from sensors that track joint performance indicators and functioning in real time. This makes it simple for orthopedicians to determine whether the joint or implant has to be adjusted, so that it may be done quickly.

6. Artificial Intelligence (AI)

AI is starting to appear in a number of advanced orthopaedic applications. Orthopedicians can utilize AI to evaluate patient data, which helps them see possible problems and patterns that might help them make data-driven decisions. AI is utilized to create individualized treatment plans, evaluate risk, and plan orthopedic surgeries and procedures.

Cite this article: Sharma J. Innovations and emerging trends in orthopedic technology. *Indian J Orthop Surg.* 2025;11(3):167.

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