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## Editorial

# New Technologies in Orthopaedic Traumatology<sup>☆</sup>



Technology is defined as an artifact made through systemic application of knowledge and used to reach practical goals [1]. Each and every medical discipline seeks and develops improvements and optimization of patient care linked to innovation and new technologies. In medicine, ground-breaking discoveries, such as X-rays by Wilhelm Konrad Röntgen in 1895 or penicillin by Sir Alexander Fleming in 1929, are extraordinary and revolutionary highlights in medical history. Those discoveries and the further development of applications using them in medicine can be defined as disruptive technologies. However, advancements in medicine are mainly made largely by gradual improvements of established core technologies, and the introduction of disruptive technologies remains exceptional. Similarly, while orthopaedic trauma care continues to improve gradually through modifications to existing implants, equipment, and implants, exceptional discoveries in musculoskeletal medicine and related fields (including radiology, microbiology, cell biology) have moved the needle forward substantially. As scientific discoveries continue at an exponential pace, novel treatment approaches to injury care will also evolve rapidly.

As an example, fracture fixation techniques and fixation devices were created several centuries ago and have been continuously refined by both incremental technological advances and disruptive technologies. The first modern implants were designed at end of the 19<sup>th</sup> century, with the term “osteosynthesis” defined by Albin Lambotte in 1904 [2]. In the 1930s, Gerhard Küntscher introduced intramedullary nail fixation in the 1930s, which not only added to the options for fracture management, but entirely changed the approaches to many long bone fractures and remain a treatment cornerstone today [3]. Since then, gradual improvements in implant designs, materials, and strategies for fracture management, including those for plates, intramedullary nails, external fixation devices, have expanded surgical indications and improved patient outcomes [4,5].

Recent scientific investigative tools and discoveries in the fields of engineering, tissue biology, information technology, data management and clinical study design, and fracture management will all likely contribute to substantial improvements in musculoskeletal injury care within the next decade and beyond. The Osteosynthesis and Trauma Care Foundation (OTCF), dedicated to the advancement of trauma care through education, research, and professional networking, identified technological advancements in these emerging fields as the basis for a hot topic workshop entitled “New Technologies” in Brussels on November 11–12, 2021. The symposium reviews on topics ranging from new imaging techniques to innovative implant technologies to 3D printing and digi-

tal technologies were led by expert clinician-scientists. The articles in this supplement represent reviews of the presentations and exchange of ideas of the workshop by those experts and their collaborators.

We hope that the information presented in this supplement will aid in the understanding of state-of-the-art innovations and technologies that will influence future musculoskeletal injury care, and potentially stimulate new areas for investigation. Further, this work will serve as a foundation for future areas of interest for the OTC Foundation, including its own extramural annual research grant program.

### Conflict of interest

None.

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