JOURNAL RIPHAH COLLEGE OF REHABILITATION SCIENCES

OPEN ACCESS

EDITORIAL

The Future of Rehabilitation Practice in the Era of Artificial Intelligence and Robotics

Prof Dr Asghar Khan

Chief Editor JRCRS

Faculty of Rehabilitation & Allied Health Sciences, Riphah International University, Islamabad, Pakistan

*Correspondence author

Asghar Khan

asghar.khan@riphah.edu.pk

ORCID: 0009-0005-8757-7949

Article Info.

Received: June 08, 2026
Accepted: June 17, 2026
Published: June 29, 2026

Cite This Article as: *Khan A. The Future of Rehabilitation Practice in the Era of Artificial Intelligence and Robotics. JRCRS. 2026; 14(2):60-61.*
https://dx.doi.org/10.53389/JRCRS.2026140201

Copyrights

@2026. This is an open access article distributed under the terms of Creative Commons ***"Attribution-NonCommercial 4.0 International"*** license.
https://creativecommons.org/licenses/by-nc/4.0/. Copyrights on any open access article published by *Journal Riphah College of Rehabilitation Science (JRCRS)* are retained by the author(s). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted, which does not comply with these terms.

Artificial intelligence (AI) is rapidly transforming healthcare delivery and is expected to significantly influence the future of rehabilitation practice. Rehabilitation professionals, including physical therapists, occupational therapists, speech-language pathologists, prosthetists, orthotists, and other allied health practitioners, are increasingly utilizing AI-driven technologies to support assessment, diagnosis, treatment planning, outcome prediction, and patient monitoring.[1] As healthcare systems become more digitalized, AI offers unprecedented opportunities to improve the efficiency, accessibility, and quality of rehabilitation services.

Rehabilitation professionals focus on restoring mobility, improving stability, and maximizing functional independence to enhance quality of life. These outcomes are achieved through assessment, clinical expertise, and patient centred care. However, challenges such as fragmented healthcare systems, poor interdisciplinary communication, delayed diagnostic information, and limited access to real-time patient data can hinder effective clinical decision making and impact treatment outcomes.[2]

Artificial intelligence has the potential to address many of these challenges. Through integration with electronic health records, wearable sensors, motion analysis systems, telehealth platforms, and remote monitoring technologies, rehabilitation professionals can access continuous and objective patient data.[3] Such information may facilitate earlier identification of complications, improve monitoring of functional progress, and support individualized treatment planning. AI-assisted documentation systems may also reduce administrative burden and allow clinicians to spend more time in direct patient care.

One of the most promising applications of AI in rehabilitation is clinical decision support. AI systems can analyse large volumes of information, including physical examination findings, imaging studies, laboratory reports, and functional outcome measures, to identify clinically relevant patterns and support evidence informed decision making.[4] However, AI should be viewed as an adjunct to professional expertise rather than a replacement for clinical judgment. Human factors such as patient values, psychosocial circumstances, cultural context, and therapeutic relationships remain beyond the capabilities of current AI systems.

Another technological advancement shaping the future of rehabilitation is robotics. Robotic-assisted rehabilitation systems, including gait-training robots, robotic exoskeletons, upper-limb rehabilitation devices, and intelligent prostheses, are increasingly being integrated into clinical practice.[5] These technologies facilitate repetitive, task-specific, and measurable interventions that may enhance motor learning, neuroplasticity, and functional recovery. The integration of AI with robotics further enables personalized rehabilitation by automatically adjusting exercise intensity and progression according to patient performance.

The growing use of AI by patients themselves also presents important considerations. Many individuals now seek health information and symptom interpretation through AI-powered platforms before consulting healthcare professionals. While such technologies may improve health literacy and patient engagement, their effectiveness depends largely on the accuracy of the information provided. Incorrect symptom descriptions, incomplete clinical information, and misunderstanding of AI-generated recommendations may lead to inappropriate conclusions. Consequently, professional assessment and clinical reasoning remain essential components of safe and effective rehabilitation practice.[6]

For countries such as Pakistan, AI and robotics may offer important opportunities to address challenges related to workforce shortages, limited access to specialized rehabilitation services, and geographical barriers to care. AI-supported telerehabilitation and remote monitoring systems can help extend rehabilitation services to underserved populations and improve continuity of care. These technologies may prove particularly valuable in rural and resource constrained settings where access to rehabilitation professionals remains limited.

Despite its promise, successful AI integration requires adherence to several best practices. AI should complement rather than replace professional expertise; patient privacy and data security must remain priorities; clinicians should critically evaluate AI-generated recommendations; and rehabilitation professionals should receive formal training in digital health technologies. Furthermore, collaboration among clinicians, engineers, researchers, and policymakers is essential to ensure that technological innovations remain safe, ethical, and patient centred.

The rehabilitation profession stands at a pivotal moment in its evolution. Educational institutions must prepare future rehabilitation professionals with competencies in digital health literacy, AI assisted clinical decision making, and technology enabled rehabilitation. At the same time, the profession must preserve its fundamental values of empathy, compassion, communication, and patient centred care. While AI and robotics can enhance efficiency and support decision making, they cannot replace the therapeutic alliance that forms the foundation of successful rehabilitation.

As rehabilitation professionals, we should view AI and robotics not as competitors but as valuable partners. The future of rehabilitation will be shaped not by technology alone but by how effectively rehabilitation professionals integrate technological innovation with clinical expertise, ethical responsibility, and compassionate care. By embracing innovation while preserving the humanistic foundations of rehabilitation, the profession can ensure that AI serves as a catalyst for improving patient outcomes and expanding access to high-quality rehabilitation services.

***Conflict of Interest**: None*

***Funding Sources**: None*

***Data Availability Statement**: Not applicable.*

***Disclaimer**: I as author want to declare that I used AI-assistant tools in this article for improving language. I am fully responsible for the accuracy, originality, integrity, and scientific validity of this article.*

***Acknowledgment**: None*

References

1. Rasa, A. R., Ahmed, M., Khan, S., et al. (2024). Artificial intelligence and its revolutionary role in physical rehabilitation and occupational therapy. Cureus, 16(11), e73214.
2. Sumner, J., Falk, T. H., & Kairy, D. (2023). Artificial intelligence in physical rehabilitation: A systematic review. Disability and Rehabilitation: Assistive Technology, 18(8), 1037–1050.
3. Lanotte, F., Rinaldi, L. A., Monaco, V., et al. (2023). Artificial intelligence in rehabilitation medicine: Opportunities and challenges. Annals of Rehabilitation Medicine, 47(6), 473–485.
4. Topol, E. (2019). Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. Basic Books.
5. Mehrholz, J., Thomas, S., Werner, C., Kugler, J., Pohl, M., Elsner, B., & Electrostimulation and Robotics Working Group. (2018). Electromechanical-assisted training for walking after stroke. Cochrane Database of Systematic Reviews, 10, CD006185.
6. World Health Organization. (2021). Ethics and Governance of Artificial Intelligence for Health. World Health Organization.