Royal College of Occupational Therapists

Summary of key findings

What is the use of artificial intelligence in occupational therapy practice, education and research? A scoping review

Key findings

Practice:

- Artificial Intelligence (AI) is most widely applied in occupational therapy for classification and detection of impairments, functional assessment, outcome prediction and rehabilitation support.
- Examples include using wearable sensors to measure spasticity and movement patterns, computer vision to score daily activities, models predicting discharge or functional outcomes and robotic-assisted rehabilitation.
- Other applications include remote monitoring, smart-home systems and natural language processing to extract information from clinical notes.

Education:

- Generative AI supports personalised learning, simulation-based training and reflective practice, but published work in this area is still very limited.
- It has been used for case-based reasoning and automated feedback, although there are concerns about interpretation and academic integrity.

Research:

- AI use in occupational therapy research is limited, with early examples supporting qualitative data analysis and evidence synthesis.
- Natural language processing has been applied to qualitative interview transcripts and literature reviews.

Benefits of AI:

- Supports clinical decision-making and triage.
- Supports the detection and classification of functional problems.
- More objective and continuous assessment.
- More personalised rehabilitation planning.
- Reduced administrative burden.
- Can support remote and home-based therapy through smart systems.

Challenges of using AI:

- Data quality and infrastructure limitations.
- Algorithmic bias, privacy and transparency concerns.
- Usability issues and high technical demands.
- Limited real-world validation of AI tools.
- Maintaining occupational therapy's person-centred values and avoiding over-automation.
- Ensuring equitable access.

Project aims

The aim of this scoping review was to map existing evidence on the application of artificial intelligence (AI) in occupational therapy practice, education and research. It sought to identify and summarise how AI is used across these domains and to describe the reported methods, settings and outcomes. Finally, the review aimed to synthesise the benefits, risks and gaps in the evidence and to identify recommendations for future development and implementation.

Background

Artificial intelligence (AI) refers to computer systems capable of autonomous action, sensing and adaptation (Russell & Norvig 2021). Techniques such as machine learning, deep learning, natural language processing and computer vision enable different forms of intelligent behaviour (Manimaran et al 2025). More recent developments in generative AI further extend these capabilities by producing new content based on learned data patterns.

AI use in healthcare is expanding rapidly, supporting predictive medicine, data handling, diagnostics and clinical decision-making (Fahim et al 2025). AI offers opportunities to enhance occupational therapy practice by improving assessment accuracy, automating scoring and supporting more tailored interventions (Stover & Jacobs 2025).

In education, AI can personalise learning and provide simulation-based training (Bakthavatchaalam & Sivasankar 2024). In research, AI has the potential to accelerate data analysis and evidence synthesis (Bhattamisra et al 2023), although applications in occupational therapy research remain limited.

Despite these opportunities, challenges remain. Reported issues include technical barriers, data limitations and ethical concerns such as privacy and bias (Kansizoglou et al 2025) and the need to maintain person-centred practice (Kaelin et al 2024). Introducing AI in this context raises important questions about safeguarding personalised engagement and ensuring that automated systems do not compromise autonomy or the lived experience of people accessing services.

Methodology

This scoping review followed the Joanna Briggs Institute methodology for scoping reviews, was reported in line with PRISMA-ScR and was managed using the Covidence platform. The search strategy included both peer-reviewed and grey literature sources. Searches were conducted in major databases and grey literature repositories, and professional organisation websites were scanned for relevant publications. A combination of Medical Subject Headings (MeSH) and free-text terms related to occupational therapy (OT) and artificial intelligence was used. No restrictions were placed on publication year or language, although only sources published in English or with an English translation were included. Titles, abstracts and full texts were screened by two reviewers, with disagreements resolved by a third reviewer. Data was extracted using a structured form and independently verified by at least one additional reviewer. The search conducted in January 2025 identified 1,038 records, reduced to 780 after duplicate removal. Of these, 261 were reviewed in full text, and 88 sources met the inclusion criteria. Data was synthesised narratively.

Recommendations

- Anchor AI in OT values: ensure AI augments, not replaces, clinical reasoning and person-centred care.
- Participatory co-design: involve people who access services, carers and therapists in development.
- Governance: establish ethical standards and service-level frameworks for the use of AI in OT.
- Workforce readiness: embed AI literacy in OT education and professional development.
- Collaborative research frameworks: support interoperable, reproducible and validated research.
- Equity and ethics: address bias, privacy and cost barriers to avoid widening disparities.

Publications

Manuscript submitted to a peer-reviewed journal: *What is the use of artificial intelligence in occupational therapy practice, education, and research? A scoping review*.

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