Editorial

Occupational Therapy in the Age of Artificial Intelligence: Preserving Human Occupation While Embracing Digital Innovation

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Occupational therapy (OT) has long been recognized as a profession centered on enabling individuals to participate in meaningful occupations that promote health, well-being, and quality of life. Built upon the principles of person-centered care, occupational therapy emphasizes the therapeutic value of daily activities while considering the physical, psychological, social, and environmental factors influencing occupational performance. As healthcare undergoes rapid technological transformation, the profession now stands at a pivotal moment where artificial intelligence (AI), digital health technologies, and data-driven rehabilitation are reshaping clinical practice. Rather than viewing these innovations as a threat, occupational therapists have an opportunity to redefine their role in an increasingly digital healthcare ecosystem.

AI has already begun influencing rehabilitation through automated assessments, predictive analytics, virtual rehabilitation platforms, wearable sensors, and intelligent assistive technologies. Machine learning algorithms can analyze movement patterns, identify subtle functional impairments, and monitor patient progress with unprecedented precision. Smart homes equipped with AI-enabled devices can support older adults in maintaining independence, while virtual reality systems provide engaging therapeutic environments for individuals recovering from neurological and orthopedic conditions.

Despite these technological advances, the essence of occupational therapy remains irreplaceably human. Occupation extends beyond measurable physical performance; it encompasses identity, purpose, culture, values, motivation, and participation in meaningful life roles. These dimensions cannot be fully captured by algorithms alone. An individual may demonstrate adequate physical function through digital assessment yet continue to experience occupational deprivation due to social isolation, environmental barriers, or psychological challenges. Occupational therapists possess the unique expertise to interpret these complexities within the broader context of a person's life. The integration of AI should therefore be viewed as an enhancement rather than a

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replacement of occupational therapy practice.

By automating routine documentation, outcome measurement, and data analysis, AI can reduce administrative burden and allow therapists to dedicate more time to therapeutic reasoning, collaborative goal setting, and individualized intervention planning. Technology should augment clinical judgment while preserving the therapeutic relationship that lies at the heart of occupational therapy.

Another emerging consideration is the ethical use of AI in rehabilitation. Issues related to data privacy, algorithmic bias, accessibility, and digital equity require careful attention. AI systems trained on limited populations may not accurately represent individuals from diverse cultural or socioeconomic backgrounds, potentially widening existing healthcare disparities. Occupational therapists, with their commitment to occupational justice and client-centered practice, are well positioned to advocate for equitable and inclusive implementation of digital technologies.

AI also opens new opportunities for research within occupational therapy. Large datasets collected through wearable devices and digital platforms can facilitate longitudinal monitoring of occupational performance, enabling researchers to identify patterns of recovery and personalize interventions. Predictive models may assist clinicians in identifying patients at risk of functional decline, supporting early intervention and preventive care. However, rigorous validation studies are necessary to ensure that AI-generated recommendations align with occupational therapy principles and improve meaningful participation rather than solely clinical metrics. Importantly, the profession must continue to emphasize that technology is a means to support occupation not an end in itself. Successful rehabilitation should ultimately be measured by an individual's ability to engage in meaningful life activities, participate within their communities, and achieve personal goals. AI can provide valuable information, but occupational therapists remain essential in translating that information into interventions that respect each person's unique occupational identity.

As healthcare moves toward precision rehabilitation and digitally integrated care, occupational therapy has an opportunity to lead rather than follow technological innovation. By embracing AI responsibly while preserving the profession's humanistic foundations, occupational therapists can ensure that technological progress enhances not diminishes the meaning of occupation. The future of occupational therapy lies not in choosing between technology and humanity, but in thoughtfully integrating both to create more accessible, personalized, and effective rehabilitation services.

The profession has consistently evolved in response to societal change. The emergence of AI represents another milestone in that evolution, challenging occupational therapists to innovate while remaining steadfast in their commitment to meaningful occupation, inclusion, and holistic care. If embraced with ethical responsibility and clinical wisdom, AI has the potential to strengthen occupational therapy's contribution to global health and redefine rehabilitation for the decades ahead.