

# Role of Artificial Intelligence (AI) in physiotherapy

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## ARTICLE CYCLE

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With the growing demand of technological advancements and real time technical support, ARTIFICIAL INTELLIGENCE (AI) has emerged as one of the integral parts of the healthcare system, especially after post pandemic era (1) Synthetic intelligence plays a significant role in assessment and patient management. So, the time is not far where learning and implementing it in current practice will be the need of an hour. Physiotherapy course curriculum would need to add it on in the coming times to become rational about accepting or rejecting the AI advices.

With the fast paced growing time, at times it becomes difficult for patients to even visit physiotherapy clinic on a daily basis or the post operative bed ridden patients or individuals who are bed ridden due to other reasons such as stroke, spinal cord injury or other neurological impairment, home bases treatment with AI instruments can prove nothing less than a blessing

## WHAT IS AN ARTIFICIAL INTELLIGENCE (AI)? (2)

It explains how a machine can carry out operations that would typically call for human intelligence. In any case, it is described as the advancement of technology utilised to carry out technological tasks involving human intellect. Learning, thinking, problem solving,

comprehending natural language, speech recognition and visual perception are all involved these tasks.

AI covers a number of subfields, such as robotics, computer vision, machine learning and natural language processing. A subset of Artificial Intelligence (AI) called Machine Learning (ML) uses algorithms to let system learn from data and gradually get better at what they do.

## AI TECHNOLOGIES CONTRIBUTE TO:

### Diagnosis and assessment

Physiotherapists use this feature to diagnose based on present criteria that may include presenting symptoms, demographic details of the client, relevant history, clinical examination findings, special tests, and various investigations. Algorithms for machine learning can recognise patterns in medical images and help identify musculoskeletal issues (3)

### Personalised treatment plans

tailor made rehabilitation protocols can be made depending upon the patient's needs and characteristics with the help of artificial intelligence (4)

### **Remote monitoring**

with AI physiotherapists can remotely monitor patient's progress through wearable devices and sensors, which aids in real time feedback and adjustments to current treatment plans (5)

### **Predictive analytics**

AI can measure and analyse large databases to predict the potential issues and complications in a patient's recovery. This proactive approach allows physiotherapists to intervene early and modify treatment plans accordingly (6)

### **Research and decision support**

AI assists in analysing vast amounts of medical research and literature, providing physiotherapists with up-to-date information to inform their decision making and treatment strategies. (7)

### **Automation of administrative tasks**

AI can be a game changer as it saves a great deal of time consumed for administrative process such as appointment scheduling, billing and documentation, allowing physiotherapists to focus and be centred more on rehabilitative aspects (8)

### **Robotics in rehabilitation**

Robotic devices which is controlled and augmented by AI, can aid in rehabilitation especially neurorehabilitation and post stroke survivors by providing controlled assistance or resistance during exercises (9)

## **LIMITATIONS OF AI (10)**

### **Lack of human touch**

Physiotherapy most often than not involves physical touch, incorporates hands-on techniques for assessment and treatment which AI lacks

### **Data security and privacy concerns**

Physiotherapy involves sensitive health data which needs robust security measures to protect confidentiality.

### **Complex patients interactions**

AI may face challenges in comprehensively understanding and responding to the diverse communication styles of the patients

### **Ethical considerations**

AI decisions raises ethical dilemma, especially when it comes to autonomy, consent and the responsible use of technology and AI

### **Inaccurate diagnosis**

AI remains in its budding phase and so they are not always accurate. AI algorithms rely on data to learn and make predictions, so if the information used is inaccurate, the outcomes will be biased.

### **Limited generalisation**

AI models trained on specific population may struggle to. Generalise well to diverse patient groups.

### **Accessibility**

Since the tools of AI can be expensive the overall costing of rehabilitation expenses need to be considered and cost effectiveness may be compromised.

## **CONCLUSION**

In conclusion artificial intelligence has the vast potential to revolutionize the field of Physiotherapy. This is because AI algorithm can analyze large datasets to identify patterns and trends that may not be apparent to human practitioners, leading to more accurate diagnosis and tailored treatment plans. AI technologies can improve patient care by providing real time monitoring, feedback and support. Therefore, it is imperative to stress the importance of collaboration between AI systems and human physiotherapists. However; AI can automate certain insights; human empathy and expertise remain essential for effective patient care. So in nutshell AI in Physiotherapy can augment rather than replace the skills and knowledge of physiotherapists.

## **AUTHORS CONTRIBUTION**

Dr Monali Tanna, confirms contribution to the paper as follows: study conception and design, analysis and interpretation and draft manuscript preparation

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Nil

### CONFLICT OF INTEREST

There are no conflicts of interest.

### DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work the author used chatgpt to explore the avenues pertaining the limitation of artificial intelligence in Physiotherapy and used Quillbot for paraphrasing. After using this tool ,the author reviewed and edited the content as needed and takes the full responsibility for the content of the publication

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