

Emerging Trends in the Field of Physical Therapy

There are some major advancements trending in Physical therapy field including wearable vibrating posture sensors, gait-correcting insoles monitoring devices such as Fitbit video games programmed to make treatment sessions more enjoyable, and sensors for helmets that warn sports persons and physiotherapists of possible impacts causing concussion¹. With the invention of the Ekso suit, an aluminum and titanium exoskeleton that allows patients/clients facing different stages of paralysis or hemiparesis with movement, the Berkeley-based Ekso Bionics Company set new standards in rehabilitation facilities and gait training. Moreover for patients/clients suffering from neurological impairments which are traumatic brain injury, strokes, and cerebral paralysis, another promising option for rehab therapists are therapy robots, which help therapists with exercises and can accelerate recovery. More and more clinicians have begun integrating the Xbox Kinect and Nintendo Wii into therapy plans over the past few years. Wii games are designed to use motion-sensitive controls and repeated motions equivalent to physical therapy. In addition to helping victims of stroke and people suffering from knee surgery, video game workouts have been found to help people recover from brain injury and patients in ICUs. The application of virtual reality technology in PT has expanded a fascinating, interactive treatment session in a virtual world to virtual reality rehab. The CAREN-Computer Assisted Rehabilitation Environment (CAREN) VR system is designed to support stroke patients or patients with serious injuries, geriatric population with disability and improve their sense of stability and mobility². The Recovery Tracker software from Reflexing Health offers advised client-specific videos with proper instructions and guidelines, training resources, and exercises. The software allows

therapists to track client's success plus monitor his/her progress in real time and in addition allows them to visually check their clients carrying out the exercises with the help of Kinect camera. In 2010, Chase Curtiss created "Sway", a solution for concussion management that highlights the forever present risks linked with chronic or untreated head injuries, to assist "health professionals manage objective balance and reaction time virtually testing in any setting." Rocky Mountain University of Health Professions, Utah is working on wearables that notify when the gait speed of a patient decreases, so that they can intervene before a patient falls. These devices can be used within and outside of the clinic to monitor patients, while offering actual measures which avoid exhaustion or injury. Physical therapy is a hands-on field, and will always be, but for sure technology can always play a significant part. Progresses in robotics and bionics are helping physiotherapists to diagnose more reliably and boost treatment efficiencies which in addition enhance patient/client involvement and compliance with Home Exercise Program(HEP). All of this results in an improved patient/client experience, eventually leading to enhanced and long-term outcomes in return.

References:

- 1- Oh J, Eser RA, Ehrenberg AJ, Morales D, Petersen C, Kudlacek J, Dunlop SR, Theofilas P, Resende ED, Cosme C, Alho EJ. Profound degeneration of wake-promoting neurons in Alzheimer's disease. *Alzheimer's & Dementia*. 2019 Aug 12.

- 2- Winer JR, Mander BA, Helfrich RF, Maass A, Harrison TM, Baker SL, Knight RT, Jagust WJ, Walker MP. Sleep as a potential biomarker of tau and β -amyloid burden in the human brain. *Journal of Neuroscience*. 2019 Aug 7;39(32):6315-24.

Prof. Dr Riffat Mehboob
Editor

Pakistan Journal of Physical Therapy