Pakistan Journal of Neurological Sciences (PJNS)

Volume 12 | Issue 2 Article 3

6-2017

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ADVANCING GAMING TECHNOLOGY IN NEUROLOGICAL REHABILITATION

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Date of submission: *January 17, 2017* ***Date of revision:*** *March 29, 2017* ***Date of acceptance:*** *March 30, 2017*

The consumption of gaming technology has recently gain unexpected significance in medical health care for neurological rehabilitation. With increasing interest in exergames study, numerous definitions and terminology have been introduced to describe this term. Researchers from health-related background acknowledged the fact that engaging in video gaming was not always sedentary and might act as a means to ensure more physical work. Simplifying the terminology exergames are those types of gaming technology or multimedia communications that necessitate the player to perform physical activity during play.

However, health related researchers were hesitant to use the terminology of exergaming, their descriptions shared a mutual purpose of enhancing physical activity level. Two similar terms were defined to explain that concept known as activity promotion and active video gaming. For instance, videogames that promote physical activity were described as those video games that have capability to enhance physical movements during screen period whereas active video gaming may give new opportunities to transform the conventional sedentary attitude into physical active behavior. The chief impression of using such terminology is to discriminate engaging in video gaming that encourage active attitude from those resulting in inactive behavior.'

The growing utilization of exergaming and the expansion of diverse software's by ground breaking minds in gaming industry have inadvertently opened new ways to address goals of neurological rehabilitation. The common aims of rehabilitation include improvement in balance, enhancing functional movements as well as to promote flexibility. The chief reason for integrating video gaming in neurological rehabilitation is to enhance patient motivation, strict adherence to treatment procedure and to ignore boring training.

An important question which rises in mind is could those clients who are involved in neurological rehabilitation through gaming technology capitalize on its entertainment value? Motivating a person's interest is probably a key to strict exercise adherence. The utilization of gaming technology is limitless. A research was done to evaluate efficacy of Wii Ninetedo in Parkinson's disease patients and the impact of integrating exergaming for the management of childhood obesity. Case reports utilizing exergaming have been described for improving balance and gait parameters in patients suffering from neurological condition known as stroke. The practice of exergames were found to be effective in improving exercise tolerance and adherence in Multiple Sclerosis patients. A study on efficacy of Wii Fit was also conducted to evaluate the balance problems among Cerebral palsy children and the results suggested that Nintendo Wii provides entertaining, safe and effective means in conjunction with traditional management to improve balance of cerebral palsy children.

The safety of these emergent devices as medical equipment is questionable and whether there is need to give approval to these devices by governing authorities before using them. The concerned issue should be emphasized keeping in consideration the risks, dangers and adverse effects associated with the use of this exergames technology. Several case reports of injuries have been identified with utilization of this gaming technology for example shoulder joint dislocation, pulmonary disorder, tendon and ligamentous tear. Another case was reported about primary spontaneous pneumothorax in an old man with initial presentation following prolonged period of playing Nintendo Wii. Commonly reported injuries include overuse strain injuries, joint injuries and has been named as Wiiitis by authors. Terminology mostly used to describe such injuries associated to to Wii-habilitation include Wii Shoulder, Wii Knee and Nintendinitis.

Worldwide utilization of this novel technology has been implemented and various international scholars showed strong interest in integrating the use of exergaming for neurological rehabilitation. Global attention has been focused to this technology and paper based work has been presented in World Confederation for Physical Therapy. A lot of document based work displayed in Amsterdam was also put together on this specific topic, some were initial researches but they depict a worldwide interest in this emergent technology. Previous literature have focused the remarkable and extraordinary effects of exergaming on upper extremity function, daily living activities

and posture control. This novel technology can efficiently provide opportunity to neuro patients to accomplish maximal repetition of movement and tasks and provide a better possibility in comparison to traditional techniques.
In Pakistan, a similar paper highlighted the application of exergaming as an effective and innovative tool for stroke rehabilitation. It was suggested that this tool offers a collaborative activity and the cost of video games is less as well as ensure easier implementation. So, it is the chief responsibility of concerned professionals to deliver a complete rehabilitation protocol so that optimal functioning level can be achieved. It enables the person to perform activities of daily living independently. This novel technology lessens the full time help of physical therapist and home-based management can also be manageable in future. Therefore, it is correct time to use this technological advancement for assistance in neurological rehabilitation to attain best outcome in small period.
The debate on emergent technologies is relatively noteworthy in rehabilitation and physical therapy practice. This forward technology shift and use of other analogous devices offer countless choices for rehabilitation extending from heart rate measuring and respiratory rate monitoring tools, to diagnostic and education applications. It now seems possible to foresee the effect and impact of this emergent technology in rehabilitation fields. It is pretty clear that technology has substantially improved the delivery of rehabilitation services and exer-gaming is likely to positively influence neurological rehabilitation in the future.

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Conflict of interest: Author declares no conflict of interest.
Funding disclosure: Nil

Author's contribution:
Samreen Sadiq; data collection, data analysis, manuscript writing, manuscript review
Iqra Khan; data collection, data analysis, manuscript writing, manuscript review