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Gaming Systems in Rehabilitation

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Video gaming is a popular recreational activity for children and adults across the world. Gaming technology using virtual reality systems has enabled users to become active participants in the virtual environment. The incorporation of physical activity into video gaming facilitates the integration of this technology into rehabilitation therapies.

In recent years the integration of gaming system technologies in the field of rehabilitation has been expanding. The use of gaming systems as a treatment strategy incorporates essential elements of motor learning. When used as a rehabilitation tool, gaming systems provide, not only real time practice of tasks and activities, but also provides opportunities to engage in intensive, meaningful, enjoyable and purposeful tasks related to real-life environment. Physical activity in these games includes a great deal of movements and tasks that involves a wide range of sensory feedback; adjustable movement amplitudes, speed, and precision levels; and incorporation of a variety of visual-spatial, cognitive, and attention tasks. The practice of these activities may be promising as it may increase participation and motivation during therapy and can be used as part of the home therapy program.

Although using the gaming systems has become a popular form of therapy, it is important to understand that these systems have been developed and tested for the purpose of entertainment. They were not designed as therapeutic tools. Before recommending gaming systems for use in clinical practice, it is important to understand the evidence regarding their feasibility and effectiveness. Fortunately, there has been much progress in research that examines the use of gaming systems as a rehabilitation tool in various populations including adults and children with disabilities as well as aging population. The growing body of evidence in this area of research suggests that gaming systems are somewhat helpful in improving motor skill rehabilitation of wide range of functional deficits in several patient population.

Several key themes have emerged from the review of current literature. The use of gaming systems in rehabilitation appears promising and can offer a number of benefits over traditional therapeutic approaches. Exercising using gaming systems is an attractive form of therapy and may motivate patients to participate, improve performance, and increase adherence to the rehabilitation program. The gaming systems allow the participants to actively engage in tasks and movement activities that can be fun, enjoyable, and therapeutic with environmental conditions that encourage self-initiated activity with natural restrains. One potential application of gaming systems is to increase intensity or access to affordable practice to augment rehabilitation of individuals with disability.

Various low-cost commercial gaming systems and game packages are available for use as rehabilitation tools. The role of clinicians is essential in prescribing and promoting the use of gaming systems as they relate to patients' physical function and wellness. A major responsibility of clinicians is to select and educate patients on use of gaming systems that are safe and appropriate for the patients' goals and needs. Clinicians should consider dosing intensity of training and the balance between practicing tasks using gaming systems and practicing functional tasks outside the simulated environment. Selection and progression of training should allow transfer of training from the simulated environment to the real-life environment.

One potential issue of repetitive use of a gaming system is a possible increased incidence of musculoskeletal injuries. It is important to determine the evidence regarding safety, suitability, and risk factors. Current evidence does not provide enough information regarding the safety and risk factors of unsupervised use of gaming systems for people with disabilities. Safety should be a consideration, particularly in home settings for people with disabilities especially children.

Current evidence focused on the validity of gaming systems as a novel approach. The consensus from the literature is that gaming systems are valid tools to augment rehabilitation. While studies provide useful information regarding its validity as a novel treatment, there is lack of evidence that has examined if the use of gaming systems is superior to traditional approaches or it can be an adequate substitute of traditional rehabilitation. Because of lack of evidence at this point, clinicians and patients should not consider using a gaming system as a replacement for a physical therapy program; it should instead be used to increase the intensity of exercises and to complement traditional exercise programs.

Over the past three years, I have seen and engaged in several discussions with clinicians who are using gaming systems in rehabilitation. Some clinicians are using gaming systems to replace hands-on therapy, of course because it is easier for the clinicians than traditional exercises and more appealing to some patients. I am concerned at this point given the lack of evidence in this area. Another area of concern that has emerged from my discussions with clinicians is that some clinicians and patients are immersed into the games and are more focused on improving scores in specific games rather than meeting functional goals.

The integration of the gaming systems into rehabilitation is appealing and motivating. The use of the gaming systems in rehabilitation provides patients with an opportunity to participate in an exercise program that is fun, enjoyable, and at the same time beneficial to address their disabilities. Many patients with a disability do not have easy access to rehabilitation centers particularly in rural areas, making it difficult to participate in rehabilitation programs. The safety and potential application of gaming systems as a rehabilitation tool in home settings and rural communities is an area worthy of investigation. Consensus of the current evidence suggests that gaming systems provide an appropriate therapeutic environment that can be used to augment rehabilitation and to increase intensities of therapy.

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