

The Nintendo Wii® and PD



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W hat is the Nintendo Wii?

The Nintendo Wii gaming system has been revolutionary for the video entertainment company. Its introduction in 2006 has led to a new era in video gaming technology and participant interaction. With its wireless motion-sensitive remote controllers, built-in wireless capability and virtual environment, the Nintendo Wii allows for a unique experience that other video gaming systems lack. A major feature of the Nintendo Wii is the ability to perform activities in a virtual reality, requiring functional movement associated with the activities for successful participation. The variety of sports-related “games” are tennis, bowling, boxing, golf, baseball, fishing and football. In the Nintendo Wii system, each game has a single player or two-player mode, and other games allow up to four players depending on the type of sport.



How does this gaming system help people with Parkinson’s disease?



If we examine the course and nature of Parkinson’s disease, we find that there is a lack of dopamine production in the basal ganglia of the brain, thus affecting the voluntary movements of the individual.

In exercise, the production of dopamine has been shown to increase (Petzinger, G.M. et al, 2007). In some studies, however, exercise has also been shown to improve Parkinson’s symptoms without respect to dopamine (Ellis, T. et al, 2008). The act of performing functional movement goes back to the adage of “Use it or Lose it”—as it relates to Parkinson’s disease – and participation in video games has been found to increase dopamine (Koepp, M.J. et al, 1998). The Nintendo Wii creates an environment that allows for someone to remain active, as well as participate in a safe environment. The sports programs can imitate the exercise associated with the games being played. Engagement in the Nintendo Wii, specifically for the individual with Parkinson’s disease, allows for those learned activities/movement to be implemented, unplanned, and random which is necessary for the participant to be



successful. Participants demonstrate decreases in rigidity and increases in movement. These increases are also due to the increased dopamine production from the exercise aspect of the games.

The Nintendo Wii can address the need to complete necessary movements through the gaming process. In research, the implementation of the Nintendo Wii system has demonstrated increases in participants for breadth, coordination and ease of movement, endurance, balance and social participation.

What are the advantages of using the Nintendo Wii system?

The advantages of using the Nintendo Wii system are many. It is not only a form of exercise; it addresses the issues associated with the Parkinsonian movement patterns, as well as the integration of multiple human systems at the same time. While it is a gaming system, it also creates a new exercise platform that allows the participant to have fun, which can create motivation and participation. The gaming system can be used across the lifespan so that persons of all ages can participate. Parents and grandparents can also play games with their children. The variety of participatory “games” creates variability for different aspects of participation, and can address specific deficit skills.

The social aspects can also be a positive because someone who thought they could not compete in specific sports or games has the ability to participate and be competitive. These games provide “purposeful activity” for the participants and something that they do not necessarily realize as improving their functional status.

The games add to the challenge of participation and the participant does not have to play against someone; he or she can play against the computer. The play against the computer is interesting, due to the fact that the individual can get better at the games and the computer recognizes this and improves itself. In some cases, the computer will allow other levels of the game or activity to open once a certain point in playing is reached. The Nintendo Wii system also has a way to measure progress that the player makes by participation in a fitness test that calculates a player’s fitness age. The test gauges the player’s performance in three randomly chosen challenges from the training mode. Calculating the fitness age takes into account a player’s balance, speed and stamina.

Conclusion

In summary, the Nintendo Wii has many different applications for a variety of activities to address movement, gait and balance issues that are associated with Parkinson’s disease. The integration of the functional movement, coupled with the participant’s interaction, leads to physical, cognitive, psychological and social aspects that address skills necessary to maintain independence and mobility in the individual with Parkinson’s disease. Above all the advantages, participants can exercise and have fun at the same time. ■

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