

'Wii' care

A study conducted by the School of Physical Therapy (SPT) at the University of West Indies, Mona, has found that some video games are effective in the treatment of children living with cerebral palsy and also offer promise for patients suffering from strokes and spinal cord injuries.

The study, which is being edited for publication in the British Physiotherapy Journal, was carried out by a group of researchers from the university in May 2009. The researchers analysed the motor function scores of six children suffering from cerebral palsy after they had played the Nintendo Wii twice weekly for six weeks. The students, ages six to 12 years, participated in boxing, baseball and tennis games using the Wii console, which uses a computer simulated environment. ROOPCHAND-MARTIN... there is nothing else that I have done in physical therapy with children that I have seen that level of eagerness to come to physical therapy (Photo: Bryan Cummings) A patient with a spinal chord injury plays a boxing game using the Nintendo Wii. Two children with cerebral palsy compete in a game on the Nintendo Wii as part of the study by the School of Physical Therapy at the University of West Indies, Mona. A stroke patient engaged in a balance training game.

Dr Sharmella Roopchand-Martin, who specialises in nuero-rehabilitation at SPT, said all the children involved in the study had improvements in their gross motor function scores at the end of the six weeks of training.

"One child in particular stood out in that she had never walked before, independently, without her rollator. During the activity one day, she wanted to go to the bathroom and we were bringing her rollator for her, and by the time we had got there with the rollator, she had walked to the bathroom already," she said.

The study, which is the first of its kind in the Caribbean, has added to the growing number of international studies assessing the use of virtual reality for the rehabilitation of patients with neurological and orthopedic conditions. Because video games are compact, Dr Roopchand-Martin believes the use of the Wii for rehabilitation also provides a solution to the space limitations faced by physiotherapists in some treatment facilities.

In comparison to the traditional method of rehabilitation, which relies on the repetition of movements for a patient's recovery, the doctor said video games are far more engaging, especially for children who have always used them for entertainment.

"There is nothing else that I have done in physical therapy with children that I have seen that level of (eagerness) to come to PT (physical therapy). Prior to that, they don't want to come to PT because you are putting them through pain because you are stretching them and making them do boring exercises," she said

The virtual reality offered by video games helps patients with neurological impairment by using the brain's plasticity to help rewire impaired circuits. The introduction of the new activities provided by the virtual world has been shown to strengthen the nerve cells in the brain.

"Virtual reality training allows therapists to push patients to new limits and work on practicing goal-directed functional tasks in a controlled and safe environment. The complexity of tasks can be manipulated in the virtual environment in a

manner that would not be practical in the constraints of the real world physical therapy department," explained Dr Roopchand-Martin.

Although there are a number of hi-tech virtual reality games on the market, the doctor feels the Wii is more cost-effective for stroke patients and those suffering from spinal cord injuries and cerebral palsy. Whereas a patient can expect to pay at least \$2,000 per session for physical therapy at a private institution, the doctor said the video game is being sold for about US\$150 (about JA\$13,000), and can be utilised at the patient's convenience.

Because of the high cost of treatment, Dr Roopchand-Martin said most children suffering from cerebral palsy do not receive physical therapy, but she hopes the introduction of video games in the home environment could change this problem.

"The video actually is a great option where if you see good improvement you can work with the family and say listen, it's not just toys you are getting for the children, it's well worth it because their overall physical health can improve with this, and then you can do a session with the parents on how to use it at home for rehab purposes," she said.

Although the study carried out by the SPT only involved six children, the doctor believes the findings offer an exciting glimpse into the future possibilities for video games.

"My philosophy is that anything is better than nothing, so we are not necessarily saying that it is better than traditional rehab. Right now we can only say that it is better than nothing at all in terms of intervention," she said.

The researchers are currently writing up the proposals for another study on the possibilities for the Wii in the treatment of spinal cord injuries and chronic obstructive pulmonary disease.

"With this one, we would be looking at training with spinal cord patients, but we would be more interested in the impact on the cardiovascular system, so blood pressure, heart rates, lung volume, endurance," said Dr Roopchand-Martin, who is hoping the group can begin the study in September

The doctor believes the study is very timely given the annual increase in the number of persons suffering from cardiovascular diseases.