



News Release

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ATS Press Room: 303-228-8473 (May 15-18)

Poster session time: 2:00-4:30 p.m.

Location: Room 601 (Street Level), Colorado Convention Center

COPD Patients May Breathe Easier, Thanks to the Wii™

ATS 2011, DENVER – According to a new study conducted by researchers in Connecticut, the Wii Fit™ offers patients with chronic obstructive pulmonary disease (COPD) an effective workout – and one that, because it is enjoyable, patients are more likely to use.

“Our study showed that COPD patients exercised at a relatively high percent of their maximum during three to five minutes of specified Wii Fit™ exercises, indicating the Wii™ Fit may be a reasonable home-based exercise regimen for COPD patients,” said Jeffrey Albores, MD, Internal Medicine Resident, University of Connecticut Health Center.

The results will be presented at the ATS 2011 International Conference in Denver.

Regular exercise benefits COPD patients by increasing overall muscle tone and improving cardiopulmonary fitness. Getting patients to exercise regularly at home, while ideal, can be difficult, especially when in patients with COPD where exercise tolerance may be limited. Finding an exercise routine that patients enjoy may help motivate them to exercise regularly, said Dr. Albores.

“In order for exercise to be sustained in the long-term, the type of exercise should be agreeable to the patient,” Dr. Albores said. “In this study, we aimed to find out the level of intensity of the Wii Fit™ exercises in patients with COPD.”

Introduced by Nintendo in 2007, the Wii Fit™ includes exercise activities and games, including yoga, balance and strength training exercises, and aerobic activities. The system has been used by physiotherapists to encourage at-home exercise among patients. In this study, researchers decided to evaluate the ability of the Wii™ in offering COPD patients a viable and effective option for exercise in the home.

For their study, Dr. Albores and his colleagues recruited five patients with stable COPD. Prior to exercising with the Wii™, a standard walking test was performed to determine each patient's maximal workload and heart rate, oxygen consumption and respiratory factors were measured. Patients were asked to perform four specified exercises from the Wii Fit™ program: running in place, upper arm exercises, stepping in place and obstacle course. Each exercise was performed for three to five minutes, after which heart rate, oxygen consumption and respiratory factors were again measured.

At the end of the exercise routine, heart rate was at 71 percent of maximum predicted value and oxygen consumption was 86 percent of maximum predicted value. Maximum predicted values reflect the absolute upper limit of what a patient can achieve through exercise, and is based on health, age and other factors. Most exercise programs aim to achieve from 60 percent to 80 percent of maximum values to be safe and effective.

“The preliminary data from our study indicate that COPD patients performed at 60 percent to 70 percent of their maximum during three to five minutes of specified Wii Fit exercises, reflecting a relatively high percent of their maximum,” Dr. Albores said. “This is comparable to what we would expect to see with relatively low-intensity classroom calisthenics.”

The study also found lower extremity Wii Fit™ exercises approximate 70-80 percent of the pair maximum as compared to upper extremity Wii Fit™ exercises, which approximate 50-60 percent of their maximum.

“Because the lower extremities have bigger muscle groups, they approximate a higher percentage of the maximal values as compared to the upper extremities,” Dr. Albores said. While the Wii Fit™ offers exercise options that are similar to those available in traditional rehabilitation centers, Dr. Albores said additional research needs to be performed to determine if use of the Wii™ increases a patient's willingness to perform regular exercise at home.

“The video game system will provide COPD patients an adjunct to pulmonary rehabilitation by performing these interactive activity-promoting video game exercises in the home setting,” Dr. Albores noted. “However, further studies are necessary to determine safety, adherence and effectiveness of the Wii Fit™ exercises in COPD patients.”

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“Physiologic Variables Observed in COPD Patients While Exercising With An Interactive Activity-Promoting Video Game” (Session B109, Monday, May 16, 2:00-4:30 p.m., Room 601 (Street Level), Colorado Convention Center; Abstract 16335)

** Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 16335

Physiologic Variables Observed in COPD Patients While Exercising With An Interactive Activity-Promoting Video Game

Type: Scientific Abstract

Category: 15.01 - Exercise Training (PR)

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Abstract Body

RATIONALE: Regular exercise training in the home setting is desirable in COPD patients. In order for exercise to be sustained in the long-term the type of exercise should be agreeable to the patient. We evaluated a popular, interactive, activity-promoting video game (Nintendo Wii Fit) for this purpose.

METHODS: Five patients with stable COPD were recruited. Before testing with the Wii, an incremental Shuttle Walk Test was performed to maximal workload. Concurrent measurements of heart rate, oxygen consumption (VO₂), minute ventilation (VE), and inspiratory capacity (IC) were obtained using a portable telemetric system (Oxycon Mobile). Patients were asked to do four specified exercises from the Wii Fit program: running in place, upper arm exercises, stepping in place, and obstacle course. Each exercise was performed for 3-5 minutes; metabolic measurements were also obtained using the Oxycon Mobile system.

RESULTS: Four out of five patients were female, the mean age was 68 ± 6 years, and the FEV₁ was 48 ± 14 percent of predicted. The peak heart rate at the end of the Shuttle was 71% and the peak VO₂ was 86% of the respective predicted maximum values. The Δ IC was -0.44 ± 0.16 L at the end of the Shuttle, indicating dynamic hyperinflation. The Δ IC's for the 4 exercises were similar: -0.50, -0.46, -0.58 and -0.33, respectively. The total calories used for the 4 exercises were 46 ± 23 Kcal for the total duration of 15 ± 3 minutes.

The maximal VO₂ and VE responses to the four Wii exercises are provided in the figures.

CONCLUSION: These preliminary data indicate that COPD patients exercised at a relatively high percent of their maximum during 3-5 minutes of the specified Wii exercises. This may be a reasonable home-based exercise regimen for COPD patients. Further studies are necessary to determine safety, adherence, and effectiveness.