Jamboxx: Interactive Respiratory Therapy through Music and Gaming

https://neurodegenerationresearch.eu/survey/jamboxx-interactive-respiratory-therapy-through-music-and-gaming/

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Contact information of lead PI
Country

USA

Title of project or programme

Jamboxx: Interactive Respiratory Therapy through Music and Gaming

Source of funding information

NIH (NINDS)

Total sum awarded (Euro)

€ 206,422.02

Start date of award

15/08/2016

Total duration of award in years

1

The project/programme is most relevant to:

Motor neurone diseases

Keywords

Respiratory Therapy, Music, routine therapy, Quadriplegia, Motor Neuron Disease

Research Abstract

? DESCRIPTION (provided by applicant): The goal of this project is to develop a novel device for respiratory therapy that uses interactive gaming and music to encourage patient compliance. In order to maintain pulmonary health, many post-operative surgery patients as well as people

with quadriplegia and other spinal cord injuries, high-level motor neuron diseases such as amyotrophic lateral sclerosis (ALS) and multiple sclerosis (MS), and disorders like cystic fibrosis undergo routine respiratory therapy. These therapy techniques are used to help strengthen and stretch the muscles around the lungs, exercise the diaphragm, and loosen mucus build-up to promote improved lung function. Improved lung function can help reduce the incidence of pneumonia and other respiratory illness, a leading cause of mortality among spinal cord injury patients and the most prevalent and most fatal hospital inquired infection (HAI) among post-operative patients. These therapy techniques often lack feedback and incentive, require the user to depend on an assistant, and become strenuous and mundane for users with limited mobility resulting in low patient compliance. We aim to improve patient compliance by adding a gaming component to provide users with an engaging incentive to adhere to their prescribed therapy routine. This work builds on our invention of the Jamboxx: a hands free breath controlled digital musical instrument designed for accessibility by users with quadriplegia or other motor neuron diseases. We aim to extend the functionality of the Jamboxx to create a commercially viable and proven product for improving respiratory therapy. This device has significant potential for improving compliance in both long-term outpatient users requiring routine respiratory therapy and short-term inpatient users requiring post-op respiratory conditioning. Improved therapy compliance can lead to improvements in long term outcomes as well as daily functioning for people with spinal cord injuries and other chronic disease requiring respiratory rehabilitation, as well as their families. To do this, we will create a product and a suite of mini-games with cross platform availability for patient use that will mimic a number of commonly prescribed respiratory therapy techniques. Once clinical functionality has been established, the device will enter into rigorous evaluation in both a hospital and outpatient setting in preparation for a subsequent clinical trial.

Lay Summary
PUBLIC HEALTH RELEVANCE: Pneumonia and other respiratory illness is a leading cause of mortality among spinal cord injury patients and surgical post op patients. The Jamboxx combines tablet based gaming with traditional respiratory therapy techniques, creating an added incentive for patients to adhere to their prescribed therapy routines. The goal of this device is t improve outcomes for patients requiring both short term and long term respiratory therapy and rehabilitation, subsequently decreasing the incidence of pneumonia, bronchitis and other respiratory diseases among these populations.

Further information available at:

Types:
Investments > €500k

Member States:
United States of America

Diseases:
Motor neurone diseases

Years:
2016

Database Categories:
N/A

Database Tags:
N/A