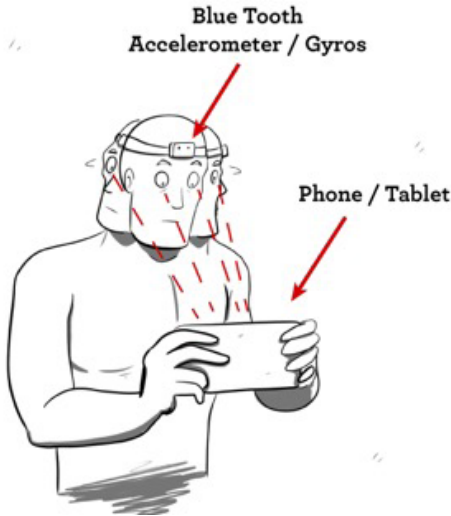


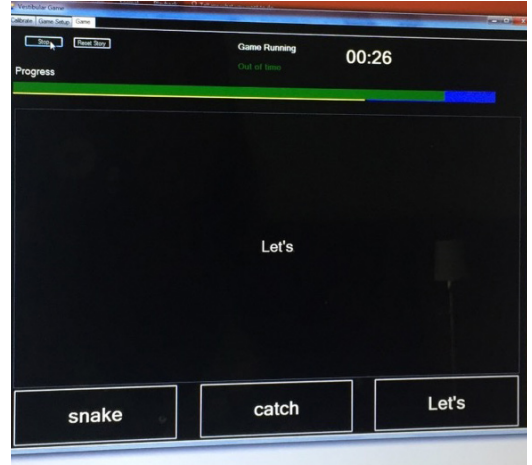
# Vestibular Dynamic Compensation

ALLIANCE FOR INNOVATIVE MEDICAL TECHNOLOGY / REHAB ENGINEERING



Blue Tooth  
Accelerometer / Gyros

Phone / Tablet



## ■ Product Description

Vestibular rehabilitation therapy (VRT) is a time intensive and tedious process and is required for treatment of most vestibular dysfunction disorders. VRT requires continuous shaking of the head while looking and reading from a stationary card. Some patients, especially children, stop treatment before complete rehabilitation. The technology of this invention will integrate head sensors combined with mobile phone based app/ game that will reduce or eliminate the tedium of performing the exercises and will allow faster rehabilitation.

## ■ Technical Readiness Level

TRL 4 (Component and/or breadboard validation in laboratory environment) A laptop-based system has been developed that shows a word only when the sensor on a headband indicates that the head is shaking above a selected speed. The program advances to the next word when the user correctly says the word.

## ■ Intellectual Property Status

Patent application filed (PCT/US2017/014227)

## ■ Competitive Advantages

The vestibular compensation technology offers benefits over the manual card system. The user cannot cheat the therapy by slowing his or her head to read the word. The system can evolve to incorporate voice recognition to advance the words when the user says the correct word shown. Gamification of the system will allow for a more interactive and rewarding experience that will also offer the clinician diagnostics as to how the patient responded. More elaborate systems that involve rotating chairs are more expensive and are not conducive to home use. Several software systems are available to diagnose vestibular disorders but do not have the therapeutic features of the vestibular compensation system.



PLEASE CONTACT

Bob Hergenrother / Director, Medical Technology Development / Southern Research  
rhergenrother@southernresearch.org / 205.581.2328



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## ■ **Market Overview**

Vestibular disorders effect millions of people a year and an estimated 1 out of 5 children. Depending on the particular cause of the dysfunction, the typical therapy utilized is vestibular rehabilitation therapy (VRT). VRT involves moving the head in a specific pattern and speed to induce dynamic compensation, which ultimately reduces symptoms. The process of VRT can be tedious and time consuming. The proposed technology intends to provide a means of integrating a headset and mobile app, with an entertainment component, to increase participation and completion of VRT.

## ■ **Inventor**

Jennifer Braswell Christy, Ph.D., PT  
UAB Department of Physical Therapy



## **ABOUT SOUTHERN RESEARCH**

Founded in 1941 in Birmingham, Alabama, Southern Research is a scientific and engineering research organization that conducts preclinical drug discovery and development, advanced engineering research in materials, systems development, and energy and environmental technologies research. SR supports clients and partners in the pharmaceutical, biotechnology, defense, aerospace, environmental, and energy industries.

We pursue entrepreneurial and collaborative initiatives to develop and maintain a pipeline of intellectual property and innovative technologies that contribute to the growth of the organization and positively impact real-world problems.

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