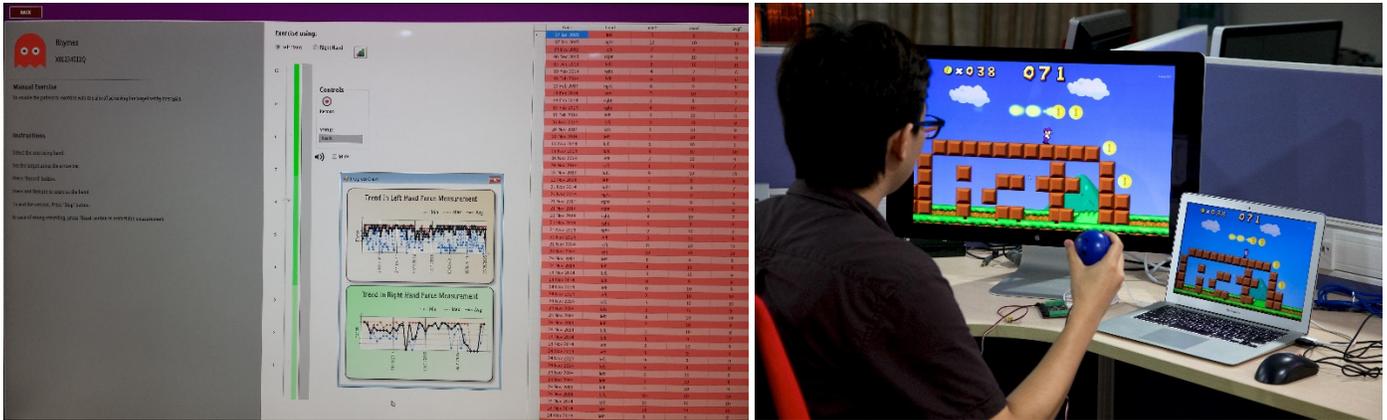


# Integrated Hand Grip Physiotherapy System (IHGP)



## Technology Overview

Traditionally, a stress ball is used for physiotherapy exercise. We identified several opportunities to improve the existing practice. Firstly, there are no measurable results during the exercise, therefore, it is harder for therapist to determine if the patient is making any improvement. Next, the therapist has to accompany the patient for the whole session. Thirdly, the patient has little motivation and purpose to complete and repeat the exercise without any feedback.

This Integrated Hand Grip Physiotherapy system enables hand-related physiotherapy patient, or stroke patient to independently monitor the exercise performance progress and get motivated with fun game exercises. The system provides an integrated platform for patients to exercise their upper limbs through a specially designed stress ball connected to a notebook computer. The stress ball will be equipped with sensors that could detect and send signals to notebook about the performance of exercise. The performance results are presented in an entertaining and useful manner to encourage the patients to complete and do more exercises. This would in turn speed up the recovery of the patients and elderly undergoing hand grip physiotherapy rehabilitation.

## Technology Features & Specifications

This specially-designed ball will be equipped with sensors that send signal to the notebook, recording the patient's performance in the exercise. The software algorithm will capture and convert it into useful information and store in the system to track and compare. The specially-designed games are programmed to present the exercises to the patient in an entertaining manner and will encourage the patient to complete the exercise program. The games can be a single player or competitive multiplayers game. The results from this notebook can be accessed remotely, for example, through a smartphone or another computer. This system is intended to make physiotherapy exercise more fun and entertaining for all patients.

## Potential Applications

### 1. Hospitals & Rehabilitation Centres

- Hand physiotherapy
- Eye Hand coordination

### 2. Home-based Therapy

- Stress release
- Hand/Grip Therapy

### 3. Others

- Although the sensors are now attached to stress ball, they can also be installed in other appliances such as cloth clipper, can & etc.

## Market Trends and Opportunities

The global physiotherapy equipment market is poised to reach \$19,786.3 million by 2019 from \$14,240.0 million in 2014, at a CAGR of 6.8% from 2014 to 2019. With the global increase in aging population and increasing treatment cost, the need for remote, effective treatments /therapies are high.

## Customer Benefits

- Instant feedback from exercise
- Fun, motivating and engaging games
- Multi-users, collaborative or competitive
- Self-track performance history
- Exercise anytime, anywhere
- Increase productivity of physiotherapists

## OVERVIEW

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- Technology Category Healthcare - Medical Devices
- Featured in TechAlert - 6 Apr 2016
- Technology Status Available
- Technology Readiness Level [TRL7](#)
- Keywords upper limb rehab



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