

<b>GP1020</b>	<b>Design and Development of Physiotherapy Trainer Kit for Patients</b>		
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Many patients experience hand dysfunction due to neurological and orthopedic injury and diseases including stroke, muscle weakness and fractures. The proposed system is one such bio-feedback device for hand motion rehabilitation. It employs the concept of biofeedback to give therapists an affordable and user friendly access to finger flex and force parameters for appropriate rehabilitation. The system records the motion feedback through the sensors which quantitatively measure the movements of the fingers of the right hand.

The resistance change in force and flex sensors due to applied force and bend, respectively, in each finger is converted to calibrated voltage values (voltage divider circuit). These voltage values are given to NI-6008 DAQ as inputs for the game logic implemented using LabVIEW providing visual feedback to patient. The game scores the patient input from 0 to 120 depending on the amount of bend and force applied. The game runs for 30 seconds and generates the average score for force and flex individually and combined, and the recorded data can be mailed if the system is connected to internet. The whole project is approached as in system engineering life cycle.

The final product comprises of a glove with the flex and force sensors mounted on it. The patient wears the glove and plays the game implemented. Based on his/her performance, the patient will be given a score on a scale of 0 to 120 points and a feedback comment. The game data will be stored in an excel sheet comprising of 3000 samples for each game. This excel sheet can then be mailed to the physiotherapist or the doctor thus enabling remote monitoring.



**Force sensors (FSR-402)**



**Flex sensor (spectra symbol)**



**NI DAQ-6008**



**Hand glove and GUI**