Assistive Rehabilitation Device

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The aim of this project was to construct a prototype of an inexpensive, lightweight device to provide those with temporary forearm disabilities such as broken radii and sprained wrists with a tool that could assist them during their recovery period. A Computer-Aided-Design (CAD) program was used in conjunction with a laser cutter to cut parts out of low-cost basswood, which was assembled to form a servo-powered animatronic hand. The hand can easily be attached over casts and arm braces so that the user can decide when to use the device. It is operated by way of a control glove, which the user wears in order to send signals to a microcontroller. The microcontroller reads these inputs and sends control signals to servo motors. The servo motors move according to their control signals and operate the fingers of the hand. This device provides the wearer with the exercise needed to restore natural function while enabling him or her to grasp and lift items heavier than the injured arm could bear unaided.

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