Abstract

In the current world, there are people with disabled or weaken of moving the hands. Some of these are due to various diseases such as muscle atrophy, peripheral vascular disease or accidents. These people go through a very difficult time when they interact with motion and tasks in their day-to-day life. They have to depend on other people even for the basic needs. For the lower limb disabilities, lots of passive devices and assistive devices like canes, walkers are developed. When considering about upper limb disabilities, currently such devices are rarely in the market and in use.

Rehabilitation of such persons is a common process done in the modern medical field. Such rehabilitation work is being carried out using conventional manpower under the guidance of specially trained physiotherapists. Recent developments in bio-mechanics have prompted medical experts to use bio-mechanical devices as assistive mechanisms in many medical applications. One of the most popular improvements is the use of exoskeletons for motion assist and rehabilitation purposes.

Many researches and projects have being done to develop robotic exoskeletons to assist human motion for both upper and lower limbs. However due to the large range of motion of the upper limb in comparison to the lower limb, higher degrees of freedom and the anatomical complexity of the shoulder region, the number of devices that have reached commercialization are limited, thus leaving the room for introduction of new designs and improvements which mimic natural human motion.

Medical experts and scientists alike have been engaged in the study of mechanics associated with human motion and the development of assistive technologies. The exoskeleton was introduced as a result of research work carried out. From that my attention was turned towards assisting the physically weak or disable people. I designed the human upper arm exoskeleton device consist of light weight, portable exoskeleton device can be worn by the patient or mounted separately. This is very elegant device which would be very useful in modern medical field to speed up the rehabilitation process. And mainly I have consider the safety of the device as well. I assume that this design will be next best solution for the human upper arm rehabilitation process.