



Design and construction of an upper limb rehabilitation pedal for elderly

Poster Presentation

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Abstract

Background: Muscular weakness in the upper extremity is very common among most people especially the elderly in the community and is due to decrease movement. Therefore, designing mechanical rehabilitation devices for body organs, especially the upper limbs, is essential. Mechanical devices that can improve the function of three joints of upper limb (the shoulder, elbow and wrist).

Purpose: The objective of the study was to design and construction of an upper limb rehabilitation pedal for elderly.

Methodology: First, various upper limb rehabilitation devices were examined. Finally, it was decided to design a pedal that would increase or decrease the amount of force by tightening the screw on the pedal. The initial design of the device was designed in Catia software and then it was made according to the designed sizes of the laboratory sample. The main body of the device was made of iron. This pedal closes on the seat handle. The pedal rotates 360 degrees. The shoulder, elbow and wrist joints rotate both clockwise and counterclockwise.

Results: The rehabilitation pedal allows flexion and extension movements of the shoulder, elbow and wrist joints to be performed forcefully. In this machine, plates were used that increased the amount of friction by tightening a screw. As the friction increases, the resistance increases. Therefore, more force is needed to move it.

Conclusions: A special feature of this device is that all three joints of the shoulder, elbow and wrist are strengthened simultaneously. The joints are also reinforced in the entire 360-degree range (both clockwise and counterclockwise). It is recommended that employees use this device on the handle of their chairs to strengthen the joints of the upper limbs.

Keywords

design; Construction; Upper limb rehabilitation pedal; Elderly

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