Lower Limb Rehabilitation System After Stroke And Spinal Cord Injury

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Stroke is Classified as the third cause of death in the world, as every four minutes a person is infected with stroke in the world . From here show the importance of lower limb rehabilitation system after stroke and spinal cord injury post-stroke and spinal cord injuries. Therefore, Rehabilitation stage is the most important stages during the treatment period. This system consists of many parts to help the patient in walking and moving their legs and provide a comfort ability through treatment period. Treadmill system provides moving up ground for the walking, and the "Lokolift" weight support system "BWS" can be reduces the load that is needed to be overcome by the patient and facilitate stepping movements. In addition, the BWS system ensures safety and stability of the patient walking on the treadmill.

Proposed project

Design lower Limb Rehabilitation System After Stroke And Spinal Cord Injury. The system consist from mechanical and electrical components. The Mechanical side design from square metal " Profile " and some pulley and gear, all this component to support the electrical component and provide the safety to patent. Electrical side is the main side in Lower Limb System, this section consist from two part : 1-Motion and Movement Part , 2- Control Part .

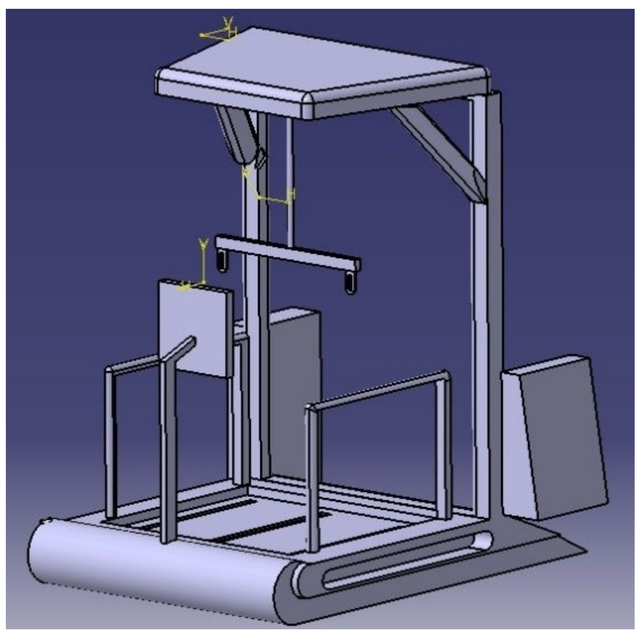

Figure 1: overall structure of the project

System Design and Implementation:

The figures 3,4, and 5 show the overall implementation of project, Electrical control panel and PLC Touch Screen respectively

Figure 3: Overall implementation of project,

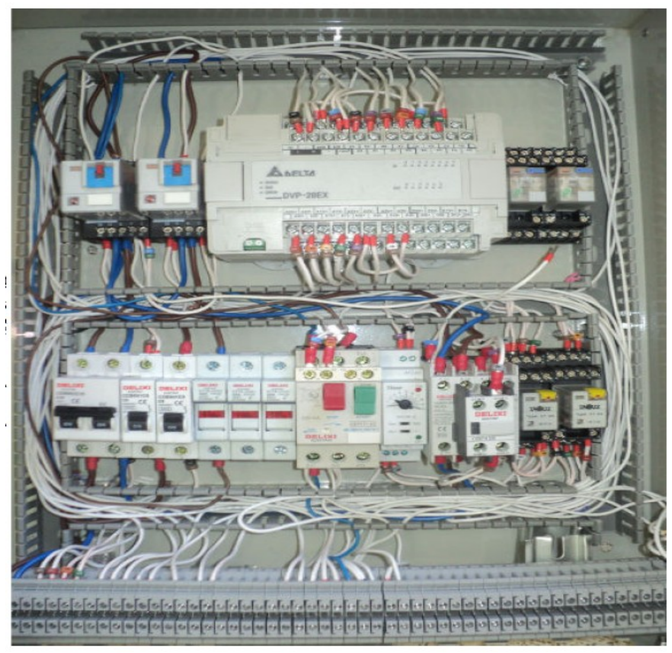

Figure 4: Electrical control panel

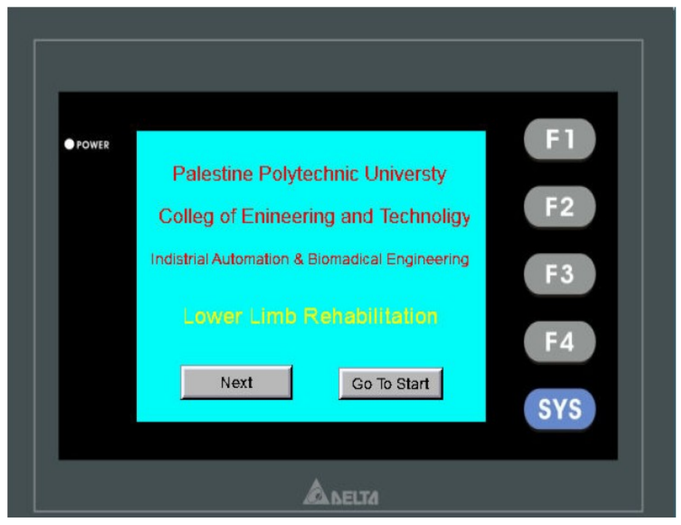

Figure5: PLC Touch Screen

Project Objectives:

1- To help the patient at the process of walking and provide him safety and correct position while walking.
2- To save time, effort and material cost in the rehabilitation of stroke and spinal cord injuries.
3- To ensure the protection for the specialist from the diseases during the treatment process, such as slipped discs.
4- To Provide safety and security of the patient from common errors committed by Physiotherapist
5- To stimulate the muscle movement and Increase the patient's ability to do moving activities.
6- To improve the level of treatment, especially on the level of Palestine.
7- To monitor the patient several medical aspects such as activity of muscles and heart rate to determine the ability of recovering his health.

Results:

1) Design system able to save time and cost in rehabilitation part .
2) Design system able to improve the level of physiotherapy, Especially at the level of Palestine.
3) Design system able to provide the safety and protection to patient and physiotherapist.
4) Design system able to help the physiotherapist.
5) Use high technology to design new rehabilitation system.
6) Development engineering and medical in Palestine.

Steps for driving project:

Figure 2 is the general steps for driving project.

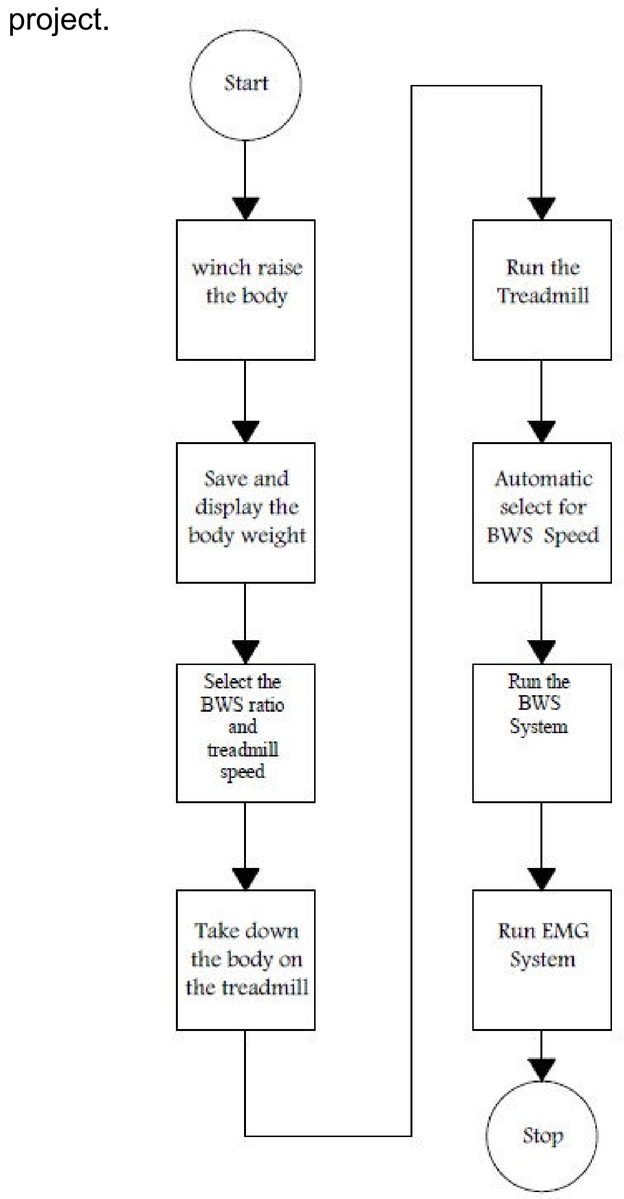

Figure 2: General steps for driving project