

Knee passive-rehabilitation device for post-surgical assistance

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ABSTRACT:

The post-surgical knee rehabilitation is a long and complex procedure. Professionals and specialists should make it carefully and immediately to the surgical to prevent fibrosis. The rehabilitation represents a traumatic process due constant pain by the patient. Is complex for the physical therapist make a passive and continuous movement to the knee due to external factors, as well as tiredness. A low-cost device, as support to the therapist, that performs the required movements, controlled and constantly, during knee recovery, is presented. A control system that allows changes and verify the patient's rehabilitation-levels to ensure a proper recovery, is incorporated. The finite element method to calculate stresses and displacement to device's structure, is used. Finally, a rehabilitation device that can be utilized in a great variety of knee musculoskeletal system pathologies, is designed. The tests conclude reduction between 10 and 20% of the time for recovery the patients knee; furthermore, more control and precision for number of repetitions and angles in the movement.

KEYWORDS:

Rehabilitation, knee, post-surgical, medical device