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ACTUATING SYSTEMS OF ELBOW REHABILITATION DEVICES

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Rezumat. *Echipamentele de reabilitare ce folosesc mișcarea pasivă continuă reprezintă un real ajutor în cazul pacienților cu afecțiuni posttraumatice care nu își pot mobiliza ei înșiși membrele, reușind atât să substituie munca depusă de kinetoterapeut, cât și să majoreze confortul pacienților. Mișcarea pasivă continuă constă în exerciții lente și neîntrerupte aplicate articulației lezate. Acest articol prezintă stadiul actual al echipamentelor de reabilitare a articulației cotului, sisteme care folosesc acest procedeu. Majoritatea au sistemul de acționare electric, dar datorită avantajelor constructive ale sistemului de acționare pneumatic, în ultima perioadă s-a constatat o creștere a aplicabilității lui în acest domeniu.*

Abstract. *Rehabilitation equipment using continuous passive motion is useful in the case of patients with posttraumatic disorders that cannot move autonomously, succeeding in both replacing the kinesiotherapist's work and increasing patient comfort. Continuous passive motion consists in applying a slow and uninterrupted movement to injured joints. This paper presents an analysis of the current stage of the elbow rehabilitation equipment developed by the authors, based on this technique. While most devices are driven by electric motors, due to the constructive advantages of pneumatic actuating systems, lately an increase of its applicability in this field has been recorded.*

Keywords: CPM, rehabilitation equipment, elbow, actuation systems

1. Introduction

Following surgery, the mobility of the joint operated on is diminished, possibly even causing chronic pain. It has been clinically demonstrated immobilization following joint surgery increases the recovery time and slows down the healing process, favouring the development of adherences and scar tissues, which can lead to long term or permanent restrictions of movement [1].

Passive kinesiotherapy is designed for patients lacking the necessary biological resources for commanding and executing the movement [2]. The problems outlined above can be addressed by continuous passive motion (CPM), a therapeutic procedure consisting of applying a range of motions to the affected joint, without self-straining of the patient's muscles. CPM can be achieved by means of kinesiotherapy's or specially designed equipment.

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