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Introduction

Brain diseases can cause difficulties in everyday life, affecting everyday life quality of patients. Among them, stroke is the leading cause of disability. In the population, it is around 3 percent of the population, which has been estimated that about 17 million people suffer from stroke in the world, with a survival rate that reaches 80% [1]. Most stroke survivors experience functional issues on language, motor control of body and other functions associated with motor activity. When working with a post-stroke individual, rehabilitation therapy, which is usually based on best practices, can last up to a few months [2]. As for many human-medical activities, in this kind of therapy, it is not always easy to reach a high level of measurability and repeatability, but therapists can improve patients' goals and safety them

with the flexibility given by their experience and professional skills. Different strategies can be used by the physical therapist, and there is an open debate about which paradigm is most effective; among others, the most popular is the so-called "constraint-induced movement therapy" (CIMT) [3], where movements of the unaffected limb are selectively restrained, to promote movement of the affected side. The possibility to recover lost functions due to neural damage through physical therapy is allowed by the so-called "neural plasticity", which is based on recruiting survived additional neural cells. Neural plasticity also plays a major role when individuals are asked to perform motor tasks in novel environmental conditions, such as visual distortions [4], or altered force fields [5].

Following this perspective, in the early nineties, an electromechanical machine with a control system based