

H.I. Krebs, B. Volpe, N. Hogan. *Rehabilitation robotics: how old is too old?* *Gerontechnology* 2008; 7(2):145. The last 75 years of rehabilitation therapy practice and research have provided very few actual answers to ameliorate and maximize outcomes of stroke survivors. Rehabilitation practice remains an art rather than a science. To change this landscape, we have engaged in randomized control trials using robots, which can deliver a variety of well-controlled reproducible therapy and help us determine these needed answers. In previous research, we have shown robotic therapy to be effective in reducing motor impairments of the hemiparetic upper limb in persons who are in the acute phase of stroke recovery<sup>1-4</sup>. More recently, we have shown that the robotic therapy is also effective in reducing motor impairments of persons with chronic stroke<sup>5-7</sup>. Specifically, robot mediated therapy led to significantly improved motor coordination and muscle strength of the exercised shoulder and elbow muscles, as measured by clinical evaluations. Stroke recovery is a multifaceted process and practitioners have hypothesized a multitude of variables that influence outcome. Yet little is known of the independence, actual impact, and interaction of these variables on outcomes. Here in this paper, we examine if aging limits the potential for recovery following a stroke. **Methods** We enrolled one-hundred and eleven (111) community dwelling volunteers who have suffered a single stroke at least 6 months prior to enrollment and received 18 hours of robot-mediated therapy sessions [8, 9]. Patients age range from 19 to 81 years old (mean 59.9 y.o. and sem 1.2 y.o). The protocol included three pre-treatment and three additional evaluation sessions at mid-point, discharge, and 3-4 months follow-up. Pre-treatment sessions took place prior to admission with the average of the pre-treatment evaluations serving as the admission score. If the patient demonstrated to be improving in the three pre-treatment evaluation sessions, he was referred to traditional therapy services. **Results and discussion** Results for this cohort of stroke survivors suggest that age is not a limiting factor (*Figure 1*). The correlation between age and changes in the Fugl-Meyer scale was actually very low ( $R=0.016$ ) and hence therapy should not be rationed based on age. As we continue our studies, we will continue to monitor our patients' age to determine if this conclusion needs to be revised as we recruit older subjects.

## References

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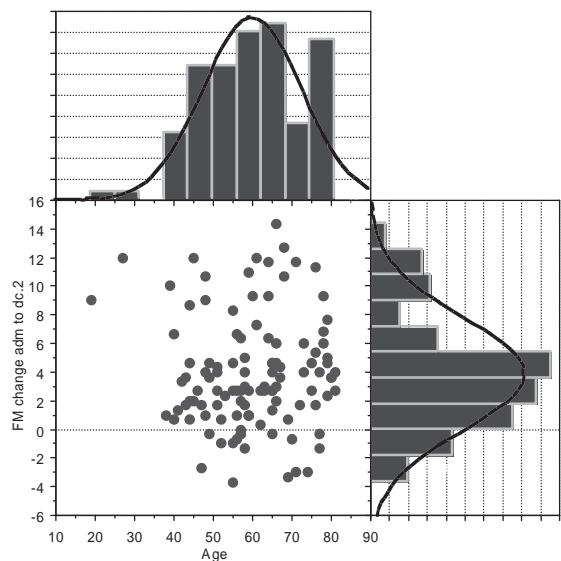


Figure 1 Age and Recovery in Chronic Stroke