The classic definition of motor learning is to cause somewhat permanent results in the trained motor skill. It is suggested that memories of newly acquired fine motor skill can be retained for at least two years without rehearsal in normal aged adults (Smith et al. 2005). This pilot study investigated the retention of a continuous motor skill in eccentric ergometer training of elderly subjects.

In our previous study 33 (64±6 yrs) subjects completed a 10-week individually administered training program of 18 sessions on motor driven eccentric bicycle ergometer. The subject’s task in eccentric bicycle ergometer exercise was to resist the movement of pedals by producing a constant and steady force against the pedals. The uniformity of force production during a 30 second period was used to describe the motor performance, named proficiency index (PI). The results indicated that the subjects progressed throughout the intervention (p<0.01) and reached a fairly constant level of motor performance after 5-6 weeks of training.

Three subjects (65±1.7 yrs) participated in a second 10-week training program 18 months after the first intervention. In the first intervention the subjects reached PI of 11.2±3.6 in the 18th training session. The retention of motor skill was assessed in the first training session being 10.9±2.4. One subject scored better in the retention test than in the first intervention. Two subjects scored also well in the retention.

The results of the pilot study supports the results of Smith et al. (2005), that the achieved skill level remains high in normal aged individuals after an unpractised time period for at least 18 months. Our results suggest that continuous motor skills are well preserved in elderly subjects. Continuous motor skills are likely to be retained especially well, due to the high number of the repetitions during the initial training phase. This hypothesis is to be studied especially with elderly individuals and also with longer untrained period before retention.

Reference: Smith et al. Neurobiology of Aging 6(26), 883-890, 2005

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