

MUSCLE STRENGTH AND GAIT PERFORMANCE IN PERSONS WITH POST-POLIO SYNDROME

Ulla-Britt Flansbjer PT, PhD, Christina Brogårdh PT, PhD and Jan Lexell MD, PhD
Department of Rehabilitation Medicine, Skåne University Hospital, Lund
and Department of Health Sciences, Lund University, Sweden

Introduction

Post-polio syndrome (PPS) often affects muscles in the lower limb, such as the knee extensors and flexors and ankle dorsiflexors. This weakness can impede on gait performance which can lead to mobility difficulties and thereby impact on everyday activities. In order to plan appropriate rehabilitation interventions we need a thorough understanding of the relationships between lower limb muscle function and walking ability in persons with PPS.

Aims

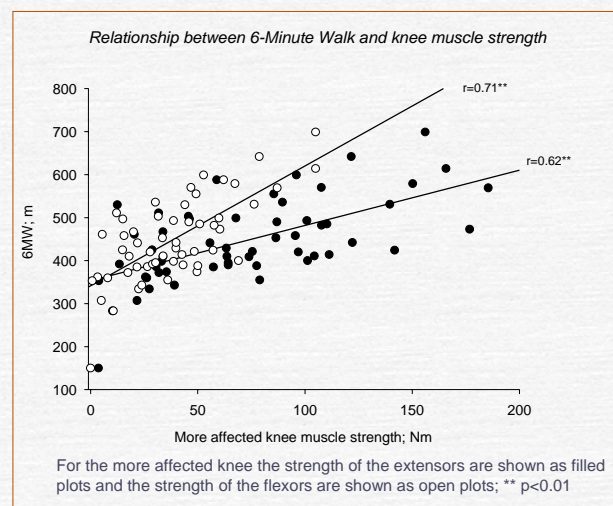
To determine the relationships between lower limb muscle strength and gait performance in persons with late effects of polio.

Methods and material

Fifty-six community-dwelling ambulant persons with PPS (27 men and 29 women; mean age 62 years, SD 8, 32-74 years; mean time since onset of new physical symptoms 13 years, SD 7, 2- 28 years) participated in the study. Isokinetic concentric knee extension and flexion strength was measured at 60°/s and ankle dorsiflexor strength at 30°/s. Gait performance was assessed by Timed "Up & Go", Comfortable Gait Speed, Fast Gait Speed and 6-Minute Walk.

Results

There was a significant correlation ($p < 0.01$) between knee muscle strength and gait performance for both the less-affected and the more affected lower limb. Knee muscle strength explained 15% to 55% of the variance in gait performance. For the less affected lower limb there was a significant correlation between ankle dorsiflexor strength and gait performance ($p < 0.01$; $n = 51$) but for the more affected lower limb only for Fast Gait Speed ($p < 0.05$; $n = 30$).



Conclusions

Knee extensor and flexor muscle strength are strong predictors of walking ability in persons with PPS and can explain up to 55% of the variance in gait performance, whereas ankle dorsiflexor muscle strength is a more moderate predictor of gait performance.