Abstract

Objectives: To examine the strength deficits of the shoulder complex after stroke and to characterize the pattern of weakness according to type of movement and type of isokinetic parameter. Method: Twelve chronic stroke survivors and 12 age-matched healthy controls had their shoulder strength measured using a Biodex isokinetic dynamometer. Concentric measures of peak torque and work during shoulder movements were obtained in random order at speeds of 60°/s for both groups and sides. Type of movement was defined as scapulothoracic (protraction and retraction), glenohumeral (shoulder internal and external rotation) or combined (shoulder flexion and extension). Type of isokinetic parameter was defined as maximum (peak torque) or sustained (work). Strength deficits were calculated using the control group as reference. Results: The average strength deficit for the paretic upper limb was 52% for peak torque and 56% for work. Decreases observed in the non-paretic shoulder were 21% and 22%, respectively. Strength deficit of the scapulothoracic muscles was similar to the glenohumeral muscles, with a mean difference of 6% (95% CI -5 to 17). Ability to sustain torque throughout a given range of motion was decreased as much as the peak torque, with a mean difference of 4% (95% CI -2 to 10). Conclusions: The findings suggest that people after stroke might benefit from strengthening exercises directed at the paretic scapulothoracic muscles in addition to exercises of arm elevation. Clinicians should also prescribe different exercises to improve the ability to generate force and the ability to sustain the torque during a specific range of motion.

Keywords

Keywords, cerebrovascular disease, hemiparesis, shoulder complex, muscle strength, physical therapy.