Abstract

Background: Grip strength is used to infer functional status in several pathological conditions, and the hand dynamometer has been used to estimate performance in other areas. However, this relationship is controversial in neuromuscular diseases and studies with the bulb dynamometer comparing healthy children and children with Duchenne Muscular Dystrophy (DMD) are limited. Objective: The evolution of grip strength and the magnitude of weakness were examined in boys with DMD compared to healthy boys. The functional data of the DMD boys were correlated with grip strength. Method: Grip strength was recorded in 18 ambulant boys with DMD (Duchenne Group, DG) aged 4 to 13 years (mean 7.4±2.1) and 150 healthy volunteers (Control Group, CG) age-matched using a bulb dynamometer (North Coast- NC70154). The follow-up of the DG was 6 to 33 months (3-12 sessions), and functional performance was verified using the Vignos scale. Results: There was no difference between grip strength obtained by the dominant and non-dominant side for both groups. Grip strength increased in the CG with chronological age while the DG remained stable or decreased. The comparison between groups showed significant difference in grip strength, with CG values higher than DG values (confidence interval of 95%). In summary, there was an increment in the differences between the groups with increasing age. Participants with 24 months or more of follow-up showed a progression of weakness as well as maintained Vignos scores. Conclusions: The amplitude of weakness increased with age in the DG. The bulb dynamometer detected the progression of muscular weakness. Functional performance remained virtually unchanged in spite of the increase in weakness.

Keywords

Keywords, muscular dystrophy, skeletal muscle, muscle strength, dynamometer, physical therapy.