Abstract

Background: In Duchenne muscular dystrophy, functional deficits seem to arise from body misalignment, deconditioning, and obesity secondary to weakness and immobility. The question remains about the effects of postural deviations on the functional balance of these children. Objectives: To identify and quantify postural deviations in children with DMD in comparison to non-affected children (eutrophic and overweight/obese), exploring relationships between posture and function. Method: This case-control study evaluated 29 participants aged 6 to 11 years: 10 DMD (DG), 10 eutrophic (EG), and 9 overweight/obese (OG). Digital photogrammetry and SAPo program were used to measure postural alignment and the Pediatric Balance Scale (PBS) was used to measure balance. The Kruskall-Wallis and Dunn post-hoc tests were used for inter-group comparison of posture and balance. Spearman’s coefficient tested the correlation between postural and balance variables. Results: The horizontal pelvic alignment data indicated that the anteversion of the DG was similar to that of the OG and twice that of the EG (p<0.05). Compared to the EG, the DG and OG showed an increased forward position of the center of mass (p<0.05). There was a moderate and weak correlation between the PBS score and horizontal pelvic alignment (0.58 and 0.47-left/right). The PBS showed a weak correlation with asymmetries in the sagittal plane (–0.39). The PBS scores for the OG and EG suggest that obesity did not have a deleterious effect on balance. Conclusions: The balance deficit in children with DMD was accompanied by an increased forward position of the center of mass and significant pelvic anteversion that constitutes a compensatory strategy to guarantee similar performance to the children not affected by the disease.

Keywords
Keywords, balance, neuromuscular diseases, posture, photogrammetry.