Title

Longitudinal trajectories of physical activity levels in children with cerebral palsy: Time to move

Authors

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Abstract (max 250 words)

Introduction

Ambulant children with spastic cerebral palsy (SCP) present with lower levels of physical activity (PA) and higher levels of sedentary time, compared to typically developing peers. The aim of this study was to investigate longitudinal changes in PA levels in SCP, since this could highlight key timeframes for targeted preventative interventions.

Participants and methods

Twenty-four children with SCP (age mean±SD/range: 5.7y.±2.5y./2-12y., boy/girl: 13/11, GMFCS I/II/III: 9/12/3, unilateral/bilateral: 14/10) participated in this prospective longitudinal study, with time intervals between 6 months and 1 year, resulting in 2-4 assessments per child (total=54 measurements). PA was measured using ActiGraph wGT3X-BT triaxial accelerometer, worn at the hip during seven consecutive days. The percentage of time spent in light PA (LPA), in moderate-to-vigorous PA (MVPA) and in sedentary time were calculated, based on the cut-points of Evenson et al. (2008). Linear mixed-effects models, with random intercept, were fit to investigate the effect of age.

Results

Participants spent 36.0% (SD:8.6%) of their waking hours in LPA, 4.5% (SD:2.2%) in MVPA and 59.4% (SD:9.6%) sedentary. While the percentage of MVPA (MVPA=3.4866+(0.2922*age) (p=0.0130)) and sedentary time (sedentary time=55.8927+(0.8309*age) (p=0.0167)) showed a straight increase with age, LPA showed a straight decrease with age (LPA=40.6756+(-1.1388*age) (p=0.0007)). A large heterogeneity was present in the individual longitudinal trajectories.

Conclusion

The unique longitudinal results indicate that with increasing age, LPA decreases, along with a greater rise in sedentary time compared to MVPA. Patient-tailored advice should be given to optimize how children with SCP spend their waking hours, especially with increasing age.

Relevance

Children with cerebral palsy experience motor function problems, hindering their participation in physical activities. The observed longitudinal changes in physical activity in this population highlight

the importance of individualized activation plans and of advice to create healthy habits from a young age onwards, which could be beneficial later in life, since physical activity has been associated with several health benefits.

Mixed models (ter illustratie, wordt niet toegevoegd aan abstract)

