

Article Title

Alternative exercise methods for children with cerebral palsy: effects of virtual vs. traditional golf training.

Article Citation

Gercek, N., Tatar, Y., & Uzun, S. (2022). Alternative exercise methods for children with cerebral palsy: effects of virtual vs. traditional golf training. *International Journal of Developmental Disabilities*, 68(6), 933-942.

Adaptive Sport/Recreation Categories

- Exercise
- Golf

Study Type: Quasi-experimental

Summary

Task-oriented sport programs can sustain physical activity in individuals with cerebral palsy (CP) while improving physical performance and quality of life. Golf can help improve balance, proprioception, and mobility in children with CP as well as cardiovascular fitness, muscle strength and endurance, flexibility, speed, and quality of movement. Virtual golf can help overcome environmental barriers while sustaining the benefits of the activity. The purpose of this study was to examine the effects of traditional or virtual golf training in overcoming problems such as spasticity, loss of muscle strength, and balance that limit the daily life of children with CP. Thus, 19 spastic unilateral children with CP (GMFCS level I-II) aged between 6-12 years (mean= 8.22) were divided to receive either virtual golf training or traditional golf training, applied 3 days/week for 60 min/day for 12 weeks by a certified golf coach. Participants were trained to play golf with their affected side (hemiplegic). For virtual training, Xbox 360 Kinect was used. Various physical function measures/tests of both upper and lower extremities were conducted before and after the 12-week intervention.

The study showed that both traditional and virtual golf training had positive effects on Gross Motor Function Measure-88 scores (lying and rolling, sitting, crawling and kneeling, standing and walking, running and jumping), curl-up, lateral step-up, sit-and-reach, and six-minute walk tests. Participation in the virtual training was associated with greater improvements in balance compared to traditional while traditional training had greater improvements in ankle muscle spasticity. We see that virtual training programs provide similar motor improvements as traditional golf training without requiring large physical space nor expensive equipment. They can provide an opportunity to participate in sports for children with CP who are unable to attend rehabilitation and sports programs.

Article Strengths

- Showed that both virtual and traditional golf programs improve physical functioning and mobility in children with CP.
- Investigated alternative (virtual) methods to participate in sports (golf) for children with CP.

- Compared virtual and traditional golf training in improving physical functioning in children with CP.

Article Weaknesses

- Non-randomized research design.
- Outcomes measured only at pre and post intervention, no data on maintaining improvements longitudinally (e.g. 6 months post intervention)
- Limited generalizability – small sample size, no details on recruitment methods.
- Only included GMFCS I/II

Take Home Messages

- Virtual and traditional golf training improves lower extremity and abdominal muscle strength, flexibility, and aerobic endurance in children with CP.
- Sport participation is important in improving physical functioning in children with CP.

Impacts on Clinical Practice

- PA should be promoted among children with CP.
- More information and tips should be provided to children with CP and their families related to PA and PA participation.
- Virtual sports programs can offer alternative options for children with CP to participate in sports without the need for large physical space nor expensive equipment.