Effects of a static bicycling programme on the functional ability of young people with cerebral palsy who are non-ambulant.

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This study investigated the effects of exercise on the motor function of 11 young people (10 females, one male; age range 11-15y; mean age 12y 7mo [SD 1y 4mo]) with cerebral palsy (CP) who were non-ambulant (Gross Motor Function Classification System Levels IV or V), using an adapted static bicycle.

Three participants had dyskinetic quadriplegia, seven had spastic quadriplegia, had spastic quadriplegia, and one had spastic diplegia. The study used an ABA design with participants acting as their own controls with 6-week baseline, 6-week exercise (three sessions a week), and 6-week follow-up periods. Outcomes were assessed with the Gross Motor Function Measure (GMFM)-66 and GMFM-88. A "graded exercise test" determined pedalling resistance, and "overload" was ensured by increasing the duration and speed of pedalling.

Results showed significant improvements in GMFM-66 (p=0.010) and in GMFM-88 dimensions D (Standing; P=0.012) and E (Walking, Running, and Jumping; p=0.011) over the intervention period, but not over the baseline or follow-up periods. Significant improvements were found in "cycling" ability for duration of pedalling (p<0.001), speed (p=0.01), and resistance (p=0.001).

This study demonstrates that a relatively short, clinically feasible training programme on a static bicycle can lead to valuable improvements in functional ability in young people with CP. The static bicycle provided a safe, effective means of exercise to a population with very limited opportunities for activity.