



Pedal Power Pilot Study: Work in Progress-Preliminary Findings

Does participation in adapted dynamic cycling affect lower limb muscle function, activity levels and quality of life for children with Cerebral Palsy?

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Cardiff Pedal Power is a charity providing adapted cycles and cycling opportunities for all ages and abilities. This three year mixed methods study aims to investigate the effects of 6 sessions of adapted dynamic cycling (ADC) for children with Cerebral Palsy (CP), who may have difficulty participating in leisure activities.

Background

Children with Cerebral Palsy (CP) have limited opportunities for physical activity and participation due to impairments with balance and coordination. Adapted Dynamic Cycling (ADC) offers children with CP a recreational activity. This fits well with the World Health Organisation's International Classification of Function (ICF) model and the ICF for Children and Youth (WHO, 2001; WHO ICF-C Y, 2007). This project is based on the domains of the ICF as a framework for design, methodology and analysis, incorporating the United Nations Convention on the Right of the Child Article 31 'children have a right to relax, play and join in a wide range of activities' (UNCRC, 1989). This is a 3 year mixed method study, only the qualitative results are reported here.

Qualitative methods

The phenomena being explored are the views of children and their families about their adapted dynamic cycling experiences which were obtained through diaries, photographs, drawings and semi-structured interviews. The interview questions were tested in a pilot study with 4 children. Interviews were recorded, transcribed and verified and are currently being thematically analysed. 17 children and young people have been recruited to this study so far.

Data Analysis

The interview and diary data sets have been read and colour coded for emerging themes using an editing approach. This iterative approach has led to changes in the interview style. NVIVO⁸ is being explored for its usefulness in data management for further analysis.

Results and Discussion

Preliminary findings show emerging themes related to facilitators and barriers to ADC. Having an assessment and suitable bike set up for the child was crucial. When this was not followed through the child's experience was not so positive as Emily's mum suggests:

"Emily (aged 5 years) is now able to steer the bike...if the foot plates are secure she can cycle for up to an hour...however sometimes the technicians don't quite get this bit right and she gets too tired after 10 minutes ...which is a shame....."

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Diary entry from Diane 10 years old



Peter: 'I did cycling and it was wicked!'



Some children have developed more social confidence directly from the cycling opportunity, linked to the theory of Social Constructionism (Crotty, 1998). Diane illustrated her bike by drawing it in her diary (see left).

There have been examples of specific outstanding personal achievements, demonstrated by Peter.

Peter's Mum: *'Gabriela put him on the Tom Cat trike, strapped his feet in and it was the first time ever he pedalled and he couldn't stop it. Everybody got so emotional, fantastic. It just shows if you've got the tools for the job, the right equipment, you can do it.... ...This year we started from Bristol to Windsor. In total, I think, independently, completely independently he cycled not far off forty miles I would say.....'*

Caution was expressed that this activity might not be the best in the long term for postural alignment if carried out to the exclusion of other physical activities.

Becky's Mum: *"Well I think, you know, when Becky (aged 4 years) generally makes the effort she gets stiffer, and stiffness... if she was to do nothing but cycling all the time, you couldn't design a bike that would get her using her muscles in a totally normal way, so it's never going to be totally constructive for her development....."*

Conclusion

Current focus of rehabilitation could develop to enhance the participation of children with CP in appropriate activities which promotes their health and social independence.

References

- Crotty M (1998) *The Foundations of Social Research*. Australia: Sage publications
- United Nations (1989) *The United Nations Convention on the Rights of the Child*. London: UNICEF
- World Health Organization (2001) *International Classification of Functioning* available from <http://www.WHO.ICF>
- World Health Organization (2007) *International Classification of Functioning for Children and Youth* available from <http://www.WHO.ICF>

