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Review article

Measuring physical activity in children and youth living with intellectual disabilities: A systematic review

Erica Aneke Hinckson *, Amy Curtis [1]

Centre for Child Health, Faculty of Health and Environmental Sciences, Auckland University of Technology, Private Bag 92006, Auckland, New Zealand

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ABSTRACT

Accurate assessment of physical activity is necessary in determining levels of physical activity in children living with intellectual disability (ID) and assessing effectiveness of intervention programmes. A systematic review of measures of physical activity in children with ID was undertaken using the PRISMA guidelines. MEDLINE-PubMed, Scopus, CINAHL Plus with Full Text and SPORT Discus (up to May 2012) databases were searched and articles were identified. The following inclusion criteria were used; articles in English which reported original research and measured physical activity levels in children with ID, and participants of school age (5–18 years). Searches were limited to articles from peer-reviewed journals and those available in full text. The search identified 5087 titles. Seventy-eight articles were retained for full review and 30 met the inclusion criteria. The review identified a clear deficiency in the number of validity and reliability studies of tools used to quantify physical activity in children with ID. Objective measurement of physical activity provided consistent results. Despite the differences in study design and methodological quality, there was agreement among studies that children with ID were significantly less active compared to children without disabilities. Refusal to wear instruments, movement limitations in children with ID, and positioning of devices were common issues. Future studies should focus on determining the validity and reliability of tools used to assess physical activity in children with ID.

Contents

* Corresponding author. Tel.: +64 9 921 9999x7224; fax: +64 9 921 9746.
E-mail addresses: erica.hinckson@aut.ac.nz (E.A. Hinckson), acurtis@aut.ac.nz (A. Curtis).
[1] Tel.: +64 9 921 9999.

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Physical activity guidelines recommend that young people should engage in a minimum 60-minutes of moderate to vigorous physical activity daily (World Health Organization, 2010). Achieving these guidelines will ensure children's cardio respiratory and muscular fitness, bone health, reduction of symptoms of anxiety and depression, and maintenance of healthy weight (Department of Health, Physical Activity, Health Improvement, & Promotion, 2004). In the UK the prevalence of physical activity in children (2–15 years of age) has declined. In 2008, only 32% of boys and 24% of girls met the government's physical activity guidelines (Basterfield et al., 2008; The NHS Information Centre Lifestyles Statistics, 2010) and according to a recent longitudinal study over a period of two years children's physical activity (7–9 years of age) reduced by 0.3% and sedentary behaviour increased by 3% (Basterfield et al., 2011). Declines in physical activity have been observed in US (Department of Health and Human Services, 2010), Canada (Colley et al., 2011), Europe (Riddoch & Bo, 2004), Australia (Commonwealth Scientific Industrial Research Organisation, Preventative Health National Research Flagship, & University of South Australia, 2007) and New Zealand (Clinical Trials Research Unit, 2010). In addition to the declining numbers of physical activity, the proportion of children being overweight and obese is rapidly increasing world-wide (World Health Organisation, 2005).

At greater risk of low levels of physical activity and increased rates of overweight and obesity are children living with intellectual disabilities (J.A. Rimmer & Rowland, 2008; J.H. Rimmer, Rowland, & Yamaki, 2007). When children with Down's syndrome were compared to their unaffected siblings, physical activity levels were lower and body mass index levels were higher (Whitt-Glover, O'Neill, & Stettler, 2006). Health issues linked to obesity in children with disabilities include difficulty participating in activities of daily living, fatigue, pain, social isolation, depression and perceived cognitive and athletic inability (Braet & Van Strien, 1997; J.H. Rimmer et al., 2007). Intellectual disabilities (ID) include a broad range of mental impairments preventing individuals from participating fully in daily life (Heath & Fentem, 1997). Terms used synonymously with intellectual disability include cognitive disability, global developmental delay, mental retardation and learning disability. For the purposes of this document, we will use the term "intellectual" disability (ID).

In the US, 2,113,555 (3.9%) of children and youth (5–17 years of age) are living with an intellectual disability (U.S. Census Bureau, 2008). In New Zealand, 90,000 of children are living with a disability and over 35,000 have a learning disability (Ministry of Health, 2005). There are 55,000–75,000 children with a moderate or severe learning disability in England (Department of Health, 2007). Government departments state a commitment to improving the life chances of people with learning disabilities and the support provided to families (Department of Health, 2011). National initiatives (U.S. Department of Health and Human Services, 2005) place health issues of persons with disabilities, including children, at the forefront of research to promote wellness and disease prevention.

International (Department of Health, 2011; U.S. Department of Health and Human Services, 2005) and national (Ministry of Health, 2005) organisations recommend that children with disabilities should engage in physical activity. Little evidence exists on current daily physical activity levels in children living with ID and there are no specific guidelines for this population. Early reviews on determining physical activity levels in children with ID often found very little information on this topic. More recently from a small number of studies, a review reported mixed results of physical activity levels of children with ID, with lower, similar or higher activity levels compared to children without ID (Frey, Stanish, & Temple, 2008). Daily activity levels in children with ID need to be accurately quantified and monitored so that trends can be identified for focused and effective activity promotion efforts. To report on methods used to measure physical activity in children living with ID and summarise findings on physical activity, we reviewed available studies in the area.

1. Methods

1.1. Search

The PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) statement was used as a guideline for reporting results from published studies (Liberati et al., 2009). The PRISMA guidelines were used in conjunction with the Cochrane Handbook of Systematic Reviews for Interventions (Higgins & Green, 2011).