



## Occupational therapy home program for children with intellectual disabilities: A randomized, controlled trial

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### ABSTRACT

This study aimed to investigate the effectiveness of a proposed occupational therapy home program (OTHP) for children with intellectual disabilities (ID). Children with ID were randomly and equally assigned to OTHP or to no OTHP groups. The primary outcome measures were Canadian Occupational Performance, Bruininks–Oseretsky Test of Motor Proficiency–Second Edition, and The Children’s Assessment of Participation and Enjoyment scores at 10 and 20 weeks. The 20-week OTHP produced significant difference in fine motor function, activity participation, and parent satisfaction with performance, compared to those of no OTHP. Pediatricians can advise families to implement 20 weeks of OTHP with an average 15 min per session to facilitate functional changes of children with ID.

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Intellectual disability (ID) is the most common developmental disorder in childhood and adolescence (37%) in Taiwan, and the prevalence is 6.5 per 1000 live births (Ministry of the Interior of Taiwan, 2010). Because children with ID are characterized by impeded social participation and productivity resulting from cognitive deficits, global developmental delay, sensorimotor difficulties, and perceptual dysfunction (Hogan, Rogers, & Msall, 2000), they are often referred to occupational therapists (OT) for assessment, treatment and consultation.

Conditions such as inadequate medical insurance coverage and overly long waiting times at clinics due to limited availability of OT specialists may reduce the affordability and/or accessibility of center-based OT services. Since children with ID require continuous and systematic intervention, research-based home programs appear promising as alternative therapeutic regimes for targeting specific deficits to achieve desired functional goals in children with disabilities. Examples of such programs include “Early Start Denver Model”, “The Parent Management Training–Oregon Model”, and “The Incredible Years”. The Early Start Denver Model (ESDM) (Smith, Rogers, & Dawson, 2008), a comprehensive early behavioral intervention for toddlers and preschoolers with autism, is based on the principles of developmental psychology and applied behavior analysis. The ESDM intervention is delivered through play-based, relationship-focused routines to promote development in four key domains: communication, cognitive, social-emotional, and sensorimotor. In the Parent Management Training–Oregon Model (PMT) (Forgatch & Patterson, 2010), which is anchored in the social interaction learning model, parents of children aged 3–12 years are educated and coached in strategies for changing problem behaviors in their children, including positive reinforcement of prosocial behavior and contingent use of mildly negative consequences

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for deviant behavior. The Incredible Years (IY) program (Webster-Stratton & Reid, 2010), a variant of the PMTO, also aims at improving the parenting skills needed to reduce problem behavior in children aged 8 years and younger.

Each of the above programs has proven effective in its target populations (Dawson et al., 2010; Ogden & Hagen, 2008; Webster-Stratton, Reid, & Hammond, 2004). For example, the PMTO and IY are effective with culturally and linguistically diverse families (Forgatch & DeGarmo, 2011; Reid, Webster-Stratton, & Beauchaine, 2001), and provide a cost-effective way of reducing behavioral problems (O'Neill, McGilloway, Donnelly, Bywater, & Kelly, 2011). Nonetheless, each program has limitations. For instance, the ESDM requires a large team of consulting specialists, which may not always be feasible or cost effective. The PMTO and IY programs may also have limited efficacy for achieving behavioral change in children in economically disadvantaged or single-parent families (Lundahl, Risser, & Lovejoy, 2006), and that training demands for broad implementation seem substantial (Vismara, Young, Stahmer, Griffith, & Rogers, 2009). Perhaps most importantly, none of these programs has specifically targeted general ID population.

For managing children with disabilities, the home program typically recommended by OTs is an individualized multimodal intervention that addresses specific problem areas identified by both the parent and therapist (Novak, Cusick, & Lannin, 2009). According to the literature, essential features of an effective OT home program include: (a) conceptually-based and family-centered interventions (Winton & Bailey, 1997); (b) parent-directed interventions that respect family priorities and family decision-making processes; (c) parental involvement in the therapy (Hinojosa, Sproat, Mankhetwit, & Anderson, 2002); (d) capability of repeated practice in natural contexts to foster generalization (Law et al., 2005a, 2005b); (e) sufficient flexibility of service delivery to enable the parents to incorporate the therapy in the daily life routine of the family (Jaffe, Humphrey, & Case-Smith, 2010); (f) interventions for developing positive attitudes that are supportive of the family (Case-Smith & Nastro, 1993); and (g) mechanisms for providing feedback to family members and other health professionals regarding assessments and treatment outcomes (Novak et al., 2009).

The therapeutic effects of occupational therapy home programs (OTHPs) in improving functional outcome in children with ID remain an area in which there is no valid empirical evidence. A few studies that have examined the efficacy of OTHPs in children with disabilities other than ID reported positive findings. For instance, a study of infants and toddlers with motor or global developmental delay by Tang et al. (2011) showed that a 12-week combined center- and home-based program obtained greater improvements in cognition, language, motor, and social domains compared to a center-based program. Another study reported that an 8-week OTHP produced statistically significant improvements in function, parent satisfaction with function, and quality of upper limb skill in school-aged children with CP (Novak et al., 2009). Given that evidence-based practice is a crucial step in the process of providing ethical and high quality therapy services, further studies are urgently needed to fill the gap in the literature regarding the effectiveness of OTHPs in children with ID.

Therefore, the present research aimed to investigate the efficacy of an OTHP in school-aged children with ID. This age range was chosen partly because children rarely receive a formal diagnosis of ID before they reach school age (Rogers, 2005) and partly because adequate sensorimotor development during the primary school years is a prerequisite for learning (Loose et al., 1991). The objectives of this double-blind randomized controlled study were to determine whether the OTHP and no OTHP groups significantly differed in terms of motor proficiency, activity participation, and parent satisfaction.

## 1. Method

### 1.1. Participants

The inclusion criteria were (a) age 6–12 years and current primary school enrollment; (b) diagnosis of ID by board-certified physician and consistent with DSM-IV criteria (American Psychiatric Association, 2000); (c) current inclusion on a waiting list for therapy services; and (d) written consent by one parent indicating their agreement to participate in the study and to perform the activities required to implement the OTHP. Children with coexisting autism, cerebral palsy, blindness, deafness, or previous neurological impairments were excluded. Children who had received any physical or occupational therapy in the year preceding the study were also excluded.

Children with ID were recruited from both school programs and hospitals. The participating institutions included 17 primary schools and 6 rehabilitation departments in the Kaohsiung metropolitan area. The researchers first contacted the school nurses, teachers and therapists at each participating facility to explain the goals and procedures of the study and to ask them to suggest children eligible for the study. Families expressing interest in participating were sent detailed written information about the study. An occupational therapist then met with one parent of each child to assess whether the child was eligible.

Of the 165 participants assessed, 20 (12.1%) were ineligible, and 31 (18.8%) refused to participate. The remaining 114 participants were randomly assigned to either an OTHP group or to a no OTHP group ( $n = 57$  each).

## 2. Measures

### 2.1. Canadian occupational performance measure (COPM) (Law et al., 2005a, 2005b)

This interview tool is helpful for identifying family priorities and for setting intervention goals. Occupational performance is measured in terms of personal care, functional mobility, and community management. For each child, one parent is asked to indicate observed problems in the occupational performance of the child and to indicate their satisfaction with the

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