

A Pilot Study of Pediatric Goal Management Training in Children with Spina Bifida: Informant and Self Reports Six Months Post-training

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Background

Executive dysfunction causes significant real-life disability for children with spina bifida (SB). Goal Management Training (GMT) is a cognitive rehabilitation method for improving executive functioning (EF) [1], and has received empirical support in an adult SB study [2]. No previous research has been directed towards the amelioration of EF deficits amongst children with SB.

Aim

The purpose of this pilot study was to determine if a newly developed pediatric GMT protocol (pGMT) would lead to improvement in daily-life EF in children with SB.



Figure 1. The figure illustrates strategies used in pGMT. Participants are trained to “stop and think” before and during task execution to improve awareness toward current activities and goals.

Materials and methods

Four boys with SB (lumbar-level lesion, one with hydrocephalus) aged 10-12 years were included, based upon the presence of EF problems described by parents. The participants received 21 hours of pGMT, using two inpatient intervention periods (three + four days) with one week at home in between, followed by 4 hours of pGMT outpatient guidance over a period of 8 weeks.

Behavioural changes related to executive dysfunction at baseline and 6 months follow-up, included a questionnaire of everyday manifestations of executive dysfunction; ADHD Rating Scale IV (ADHD-RS: self, teacher and parent form).

Results

Comparisons of pre- and six months showed a reduction in dysexecutive symptoms reported by parents, with total raw score reduced from 17 ($SD = 8.4$) to 13 ($SD = 6.1$), approaching significance ($p = .07$).

A similar trend was found for the teacher reports ($p = .07$), with total score reduced from 8.8 ($SD = 7.3$) to 2.3 ($SD = 1.3$). Effect-size indicated large training effects ($r > .5$). At six months post-intervention, lower scores were primarily found on items related to inattention.

A decline in child self-reported executive symptoms was detected ($p = .18$), with the total score reduced from 9 ($SD = 2.9$) to 6.3 ($SD = .9$), with a medium effect size ($r = .47$).

Two of the children reported a decline in dysexecutive symptoms six months post-intervention, while parents and teachers reported improvement for all subjects (Fig 2).

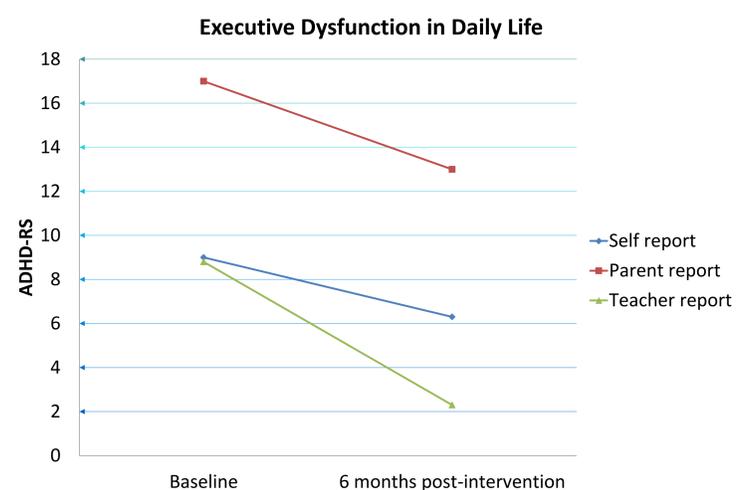


Figure 2. Mean dysexecutive symptom score pre- and post-intervention, as reported by participants, parents and teachers.

Conclusions

The children improved their performance on a measure pertaining to daily-life executive functioning 6 months post-treatment. These results suggest that executive difficulties in daily life for children with spina bifida can be reduced with pGMT. Further studies of pGMT amongst children with congenital brain dysfunction are therefore recommended.

References

1. Levine et al. (2000). Rehabilitation of executive functioning: an experimental-clinical validation of goal management training. *Journal of International Neuropsychological Society*, 6, 299-312
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