

Effectiveness of sensory integration therapy for attention deficit hyperactivity disorder (ADHD)

Kim Hender

Centre for Clinical Effectiveness
Monash Medical Centre
Locked Bag 29
Clayton VIC 3168
Australia

Telephone: +61 3 9594 2726
Fax: +61 3 9594 6970
Email: Kim.Hender@med.monash.edu.au
URL: <http://www.med.monash.edu.au/publichealth/cce/>

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SUMMARY STATEMENT:

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REQUEST:

Effectiveness of sensory integration therapy for attention deficit hyperactivity disorder (ADHD)

REQUESTED BY:

Vikki Edlich, Occupational Therapist, Child and Adolescent Mental Health Service (CAMHS), Cranbourne, Southern Health

METHODOLOGY

Search Strategy

The Centre for Clinical Effectiveness defines the 'best available evidence' as that research we can identify that is least susceptible to bias. We determine this according to pre-defined NHMRC criteria (see Appendix).

First we search for systematic reviews, evidence-based clinical practice guidelines or health technology assessments, and randomised controlled trials. If we identify sound, relevant, material of this type the search stops. Otherwise, our search strategy broadens to include studies that are more prone to bias, less generalisable, or have other methodological difficulties. We include case-control and longitudinal cohort studies in our critical appraisal reports. While we cite observational and case series studies, and narrative reviews and consensus statements, in our reports we do not critically appraise them. Such studies can produce accurate results but they are generally too prone to bias to allow determination of their validity beyond their immediate setting.

Details Of Evidence Request

Patients (subjects): Children with attention deficit disorders
Comparisons: Sensory integration deficits

Search terms

Patient (subject) terms: attention deficit disorder with hyperactivity, attention deficit disorder, ADHD
Comparison terms: sensory integration, sensory integrat\$, sensory motor integration

\$=truncation (any word starting with this)

Resources Searched

We searched the following databases and internet websites:

Cochrane Library CD-ROM Issue 1, 2001
Medline (OVID)- 1966 to December Week 4 2000
Best Evidence (OVID)- 1991 to January/ February 2001
CINAHL (OVID)- 1982 to February 2001
Current Contents (OVID)- 1993 Week 26 to 2001 Week 13
PREMEDLINE (OVID)- March 16, 2001
PsychINFO (OVID)- 1967 to March Week 2 2001
SocioFile (OVID)- 1974 to February 2001
Australasian Medical Index (AMI)- March 21, 2001
National Guidelines Clearinghouse- March 21, 2001

Refinements, Searching & Reporting Constraints

Our electronic searching was performed on 21 March 2001. Articles were included if they assessed the effectiveness of sensory integration therapy for children with attention deficit disorder.

RESULTS:

After applying the inclusion and exclusion criteria we were left with 1 pertinent article.

Table 1. Study designs of articles retrieved by search

Study Design	Number included
Systematic reviews or meta-analyses	0
Evidence-based clinical practice guidelines	0
Randomised controlled trials	0
Controlled trials, cohort studies, case-control studies	1
Total	1

Articles were excluded from further appraisal for the following reasons:

Table 2. Reasons for exclusion of articles retrieved by search

Reason for exclusion	Number
Level IV evidence	3
Opinion	2
Total	5

We are reasonably confident this articles represent the most important findings published to date based on our refinements, searching and reporting constraints.

EVIDENCE SUMMARIES

Format

Evidence summaries are in the form of spreadsheets reproduced at the end of this report. Each spreadsheet contains the article citation, the study design, patient description, scientific validity of the article, results, and pertinent remarks from the authors and Centre for Clinical Effectiveness reviewer.

REFERENCES

1. National Health and Medical Research Council. A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines. Canberra: Commonwealth of Australia, 1999.

ARTICLES CRITICALLY APPRAISED FOR THIS REPORT

Level III-2 evidence- Comparative study with concurrent controls

Werry, J. S., R. Scaletti, et al. (1990). "Sensory integration and teacher-judged learning problems: a controlled intervention trial." Journal of Paediatrics & Child Health **26**(1): 31-5.

ARTICLES NOT CRITICALLY APPRAISED

Level IV evidence

Arnold, L. E., K. Sheridan, et al. (1986). "Multifamily parent-child group therapy for behavior and learning disorders." Journal of Child & Adolescent Psychotherapy **3**(4): 279-284.

Dunkerley, E., L. Tickle-Degnen, et al. (1997). "Therapist-child interaction in the middle minutes of sensory integration treatment [see comments]." American Journal of Occupational Therapy **51**(10): 799-805.

Koomar, J. (1997). "Clinical interpretation of "Therapist-child interaction in the middle minutes of sensory integration treatment" [comment]." American Journal of Occupational Therapy **51**(10): 806-7.

Opinion

Goldstein, S. and B. Ingersoll (1993). Controversial treatments for children with ADHD and impulse disorders. Handbook of childhood impulse disorders and ADHD: Theory and practice. L. F. Koziol and C. E. Stout. Springfield, IL, USA, Charles C Thomas, Publisher: 144-160.

Lust, C. and M. Powell (1993). "Sensorimotor half-day camp." Occupational Therapy in Health Care **8**(4): 79-92.

APPENDIX 1

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Levels Of Evidence

As Defined By "A Guide To The Development, Implementation And Evaluation Of Clinical Practice Guidelines" (National Health & Medical Research Council, Canberra, 2000):

Level I		Evidence obtained from a systematic review or meta-analysis of all relevant randomised controlled trials.
Level II		Evidence obtained from at least one randomised controlled trials.
Level III	-1	Evidence obtained from pseudo-randomised controlled trials (alternate allocation or some other method).
	-2	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case control studies or interrupted time series with a control group.
	-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.
Level IV		Evidence obtained from case series (either post-test or pre-test and post-test), descriptive studies, or case studies.

<p>Evidence Summary Therapy</p> <p>Effectiveness of sensory integration therapy for ADHD</p>	<p style="text-align: center;">Study 1</p> <p>Werry JS, Scaletti R, Mills F. (1990) Sensory integration and teacher-judged learning problems: A controlled intervention trial. <u>Journal of Paediatric and Child Health</u>. 26:31-35</p>
<p>STUDY DESIGN & NHMRC LEVELS OF EVIDENCE</p>	<p>Comparative study with concurrent controls Level III-2</p>
<p>DESCRIPTION: Subjects, Interventions, Comparisons, Outcomes, Inclusion & Exclusion Criteria</p>	<p>Patients (subjects): Children with significant learning problems inconsistent with their ability Intervention: Sensory integration therapy (early group n=13, late group n=16) Comparison: No therapy (n=35) Outcomes: Vocabulary, reading, language, handwriting, motor skills, sensory integration and classroom behaviour. Incl & Excl Criteria: Children who were mentally retarded, suffered from a major neurological disorder, had previous sensory integration treatment, were unlikely to respond to treatment or on any medication with neurotropic effects were excluded.</p>
<p>VALIDITY: Methodology, rigour, selection, opportunity for bias</p>	<p>Randomisation: No All patients accounted for: Yes, only five children were lost to follow up Patients treated equally: The intervention group received a therapy, where as the comparison group did not receive a placebo with the same amount of child-therapist interaction. Similar groups: Groups were roughly matched for school age, sex and degree of sensory integration (SI) disability. There were no significant differences for age, sex, or maternal education across the groups. There were significant differences in IQ ($p=0.06$) and auditory memory ($p=0.03$) at baseline. Potential for bias: No sample size (power) calculations were made prior to the study. Potential placebo effects with the control group receiving no treatment at all.</p>
<p>RESULTS: Generally favourable or unfavourable, specific outcomes of interest, estimate of experimental effect and precision if appropriate</p>	<p>All groups had improved significantly at 9 months on word recognition, reading, vocabulary and motor performance. There were, however, no significant differences between groups for IQ, academic achievement, or motor performance. There were no significant differences between the groups on teacher ratings of behaviour, visual association, auditory memory or auditory sequencing. Both early and late treatment groups performed better in visual matching than the no therapy group in follow up (early therapy pre 6.50 ± 1.90 post 8.15 ± 1.14; late therapy pre 6.70 ± 2.1 post 8.56 ± 0.73; no therapy pre 6.51 ± 2.13 post 7.6 ± 1.33, $p=0.04$).</p>
<p>AUTHORS COMMENTS: Risk/benefit, limitations</p>	<p>"Except on one minor sub-test, this study has failed to show any improvement attributable to SI. This study can be said only to have added to the probability that SI is ineffective for 'learning disabilities'. There were significant improvements with time in both treated and untreated groups on most measures except classroom behaviour. Only one measure showed a treatment effect, though thus one was most reflective of sensory integration."</p>
<p>REVIEWER'S COMMENTS: Risk/benefit, methodology, conclusions</p>	<p><u>Strengths:</u></p> <ul style="list-style-type: none"> • Clear exclusion criteria • The groups were roughly matched at baseline • Little loss to follow up <p><u>Weaknesses:</u></p> <ul style="list-style-type: none"> • The children were not randomly allocated to groups • The most serious cases were screened out prior to the study, this limits the generalisability of the results to more serious children • Testers were not blinded to group allocation • The groups were treated differently with the intervention group receiving therapy and the control group not receiving anything • The intervention group received the treatment during different time periods (half early and half late) so there is the possibility of time effects • The study may not have had sufficient power to detect a difference between the groups