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*Published in:*  
Cochrane Database of Systematic Reviews

*DOI:*  
[10.1002/14651858.CD008223.pub3](https://doi.org/10.1002/14651858.CD008223.pub3)

*Publication date:*  
2019

*Document version:*  
Final published version

### *Citation for polished version (APA):*

Storebø, O. J., Andersen, M. E., Skoog, M., Hansen, S. J., Simonsen, E., Pedersen, N., Tendal, B., Callesen, H. E., Faltinsen, E., & Glud, C. (2019). Social skills training for attention deficit hyperactivity disorder (ADHD) in children aged 5 to 18 years. *Cochrane Database of Systematic Reviews*, 6(6), [CD008223]. <https://doi.org/10.1002/14651858.CD008223.pub3>

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Social skills training for attention deficit hyperactivity disorder (ADHD) in children aged 5 to 18 years.

*Cochrane Database of Systematic Reviews* 2019, Issue 6. Art. No.: CD008223.

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[Intervention Review]

# Social skills training for attention deficit hyperactivity disorder (ADHD) in children aged 5 to 18 years

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**Editorial group:** Cochrane Developmental, Psychosocial and Learning Problems Group.

**Publication status and date:** New search for studies and content updated (no change to conclusions), published in Issue 6, 2019.

**Citation:** Storebø OJ, Elmoose Andersen M, Skoog M, Joost Hansen S, Simonsen E, Pedersen N, Tendal B, Callesen HE, Faltinsen E, Gluud C. Social skills training for attention deficit hyperactivity disorder (ADHD) in children aged 5 to 18 years. *Cochrane Database of Systematic Reviews* 2019, Issue 6. Art. No.: CD008223. DOI: 10.1002/14651858.CD008223.pub3.

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## ABSTRACT

### Background

Attention deficit hyperactivity disorder (ADHD) in children is associated with hyperactivity and impulsivity, attention problems, and difficulties with social interactions. Pharmacological treatment may alleviate the symptoms of ADHD but this rarely solves difficulties with social interactions. Children with ADHD may benefit from interventions designed to improve their social skills. We examined the benefits and harms of social skills training on social skills, emotional competencies, general behaviour, ADHD symptoms, performance in school of children with ADHD, and adverse events.

### Objectives

To assess the beneficial and harmful effects of social skills training in children and adolescents with ADHD.

### Search methods

In July 2018, we searched CENTRAL, MEDLINE, Embase, PsycINFO, 4 other databases and two trials registers. We also searched online conference abstracts, and contacted experts in the field for information about unpublished or ongoing randomised clinical trials. We did not limit our searches by language, year of publication, or type or status of publication, and we sought translation of the relevant sections of non-English language articles.

### Selection criteria

Randomised clinical trials investigating social skills training versus either no intervention or waiting-list control, with or without pharmacological treatment of both comparison groups of children and adolescents with ADHD.

## Data collection and analysis

We conducted the review in accordance with the *Cochrane Handbook for Systematic Reviews of Intervention*. We performed the analyses using Review Manager 5 software and Trial Sequential Analysis. We assessed bias according to domains for systematic errors. We assessed the certainty of the evidence with the GRADE approach.

## Main results

We included 25 randomised clinical trials described in 45 reports. The trials included a total of 2690 participants aged between five and 17 years. In 17 trials, participants were also diagnosed with various comorbidities.

The social skills interventions were described as: 1) social skills training, 2) cognitive behavioural therapy, 3) multimodal behavioural/ psychosocial therapy, 4) child life and attention skills treatment, 5) life skills training, 6) the “challenging horizon programme”, 7) verbal self-instruction, 8) meta-cognitive training, 9) behavioural therapy, 10) behavioural and social skills treatment, and 11) psychosocial treatment. The control interventions were no intervention or waiting list.

The duration of the interventions ranged from five weeks to two years. We considered the content of the social skills interventions to be comparable and based on a cognitive-behavioural model. Most of the trials compared child social skills training or parent training combined with medication versus medication alone. Some of the experimental interventions also included teacher consultations.

More than half of the trials were at high risk of bias for generation of the allocation sequence and allocation concealment. No trial reported on blinding of participants and personnel. Most of the trials did not report on differences between groups in medication for comorbid disorders. We used all eligible trials in the meta-analyses, but downgraded the certainty of the evidence to low or very low.

We found no clinically relevant treatment effect of social skills interventions on the primary outcome measures: teacher-rated social skills at end of treatment (standardised mean difference (SMD) 0.11, 95% confidence interval (CI) 0.00 to 0.22; 11 trials, 1271 participants;  $I^2 = 0\%$ ;  $P = 0.05$ ); teacher-rated emotional competencies at end of treatment (SMD  $-0.02$ , 95% CI  $-0.72$  to  $0.68$ ; two trials, 129 participants;  $I^2 = 74\%$ ;  $P = 0.96$ ); or on teacher-rated general behaviour (SMD  $-0.06$  (negative value better), 95% CI  $-0.19$  to  $0.06$ ; eight trials, 1002 participants;  $I^2 = 0\%$ ;  $P = 0.33$ ). The effect on the primary outcome, teacher-rated social skills at end of treatment, corresponds to a MD of 1.22 points on the social skills rating system (SSRS) scale (95% CI 0.09 to 2.36). The minimal clinical relevant difference (10%) on the SSRS is 10.0 points (range 0 to 102 points on SSRS).

We found evidence in favour of social skills training on teacher-rated core ADHD symptoms at end of treatment for all eligible trials (SMD  $-0.26$ , 95% CI  $-0.47$  to  $-0.05$ ; 14 trials, 1379 participants;  $I^2 = 69\%$ ;  $P = 0.02$ ), but the finding is questionable due to lack of support from sensitivity analyses, high risk of bias, lack of clinical significance, high heterogeneity, and low certainty.

The studies did not report any serious or non-serious adverse events.

## Authors' conclusions

The review suggests that there is little evidence to support or refute social skills training for children and adolescents with ADHD. We may need more trials that are at low risk of bias and a sufficient number of participants to determine the efficacy of social skills training versus no training for ADHD. The evidence base regarding adolescents is especially weak.

## PLAIN LANGUAGE SUMMARY

### Social skills training for children aged between 5 and 18 with attention deficit hyperactivity disorder (ADHD)

#### Review question

What are the benefits and harms of social skills training for children and adolescents with attention deficit hyperactivity disorder (ADHD)?

#### Background

Children and adolescents with ADHD experience hyperactivity, impulsivity, attention problems, and difficulties with social interactions. Social skills training for ADHD seeks to improve and maintain social interaction and prevent interpersonal difficulties. Programs tend to focus on problem solving, control of emotions, and improving verbal and non-verbal communication. We examined the benefits and harms of social skills training on the following outcomes: social skills, emotional competencies, general behaviour, ADHD symptoms, and performance in school.

### **Study characteristics**

We found 25 randomised clinical trials (studies where participants with ADHD were randomly assigned to one of two or more groups) involving a total of 2690 participants. The trials lasted between five weeks and two years. The social skills training generally focused on teaching the children how to 'read' the subtle cues in social interaction, such as learning to wait for their turn, knowing when to shift topics during a conversation, and being able to recognise the emotional expressions of others. Social skills training often consists of role play, exercises and games, as well as homework. Children in the control groups either received no intervention or were placed on a waiting list.

### **Key results**

We found no significant differences between social skills training versus controls on social skills, emotional competencies, and general behaviour as assessed by teachers. Compared with the children who had no social skills training, teachers rated those who had been in the social skills groups as having fewer ADHD symptoms at the end of treatment.. However, this finding was questionable because our other analyses did not support it. We found no indications of harmful effects.

All trials suffered from methodological problems such as overestimation of benefits and underestimation of harms. Many studies were also difficult to compare because they involved different interventions. The results from some trials were not very precise, which means it is difficult to be confident in the results. In seven trials, study authors were board members of pharmaceutical companies, had received funding from such companies, or had performed previous research on the topic.

### **Intepretation**

We are unable to conclude whether social skills training is beneficial or not for children with ADHD. We need more randomised clinical trials on social skills training for children and adolescents with ADHD that have a sufficient number of participants and higher methodological quality. The evidence base regarding adolescents is especially weak. We found no adverse treatment effects.