NKR24 - PICO6 - Schizophrenia: Cognitive remediation

Characteristics of studies

Characteristics of included studies

Belucci 2002

Methods	
Participants	
Interventions	
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Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Burda 1994

Methods	
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Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

d'Amato 2011

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:** YES
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 32.2 (6.0) ● *Sex (male %)*: 76.3 ● *Length of illness (years), mean (sd)*: 8.1 (4.5) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: Cognitive remediation ● *Age, mean (sd)*: 33.4 (6.9) ● *Sex (male %)*: 74.4 ● *Length of illness (years), mean (sd)*: 8.7 (6.6) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: **Included criteria:** Patients were eligibleif they met the DSM IV criteria for schizophrenia, wereclinically stabilized without any modification of theirmedication for at least one month, spoke French fluentlyand were aged between 18 and 40 years. **Excluded criteria:** Exclusion criteriawere past or present neurological disorders or substancedependence or abuse, pregnancy, and not being able to giveinformed consent.
Interventions	**Intervention Characteristics** TAU ● *Description*: standard treatment only Cognitive remediation ● *Description*: The therapy consisted of 14 individual two-hour sessionsover a 7-week period providing supportive, graduatedtraining and practice in selecting, executing, and monitoringcognitive operations. CRT was conducted by a psychologiston a computer with a special input panel (joystick andergonomic pads) using RehaCom® software package(SCHUHFRIED, GmbH).four procedures have been chosenfrom amongst the nineteen different procedures availablein RehaCom®, to train four cognitive functions involved indifferent stages of the

	information processing: attention/concentration, working memory, logic, and executivefunctions.
Outcomes	*Continuous*: ● Global cognition score, Z score ● Social functioning ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Days at hospital ● QoL ● Symptoms, total score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Verbal learning and memory, RAVLT, learning (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Verbal learning and memory, other scale ● Working memory, other. *Dichotomous*: ● Syptomatic relapse ● Symptomatic remission
Identification	**Sponsorship source:** Funding for this study was provided by PHRC 2005 and had no furtherrole in the study design; in the collection, analysis and interpretation of data;in the writing of the report; and in the decision to submit the paper forpublication. **Country:** France **Setting:** **Comments:** **Authors name:** Thierry d'Amato **Institution:** Université de Lyon, Lyon, F-69003, France **Email:** thierry.damato@ch-le-vinatier.fr **Address:** CH le Vinatier, Service Pr. d'Amato, 95 Boulevard Pinel, 69677 Bron cedex, France
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Jesper ØStrup Rasmussen* Scales:Verbal Working memory: Auditory Number Sequencing (ANS). The participants are presented with clusters of numbers (e.g. 936) of increasing length (from 2 digits to amaximum of 8 digits). They are asked to tell the tester the numbers in order, from lowest to highest. A key measure was the maximal span recalled (high=better)Verbal learning and memory: Word List Memory test (WLM).16 words are presented auditorily by the computer to the subject who must then recall as many as possible. Key measures were the total recall on first trial (high=better)En del præsenteres kun som Cohens d: Impact of CRT on all clinical and neuropsychological assessments was calculated using Cohen's d effect size. We reported a large effect of CRT on verbal learning (1.55) and a medium effect size on verbal memory (0.52), and working memory (0.41) *Elisabeth Ginnerup-Nielsen* Quality of life was assessed by the self-report quality of life forpeople with schizophrenia (SQoL) higher=betterVerbal Working memory: Auditory Number Sequencing(ANS). The participants are presented with clusters ofnumbers (e.g. 936) of increasing length (from 2 digits to amaximum of 8 digits). They are asked to tell the tester thenumbers in order, from lowest to highest. A key measurewas the maximal span recalled; higher=betterVerbal learning and memory: Word List Memory test (WLM) higher=better **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Seventy-seven patients were randomised to either the active group (CRT patients, standard treatment and cognitive remediation program, n = 39)" Comment: unclear how
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Comment: Probably not possible. Not described
Blinding of outcome assessment (detection bias)	Low risk	Quote: "The assessors were blind to the participants' assigned rando- misation and had no other role in the project that would undermine the blinding."
Incomplete outcome data (attrition bias)	Low risk	Comment: No itt analysis but apparantly no dropouts
Selective reporting (reporting bias)	Unclear risk	Comment: Det er ikke helt de samme outcomes de agiver de vil måle, som de resultater de præsenterer. Desuden er resultaterne meget kortfattet præsenteret.
Other bias	Low risk	

Dickinson 2010

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 48.5 (8.8) ● *Sex (male %)*: 75 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: Cognitive remediation ● *Age, mean (sd)*: 46.9 (6.6) ● *Sex (male %)*: 65.7 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** Participation was open to individuals diagnosed with schlzo· phrenia or schizoaffective disorder. Diagnoses used the Structured

	Clinical Interview for DSM-IV (SCID), information from the panicipants' mental heaJth care providers, and medicaJ records. Eligible individuals were 21 to 60 yeacs old, clinically stable on regimens or second-generation or low-dose first-generation antipsychotics, without a history of significant brain trauma, n.euro· logical disorder, or substance dependence within the previous 3 months, and without physical limitations precluding effective use of computer-based exercises. **Excluded criteria:**
Interventions	**Intervention Characteristics** TAU ● *Description*: This condition was designed to contra! for nonspecific treatment effects. It specified an equal number of one-on-one com-puter sessions with the same trainers who conducted the remediation sessions. Tt offered supportive trainer interactions and matched experience with computers and varied computer activities. Control activities were selected for game-like proper<ies and low cognitive demand. Participants in this condition did not receive problem-salving training or guided practice on the exercises used in the remediation condition. The control sessions were also videotaped and reviewed in supervision meetings. Cognitive remediation ● *Description*: Training was organized in three phases. During the first phase, trainers introduced a simple and general problemsolving approach, which was reinforced consistently through all phases of training. The participants were prompted to identify the challenges in each exercise, articulate a plan to address them, implement the plan, monitor its effectiveness, and adjust their strategy as needed. Computer-assisted cognitive remediation shaped these problem-salving techniques through extensive practice. Master's-level trainers guided participants at an individualized pace through a varied curriculum of engaging, educational computer exercises, selected to gradually enhance processing speed, attention, working memory, episodic memory, and executive functioning, Le., reasoning and problem salving {30) (Figure 1). Time in individual sessions was split; practice of cognitive exercises (roughly two-thirds af each session) alternated with trainer prompts, queries and feedback, and strategy review. Tue training sessions were videotaped and reviewed in a weekly supervision meeting to promote consistency across different participantsand trainers and allow adjustments to individual participant needs. We sought to complete three remediation sessions perweek, with a maximum af 15 weeks allowed for completion of the 36-session training program.
Outcomes	*Continuous*: ● Social functioning (Maryland Assessm ent of social competence) Z-score ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, other scale ● QoL ● Global cognition score, ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, (see note). higher=better ● Verbal learning and memory, RAVLT, learning (high=better) ● symptoms BPRS *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** Funded by NIMH grant MH-67764 and the VA Rehabilitation Research and Development Service. **Country:** USA **Setting:** **Comments:** **Authors name:** Dwight Dickinson **Institution:** Mental Illness Research, Education and dinical Center, Veterans Integrated Services Network 5, Baltimore VA Medical Center; and the Department of Psychiatry, Universify Of Maryland School of Medicine, Baltimore **Email:** dwight.dickinson@va.gov **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Working memory meassured by: N-back paradigm (35}, accuracy on the 1- and 2-back conditions WAIS-III (36) letter-number sequendng subtest. number correct. Forstår det som higher=betterWorking memory - intervention eot: -0.04control group eot: -0.13 (Maryland Assessm ent of social competence): Svært at finde beskrivelse af scoring står opgivet som en Z score *Jesper ØStrup Rasmussen* The FU results is not included, because the period was only 3 mo (The panicipants were assessed before treatment, immediately after treatment, and 3 months after treatment).Scales: Symptoms: BPRS, total (Low=better)Working memory: WAIS-111 (High=better).Global Cognition: SCoRS (interviewer global rating was significantly correlated with the BACS composite score, the UPSA total score, and the ILSI total score. Higher ratings reflect a greater degree of impairment). **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Comment: What is adaptive urn?Only randomised
Allocation concealment (selection bias)	Unclear risk	Comment: Not described.
Blinding of participants and personnel (performance bias)	Low risk	Comment: The participants were not informed that they were assigned to "treatment" or "contra!" conditions; rather. individuals in both groups were told that the aim of the study was to determine whether participation in a "computer activities program" improved thinking skills.Personnel not relevant in this type of intervention
Blinding of outcome assessment (detection bias)	Low risk	Quote: "The cognitive assessors (who also administered the functional measures) were research assistants, trained and supervised by a neuropsychologist (0.0.). The assessors were blind to the par- ticipants' assigned condition and had no ether role in the project that would undermine blinding."
Incomplete outcome data (attrition bias)	Low risk	Quote: "Of the 35 par- ticipants who engaged in the remediation condition, 30 (85.7%) completed at least 30 remediation sessions (mean=32.2)." Comment: Dropout: Control: 25,9%Intervention: 17,64
Selective reporting (reporting bias)	Low risk	Quote: "ClinicalTrials.gov identifiers: NCT00295048, NCT00261794." Comment: Outcome from protocol assessed

Other bias	Low risk

Farreny 2012

Methods	**Study design:** **Study grouping:** **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: ● *Sex (male %)*: 67.9 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: Cognitive remediation ● *Age, mean (sd)*: ● *Sex (male %)*: 67.6 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** 1) they had a diagnosis of schizophreniaor schizoaffective disorder and more than 2 years' illness duration;2) they had finished primary studies or they were able to successfullycomplete a reading comprehension task used for 13-year-old students;3) if they had a Mini Mental State Examination score of24 or more and a Global Assessment of Functioning score between40 and 70. **Excluded criteria:** 1) they were suffering acuteillness exacerbation; 2) they had intellectual disability or any neurologicaldisorder; 3) they were participating in social skills training,cognitive remediation or any other psychological intervention differingfrom usual care; 4) they had had a switch of antipsychotic drugthe month before the trial or during the 40 week study period;5) and/or a diagnosis of alcohol or drug dependence within 6 monthsprior to inclusion.
Interventions	**Intervention Characteristics** TAU ● *Description*: Cognitive remediation ● *Description*: REPYFLEC CR is a strategy-based training that targets executivefunction and metacognition. It is carried out using paper and penciland a blackboard (required to develop some of the tasks, explanations,examples, etc.); in a group format (4–6 participants), over4 months twice a week and consisting of 32 sessions lasting 1 h. Wedeveloped a Spanish manual where training is described session bysession; incorporating the materials for developing sessions, sometheoretical points and bibliography for therapists. Working contentsare divided into two main areas: Problem Solving (PS) and CognitiveFlexibility (CF).
Outcomes	*Continuous*: ● Social functioning SFS higher=better ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, other scale ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** This research was supported by Fundació La Caixa and Instituto de Salud Carlos III **Country:** Spain **Setting:** **Comments:** **Authors name:** Aida Farreny **Institution:** Parc Sanitari Sant Joan de Déu, Fundació Sant Joan de Déu, Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Sant Boi de LLobregat, Barcelona, Spain **Email:** afarreny@pssjd.org **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** *Jesper ØStrup Rasmussen* Some of baseline characteristics only for the total sample: Some 89% of participants had a diagnosisof schizophrenia (n=54), principally paranoid-type (n=35); andthe remaining 11% (n=7) of schizoaffective disorder. The averageage was 40.6 years (SD: 7.6) and average illness duration was17.5 years (SD: 8.9). **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Some Wechsler Memory Scale-III(WMS-III) (Wechsler, 2004) subscales were selected with the aim ofassessing verbal and visual memory (Texts I and II, and Scenes I andII)Social functioning: We used the Spanish validation (Torres andOlivares, 2005) of the Social Functioning Scale (SFS) (Birchwood et al.,1990) for measuring social behavior and relationships, autonomy,employment-occupation and leisure. Raw scoring was used for eachsubscale and for total score (min. 0–max. 223) with a higher score indicatinga better result *Jesper ØStrup Rasmussen* Length of intervention: 4 mo, FU 6 mo (40 weeks after start of treatment).Scales:Social functioning: Higher standardised scores indicate better functioning (range 55 to 135)Memory: WMS-III (Some Wechsler Memory Scale-III(WMS-III) (Wechsler, 2004) subscales were selected with the aim ofassessing verbal and visual memory (Texts I and II, and Scenes I andII). Raw scores were used.) (high=better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "The participants were assigned to the experimental and control groups through a randomization procedure once the baseline assessments had been performed." Comment: Hmm still unclear which procedure. 34/28 in the two group is relatively skewed. At the same time there were no significant differences between groups
Allocation concealment (selection bias)	Unclear risk	Comment: Not described.
Blinding of participants and personnel (performance bias)	High risk	Quote: "metacognition. It is carried out using paper and pencil and a blackboard (required to develop some of the tasks, explanations, examples, etc.); in a group format (4–6 participants)," Comment: probably not possible to blind
Blinding of outcome assessment (detection bias)	Low risk	Quote: "psychologists carrying out the assessment were blinded to the treatment until the conclusion of the study."
Incomplete outcome data (attrition bias)	Unclear risk	no details
Selective reporting (reporting bias)	Low risk	Quote: "This clinical trial is regis- tered at ClinicalTrials.gov: NCT01279070 and was approved by the Parc Sanitari Sant Joan de Déu Ethics Committee."
Other bias	Low risk	

Garrido 2013

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 33.21 (6.89) ● *Sex (male %)*: 76 ● *Length of illness (years), mean (sd)*: 10.68 (6.66) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: 64.41 (10.62) Cognitive remediation ● *Age, mean (sd)*: 33.37 (8.32) ● *Sex (male %)*: 71 ● *Length of illness (years), mean (sd)*: 11.84 (8.23) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: 63.58 (10.99) **Included criteria:** DSM-IV criteria for schizophrenia disorderconfirmed by Structured Clinical Interview for DSM-IV Axis I Disorders(SCID-I; First et al., 1997); age between 18 and 55 years; estimated IQof 85 or above according to the Vocabulary subtest on the WechslerAdult Intelligence Scale-III (WAIS-III); patients were considered sufficientlystable if they had a Global Assessment of Functioning score(GAF; Endicott et al., 1976) of 40 or higher and they maintained a stabledose and type of psychiatric medication for at least one month prior toinclusion. **Excluded criteria:** a score of 6 or higher (severe orextremely severe) on any item of PANSS-P Positive Syndrome Scale,Spanish version (Peralta and Cuesta, 1994); absence of cognitive impairmentconfirmed by neurocognitive assessment (when raw scores wereless than 1 standard deviations of the mean score obtained from therespective normative data in their corresponding manual, they wereconsidered non-impaired); current substance abuse or drug dependencein the last year, defined by the Structured Clinical Interview for DSM-IV(SCID-I; First et al., 1997); traumatic brain injury or history of neurologicalillness; electroconvulsive therapy in the previous 12 months; psychiatriccomorbidity and plan to change medication during the trial.
Interventions	**Intervention Characteristics** TAU ● *Description*: The active control condition consisted ofwatching videos for 60 min ona computerwith the same features as the therapy condition and led by thesame staff who conducted the CACR.At the end of the each session, participants had to answer fivemultiple choice questions referring to different points in the video.Patients were also instructed to write down what had impressedthem or what they had liked best about the documentary. Cognitive remediation ● *Description*: 48 sessions of computer-assisted cognitiveremediation (CACR)Participants received either CACR therapy or active control withintwo weeks of randomization (Fig. 1). The intervention was conductedover six months and comprised 48 sessions in both cases. The sessionslasted 60 min and were held twice a week.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS III ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, CVLT long term recall ● QoL gls-total ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) ● Verbal learning and memory, CVLT short term recall *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** This study was supported by the ¨Fundació La Marató TV-3¨ (012810). **Country:** Spain **Setting:** **Comments:** **Authors name:** Gemma Garrido **Institution:** Department of Mental Health, Consorci Sanitari de Terrassa, Terrassa (Barcelona), Spain **Email:** ggarrido@cst.cat **Address:** Department ofMental Health, Consorci Sanitari de Terrassa,Terrassa, Barcelona, Spain

Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* WAIS III = Letter–Number sequencing subtest higher =betterThe Heinrichs–Carpenter Quality of Life Scale (QLS; Heinrichs et al.,1984) was administered to assess the two secondary outcomes. The QLSassesses overall quality of life and functioning on 21 items rated from0 to 6 (higher scores reflecting better quality of life).Verbal learningwas assessedwith California Verbal Learning Test (CVLT; Delis et al., 2000), taking intoaccount the number of words recalled in short-term and long-term freerecall. *Jesper ØStrup Rasmussen* Scales:Working memory: WAIS III. QoL: The QLS assesses overall quality of life and functioning on 21 items rated from 0 to 6 (higher scores reflecting better quality of life).Verbal learning and memory: CVLT (taking into account the number of words recalled in short-term and long-term free recall. (Kan sammenlignes med RAVLT learning og delayed))Short-term free recall Intervention: 11.42 (3.55) Control 11.00 (2.47) Long-term free recall Intervention: 11.65 (3.25) Control: 11.61 (2.52) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Participants were randomly assigned using computer- generated random numbers after baseline assessment. Randomization was independently conducted by V.V. who took no part in the imple- mentation of assignments or clinical and neuropsychological assess- ments. After baseline assessment, patients were assigned to the CACR group or active control group."
Allocation concealment (selection bias)	Unclear risk	Comment: Not described. probably done but unclear
Blinding of participants and personnel (performance bias)	Low risk	Quote: "Both patients and relatives were blinded to the group allocation, and the raters were blind to treatment condition."
Blinding of outcome assessment (detection bias)	Low risk	Comment: Both patients and relativeswere blinded to the group allocation, andthe raters were blind to treatment condition.
Incomplete outcome data (attrition bias)	High risk	Comment: Big difference in dropout rates: Intervention: 18,4%Control: 37,9%
Selective reporting (reporting bias)	Low risk	Quote: "The trial registration number is NCT01598220." Comment: All outcome from protocol assessed
Other bias	Low risk	

Gharaeipour 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 27.62 (5.66) ● *Sex (male %)*: 66.67 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: 14.86 (5.99) ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: Cognitive remediation ● *Age, mean (sd)*: 29.81 (7.61) ● *Sex (male %)*: 76.20 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: 15.71 (3.20) ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** Schizophrenia, as determined by theStructured Clinical Interview for DSM-IV, signed informed consent, age over 20 years,and being fluent in speaking, reading, and writing Farsi. **Excluded criteria:** Auditory or visual impairment, evidence of mentalretardation, history of traumatic brain injury, presence or history ofany neurologic illness, and substance abuse or dependence.
Interventions	**Intervention Characteristics** TAU ● *Description*: Cognitive remediation ● *Description*: The program was made up of educational, experiential (trying outstrategies) and reflective (group discussion) components. Patientswere engaged in approximately 40 h of neurocognitive exercises thatprovided equal practice time in areas of attention and concentration learning and memory, and executive functions. Sessions were conductedin a seminar format. At the start of each week the clinical teamprovided a preview of topics to be presented. The group facilitatorusually had a handout and presented information on a whiteboard.Participants took notes, asked questions, shared experiences relatingto the topic and offered explanations to each other. Participants weretaught about various compensatory strategies relevant to their needs,and they were given the opportunity to practice these strategies. Theywere also encouraged to relate the tasks carried outwithin the exercisegroup to everyday activities.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, other scale ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, ACT higher=better ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*:

	● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** None to declare **Country:** Iran **Setting:** **Comments:** **Authors name:** Manouchehr Gharaeipour **Institution:** Tehran University of Medical Sciences, Department of Psychology, Hazrat Rasoul Akram Hospital, Niayesh, Satar Khan, Tehran, Iran **Email:** m-gharaeipour@farabi.tums.ac.ir **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** *Elisabeth Ginnerup-Nielsen* **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Rey Auditory Verbal Learning Test (RAVLT; Lezak, 2012) assessesverbal learning and verbal memory.Auditory Consonant Trigrams (ACT; Stuss et al., 1987) assesses verbalworking memory. higher =betterGlobal cognition score: Computed z scores of the all cognitive measures and summed those z scores separately for the baseline and posttreatment assessments *Jesper ØStrup Rasmussen* Working memory: ACT (The number of letters correctly remembered after 5 second delay interval was tallied. The maximum score was 15 - High=better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Comment: Unclear how randomOnly "randomised". Quote: "were randomly assigned to the cognitive remediation condition (n = 21) or the con- trol condition (n = 21), independent of the assessors."
Allocation concealment (selection bias)	Unclear risk	Quote: "Randomization was independently conducted by a Bachelor's level research assistant who was not involved in study treatments." Comment: But could still forsee allocation
Blinding of participants and personnel (performance bias)	High risk	Comment: probably not blindedNot possible.
Blinding of outcome assessment (detection bias)	Low risk	Quote: "Testing on measures occurred prior to random group assignment (baseline) and after a two month intervention (posttreatment). All tests and scales were administered, scored and interpreted by two trained raters with Master's degrees in clinical psychology who were blind to treatment conditions."
Incomplete outcome data (attrition bias)	Low risk	Quote: "All participants in both groups completed the program and no one dropped out of the study."
Selective reporting (reporting bias)	Low risk	Comment: no trial protocol. But described outcomes seem assessed
Other bias	Low risk	

Hadas-Lidor 2001

Methods	
Participants	
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Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Lecardeur 2009

Methods	**Study design:** **Study grouping:** **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 40.5 (8.9) ● *Sex (male %)*: 87.5 ● *Length of illness (years), mean (sd)*: 12.5 (7.8) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: Cognitive remediation ● *Age, mean (sd)*: 45 (5.9)

	● *Sex (male %)*: 75 ● *Length of illness (years), mean (sd)*: 20.7 (4.3) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: **Included criteria:** Individuals were eligible if aged between18 and 55 years, were fluent in French, met DSM-IV diagnosticcriteria (American Psychiatric Association, 1994) for schizophrenia(n=15), schizoaffective disorder (n=8) or delusionaldisorder (n=1). Participants were stabilized according to theirpsychiatrist. **Excluded criteria:** Change in treatment over 2 monthsprior to the start of the study, meeting criteria for past neurological disorders or substance dependence, and not beingable to give informed consent.
Interventions	**Intervention Characteristics** TAU ● *Description*: Cognitive remediation ● *Description*: Mental Flexibility Therapy (MFT)This therapy was centered on the remediation of mentalflexibility. The exercises were oriented towards social situationsand activities of daily living.We adopted a maximum ofmodalities by which mental flexibility could be solicited(language, hearing, touch, etc.).Both therapies were short, with 9 sessions of approximately1 h, 2 sessions/week (i.e. each therapy lasted 5weeks). This shortformat was selected since the duration of CRT was not related tothe effect on cognitive performances in a recent meta-analysis(McGurk et al., 2007). This rhythm ensured the maintenance ofacquisitions and improved performances. Sessions lasting 1 htook into account tiredness and attentional disturbances typicalin schizophrenia patients. Several patients reported that thisduration was adjusted to the rhythm of their daily-livingactivities. A group format was chosen to create a stimulatingenvironment that favoured interactions, communications, transferof knowledge and experiences between participants.We usedvarious media for the exercises proposed to patients.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, panss total score ● Verbal learning and memory, other scale ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** Funding for the study was provided by Fonds de la recherche en santé duQuébec (FRSQ) to MCL. LL was supported by the Chaire de Schizophrénie EliLilly de l'Université de Montréal (Québec, Canada). **Country:** Canada **Setting:** **Comments:** **Authors name:** Laurent Lecardeur **Institution:** Pavillon Albert-Prévost, Hôpital du Sacré-Coeur de Montréal, Montréal, Québec, Canada **Email:** lecardeur@cyceron.fr **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Jesper ØStrup Rasmussen* Scales: Symptoms: PANSS (low=better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Quote: "Group allocation was pseudo-randomized according to patient availability. Neither cognitive deficits nor symptoms were taken into account when patients were assigned to a group."
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible.
Blinding of outcome assessment (detection bias)	High risk	Quote: "scales. Assessors were not blind to group assignment."
Incomplete outcome data (attrition bias)	Unclear risk	Comment: 20 % dropout rates no itt
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Lindenmayer 2008

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 43.33 (8.65) ● *Sex (male %)*: 88

	● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 85 Cognitive remediation ● *Age, mean (sd)*: 43.58 (10.34) ● *Sex (male %)*: 91 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 82 **Included criteria:** a DSM-IV (14) chart diagnosisof schizophrenia, schizoaffectivedisorder, or bipolar disorder; absenceof psychiatric history of mentalretardation, brain injury, or neurologicaldisorder; stable use of medicationfor at least three months without plansfor changing medication; and proficiencyin English. **Excluded criteria:**
Interventions	**Intervention Characteristics** TAU ● *Description*: The computerized control conditioncontrolled for staff time and computerexposure, which consisted of threeweekly, one-hour computer sessions.Similar to the group assigned to cognitiveremediation, the groups comprisedsix to eight patients and were supervisedby two or three hospital staff.Patients were assigned to a computerstation and given instruction on usingthe mouse. Patients were then able toplay computer games Cognitive remediation ● *Description*: The cognitive remediation program consisted of 24 hours of computerizedpractice over a 12-week period and a weekly discussion group tofacilitate transfer of cognitive skills to daily activities.All study participants had access tothe broad range of treatments availableto inpatients at Manhattan PsychiatricCenter while involved in thetrial. These treatments includedpharmacological treatment and management,and psychosocial group interventionsadministered in a required20-hours-per-week “treatmentmall” program. This program includedaggression management; mentalillness and chemical abuse interventions;social skills training and preparationfor community living; and acomprehensive educational programthat teaches patients about their medication,mental illness, and healthylifestyles. Both groups attended thesame mix of mall group programs,both in terms of number of groupsand type of groups.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS (note) ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, other ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** Not stated. **Country:** USA **Setting:** **Comments:** **Authors name:** Jean-Pierre Lindenmayer **Institution:** Department of Psychiatry, New York University, New York City **Email:** lindenmayer@nki.rfmh.org **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Global cognition: Her er brugt composite z-score - Overall cognitive function, psychomotor speed, and verbal learningI WAIS er brugt: Digit span (number correct) (Forward) Possible scores range from 0 to 12, with higher scores indicating improvement in verbal working memory from the Wechsler Adult Intelligence Scale–Revised.Resultater Backwards: Intervention: Mean (sd) 4.5 (2.3) (N=42)Control: 3.9 (2.0) N=33 *Jesper ØStrup Rasmussen* Scales:Verbal learning and memory: RAVLT learning: Possible scores range from 0 to 75 with higher scores indicating higher verbal learning memory.Verbal learning and memory: RAVLT delayed: Possible scores range from 0 to 15, with higher scores indicating increased delayed recall.Working memory: WAIS-R, backward: Possible scores range from 0 to 12, with higher scores indicating improvement in verbal working memory from the Wechsler Adult Intelligence Scale–Revised.Global cognition: WRAT, z score: **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Randomization was conducted with a computer-generated randomization sequence (www.randomization.com) conducted by the study coordinator."
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible.Efforts have been done to make interventions equal but some parts of the intervetnion are difficult to blind. Also to treating therapists..
Blinding of outcome assessment (detection bias)	Unclear risk	Quote: "Interviewers were blind to the condition to which the patient had been assigned during the treatment phase." Comment: and: Work measures were collectedby the vocational rehabilitation director(not blind to the conditions) duringthe 12-month follow-up and includedcumulative hours, weeksworked, and wages earned.

Incomplete outcome data (attrition bias)	Low risk	Quote: "Third, intent-to-treat analyses were conducted to" Comment: Low dropout rates and ITT Quote: "Forty-five were random- ized to cognitive remediation and 40 to the control condition. Seventy-two patients completed the entire trial of 24 hours"
Selective reporting (reporting bias)	Unclear risk	Quote: "Positive and Negative Syn- drome Scale (PANSS) covering the prior week of functioning (21). Symp- toms were assessed at baseline and at six-week, 12-week, six-month, and 12-month follow-ups." Comment: 6 and 12 months not described anywhereIn the methods section it says that PANSS will be reported at FU, cant find those answers.
Other bias	Low risk	

Lu 2012

Methods	**Study design:** **Study grouping:** **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 38 (9) ● *Sex (male %)*: 58.7 ● *Length of illness (years), mean (sd)*: 24 (8) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 Cognitive remediation ● *Age, mean (sd)*: 37 (8) ● *Sex (male %)*: 63.5 ● *Length of illness (years), mean (sd)*: 23 (9) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 **Included criteria:** schizophrenia (based on the third editionof the Chinese Classification and Diagnostic Criteriaof Mental Disorders[5]), had a duration of illness of atleast five years, were clinically stable at the time ofenrollment (i.e., total score of Positive and NegativeSyndrome Scale[6] [PANSS] <60 or a drop in the totalPANSS score of more than 50% after initial treatmentof acute symptoms), were 18-65 years of age, and werereceiving maintenance treatment with a combination ofclozapine and risperidone (the most common combinedtreatment regimen for chronic patients in our setting). **Excluded criteria:** Excluded patients included those with co-morbid mentalretardation, perceptual disorders, organic brain disease,serious medical disorders, impulse control problems, orsevere depressive or anxiety symptoms, and those whowere pregnant or lactating.
Interventions	**Intervention Characteristics** TAU ● *Description*: The TAU group received routine occupational andrecreational therapy and general mental health educationincluding instructor-led music therapy, dancetherapy and physical exercises as well as psychologicalcounseling during daily ward rounds. This treatment alsolasted 45 minutes per day and was provided five daysper week for three months. The four therapists whoprovided CRT were different from the clinicians whoprovided TAU. Cognitive remediation ● *Description*: The CRT employed in this study used a Chineseversion of the CRT manual[3,4] developed by AnnDelahunly and Rodney Morice. CRT is a comprehensiveneuropsychological training method targeting variousmajor cognitive deficits of schizophrenia that combinesverbal reinforcement, errorless learning, individualizedguidance and other cognitive therapeutic techniques.The cognitive functioning of patients in three primaryareas—cognitive flexibility, working memory and planning—is improved as they complete cognitive tasks of increasingdifficulty under the guidance of four trained therapists.[7-10] Training sessions lasted for 45 minuteseach and were repeated five days a week for threemonths.
Outcomes	*Continuous*: ● Social functioning (SSSI) ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, other scale ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** The study was supported by the Third People'sHospital of Lanzhou Municipality. **Country:** China **Setting:** **Comments:** **Authors name:** Hongbo LU **Institution:** The Third People's Hospital of Lanzhou Municipality, Lanzhou, Gansu Province, China **Email:** hongbolv0308@126.com **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* The Wisconsin Card Sorting Test[11] (WCST) was usedto evaluate before versus after changes in cognitivefunction. Men denne rapporterer 5 forskellige outcomes hhv. 1) Total number of completed cards. 2) Number of cards correctly categorized 3) Number of perseverative errors. 4) Number of random errors 5) Number of categories completed CRT -mean (sd) 973.0 (12.2) 25.8 (4.5) 25.0 (4.0) 30.7 (6.3)

	3.5 (1.1) N=60Control: mean (sd) 79.3 (11.5) 22.5 (2.6) 27.5 (3.2) 36.0 (5.9) 3.0 (1.2) (N=62) the Scale of Social Skills of chronic schizophreniaInpatients[12] (SSSI) was used to assess social functioning, *Jesper ØStrup Rasmussen* Scales: Socialfinctioning: SSSI (an interviewer-rated questionnaire developed in China specifically for chronic psychiatric inpatients with 10 items (score on 0-2 point Likert scales) that have good internal consistency (alpha=0.89), test-retest reliability (rs=0.97), and inter-rater reliability (rs=0.98);[12] the total score (range 0-20) is used in the current study, with lower scores representing better functioning.Jeg har ikke medtaget Wisconsin sorting card test, da den beskrives som at måle executive functions, og ikke hukommelse (wikipedia). **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Comment: unclear how
Allocation concealment (selection bias)	Unclear risk	Comment: Not described.
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible.
Blinding of outcome assessment (detection bias)	High risk	Quote: "Two psychologists were trained to administer these instruments; their inter- rater reliability for the three instruments was assessed by comparing their results for 15 patients (ICC for WCST=0.80, ICC for SSSI=0.87, and ICC for ITAQ=0.92). These psychologists were not blind to the treatment status of the patients they evaluated."
Incomplete outcome data (attrition bias)	Low risk	Quote: "Four patients dropped out during the study leaving 60 in the CRT group and 62 in the TAU group in the final analysis." Comment: Low dropout rates.
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Man 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 35.1 (10.2) ● *Sex (male %)*: 70 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: Cognitive remediation ● *Age, mean (sd)*: 34.9 (8.5) ● *Sex (male %)*: 56 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: therapist-administered int. (TA) ● *Age, mean (sd)*: 41.6 (7.7) ● *Sex (male %)*: 61 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: **Included criteria:** schizophreniaaged 18 to 55 years who were mentally stable and calm and had a basic attention span of at least 3 minutes **Excluded criteria:** (1) impaired physicalfunctions inhibiting the operation of a keyboard or mouse,(2) visual impairment such as blindness, partial blindnessand other visual problems, (3) other neurological problemssuch as epilepsy, (4) pre- and post-morbid mental retardationof severe or moderate grades, (5) previous training of similarcomputerised programmes, or (6) a deviation quotient of<85 in the Test of Nonverbal Intelligence version III (TONI-3),7 which is a language-free intelligence test that measuresabstract/figural problem-solving ability.
Interventions	**Intervention Characteristics** TAU ● *Description*: Cognitive remediation ● *Description*: The 12-session CAEL and TA programmes weredeveloped based on the work scenario of a conveniencestore worker involving four major tasks: stock keeping,cleansing, food servicing, and cashiering. Five principlesof errorless learning were applied: (1) the to-be-learnedtask was broken down into components, (2) training beganon simple tasks and proceeded gradually to more difficultones, (3) high levels of success were maintained at eachstage with use of aids and abundant positive reinforcement,(4) each component was over-learned through repetitive,successful practice until performed nearly automatically,and (5) the learned components were recombined, addingone component at a time, until the task was trained entirely. therapist-administered int. (TA) ● *Description*: The TA programme was produced by print-screening thescenes of CAEL to form an administration handbook foreach session. Thus the two programmes were of similarcontent and structure, but different in the mode of delivery.
Outcomes	*Continuous*: ● Social functioning CWPP higher=better ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, Cognistat ● QoL ● Global cognition score higher=better ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other.

	● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** The study was supported by the Health and Health ServicesResearch Fund, Food and Health Bureau, Hong KongSAR Government (#05060231). **Country:** Hong Kong **Setting:** **Comments:** **Authors name:** DWK Man **Institution:** Department of Rehabilitation Sciences, The Hong Kong Polytechnic University **Email:** David.Man@polyu.edu.hk **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** *Jesper ØStrup Rasmussen* The computerassisted intervention was chosen, because most of the included studies are computerassisted. **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Til Global cognition score er brugt: Vocational Cognitive Rating ScaleMemory er baseret på Neurobehavioral CognitiveStatus Examination memory subscale (cognistat)Til social functioning er brugt Chinese Work PersonalityProfile Social skills subscale *Jesper ØStrup Rasmussen* Length of intervention: 12 weeks. FU 3 month - not includeed (4 mo cutoff).scales:Memory: The Neurobehavioral Cognitive Status Examination (NCSE) Chinese version,9 which is a standardised examination of global cognitive function. It assesses multiple domains of cognitive functioning, namely: orientation, attention, language, construction, memory, calculation and reasoning. It was used to detect changes in the global cognitive functioning of the subjects after training. (High=better) OBS KUN learning IKKE memory - subgruppeanalyse. Jeg har ikke medtaget vocational skalaen, eller work profile skalaen, tænker de er for minded på arbejde. Jeg har ikke medtaget Wisconsin, obs om det evt. er et mål for learning. **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Comment: Not clear how
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	Unclear risk	Quote: "follow-up. The patients and assessors did not know the expected results of the training programmes." Comment: Treating Personnel not blinded. And patient knew if they were in control group. At the same time some effort has been done to eliminate bias.
Blinding of outcome assessment (detection bias)	Low risk	Comment: assessed by independent raters
Incomplete outcome data (attrition bias)	Unclear risk	Quote: "commencement. Of 90 subjects with schizophrenia aged 18 to 55 years who were mentally stable and calm and had a basic attention span of at least 3 minutes, 80 completed the study and 10 dropped out (owing to early discharge, incomplete training or data set)." Comment: No itt and relatively small but skewed dropout 7/30, 3/10 and 0/30
Selective reporting (reporting bias)	Low risk	Comment: No trial protocol. All described outcomes assessed.
Other bias	Low risk	

Medalia 1998

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	An outside consultant who was blind to group status, a psychologist trained in rating videotaped psychiatric interviews with the BPRS, viewed each taped interview and provided a BPRS rating.
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Poletti 2010

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**

Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 34.69 (7.63) ● *Sex (male %)*: 61.9 ● *Length of illness (years), mean (sd)*: 9.88 (6.24) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 Cognitive remediation ● *Age, mean (sd)*: 34.00 (9.87) ● *Sex (male %)*: 58.6 ● *Length of illness (years), mean (sd)*: 10.17 (8.24) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 **Included criteria:** To be included, patients had tosatisfy DSM-IV criteria for schizophrenia and the following conditions:1. To have been treated with a stable dose of the same antipsychotictherapy for at least 6 months, and be responsive (30% or more responsebased on PANSS scores) and clinically stabilised.2. To have participated in a rehabilitation programme, including both cognitive-behavioural and psychosocial programmes, three hours a day,three times a week, for three months. **Excluded criteria:**
Interventions	**Intervention Characteristics** TAU ● *Description*: SRT + PBO. The control condition consisted of one hour a week ofcomputer-aided non-domain-specific activity and two extra hours aweek of SRT (patients were randomly assigned to one of the non-cognitivegroups previously described), for a period of 12 weeks. Subjectscompleted a total of 36 hours. Cognitive remediation ● *Description*: SRT + CRT. The experimental condition consisted of three 1-hour sessionsa week of domain-specific computer-aided exercises, for a periodof 12 weeks. This gave a total of 36 hours. Sets of exercises were individuallycreated for each patient on the basis of the quality of baselineperformances at neuropsychological assessment: for each poor performance,a domain-specific exercise was included, while for eachgood performance a non-domain-specific exercise was added.The computer-aided training employed the Cogpack Softwarew (Marker,1987–2007). This computer programme includes different neurocognitiveexercises that can be divided into domain-specific exercises, aimed at trainingspecific cognitive areas among the ones known to be impaired in schizophrenia(verbal memory, verbal fluency, psychomotor speed and coordination, executivefunction, working memory, attention) and non-domain-specific exercises,that do not focus on one specific function but require the use of several functionsat a time and engage functions such as culture, language and simple calculationskills.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, mean of 5 trials ● QoL (QLS) higher=better ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, digit seq. higher=better. ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** This work was supprted by the Italian Ministry of University and Scientific Research, grantnumber 2001064198. **Country:** Italy **Setting:** **Comments:** **Authors name:** Sara Poletti **Institution:** C.E.R.M.A.C. (Centro di Eccellenza Risonanza Magnetica ad Alto Campo) , University Vita-Salute San Raffaele , Milan , Italy **Email:** poletti.sara@hsr.it **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Verbal and working memory based on BACSVerbal memory - words recall (mean of 5 trials)Working memory ((digit sequencing) n correct sequences)QLS: Daily functioning was assessed by the Quality of Life Scale (QLS; Heinrichs,Hanlon, & Carpenter, 1984), a semi-structured interview made up of 21 itemsthat evaluates three different areas of social functioning: *Jesper ØStrup Rasmussen* Scales:Working memory: BACS (high = better)Verbal memory (ikke learning - obs subgruppe): BACS (high=better)QoL: Quality of Life Scale (high=better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "programme. Following admission to the study, compu- ter-generated random number tables allocated each patient to one of the following conditions:"
Allocation concealment (selection bias)	Unclear risk	Comment: Not described.
Blinding of participants and personnel (performance bias)	High risk	Quote: "The rehabilitation therapist was blind to the randomisation and neuropsychological assessment." Comment: Blind personnel but patients probably not

Blinding of outcome assessment (detection bias)	Low risk	Quote: "1987), admi- nistered by trained psychiatrists who were blind to treatment randomisation and neuropsychological testing."
Incomplete outcome data (attrition bias)	High risk	Quote: "36 patients in the SRT (stan- dard rehabilitation treatment) + PBO (placebo) group and 50 in the SRT + CRT group (Cavallaro et al., 2009); 13 subjects dropped out from the SRT + PBO group and 11 from the SRT + CRT group." Comment: Large skewed dropout and no ITTDropouts: Intervntion: 22%TAU: 36%
Selective reporting (reporting bias)	Low risk	Comment: No trial protocol but all outcome reported seems assessed
Other bias	Low risk	

Rass 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 43.9 (8.9) ● *Sex (male %)*: 90 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 Cognitive remediation ● *Age, mean (sd)*: 37.2 (12.5) ● *Sex (male %)*: 58.8 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 **Included criteria:** Axis-I diagnosis of schizophrenia or schizoaffective disorder(SZ) was obtained by Structured Clinical Interview for DSM-IV (SCIDI:First et al., 2001), clinical observations, and chart review. Inclusioncriteria for all participants were: 1) age between 18 and 50 years;2) no history of electroconvulsive therapy; 3) no history of neurologicalillness; 4) no current alcohol or drug dependence (DSM-IVcriteria) as ascertained by administration of the SCID sections onsubstance use disorders; 5) no hearing impairments on audiometry;6) verbal I.Q. above 70; 7) visual acuity (with correction) of 20/30or better; and 8) no alcohol use in the 24 h prior to testing. **Excluded criteria:**
Interventions	**Intervention Characteristics** TAU ● *Description*: The TAU participants came in only for assessments. Cognitive remediation ● *Description*: participants completed assigned tasksfor 2 h, including breaks, two days per week for ten weeks, a treatmentschedule consistent with other studies that showed positiveoutcomes.The CR group completed a cognitive training regimen using softwarethat applies adaptive algorithms to continuously adjust thedemands of each task according to performance (Mahncke et al.,2006). Participants completed auditory exercises described previouslyby Fisher et al. (2009a) and visual exercises. The visual moduleaims to improve the speed and accuracy of visual processing,to facilitate perception, to improve visual memory, and to reduce responsetime.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, HVLT delayed higher=better ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) ● Verbal learning and memory HVLT Total higer=better *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** We are grateful for the support from NIMH RO1 MH62150 (BFO), NIMH R21MH091774, and IUSM/CTR, NIH/NCRR grant number RR025761 to BFO; NIMH R01MH074983 to WPH; NARSAD (ARB) and NIDA T32 DA024628-01 (OR). **Country:** USA **Setting:** **Comments:** **Authors name:** Olga Rass **Institution:** Department of Psychological and Brain Sciences, Indiana University, 1101 East 10th Street, Bloomington, IN 47405, USA **Email:** rasso@indiana.edu **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Verbalmemory function was assessed using the Letter–Number Sequencingsubtest of the Wechsler Adult Intelligence Scale (WAIS-III; Wechsler,1997) and the Hopkins Verbal Learning Test (HVLT; Brandt andBenedict, 2001). Forstår det som at WAIS ligger under HVLT?? *Jesper ØStrup Rasmussen* Length og intervention: 10 weeks, Fu after 20 weeks (only 2,5 mo FU, our cut off is 4 mo, not included)Scales: Verbal learning: HVLT (high=better)Verbal memory (delayd): HVLT (high=better) Global cognition: ? **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Comment: Participants were randomly assigned using a random numbertable to cognitive remediation treatment (CR) or an active controlstudy arm.
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible
Blinding of outcome assessment (detection bias)	Low risk	Comment: Assessments werecompleted at baseline, five weeks, ten-weeks, and twenty weeksfollow-up by staff blind to treatment condition.
Incomplete outcome data (attrition bias)	Low risk	Comment: No itt and 4/21 and 0/10 dropout
Selective reporting (reporting bias)	Unclear risk	Quote: "WAIS-III Spatial Span forward and backward assessed visual working memory" Comment: Mentioned as an outcome but not assessed?No trial protocol
Other bias	Unclear risk	no details

Royer 2012

Methods	**Study design:** **Study grouping:** **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 35.5 (9.0) ● *Sex (male %)*: ● *Length of illness (years), mean (sd)*: 11.8 (8.6) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: Cognitive remediation ● *Age, mean (sd)*: 31.0 (7.6) ● *Sex (male %)*: ● *Length of illness (years), mean (sd)*: 10.6 (7.8) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: **Included criteria:** DSM-IV diagnosis of schizophreniamore than 70intelligence quotient (IQ; Wechsler Adult Intelligence Scale [WAIS-R];Britton & Savage, 1966), cognitive deficiency in at least one attention TEAtest (score below the second percentile; Zimmermann & Fimm, 1994), and/oron memory (score below 2 standard deviations [SD] in the Grober &Buschke test, 1987), and/or on executive functions (score below the fifthpercentile; Roussel & Godefroy, 2008). **Excluded criteria:** mental retardation (IQ B70), traumatic braininjury, presence or history of any neurological condition, and criteria forsubstance abuse or dependence.
Interventions	**Intervention Characteristics** TAU ● *Description*: Cognitive remediation ● *Description*: The training programme was carried out for 6hours/week for 6 months. Each 2 hour training session comprised paper andpencil exercises for 100 min in groups of six to eight persons, and individualtraining for 20 min with computer exercises.The cognitive training programme consistedof a series of exercises of increasing complexity. The first 6 weeks focused onattention, the next 3 weeks on language, the next 8 weeks introduced workingand long-term memory, and the final 7 weeks focused on planning andproblem solving. A psychologist assisted the patients in implementingstrategies (i.e., compensation approach) in order to find a way adapted tothe patient deficit to perform the exercises. Computerised exercises. A computerised training programme (REHACOM†software; Schuhfried Company) was used. The exercises wererepetitive (i.e., restitution approach) and consisted of five 10-min sessionswith tasks designed to train vigilance, divided attention, reaction time,visuomotor and visuoconstruction skills. The level of difficulty increasedwith achievement, every 90 s. If the patient was not successful, another taskwas proposed.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) ● long-term verbal memory delayed Groebe dFR16 higher=better *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** Funding for this study was provided by a grant of the French ministry of health. **Country:** France **Setting:** **Comments:** **Authors name:** Aurélie Royer **Institution:** Department of Psychiatry, University Hospital, Saint-Etienne, France **Email:** aureroyer@hotmail.com **Address:**

Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* working memory: backward span test (WAIS-R; Wechsler, 1981), two-back test(Zimmermann & Fimm, 1994)long-term verbal memory: the twoparallel forms of Grober and Buschke test (1987); *Jesper ØStrup Rasmussen* Scales:working memory: WAIS-R, backward span test (high=better)long-term verbal memory: the two parallel forms of Grober and Buschke test (d/FR) (high=better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Comment: they were randomly allocated toone of two groups (CRT or TAU) using a centralised randomisationprocedure.
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible.
Blinding of outcome assessment (detection bias)	Unclear risk	Quote: "Cognitive functions were assessed by trained neuropsychologists" Comment: Nothing said about blinding of assessors
Incomplete outcome data (attrition bias)	High risk	Comment: 3/28 patients dropped out in the CRT group and 8/18 in the TAUgroup. No itt analysisdropout rates:Intervention: 9,7%Control: 33.3
Selective reporting (reporting bias)	Low risk	Comment: No trial protocol .. But all outcome seems reported
Other bias	Low risk	

Sanchez 2014

Methods	**Study design:** **Study grouping:** **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 36.92 (10.5) ● *Sex (male %)*: 77.1 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: 43.33 (16.3) ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 Cognitive remediation ● *Age, mean (sd)*: 33.60 (9.4) ● *Sex (male %)*: 75 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: 38.88 (13.5) ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 **Included criteria:** Diagnostic criteriafor schizophrenia according to the American PsychiatricAssociation's Diagnostic and Statistical Manual ofMental Disorders, Fourth Edition, Text Revision (DSMIV-TR). **Excluded criteria:** -evidence of alcohol or drug abuse in the last 30 days;- previous history of a significant lack of consciousness;- mental retardation; and- relevant neurological or medical conditions.
Interventions	**Intervention Characteristics** TAU ● *Description*: The control group received standard treatment andparticipated in group activities including drawing, readingthe daily news, and constructing objects using differentmaterials (such as paper or wood). These activitieswere accomplished in a group format and with the samefrequency as the implementation of REHACOP. Cognitive remediation ● *Description*: REHACOP group attended 90-minsessions at least 3 days per week over 3 months.REHACOP is a structured programbased on paper-pencil tasks and uses the principles ofrestoration, compensation, and optimization. Trainingprocedures gradually increase the level of cognitive effortand demand. REHACOP trains patients in traditionallyimpaired cognitive domains such as attention, memory,processing speed, language, and executive functioning.
Outcomes	*Continuous*: ● Social functioning WHODAS lower=better ● Working memory, WAIS ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, PANSS total score ● Verbal learning and memory, HVLT ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse

Identification	**Sponsorship source:** Health Department of the Basque Government(2010111136, 2011111102); Educational and ScienceDepartment of the Basque Government (BFI09.123). **Country:** Spain **Setting:** **Comments:** **Authors name:** Pedro Sánchez **Institution:** Refractory Psychosis Unit, Hospital Psiquiátrico de Alava, Vitoria, Spain **Email:** nojeda@deusto.es **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Functional disability was assessed with the GlobalAssessment of Functioning (GAF) scale,42 the CGIscale,43 and the Disability Assessment Schedule scalefrom World Health Organization (DAS-WHO).44The 4 functional disability characteristic indicators offered bythe DAS-WHO were analyzed.The evaluation of cognitive functioning included tests toassess processing speed, working memory, verbal learningand memory, verbal fluency, and executive functioning.All cognitive measures were converted into Z-scores, higher=better Er der en en sd ved en Z-score??For learning and verbal memory, authors includedlearning and long-term recall from the Hopkins VerbalLearning TestWorking memory (Cronbach's α = .73) was assessed using Digit Forwardand Digit Backwards from WAIS-III *Jesper ØStrup Rasmussen* scales:Verbal learning and memory: HVLT (high=better)Working memory: Digit Backwards from WAIS-III (high=better)Symptoms; PANNS (Low=better)Socialfunctioning: WHO-DAS, social competence subscale (low=better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Assignment to the program was performed using a computer-generated random- ization list."
Allocation concealment (selection bias)	Unclear risk	Comment: Not described.
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible
Blinding of outcome assessment (detection bias)	Low risk	Comment: All raters were blind to thetreatment condition and had no other role in the projectthat would undermine the blinding.
Incomplete outcome data (attrition bias)	Low risk	Comment: 2/38 and 6/54 5% in intervention group 11 % in control. Relatively small but unequal dropout. ITT should have been doneLow dropout rates.
Selective reporting (reporting bias)	Low risk	Comment: No trial protocol but all outcome seems relevant and reported
Other bias	Low risk	

Silverstein 2005

Methods	
Participants	
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Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	High risk	Raters were not blind to treatment condition.
Incomplete outcome data (attrition bias)	Unclear risk	no information
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Tan 2013

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** TAU ● *Age, mean (sd)*: 36.80 (10.08) ● *Sex (male %)*: 55.9 ● *Length of illness (years), mean (sd)*: 11.96 (8.87) ● *Length of illness (month), mean (sd)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 Cognitive remediation ● *Age, mean (sd)*: 32.70 (10.86) ● *Sex (male %)*: 58.3 ● *Length of illness (years), mean (sd)*: 9.28 (6.85) ● *Length of illness (month), mean (sd)*:

	● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 **Included criteria:** Diagnostic and Statistical Manual ofMental Disorders, Fourth Edition (DSM-IV) diagnoses ofschizophrenia or schizoaffective disorder, as certified by apsychiatristGlobalAssessment of Functioning score of above 30. **Excluded criteria:** patients with known neurological, cardiovascularand respiratory diseases as well as developmental disabilitieswere excluded.
Interventions	**Intervention Characteristics** TAU ● *Description*: The PE programme was adapted from the StructuredExercise Programme implemented by the Centre forPsychiatric Rehabilitation at Boston University (Hutchinsonet al., 2005). To match the treatment intensity and durationof CR, the PE programme was also carried out for 5 hours(three sessions) per week over 12 weeks.The PE programme consisted of exercises in the gymnasium,as well as physical-based counselling Cognitive remediation ● *Description*: Computer-assisted cognitive exercises. The computer-assistedcognitive exercises were conducted for up to 5 hours (threesessions) each week for 12 weeks.In addition to the computerexercises, participants received cognitive-based counsellingfortnightly.
Outcomes	*Continuous*: ● Social functioning ● Working memory, WAIS digit span higher=better ● Verbal learning and memory, WLM (high=better) ● Verbal learning and memory, RAVLT, total (high=better) ● Days at hospital ● Symptoms, total score ● Verbal learning and memory, other scale ● QoL ● Global cognition score, Z score ● Verbal learning and memory, RAVLT, delayed (high=better) ● Working memory, other. ● Verbal learning and memory, RAVLT, learning (high=better) *Dichotomous*: ● Symptomatic remission ● Syptomatic relapse
Identification	**Sponsorship source:** This research was partially funded by a grant of S$10,000 fromthe Institute of Mental Health Research Department. Studynumber: 175/2006. **Country:** Singapore **Setting:** **Comments:** **Authors name:** Bhing-Leet Tan **Institution:** Occupational Therapy Department, Institute of Mental Health, Singapore **Email:** Bhing_Leet_TAN@imh.com.sg **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* QOL assessed by: The World Health Organization Quality of Life Scale-Brief (WHOQOL-Brief) QOL og PANSS (symptoms) kun opgivet via F-score..Lastly, the Wechsler AdultIntelligence Scale (WAIS)-Digit Span Forward and Backwardwas administered as a test of attention and working memory. I SKEMA ER BRUGT BACKWARDS *Jesper ØStrup Rasmussen* Scales:Working memory: WAIS, Digit Span Backward (high=better)Verbal memory and learning: RAVLT (high=better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Comment: During randomisation, a biostatistician independent to thestudy generated a random allocation of treatment using thecomputer.
Allocation concealment (selection bias)	Low risk	Comment: This sequence was placed in numbered sealedenvelopes and given to co-investigators who recruited theparticipants.
Blinding of participants and personnel (performance bias)	Low risk	Comment: Not described exactly what was done, but since both groups received an intervention, there was likely a similar "placebo effect" in both groups.Inaddition, all therapists were told that CR and PE were interventionslikely to yield benefits to participants and that theefficacy of both interventions was under investigation inthis study. Hence, all therapists and participants wereinformed that the topic of the research study was 'Theeffects of CR and PE on functional outcomes among peoplewith schizophrenia'. They were not told that the CR was thetreatment that was being researched and that PE was theplacebo treatment.
Blinding of outcome assessment (detection bias)	Unclear risk	Quote: "These two measurements were administered at baseline and upon completion of the 12-week treatment." Comment: The recruiting therapists, vocational training/day rehabilitationtherapists as well as the therapists involved inconducting CR and PE were not involved in administeringthe neurocognitive and Rockport Walking tests.Probably not blinded
Incomplete outcome data (attrition bias)	High risk	Comment: 10/36 and 10/34 dropped out. Even if itt was done this is a relatively large dropout.High dropout rates: Intervention: 30.6%Control: 38.2%
Selective reporting (reporting bias)	High risk	Comment: No trial protocol and WHO-QOL and PANSS unclearly reported
Other bias	Low risk	

Twamley 2008

Methods	
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Identification	

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Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	Examiners were trained to a high level of interrater reliability (ICC > .90) and were blind to group assignment.
Incomplete outcome data (attrition bias)	High risk	Thirty-eight participants completed a baseline assessment and at least one follow-up evaluation. Three participants dropped out of the SP group, and 11 dropped out of the CT group. Of the CT drop-outs, 7 dropped out after randomization but before the group started, and four attended one or two CT sessions but did not return. One found the group setting too anxiety-provoking, one felt he had no cognitive problems, one relapsed on alcohol and stopped coming to the clinic entirely, and one discontinued his antipsychotic medication and had a symptom exacerbation. The 14 drop-outs did not differ statistically from the 38 completers on age, education, gender, ethnicity, diagnosis, duration of illness, antipsychotic dose, positive and negative symptom severity, or premorbid IQ.
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Van der Gaag 2002

Methods	
Participants	
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Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Velligan 2000

Methods	
Participants	
Interventions	
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Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Velligan 2002

Methods	
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Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Velligan 2008A

Methods	
Participants	
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Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	The SOFAS score was based upon all information obtained during several hours of assessments conducted by blinded raters. In an effort to maintain treatment blinds, all subjects and collaterals were asked at the beginning of each assessment neither to divulge information about any visits made by staff of the research project nor to refer to any items they may have received as part of the study. If blinds were broken, alternative raters blind to group assignment completed the remaining assessments.
Incomplete outcome data (attrition bias)	Low risk	By the end of 24 months, 31%, 37% and 17% of participants dropped out of TAU, GES, and CAT respectively
Selective reporting (reporting bias)	High risk	No raw estimates are reported, only effect sizes (Results of a mixed effects regression model examining treatment group differences over time...)
Other bias	Low risk	

Velligan 2008B

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	In an effort to maintain treatment blinds, all subjects and collaterals were asked at the beginning of each assessment neither to divulge information about any visits made by staff of the research project nor to refer to any items they may have received as part of the study. If blinds were broken, alternative raters blind to group assignment completed the remaining assessments.
Incomplete outcome data (attrition bias)	Low risk	105 were randomized. Of these 105, there were 95 subjects with baseline and follow-up data for data analyse
Selective reporting (reporting bias)	High risk	some outcomes insufficiently reported (e.g. only ES)
Other bias	Low risk	

Wykes 2007

Methods	
Participants	
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Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Wykes 2007A

Methods	
Participants	
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Identification	
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Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	participants randomized to group by an independent trial statistician following a baseline assessment. Block randomization was used with CRT and control treatment being assigned randomly to 4 patients each within blocks of 8.
Allocation concealment (selection bias)	Low risk	
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Unclear risk	Symptom and quality of life assessments were assessed by an independent rater who was blind to group allocation. Self-report assessments (cognition and self-esteem) and informant ratings (social behaviour) were collected by a research assistant who was not blind to group allocation.
Incomplete outcome data (attrition bias)	Low risk	Low dropout rates .
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Footnotes

Characteristics of excluded studies

Alwi 2010

Reason for exclusion	Wrong setting

Arango Lasprilla 2012

Reason for exclusion	Wrong comparator

Bell 2009

Reason for exclusion	Wrong comparator

Bor 2011

Reason for exclusion	Data indgår i et andet studie

Bowie 2012

Reason for exclusion	Wrong comparator

Bucci 2013

Reason for exclusion	Wrong comparator

Burton 2011

Reason for exclusion	Wrong intervention

Cavallaro 2009

Reason for exclusion	Wrong comparator

Cella 2014

Reason for exclusion	Wrong outcomes

Dang 2014

Reason for exclusion	Wrong outcomes

Eack 2010

Reason for exclusion	Wrong outcomes

Eack 2010a

Reason for exclusion	Wrong outcomes

Eack 2013

Reason for exclusion	Wrong outcomes

Farreny 2013

Reason for exclusion	Konference abstract uden data

Farreny 2013a

Reason for exclusion	Data indgår i et andet studie

Franck 2013

Reason for exclusion	Wrong comparator

Hodge 2010

Reason for exclusion	Dublet. Allerede inkluderet studie

Kidd 2014

Reason for exclusion	Wrong patient population

Klingberg 2012

Reason for exclusion	Wrong comparator

Kurtz 2009

Reason for exclusion	Wrong comparator

Lalova 2013

Reason for exclusion	Wrong comparator

Lewandowski 2011

Reason for exclusion	Wrong comparator

Lindenmayer 2008a

Reason for exclusion	Dublet. Allerede inkluderet studie

Lindenmayer 2013

Reason for exclusion	Wrong comparator

Linke 2013

Reason for exclusion	Konference abstract uden data

Matsui 2009

Reason for exclusion	Wrong intervention

McGurk 2008

Reason for exclusion	Wrong setting

McGurk 2008a

Reason for exclusion	Wrong comparator

McGurk 2013

Reason for exclusion	Konference abstract uden data

Pontes 2013

Reason for exclusion	Pilot study, ikke europæisk sample, meget lille sample

Reeder 2013

Reason for exclusion	Konference abstract uden data

Ross 2011

Reason for exclusion	Wrong intervention

Sartory 2008

Reason for exclusion	Referat af Wykes 2007 studie

Schmidt 2011

Reason for exclusion	Wrong setting

Surti 2011

Reason for exclusion	Konference abstract uden data

Twamley 2010

Reason for exclusion	Konference abstract uden data

Twamley 2011

Reason for exclusion	Konference abstract uden data

Twamley 2011a

Reason for exclusion	Wrong study design

Twamley 2012

Reason for exclusion	Dublet. Allerede inkluderet studie

Vesterager 2010

Reason for exclusion	Konference abstract uden data

Vinogradov 2013

Reason for exclusion	Konference abstract uden data

Vinogradov 2014

Reason for exclusion	Konference abstract uden data

Vita 2011

Reason for exclusion	Wrong intervention

Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

References to studies

Included studies

Belucci 2002

[Empty]

Burda 1994

[Empty]

d'Amato 2011

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Data and analyses

1 TAU vs Cognitive remediation

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Global cognition score (Z score, final score), end of treatment	2	118	Std. Mean Difference (IV, Random, 95% CI)	-0.28 [-0.70, 0.13]
1.2 Social function End of treatment	6	479	Std. Mean Difference (IV, Random, 95% CI)	-0.56 [-0.96, -0.16]
1.2.2 SBS (higher=worse) End og treatment	1	79	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.62, 0.27]
1.2.3 SFS (higher=better	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.15 [-0.67, 0.37]
1.2.4 SSSI (higher=better)	1	122	Std. Mean Difference (IV, Random, 95% CI)	-0.31 [-0.67, 0.05]
1.2.5 WHODAS (higher=worse)	1	84	Std. Mean Difference (IV, Random, 95% CI)	-0.35 [-0.79, 0.09]
1.2.6 SoFAS (higher=better)	2	137	Std. Mean Difference (IV, Random, 95% CI)	-1.24 [-1.70, -0.78]
1.3 Social functioning, FU	4	261	Std. Mean Difference (IV, Random, 95% CI)	-0.26 [-0.51, -0.01]
1.3.2 SBS (higher=worse) FU	1	76	Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.42, 0.49]
1.3.3 SFS (higher=better)	1	47	Std. Mean Difference (IV, Random, 95% CI)	-0.20 [-0.78, 0.38]
1.3.4 SoFAS (higher=better)	2	138	Std. Mean Difference (IV, Random, 95% CI)	-0.45 [-0.79, -0.11]
1.4 Working memory, end of treatment	9	574	Std. Mean Difference (IV, Random, 95% CI)	-0.66 [-1.04, -0.27]
1.4.2 ANS (higher=better)	1	77	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.66, 0.24]
1.4.3 WAIS digit span backward (higher=better)	1	70	Std. Mean Difference (IV, Random, 95% CI)	-0.47 [-0.95, 0.01]
1.4.4 WAIS III digit span backwards (higher=better)	2	130	Std. Mean Difference (IV, Random, 95% CI)	-1.33 [-2.60, -0.07]
1.4.5 ACT (higher=better)	1	42	Std. Mean Difference (IV, Random, 95% CI)	-1.00 [-1.65, -0.35]
1.4.6 BACS (higher=better)	1	100	Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-0.73, 0.07]
1.4.7 WAIS III letter-number seq. (higher=better)	2	80	Std. Mean Difference (IV, Random, 95% CI)	-0.55 [-1.12, 0.03]
1.4.8 WAIS-R digit span backwards (higher=better)	1	75	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.73, 0.19]

1.5 Verbal learning and memory, Total	2	97	Std. Mean Difference (IV, Random, 95% CI)	-0.50 [-2.37, 1.37]
1.5.1 HVLT total (higher=better) End of treatment (final value)	1	27	Std. Mean Difference (IV, Random, 95% CI)	0.48 [-0.32, 1.27]
1.5.2 RAVLT total (higher=better) End of treatment (final value)	1	70	Std. Mean Difference (IV, Random, 95% CI)	-1.43 [-1.96, -0.90]
1.6 Verbal learning	6	330	Std. Mean Difference (IV, Random, 95% CI)	-0.23 [-0.55, 0.09]
1.6.1 RAVLT, learning (higher=better)End of treatment (final value)	2	116	Std. Mean Difference (IV, Random, 95% CI)	-0.54 [-1.05, -0.03]
1.6.2 CVLT short term recal (higher=better)End of treatment (final value)	1	49	Std. Mean Difference (IV, Random, 95% CI)	-0.13 [-0.71, 0.45]
1.6.3 WLM (first recall) (higher=better) End of treatment (final value)	1	77	Std. Mean Difference (IV, Random, 95% CI)	-0.44 [-0.90, 0.01]
1.6.4 WMS ST (higher=better)	1	57	Std. Mean Difference (IV, Random, 95% CI)	0.35 [-0.18, 0.87]
1.6.5 HVLT, learning (higher=better) End of treatment	1	31	Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.69, 0.78]
1.7 Verbal memory	10	578	Std. Mean Difference (IV, Random, 95% CI)	-0.34 [-0.71, 0.04]
1.7.1 CVLT long tern recall (higher =better) End of treatment (final value)	1	49	Std. Mean Difference (IV, Random, 95% CI)	-0.01 [-0.59, 0.57]
1.7.2 HVLT delayed (higher=better) End of treatment (final value)	1	27	Std. Mean Difference (IV, Random, 95% CI)	0.50 [-0.30, 1.29]
1.7.3 RAVLT delayed (higher=better)End of treatment (final value)	3	188	Std. Mean Difference (IV, Random, 95% CI)	-0.78 [-1.74, 0.17]
1.7.4 Cognistat (higher=better) End of treatment (final value)	1	80	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.49, 0.42]
1.7.5 Groebe DfR16 (higher=better)End of treatment (final value)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.95 [-1.58, -0.33]
1.7.6 BACS verbal memory, (high = better)End of treatment (final value)	1	100	Std. Mean Difference (IV, Random, 95% CI)	-0.32 [-0.72, 0.08]
1.7.7 WMS LT (higher=better)	1	57	Std. Mean Difference (IV, Random, 95% CI)	0.27 [-0.25, 0.79]
1.7.8 HVLT-R percent retained	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.37 [-1.11, 0.37]
1.8 Symptoms, end of treatment	6	367	Std. Mean Difference (IV, Random, 95% CI)	-0.12 [-0.32, 0.08]
1.8.1 PANSS (higher=worse) End of treatment	5	306	Std. Mean Difference (IV, Random, 95% CI)	-0.18 [-0.40, 0.04]
1.8.2 BPRS (higher=worse)	1	61	Std. Mean Difference (IV, Random, 95% CI)	0.19 [-0.32, 0.70]
1.9 QoL, end of treatmemt	4	257	Std. Mean Difference (IV, Random, 95% CI)	-0.85 [-2.03, 0.34]
1.9.1 QOLI (higher=better)	1	31	Std. Mean Difference (IV, Random, 95% CI)	0.14 [-0.60, 0.87]
1.9.2 QLS (higher=better)	2	149	Std. Mean Difference (IV, Random, 95% CI)	-1.62 [-3.45, 0.20]
1.9.3 SQoL (higher=better)	1	77	Std. Mean Difference (IV, Random, 95% CI)	-0.25 [-0.70, 0.20]
1.10 Days at hospital	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable

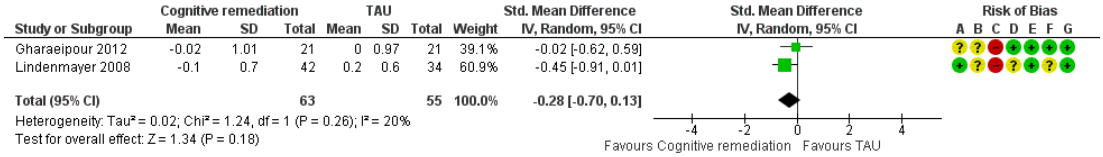
2 TAU vs Cognitive remediation original data

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
2.1 Global cognition score (Z score, final score), end of treatment	3	145	Std. Mean Difference (IV, Random, 95% CI)	0.02 [-0.62, 0.66]
2.2 Social functioning, end of treatment	3	263	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.53, -0.04]
2.2.1 SFS (higher=better)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.15 [-0.68, 0.37]
2.2.2 SSSI (higher=worse)	1	122	Std. Mean Difference (IV, Random, 95% CI)	-0.31 [-0.66, 0.05]
2.2.3 WHODAS (higher=worse)	1	84	Std. Mean Difference (IV, Random, 95% CI)	-0.35 [-0.79, 0.08]
2.3 Social functioning SFS (higher=better), longest FU	1	47	Mean Difference (IV, Random, 95% CI)	-0.20 [-9.24, 8.84]
2.4 Social function End of treatment	4		Std. Mean Difference (IV, Random, 95% CI)	-0.26 [-0.47, -0.05]
2.4.1 LSP (high=worse) end of treatment	0		Std. Mean Difference (IV, Random, 95% CI)	Not estimable
2.4.2 SBS (higher=worse) End og treatment	1		Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.62, 0.27]
2.4.3 SFS (higher=better	1		Std. Mean Difference (IV, Random, 95% CI)	-0.15 [-0.67, 0.37]
2.4.4 SSSI (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.31 [-0.67, 0.05]
2.4.5 WHODAS (higher=worse)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.35 [-0.79, 0.09]
2.5 Social functioning, FU	2		Std. Mean Difference (IV, Random, 95% CI)	-0.05 [-0.41, 0.30]
2.5.1 LSP (higher=worse) FU	0		Std. Mean Difference (IV, Random, 95% CI)	Not estimable
2.5.2 SBS (higher=worse) FU	1		Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.42, 0.49]
2.5.3 SFS (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.20 [-0.78, 0.38]
2.6 Working memory	9	574	Std. Mean Difference (IV, Random, 95% CI)	-0.61 [-0.99, -0.23]
2.6.1 ANS (higher=better) End of treatment (final value)	1	77	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.66, 0.24]
2.6.2 WAIS digit span backward (Higher =better) End of treatment (final value)	1	70	Std. Mean Difference (IV, Random, 95% CI)	-0.47 [-0.95, 0.00]
2.6.3 WAIS III digit span backwards End of treatment (final value)	2	130	Std. Mean Difference (IV, Random, 95% CI)	-1.33 [-2.60, -0.07]
2.6.4 ACT (higher=better) End of treatment (final value)	1	42	Std. Mean Difference (IV, Random, 95% CI)	-1.01 [-1.66, -0.37]
2.6.5 BACS (digit seq.) (higher=better) End of treatment (final value)	1	100	Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-0.72, 0.07]

2.6.6 WAIS III (letter-number seq. subtest) (higher=better)End of treatment (final value)	2	80	Std. Mean Difference (IV, Random, 95% CI)	-0.32 [-0.93, 0.29]
2.6.7 WAIS-R digit span backwards (higher=better) End of treatment (final value)	1	75	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.73, 0.18]
2.7 Working memory, end of treatment	10		Std. Mean Difference (IV, Random, 95% CI)	-0.60 [-0.93, -0.28]
2.7.1 working memory (fra NICE)	2		Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-0.72, 0.06]
2.7.2 ANS (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.66, 0.24]
2.7.3 WAIS digit span backward (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.47 [-0.95, 0.01]
2.7.4 WAIS III digit span backwards (higher=better)	2		Std. Mean Difference (IV, Random, 95% CI)	-1.33 [-2.60, -0.07]
2.7.5 ACT (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-1.00 [-1.65, -0.35]
2.7.6 BACS (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-0.73, 0.07]
2.7.7 WAIS III letter-number seq. (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.59 [-1.18, 0.00]
2.7.8 WAIS-R digit span backwards (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.73, 0.19]
2.8 Verbal learning and memory, Total	2	97	Std. Mean Difference (IV, Random, 95% CI)	-0.50 [-2.37, 1.37]
2.8.1 HVLT total (higher=better) End of treatment (final value)	1	27	Std. Mean Difference (IV, Random, 95% CI)	0.48 [-0.32, 1.27]
2.8.2 RAVLT total (higher=better) End of treatment (final value)	1	70	Std. Mean Difference (IV, Random, 95% CI)	-1.43 [-1.96, -0.90]
2.9 Verbal learning	5	299	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-0.63, 0.09]
2.9.1 RAVLT, learning (higher=better)End of treatment (final value)	2	116	Std. Mean Difference (IV, Random, 95% CI)	-0.54 [-1.05, -0.03]
2.9.2 CVLT short term recal (higher=better)End of treatment (final value)	1	49	Std. Mean Difference (IV, Random, 95% CI)	-0.13 [-0.71, 0.45]
2.9.3 WLM (first recall) (higher=better) End of treatment (final value)	1	77	Std. Mean Difference (IV, Random, 95% CI)	-0.44 [-0.90, 0.01]
2.9.4 WMS ST (higher=better)	1	57	Std. Mean Difference (IV, Random, 95% CI)	0.35 [-0.18, 0.87]
2.10 Verbal memory	10	631	Std. Mean Difference (IV, Random, 95% CI)	-0.73 [-1.32, -0.14]
2.10.1 CVLT long tern recall (higher =better) End of treatment (final value)	1	49	Std. Mean Difference (IV, Random, 95% CI)	-0.01 [-0.59, 0.57]
2.10.2 HVLT delayed (higher=better) End of treatment (final value)	2	111	Std. Mean Difference (IV, Random, 95% CI)	-0.71 [-3.04, 1.62]
2.10.3 RAVLT delayed (higher=better)End of treatment (final value)	3	188	Std. Mean Difference (IV, Random, 95% CI)	-0.78 [-1.74, 0.17]
2.10.4 Cognistat (higher=better) End of treatment (final value)	1	80	Std. Mean Difference (IV, Random, 95% CI)	-2.52 [-3.13, -1.92]
2.10.5 Groebe DfR16 (higher=better)End of treatment (final value)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.95 [-1.58, -0.33]
2.10.6 BACS verbal memory, (high = better)End of treatment (final value)	1	100	Std. Mean Difference (IV, Random, 95% CI)	-0.32 [-0.72, 0.08]
2.10.7 WMS LT (higher=better)	1	57	Std. Mean Difference (IV, Random, 95% CI)	0.27 [-0.25, 0.79]
2.11 Verbal learning and memory (fra NICE)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-1.01, 0.36]
2.12 Symptoms, End of treatment	3	202	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.37, 0.34]
2.12.1 PANSS (higher=worse)	2	141	Std. Mean Difference (IV, Random, 95% CI)	-0.12 [-0.65, 0.40]
2.12.2 BPRS (higher=worse)	1	61	Std. Mean Difference (IV, Random, 95% CI)	0.19 [-0.31, 0.70]
2.13 Symptoms, end of treatment	6		Std. Mean Difference (IV, Random, 95% CI)	-0.12 [-0.32, 0.08]
2.13.1 PANSS (higher=worse) End of treatment	5		Std. Mean Difference (IV, Random, 95% CI)	-0.18 [-0.40, 0.04]
2.13.2 BPRS (higher=worse)	1		Std. Mean Difference (IV, Random, 95% CI)	0.19 [-0.32, 0.70]
2.14 QoL, end of treatment	3	226	Std. Mean Difference (IV, Random, 95% CI)	-1.16 [-2.58, 0.26]
2.14.1 SQoL (higher=better)	1	77	Std. Mean Difference (IV, Random, 95% CI)	-0.25 [-0.70, 0.20]
2.14.2 QLS (higher=better)	2	149	Std. Mean Difference (IV, Random, 95% CI)	-1.63 [-3.45, 0.20]
2.15 QoL, end of treatmemt	4		Std. Mean Difference (IV, Random, 95% CI)	-0.85 [-2.03, 0.34]
2.15.1 QOLI (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	0.14 [-0.60, 0.87]
2.15.2 QLS (higher=better)	2		Std. Mean Difference (IV, Random, 95% CI)	-1.62 [-3.45, 0.20]
2.15.3 SQoL (higher=better)	1		Std. Mean Difference (IV, Random, 95% CI)	-0.25 [-0.70, 0.20]
2.16 Days at hospital	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
2.17 New Outcome	0	0	Odds Ratio (M-H, Fixed, 95% CI)	Not estimable
2.18 Verbal learning, change from baseline	1	84	Mean Difference (IV, Random, 95% CI)	-0.47 [-0.58, -0.36]
2.18.1 HVLT (higher=better), end of treatment	1	84	Mean Difference (IV, Random, 95% CI)	-0.47 [-0.58, -0.36]

Figures

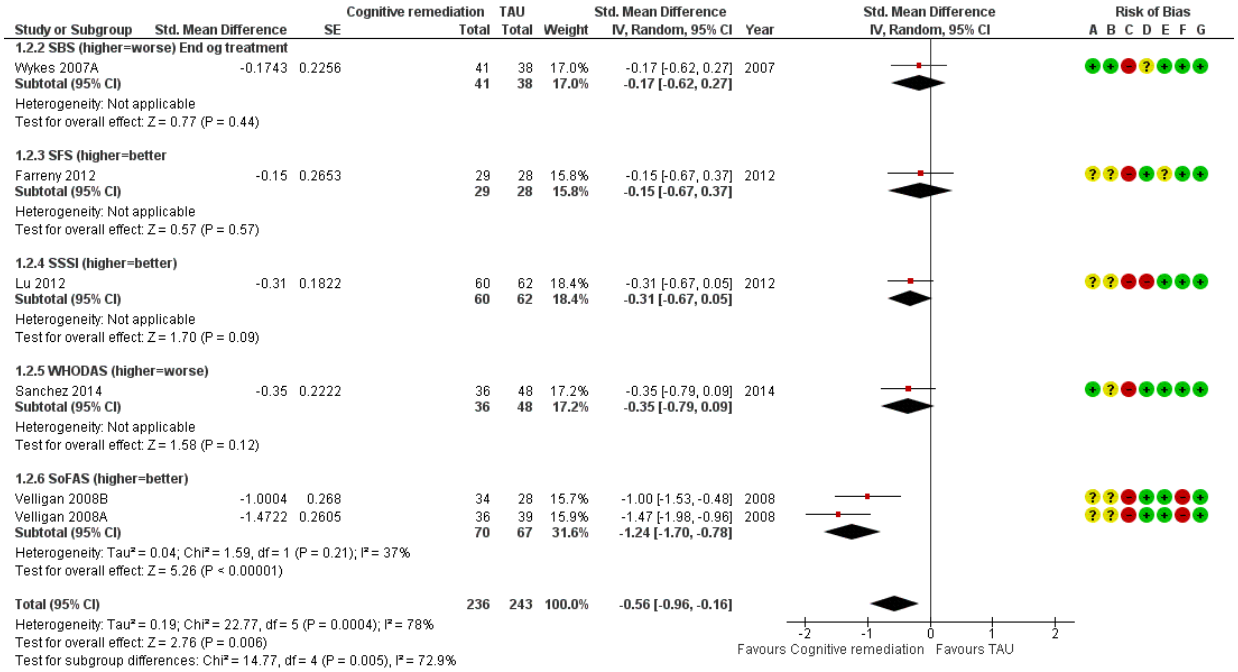
Figure 1 (Analysis 1.1)



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.1 Global cognition score (Z score, final score), end of treatment.

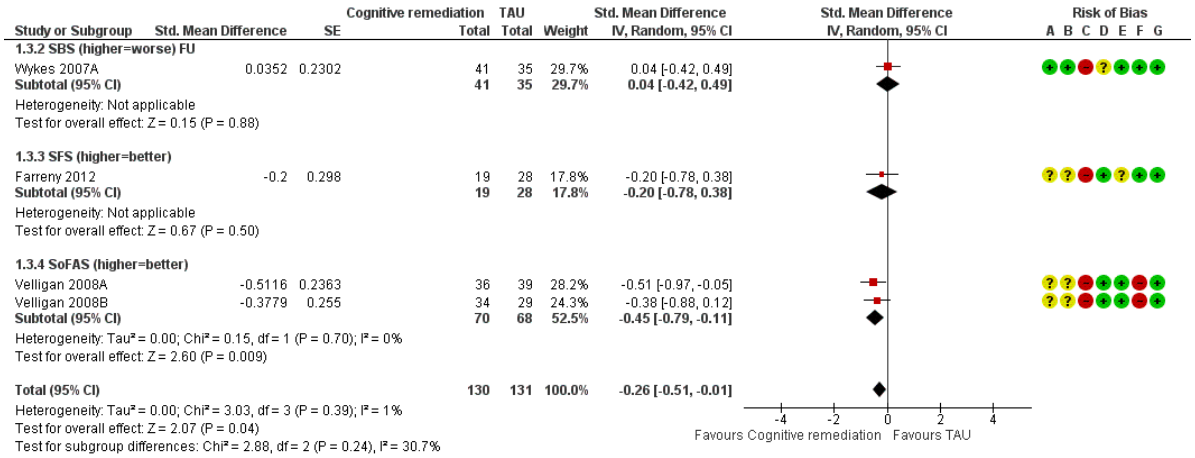
Figure 2 (Analysis 1.2)



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.2 Social function End of treatment.

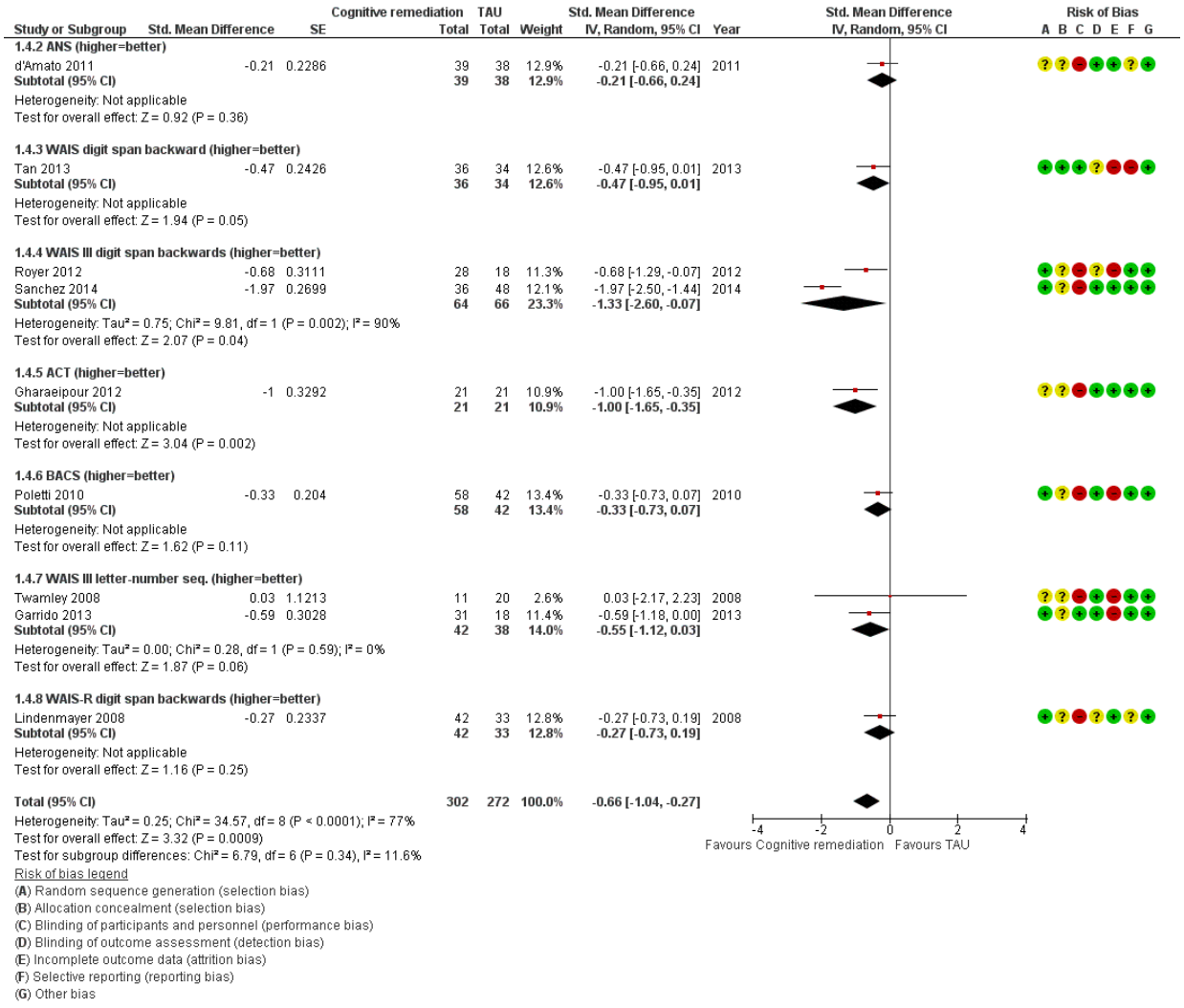
Figure 3 (Analysis 1.3)



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

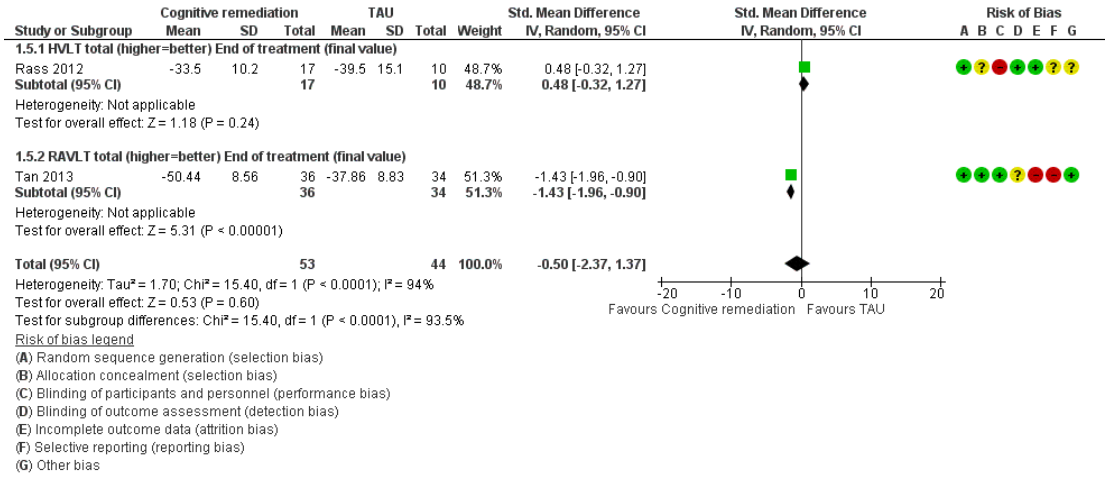
Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.3 Social functioning, FU.

Figure 4 (Analysis 1.4)



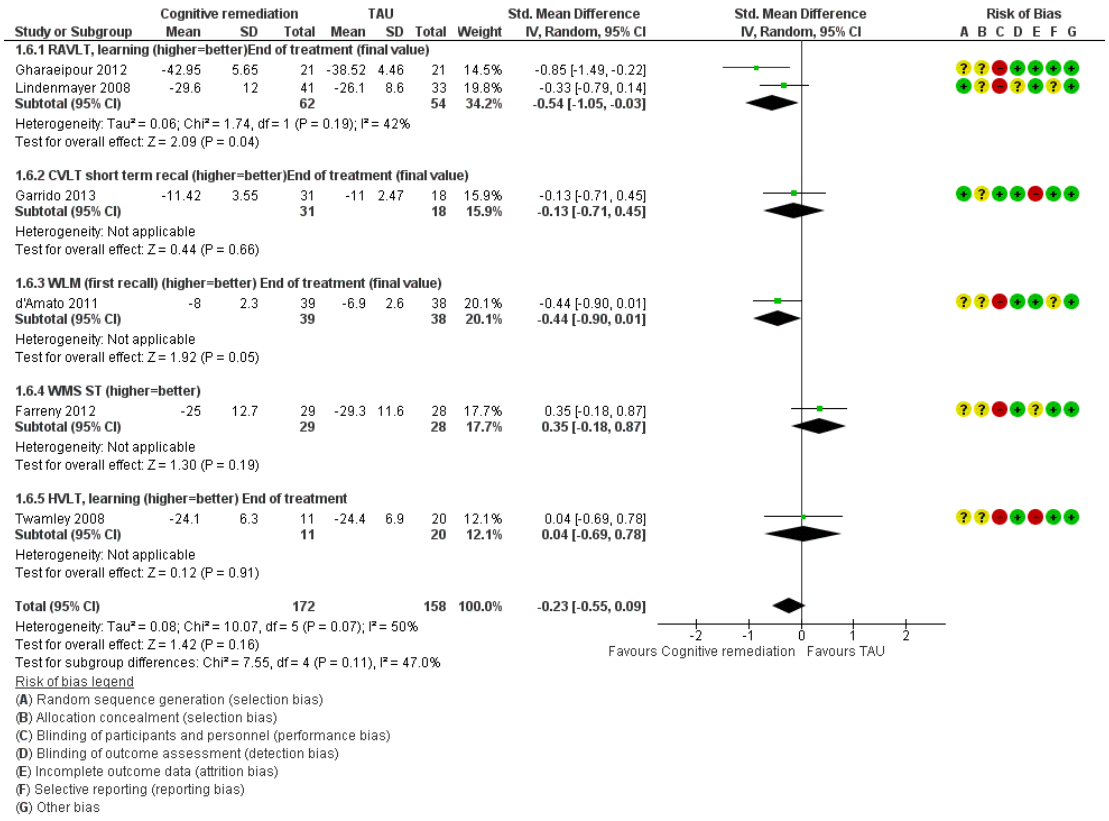
Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.4 Working memory, end of treatment.

Figure 5 (Analysis 1.5)



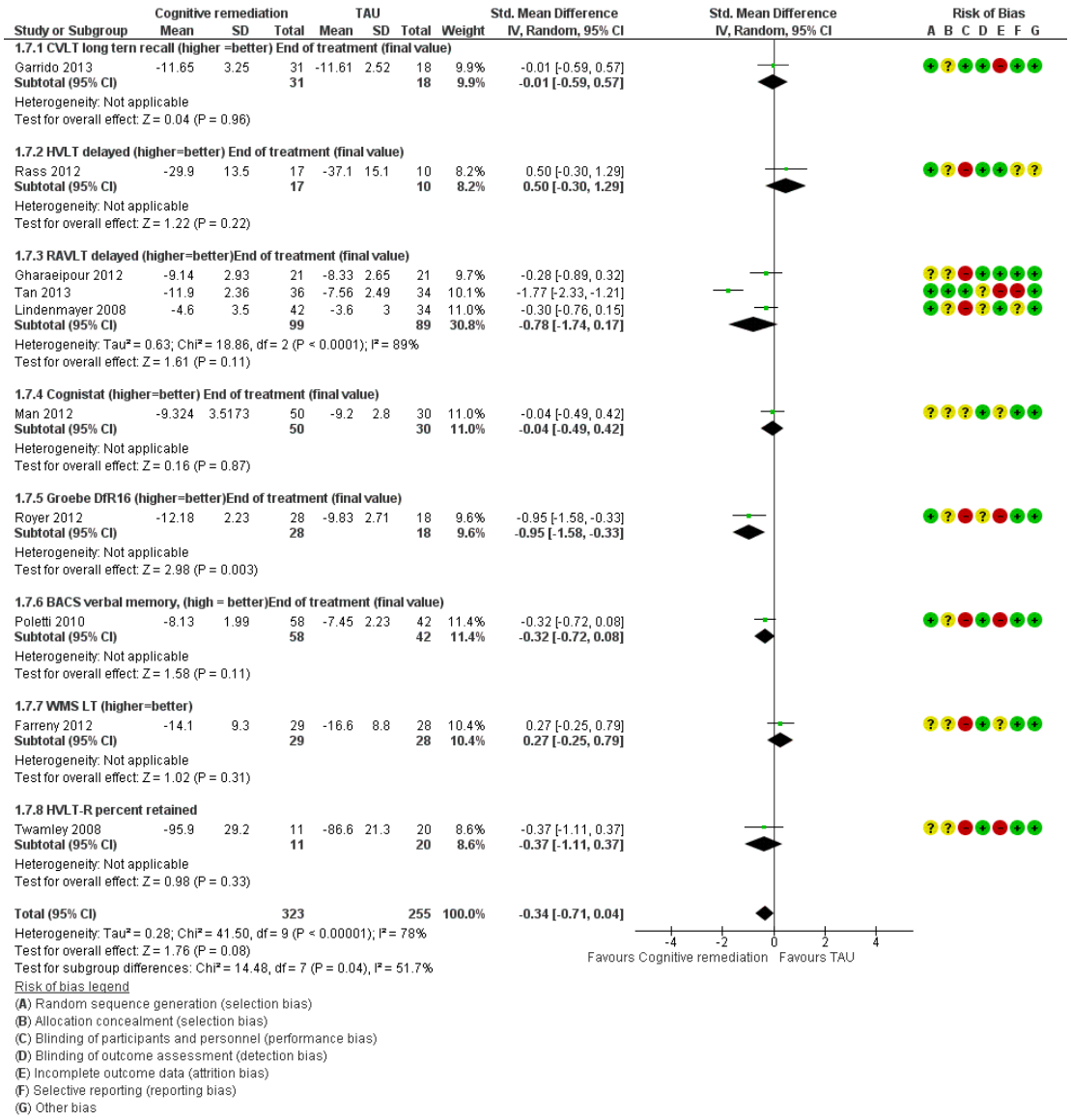
Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.5 Verbal learning and memory, Total.

Figure 6 (Analysis 1.6)



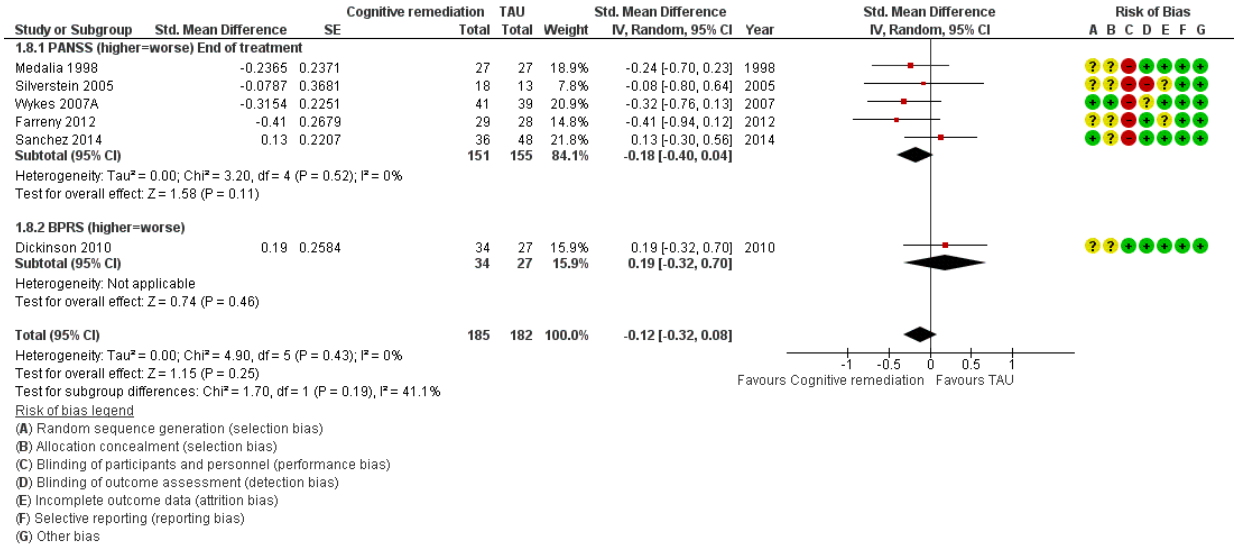
Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.6 Verbal learning.

Figure 7 (Analysis 1.7)



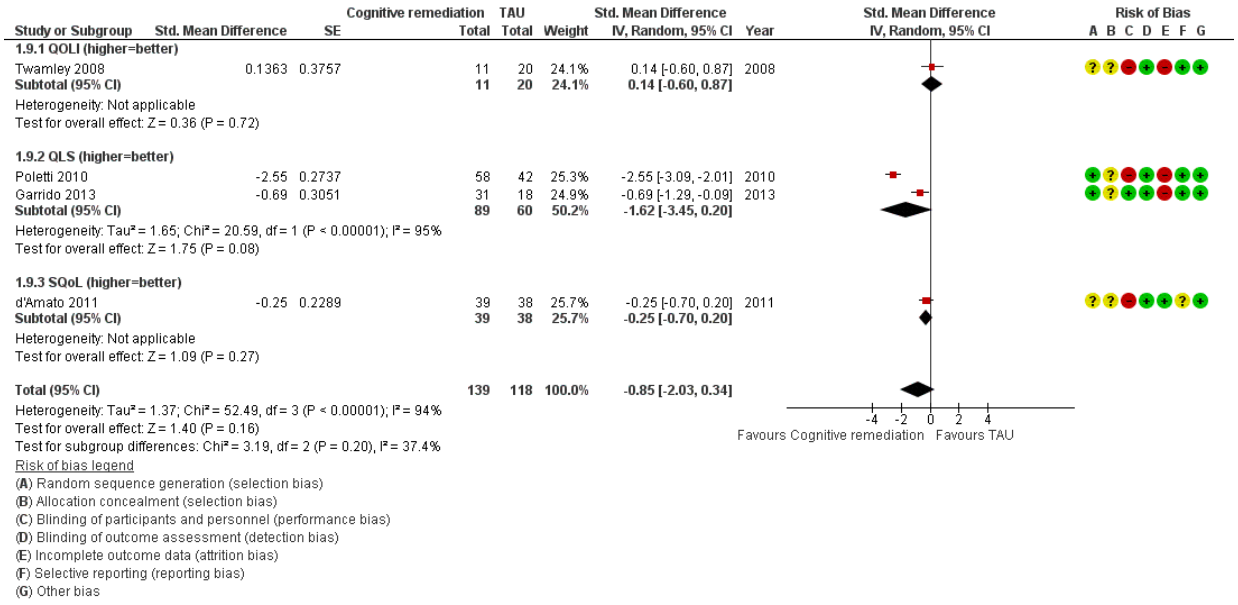
Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.7 Verbal memory.

Figure 8 (Analysis 1.8)



Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.8 Symptoms, end of treatment.

Figure 9 (Analysis 1.9)



Forest plot of comparison: 1 TAU vs Cognitive remediation, outcome: 1.9 QoL, end of treatmemt.