Complete Summary

GUIDELINE TITLE

EFNS guidelines on cognitive rehabilitation: report of an EFNS task force.

BIBLIOGRAPHIC SOURCE(S)

Cappa SF, Benke T, Clarke S, Rossi B, Stemmer B, van Heugten CM, Task Force on Cognitive Rehabilitation, European Federation of Neurological Societies. EFNS guidelines on cognitive rehabilitation: report of an EFNS task force. Eur J Neurol 2005 Sep;12(9):665-80. [153 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Cappa SF, Benke T, Clarke S, Rossi B, Stemmer B, van Heugten CM; European Federation of Neurological Societies. EFNS guidelines on cognitive rehabilitation: report of an EFNS task force. Eur J Neurol. 2003 Jan;10(1):11-23.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Non-progressive neuropsychological disorders such as disorders of language, spatial perception, attention, memory, calculation, and praxis due to stroke and traumatic brain damage (TBI)

GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness
Management
Rehabilitation

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Neurology
Physical Medicine and Rehabilitation

INTENDED USERS

Physicians
Speech-Language Pathologists

GUIDELINE OBJECTIVE(S)

To evaluate the existing evidence for the clinical effectiveness of cognitive rehabilitation in stroke and traumatic brain damage (TBI), and provide recommendations for neurological practice

TARGET POPULATION

Patients with neuropsychological disorders due to stroke and traumatic brain damage (TBI)

INTERVENTIONS AND PRACTICES CONSIDERED

Cognitive rehabilitation of patients with non-progressive neuropsychological disorders due to stroke and traumatic brain damage (TBI) including

- Aphasia therapy
- Rehabilitation of unilateral spatial neglect
- Attentional training in the post-acute stage after TBI
- Use of electronic memory aids in memory disorders
- Treatment of apraxia with compensatory strategies
- Rehabilitation of acalculia

Note: Several important areas of "cognitive rehabilitation" were excluded such as the rehabilitation of dementia, psychiatric and developmental disorders. In addition, pharmacological treatment and rehabilitation have not been considered.

MAJOR OUTCOMES CONSIDERED

Effectiveness of cognitive rehabilitation in activities of daily living (ADL) and functional outcomes

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Each member of the Task Force was assigned an area of cognitive rehabilitation (aphasia, unilateral neglect, attention, memory, apraxia, acalculia) and systematically searched the EBM Reviews – Cochrane Central Register of Controlled Trials, the Medline, and PsychInfo databases using the appropriate key words, and searched textbooks and existing guidelines. The general consensus was to include articles only if they contained data which could be rated according to the grades of recommendation for management, classified in terms of level of evidence following the guidance statement for neurological management guidelines of the European Federation of Neurological Societies-revised (see the "Rating Scheme for the Strength of the Evidence" and the "Rating Scheme for the Strength of the Recommendations" fields).

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Classification Scheme for a Therapeutic Intervention

Class I: An adequately powered prospective, randomized, controlled clinical trial with masked outcome assessment in a representative population or an adequately powered systematic review of prospective randomized controlled clinical trials with masked outcome assessment in representative populations. The following are required:

a. Randomization concealment
b. Primary outcome(s) is/are clearly defined
c. Exclusion/inclusion criteria are clearly defined
d. Adequate accounting for dropouts and crossovers with numbers sufficiently low to have minimal potential for bias
e. Relevant baseline characteristics are presented and substantially equivalent among treatment groups or there is appropriate statistical adjustment for differences

Class II: Prospective matched-group cohort study in a representative population with masked outcome assessment that meets a–e above or a randomized, controlled trial in a representative population that lacks one criteria a–e

Class III: All other controlled trials (including well-defined natural history controls or patients serving as own controls) in a representative population, where outcome assessment is independent of patient treatment

Class IV: Evidence from uncontrolled studies, case series, case reports, or expert opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Data collection and analysis of evidence was performed independently by each participant according to the individual assignment. On the basis of the single reports, one of the Task Force members produced a first draft of the guidelines. These were circulated several times amongst the Task Force members until the discrepancies on each topic were solved, and a consensus was reached.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Rating of Recommendations

Level A rating (established as effective, ineffective, or harmful) requires at least one convincing class I study or at least two consistent, convincing class II studies.

Level B rating (probably effective, ineffective, or harmful) requires at least one convincing class II study or overwhelming class III evidence.

Level C rating (possibly effective, ineffective, or harmful) requires at least two convincing class III studies.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guidelines were validated according to the European Federation of Neurological Societies (EFNS) criteria (Hughes RAC, Barnes MP, Baron J, Brainin M [2001]. Guidance for the preparation of neurological management guidelines by EFNS scientific task forces. *Eur J Neurol* 8:549-550).

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of evidence (class I-IV) supporting the recommendations and ratings of recommendations (A-C) are defined at the end of the "Major Recommendations" field.

Rehabilitation of Aphasia

The conclusions of the Cochrane review of aphasia rehabilitation after stroke are not compatible with grade A recommendation for aphasia therapy. There is however considerable evidence from class II and III studies, as well as from rigorous single-case studies indicating its probable effectiveness (**grade B recommendation**). There is clearly a need for further investigations in the field. In particular, the evidence of effectiveness of pragmatic-conversational therapy after traumatic brain injury (TBI) is based on a limited number of studies on small samples and is in need of confirmation.

Rehabilitation of Unilateral Spatial Neglect

Several methods of neglect rehabilitation were investigated in level I or II studies. The present evidence confers **level A recommendation** to visual scanning training and to visuo-spatio-motor training, and **level B recommendation** to the combined training of visual scanning, reading, copying and figure description; to trunk orientation; to neck vibration; and to forced use of left eye. The use of prism goggles obtains the same level of recommendation for transient effect and **level C** for long-term effect if used over longer periods. **Level B recommendation** exists for video feedback; and **level B–C** for training of sustained attention and alertness. **Level C of recommendation** is valid for transient effects because of caloric or galvanic vestibular stimulations as well as transcutaneous electrical stimulation of neck muscles. Visual cueing with kinetic stimuli and the use of computers in neglect rehabilitation remain controversial.

Rehabilitation of Attention Disorders

During the acute period of recovery and inpatient rehabilitation, evidence is insufficient to distinguish the effects of specific attention training from spontaneous recovery or more general cognitive interventions for patients with moderate-to-severe TBI and stroke. Therefore, specific interventions for attention

during the period of acute recovery are not recommended. On the contrary, the availability of class I evidence for attention training in the post-acute phase after TBI is compatible with a **grade A recommendation**.

Rehabilitation of Memory

One group of researchers (using a different rating system from the one used here) recommended compensatory memory training for subjects with mild memory impairments as a practice standard. These authors point out that independence in daily function, active involvement in identifying the memory problem to be treated and the capability and motivation to continue active and independent strategy use strongly contribute to effective memory remediation. Based on the currently available evidence the Task Force members judge the use of memory strategies without electronic aid as possibly effective (**level C**) although it remains unclear to what degree the benefit depends on the severity of the memory impairment. Specific learning strategies such as errorless learning are supported by a series of class III studies and are thus rated as probably effective (**level B**). However, some studies suggest that the efficacy of a specific learning technique may depend on the task used, whether implicit or explicit memory is implicated, and the severity of the memory impairment. Two class III studies supported by several class IV studies have shown possible efficacy (**level C recommendation**) of non-electronic external memory aids such as diary or notebook keeping. Electronic external memory devices such as computers, paging systems or portable voice organizers have been shown to be effective in several class III studies and are thus recommended as probably effective (**level B**) aids for improving TBI or stroke patients' everyday activities. The use of virtual environments has shown positive effects on verbal, visual and spatial learning in stroke and TBI patient in two class III studies. A direct comparison of performing learning and memory training in virtual environments versus non-virtual environments is still lacking and no recommendation can be made as to the specificity of the technique. Currently, memory training in virtual environments is rated as possibly effective (**level C**).

Despite the many studies investigating memory rehabilitation, the problems raised in previous reports concerning the heterogeneity of the population studied (in terms of age, aetiology and type of brain damage, severity of brain-damage, severity of functional impairments, time post-onset) and the subsequent difficulty of interpreting the results are still valid. It is conceivable that the type and intensity of training has different effects depending on the neural circuits damaged, the functional impairment profile, the age and gender of the patient, the time post-injury, the education level of the patient, and other external factors (such as social and vocational situation). The number of variables involved makes generalization across individuals difficult and favours training programmes tailored to the individual circumstances. No specific recommendations are made for different diagnostic groups or stages of severity. There is still a lack of studies that directly compare patients with different aetiologies (e.g. stroke versus TBI), type and severity of brain damage, age, gender, or stage of recovery.

Rehabilitation of Apraxia

There is **grade A** evidence for the effectiveness of apraxia treatment with compensatory strategies. Treatment should focus on functional activities, which

are structured and practised using errorless learning approaches. As transfer of training is difficult to achieve, training should focus on specific activities in a specific context close to the normal routines of the patients. Recovery of apraxia should not be the goal for rehabilitation. Further studies of treatment interventions are needed, which also address if the treatment effects generalize to non-trained activities and situations.

Rehabilitation of Acalculia

Overall, the available evidence suggests that rehabilitation procedures used to treat selected variants of disorders of number processing and calculation (DNPC) were successful (**level C rating**). Notably, significant improvements were observed even in severely impaired and chronic patients. Several caveats need to be mentioned in this context. At present, little is known about the prognosis and spontaneous recovery of DNPC, thus, the effects of different interventions in the early stages of numerical disorders may be difficult to evaluate. Moreover, different underlying neurological disorders (e.g. stroke, dementia, and trauma) have only partly been compared as to their specific effects on DNPC. Furthermore, it has not been studied in detail how impairments of attention or executive functions influence the rehabilitation process of DNPC.

General Recommendations

In the guideline developers' opinion, there is enough overall evidence to award a grade **A, B, or C recommendation** to some forms of cognitive rehabilitation in patients with neuropsychological deficits in the post-acute stage after a focal brain lesion (stroke, TBI). This general conclusion is based on a limited number of randomised controlled trials (RCTs), and is supported by a considerable amount of evidence coming from class II, III, and IV studies. In particular, the use of a rigorous single-case methodology has been considered by the present reviewers as a source of acceptable evidence in this specific field, in which the application of the randomised controlled trial methodology is difficult for a number of reasons, related to the lack of consensus on the target of treatment, the methodology of the intervention, and the assessment of the outcomes.

Definitions:

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Level C rating (possibly effective, ineffective, or harmful) requires at least two convincing class III studies.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for selected recommendations (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Improved cognitive rehabilitation of patients with disorders of cognitive function

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This guideline provides the view of an expert task force appointed by the Scientific Committee of the European Federation of Neurological Societies (EFNS). It represents a peer-reviewed statement of minimum desirable standards for the guidance of practice based on the best available evidence. It is not intended to have legally binding implications in individual cases.
- As a preliminary consideration, the Task Force members wish to underline that the present status of studies on the effectiveness of cognitive rehabilitation is unsatisfactory. They are fully convinced that the standards required for the evaluation of pharmacological and surgical interventions also apply to rehabilitation. In particular, it is necessary to show that rehabilitation is effective not only in modifying the impairment but also in by having sustained effects at the disability level. Unfortunately, the majority of randomised controlled studies (RCTs) in this area are of poor methodological quality, have insufficient sample size and/or fail to assess the outcome at the disability level. Many other studies fail to compare intervention with placebo or sham treatment.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The European Federation of Neurological Societies has a mailing list and all guideline papers go to national societies, national ministries of health, World Health Organisation, European Union, and a number of other destinations. Corporate support is recruited to buy large numbers of reprints of the guideline papers and permission is given to sponsoring companies to distribute the guideline papers from their commercial channels, provided there is no advertising attached.

IMPLEMENTATION TOOLS

Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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Cappa SF, Benke T, Clarke S, Rossi B, Stemmer B, van Heugten CM, Task Force on Cognitive Rehabilitation, European Federation of Neurological Societies. EFNS guidelines on cognitive rehabilitation: report of an EFNS task force. Eur J Neurol 2005 Sep;12(9):665-80. [153 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 Jan (revised 2005 Sep)

GUIDELINE DEVELOPER(S)

European Federation of Neurological Societies - Medical Specialty Society

SOURCE(S) OF FUNDING

European Federation of Neurological Societies

GUIDELINE COMMITTEE

European Federation of Neurological Societies Task Force on Cognitive Rehabilitation

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Task Force Members: S. F. Cappa, Departments of Psychology, Neurology and Neuroscience, Vita Salute San Raffaele S. Raffaele University, Milano, Italy; T. Benke, Klinik für Neurologie Innsbruck, Austria; S. Clarke, Division de Neuropsychologie, Lausanne, Switzerland; B. Rossi, Section of Neurology, Department of Neuroscience, University of Pisa, Pisa, Italy; B. Stemmer, Centre de Recherche, Institut de Geriatrie de Montreal, and Department de Linguistique et Traduction, Universite de Montreal, Montreal Canada; C. M. van Heugten, Netherlands Institute of Primary Health Care NIVEL, Utrecht, The Netherlands

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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GUIDELINE AVAILABILITY

Electronic copies: Available to registered users from the European Federation of Neurological Societies Web site.

Print copies: Available from Stefano F. Cappa MD, Universitá Vita Salute San Raffaele, DIBIT Via Olgettina 58, 20132 Milano, Italy; Phone: +39 0226434887; Fax: +39 0226434892; E-mail: cappa.stefano@hsr.it

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Brainin M, Barnes M, Baron JC, Gilhus NE, Hughes R, Selmaj K, Waldemar G; Guideline Standards Subcommittee of the EFNS Scientific Committee. Guidance for the preparation of neurological management guidelines by EFNS scientific task forces – revised recommendations 2004. Eur J Neurol. 2004 Sep;11(9):577-81. Electronic copies: Available in Portable Document Format (PDF) from the European Federation of Neurological Societies Web site.
- Guideline papers. European Federation of Neurological Societies. Electronic copies: Available from the European Federation of Neurological Societies Web site.
- Continuing Medical Education questions available from the European Journal of Neurology Web site.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on December 6, 2006. The information was verified by the guideline developer on January 9, 2007.

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