INPLASY PROTOCOL

To cite: Jiang et al. The effect of computerized cognitive training on improving the cognitive impairment and the activities of daily living in patients with post-stroke cognitive impairment. Inplasy protocol 202130059. doi: 10.37766/inplasy2021.3.0059

Received: 16 March 2021

Published: 17 March 2021

Corresponding author:
Caiqin Wu

yuwuchina@aliyun.com

Author Affiliation:
Shanghai University of Traditional Chinese Medicine

Support: **2021HLXK06.**

Review Stage at time of this submission: **Preliminary searches.**

Conflicts of interest:
None declared.

The effect of computerized cognitive training on improving the cognitive impairment and the activities of daily living in patients with post-stroke cognitive impairment

Jiang, J[1]; Li, X[2]; Wang, H[3]; Huang, L[4]; Wu, C[5].

Review question / Objective: **To evaluate the effect of computerized cognitive training on improving the cognitive impairment and the activities of daily living in patients with post-stroke cognitive impairment.**
Condition being studied: **Stroke is the second leading cause of death worldwide and often leads to cognitive impairment and accelerates the progression to dementia, which is an important factor that severely affects the quality of life and survival time of patients. Post-stroke cognitive impairment (PSCI) has become a major public health problem worldwide. The Guidelines for Adult Stroke Rehabilitation emphasize the importance of cognitive function training in stroke rehabilitation and recommend the development of targeted rehabilitation interventions to improve the quality of life by assessing the cognitive domains and severity of impairment according to the location of the patient's brain lesion. With the popularization of various smart devices and the rapid development of software development technology, computerized cognitive training (CCT) has been gradually applied in the field of neuropsychological research, which can reduce the influence of human factors on training or testing effects to a certain extent.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 March 2021 and was last updated on 17 March 2021 (registration number INPLASY202130059).

INTRODUCTION

Review question / Objective: **To evaluate the effect of computerized cognitive training on improving the cognitive impairment and the activities of daily living in patients with post-stroke cognitive impairment.**

Rationale: **Currently, literature reports on the effects of computerized cognitive training on cognitive function and activities**

of daily living in patients with post-stroke cognitive impairment are increasing year by year, and it is also effective in improving cognition, mood and communication in patients with mild cognitive impairment and dementia. This technology can meet individual patient needs and can partially replace traditional cognitive training.However, some studies have reported that computerized cognitive training has shown little improvement in cognitive function and no significant change in quality of life or self-efficacy in post-stroke patients.

Condition being studied: Stroke is the second leading cause of death worldwide and often leads to cognitive impairment and accelerates the progression to dementia, which is an important factor that severely affects the quality of life and survival time of patients. Post-stroke cognitive impairment (PSCI) has become a major public health problem worldwide. The Guidelines for Adult Stroke Rehabilitation emphasize the importance of cognitive function training in stroke rehabilitation and recommend the development of targeted rehabilitation interventions to improve the quality of life by assessing the cognitive domains and severity of impairment according to the location of the patient's brain lesion. With the popularization of various smart devices and the rapid development of software development technology, computerized cognitive training (CCT) has been gradually applied in the field of neuropsychological research, which can reduce the influence of human factors on training or testing effects to a certain extent.

METHODS

Search strategy: The search string will be built as follows:“randomized controlled trial” AND (“cognitive rehab”OR “cognitive stimulation”) AND (“Cerebrovascular Disorders” OR “Stroke”“post-stroke” OR “brain ischemia”).

Participant or population: Patients with post-stroke cognitive impairment.

Intervention: Computerized cognitive training.

Comparator: Routine rehabilitation.

Study designs to be included: Randomized controlled trials (RCTs).

Eligibility criteria: Patients with post-stroke cognitive impairment (as diagnosed by a clinician, or using any recognised diagnostic criteria)will be included.

Information sources: We will search, with no time restrictions, the following databases for relevant English language literature: PubMed、Embase、the Cochrane library、EBSCO.The electronic database search will be supplemented by a manual search of the reference lists of included articles.

Main outcome(s): Neuropsychological assessment results like the scores of Montreal cognitive assessment、the Mini-Mental State Examination.

Additional outcome(s): Activities of daily living、instrumental activities of daily living.

Data management: Two authors will independently extract data. Any disagreement will be resolved by discussion until consensus is reached or by consulting a third author.The following data will be extracted: author, year of publication, country where the study was conducted, study period, original inclusion criteria, total number of people included in the study, interventions and time of training, computer training software.

Quality assessment / Risk of bias analysis: Two reviewers will independently assesses the quality of the selected studies according to the Cochrane collaboration's tool for randomized controlled trials. Items will be evaluated in three categories: Low risk of bias, unclear bias and high risk of bias. The following characteristics will be evaluated: Random sequence generation (selection Bias) Allocation concealment

(selection bias)Blinding of participants and personnel (performance bias) Incomplete outcome data (attrition bias)Selective reporting (reporting bias) Other biases Results from these questions will be graphed and assessed using Review Manager 5.3.

Strategy of data synthesis: Risk ratio (RR) for both fixed and random effects models (weighting by inverse of variance) will be used. A continuity correction will also be used for cells with zero values. Between-study heterogeneity will be assessed using the t2, x2(Cochran Q) and I2 statistics. According to the Cochrane handbook, the I2 will be considered non-important(60%). Results will be assessed using forest plots and presented as RRs for the main outcome and secondary outcomes. An influence analysis will be performed to ascertain the results of the meta-analysis by excluding each of the individual studies.

Subgroup analysis: We will consider subgroups such as clinic type, duration of intervention.

Sensitivity analysis: After excluding a low-quality study, the combined effect size was re-estimated and compared with the results of the Meta-analysis before exclusion to explore the extent of the effect of the study on the combined effect size and the robustness of the results. If the results did not change significantly after exclusion, it indicates that the sensitivity is low and the results are more robust and credible; on the contrary, if large differences or even diametrically opposite conclusions are obtained after exclusion, it indicates that the sensitivity is high and the robustness of the results is low, and great care should be taken when interpreting the results and drawing conclusions, suggesting the existence of important and potentially biased factors related to the effects of the intervention, and the source of the controversy needs to be further clarified.

Country(ies) involved: China.

Keywords: Stroke; Computerized cognitive training; Cognitive function; Activities of daily living; Meta-analysis.

Contributions of each author:

Author 1 - Jieting Jiang - The author drafted the manuscript.
Email: lia0726@foxmail.com
Author 2 - Xinyu Li - The author provided statistical expertise.
Email: lixinyu0801@qq.com
Author 3 - Wang Hui - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.
Email: 617192123@qq.com
Author 4 - Huang Lan - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.
Email: 76556564@qq.com
Author 5 - Caiqin Wu - The author read, provided feedback and approved the final manuscript.
Email: yuwuchina@aliyun.com