

INPLASY PROTOCOL

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Effectiveness of teleneuropsychological rehabilitation – A systematic review protocol

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submission:** Completed but
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None declared.

Review question / Objective: The aim of this systematic review is to identify and evaluate the effectiveness of teleneuropsychological rehabilitation on cognitive, behavioral, and socio-emotional functioning.

Information sources: MEDLINE (PubMed), Cochrane library, Web of Science, Scopus and PsycINFO electronic databases. In addition, searches will be supplemented from relevant Finnish electronic databases (Journal.fi; Helda, psykologia.fi., Julkari).

Main outcome(s): All outcome measures of cognitive, behavioral, and socio-emotional functioning.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 March 2023 and was last updated on 24 March 2023 (registration number INPLASY202330093).

INTRODUCTION

Review question / Objective: The aim of this systematic review is to identify and evaluate the effectiveness of teleneuropsychological rehabilitation on cognitive, behavioral, and socio-emotional functioning.

Rationale: There is a need for development of flexible, accessible as well as cost-effective rehabilitation practices as the ongoing population growth and ageing are likely to increase the burden of disability caused by neurological disorders during the next few decades. Telerehabilitation has the potential to provide flexibility of time and location in rehabilitation. Remote

interventions may be delivered synchronously with real-time clinician-patient interaction, asynchronously by using remotely monitored platforms with delayed feedback from a clinician, or combining both. Remote services can increase access for persons who live in areas where traditional rehabilitation services may be limited, and increase accessibility of services for patients who have mobility impairments or difficulties with traveling. Telerehabilitation also has potential to be less labor intensive and serve as a lower cost alternative to traditional interventions, although the results considering cost-effectiveness are still inconclusive. Neuropsychological rehabilitation or cognitive rehabilitation aims to assist patients' in recovering or compensating for impaired cognitive functions and in emphasizing meaningful functional activity in everyday life. Neuropsychological rehabilitation can be utilized with a wide array of patients with neuropsychological impairments, and research has demonstrated its effectiveness in improving cognitive and psychosocial functioning in populations, such as acquired brain injury, stroke, multiple sclerosis and learning disabilities. Although there is increasing evidence demonstrating the potential of telerehabilitation in patients with neuropsychological impairments, there are still only a few systematic reviews addressing the current state of the effectiveness of teleneuropsychological rehabilitation. Findings from one systematic review demonstrated that remote interventions could be as effective as conventional rehabilitation to improve cognitive or depressive symptoms after traumatic brain injury. One meta-analysis focused on home-based technology interventions in rehabilitation of executive functioning and memory for children and adolescents with ABI. Results were encouraging, but the quality of evidence for all outcomes was noted to be low. There is growing interest towards telerehabilitation, and field of telehealth is rapidly evolving. In addition, the use of telemedicine has been increasing greatly during the COVID-19 pandemic. Given the limited research

evidence of teleneuropsychological rehabilitation, it is necessary to identify, evaluate and synthesize the findings of the effects and practices of remote neuropsychological interventions to provide insight on the current state of the research field as well as facilitate the clinical decision making.

Condition being studied: Any type of disorder causing neuropsychological impairments.

METHODS

Search strategy: A systematic literature search through following electronic databases: MEDLINE (PubMed), Cochrane library, Web of Science, Scopus and PsycINFO. Previous review articles identified in the searches and the accompanying reference lists will be manually screened. In addition, searches will be supplemented from relevant Finnish electronic databases (Journal.fi; Helda, psykologia.fi., Julkari).

Search terms: "tele", "remote", "virtual", "distance", "online" and "web-based" with words "rehabilitation", "therapy", "intervention", and "training" and words "neuropsychology", "neurology", "neuropsychiatry", "neurodevelopmental", "neurocognitive", and "cognitive". In addition, more precise key words may be utilized, such as: "acquired brain injury", "stroke", "traumatic brain injury", "multiple sclerosis", "epilepsy", "Parkinson disease", "cerebral palsy", "mental and behavioral disorders", "intellectual disability", "learning disability", "attention deficit hyperactivity disorder", "autism spectrum disorders" and "fetal alcohol spectrum disorders".

Search terms will be searched from title, abstract, and keyword fields, if available. Following initial screening, two authors will independently assess the full text articles using the eligibility criteria. The same authors will further discuss any article in which they provided discrepant ratings on whether it satisfied eligibility criteria. If there is remaining uncertainties regarding eligibility, the final decision will be made

based on a group discussion with the third author.

Participant or population: Children and/or adults (aged 0 - 65 years) with neuropsychological impairments or their caregivers.

Intervention: All neuropsychological or cognitive interventions based on telerehabilitation using synchronous or asynchronous communication or both. All neuropsychological rehabilitation approaches will be included, such as cognitive retraining (paper-pencil and/or computerized), compensatory strategy training, and neuropsychological counselling or support.

Comparator: All types of comparators are included.

Study designs to be included: All types of designs are included.

Eligibility criteria: Studies must meet the following criteria: Peer-reviewed intervention studies (1) including 0- to 65-year-old participants with neuropsychological impairments, (2) using a teleneuropsychological rehabilitation intervention, defined as an intervention utilizing remote delivery methods with the aim to assist the recovery or compensation for impaired neuropsychological functioning, (3) having been published in 2016 or later. There are no restrictions on study design, duration, intensity, co-interventions, comparators, or outcome measures. Studies with any type of disorder causing cognitive impairments will be considered. Telerehabilitation interventions combining remote and in-clinic services will be included if most of the sessions are delivered remotely. In addition, remote interventions involving mainly self-training without synchronous communication will be included. Original research articles written in English, or Finnish will be considered. In addition, searches are expanded to other languages if necessary. The included interventions could be targeting persons with neuropsychological impairments or their

caregivers. In addition, studies focusing on the views of the providers of the intervention will be considered. Exclusion criteria: (1) Articles not addressing intervention, (2) articles relating to older adults (+65), (3) theoretical articles or descriptions of rehabilitation programmed with no specific intervention, (4) articles without adequate specification of intervention, (5) participants with only mild neuropsychological symptoms not affecting their everyday functioning, and (6) articles addressing interventions without any synchronous or asynchronous interaction with the provider of the intervention.

Information sources: MEDLINE (PubMed), Cochrane library, Web of Science, Scopus and PsycINFO electronic databases. In addition, searches will be supplemented from relevant Finnish electronic databases (Journal.fi; Helda, psykologia.fi., Julkari).

Main outcome(s): All outcome measures of cognitive, behavioral, and socio-emotional functioning.

Data management: A data extraction form will be used for collecting information involving the baseline information, characteristics of the intervention, participants, research methodology, types of outcomes measured, effects sizes if reported, and the main findings of each eligible study. Data extracted from the included studies will be tabulated.

Quality assessment / Risk of bias analysis: Risk of bias will be assessed using The Cochrane's risk of bias tool and by applying the guidelines of The Cochrane Handbook.

Strategy of data synthesis: A narrative synthesis will be provided based on the included studies. In addition, meta-analysis will be conducted if the characteristics of included studies are sufficiently homogeneous.

Subgroup analysis: There are no specific plans to analyze the subgroups, but this may be revisited depending on the number of reviews found.

Sensitivity analysis: There are no specific plans to conduct sensitivity analysis, but this may be revisited depending on the number and the quality of reviews found.

Language restriction: None.

Country(ies) involved: Finland.

Keywords: Telerehabilitation; Psychological Intervention; Neurocognitive Disorders; Cognitive Dysfunction; Rehabilitation; Neuropsychology.

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