

INPLASY PROTOCOL

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None declared.

Rehabilitation effectiveness of aquatic exercise therapy for patients with stroke: A protocol for overview of systematic reviews

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Review question / Objective: The objectives of this overview is to appraise and synthesize published systematic reviews and metaanalyses investigating the rehabilitation effects of aquatic exercise therapy compared with all other non-water-based interventions on health outcomes in patients with stroke.

Information sources: A systematic search was conducted using online electronic databases, including : PubMed, Cochrane Library, Embase, CINAHL, Web of Science, China Journal Full text Database (CNKI), Wanfang Database, VIP Database and Chinese Biomedical Literature Database (CBM) . In addition, a manual review of references from the included articles was screened to complement the results of the database searches.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 March 2021 and was last updated on 10 March 2021 (registration number INPLASY202130032).

INTRODUCTION

Review question / Objective: The objectives of this overview is to appraise and synthesize published systematic reviews and metaanalyses investigating the rehabilitation effects of aquatic exercise therapy compared with all other non-water-

based interventions on health outcomes in patients with stroke.

Condition being studied: Stroke is also known as apoplexy or cerebrovascular accident. The incidence of stroke is on the rise globally and tends to be younger. It is predicted that the number of stroke

patients in China will continue to rise to 4087.20/100, 000 by 2025. The onset of stroke has been rapid, while survival rates have risen as a result of improved diagnosis and treatment techniques and improved healthcare systems, the disease burden has not improved. The influence of stroke on patients is long-term, negative and progressive. Epidemiological data show that rehabilitation nursing for motor dysfunction of stroke patients has become an important part of the prevention and management of this disease. Modern rehabilitation theory and practice have proved that rehabilitation is the most effective method to reduce the disability rate of stroke, and it is also an indispensable key link in the organizational management mode of stroke. Hydrotherapy used in rehabilitation and might ameliorate body function, structural activities and participation ability after stroke. It refers to the movement therapy in the water environment, by immersing in water to perform targeted therapeutic actions, using the temperature, mechanical and chemical properties of water, to play the active and passive therapeutic effects of hydrotherapy.

METHODS

Search strategy: A systematic search was conducted using online electronic databases, including : PubMed, Cochrane Library, Embase, CINAHL, Web of Science, China Journal Fulltext Database (CNKI), Wanfang Database, VIP Database and Chinese Biomedical Literature Database (CBM) . In addition, a manual review of references from the included articles was screened to complement the results of the database searches. Retrieval time will be from their inception until March 31, 2021. The retrieval will use the combination of Mesh words and free words. Relevant keywords such as: stroke, apoplexy, cerebral infarction, cerebral embolism, brain vascular accident, hydrokinetics, hydrokinesitherapy, aquatic exercise, underwater exercise, aquatic therapeutic exercise, water-based exercise,

pool therapy, meta analysis, clinical trial overview, systematic review, etc.

Participant or population: Patients with a definite diagnosis of stroke, regardless of the duration of illness or level of initial impairment; over 18 years of age; There is no restriction on gender, ethnicity, native place, education level.

Intervention: The intervention group was treated with aquatic exercise therapy based on patients' active exercise . Aquatic exercises therapy was defined as any single or group intervention of any kind and irrespective of whether they are targeted at improving balance and mobility. To distinguish water-based exercises from use of a bathtub or spa pool, we have used the term (water-based) exercises to refer to an activity that is planned, structured and repetitive. Studies with treatments such as mud baths, day spas or the use of shallower water will be excluded.

Comparator: The control group received with all other non-water-based interventions , including land-based exercises, conventional rehabilitation strategies or blank control (without any auxiliary rehabilitation nursing measures).

Study designs to be included: A systematic review or meta analysis based on randomized controlled trials(RCTs) of hydrotherapy in rehabilitation of patients with stroke.

Eligibility criteria: In line with PICOS setting and the languages of included articles were limited to English and Chinese.

Information sources: A systematic search was conducted using online electronic databases, including : PubMed, Cochrane Library, Embase, CINAHL, Web of Science, China Journal Fulltext Database (CNKI), Wanfang Database, VIP Database and Chinese Biomedical Literature Database (CBM) . In addition, a manual review of references from the included articles was screened to complement the results of the database searches.

Main outcome(s): The primary outcomes were balance function, muscular strength and walking speed . Possible scales which we considered include such as: Berg Balance Scale (BBS), Fugl-Meyer Assessment of balance (FMA-B), FMA-B Time up and go test (TUGT), Functional Reach Test (FRT), Functional Ambulation Category (FAC), Manual Muscle Test, MMT), 10-metre Walk Test (10MWT) , 6 minute walk test (6MWT), Sway Velocity of Center of Pressure (SVCOP) et al.

Additional outcome(s): The secondary outcomes were emotion, cardio-pulmonary function, quality of life and activities of daily living reported in the studies. Possible scales which we considered include such as: Hamilton Depression Scale (HAMD), (Hamilton Anxiety Scale, HAMA), Medical Outcomes Study Health Survey Form-36 Item (SF-36 Short), Barthel Index (BI), Modified Rankin Scale(MRS), Functional Independence Measure (FIM) et al.

Data management: All search results are imported into Noteexpress document management software, through the check weight function delete duplicate citations, two researchers (Hu and Chen) read the title, abstract, independent according to, the discharge standard after screening obviously does not conform to the literature, for further reading the full text may be included in the standard literature, selection and cross check, if divided, researchers are passed on to third place for arbitration. Using the spreadsheet software Microsoft Excel to extract and sort out the information included in the literature. The extracted variables from eligible studies included author, publication time, participants' characteristics, sample size, study design, experimental and control intervention, methodological quality assessment tool , outcomes and major conclusions.

Quality assessment / Risk of bias analysis: The two researchers (Hu and Chen) independently evaluated the methodological quality of the included studies using AMSTAR II, evaluated the evidence quality of the outcome indicators

using GRADE, and evaluated the report quality using PRISMA statement. If there is a disagreement, it will be submitted to a third researcher (Zhang) for arbitration.

Strategy of data synthesis: The characteristics and findings of included systematic reviews will be presented in a data extraction table. Considering that the objective of this study is to summarize the available evidence for the current application of aquatic therapy in post-stroke rehabilitation, a descriptive synthesis of assessed systematic reviews will be performed, the results of the systematic reviews will be listed according to different outcome indicators. And if necessary, a meta-analysis will be summarized for the quantitative synthesis, using RevMan 5.3. The effect sizes from the metaanalyses will be presented as mean differences (WMD), standardized mean differences (SMD), odds ratios (OR), relative risks (RR), or risk differences (RD), depending on the data reported by the authors.

Subgroup analysis: If possible, we will do some extra subgroup analyses according to the results of heterogeneity and inconsistency (such as duration of illness or level of initial impairment). For each category, the data were analyses qualitatively based on the mean difference(WMD) or standardized mean differences (SMDs) of each included outcome.

Sensitivity analysis: According to the guideline of Cochrane Handbook, heterogeneity between RCTs can be quantified using I-square values, if I-square is >50%, significant heterogeneity is considered, then sensitivity analysis would be performed. If the source of heterogeneity remained undetermined, descriptive reports would be given.

Country(ies) involved: China.

Keywords: stroke, aquatic exercise, rehabilitation, overview of systematic reviews.

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