INPLASY PROTOCOL

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None declared.

Effects of dual-task walking training on cognitive function of the elderly A protocol of systematic review and meta-analysis

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Review question / Objective: **To investigate the association between age-induced decline in physical function and dual-task walking training, and to understand the decline in functional performance leading to normal aging and its association with motor and cognitive function. P: healthy elderly persons over 60 years of age; I: Dual task walking; C) just walk. O: Cognitive function, quality of life, physical activity, balance function, etc. S: Randomized controlled trial (relevant).**
Condition being studied: **Under the background of population aging, paying attention to exercise is an important way to deal with aging actively. Dual task performance decline may fall with early signs of neurodegenerative diseases and is associated with increased risk, the ability to walk and perform cognitive tasks at the same time is a kind of important ability of daily life, most of the daily life activities need to perform a variety of sports and cognitive tasks at the same time, so usually involves multiple cognitive process and continuous integration of motor control system. Therefore, interventions to explore the mechanisms that lead to performance decline in normal aging and its association with motor and cognitive function.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 September 2021 and was last updated on 01 September 2021 (registration number INPLASY202190003).

INTRODUCTION

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METHODS

Search strategy: The following electronic databases will be searched from inception to August 2021: PubMed, the Cochrane Library, Web of Science, China National Knowledge Infrastructure (CNKI), WanFang Data, Weipu Electronics. In addition, reference lists of the included studies were manually searched to identify additional relevantstudies.

Participant or population: We will include people aged 60 and above. Regardless of race, education or economic status. There are no contraindications to exercise test (such as severe hypertension, heart disease, peripheral vascular disease, etc.). Patients with postoperative infection, mental illness, severe pneumonia or other inability to exercise, and patients with severe cardiovascular and/or liver and/or kidney disease are not included.

Intervention: The experimental group underwent dual-task walking training.

Comparator: The control group did simple walking.

Study designs to be included: We will review all studies on the efficacy and safety of dual-task walking training in the effects of cognitive function in old age. Due to language limitations, we will search for articles in Both Chinese and English. In order to obtain a more objective and authentic evaluation, all articles must meet the following two conditions: 1. The published literature is complete; 2. The trial type was randomized controlled trial (RCT).

Eligibility criteria: (1) languages other than English and Chinese; (2) lack of outcome indicator data; (3) studies that were not RCTs (4) duplicate studies, studies with incomplete data and abstracts without full texts.

Information sources: 1. Electronic data sources. The following electronic databases will be searched from inception to March 2021: PubMed, the Cochrane Library, Web of Science, China National Knowledge Infrastructure (CNKI), WanFang Data, Weipu Electronics. In addition, reference lists of the included studies were manually searched to identify additional relevant studies. 2. Other resources. Relevant references will be reviewed and screened. In addition, we will search the following registration website of the clinical trial: WHOICTRP, http://http://http://www.chictr.org.cn , http://http://www.ClinicalTrial.gov, and ISRCTN Register. Moreover, the relevant grey literature from the Health Management Information Database (HMIC), Open SIGLE Database, and the National Technical Information Service (NTIS) will be searched. Experts in the field will be consulted for relevant studies.

Main outcome(s): Clinical trial outcome indicators include at least one or more of the improvement in the elderly's quality of life, physical activity and balance function. Use any one or more measures of brain function such as: Encephalogram (EEG), Magnetoencephalography (MEG), Functional near-infrared spectroscopy (fNIRS) and functional magnetic resonance imaging (fMRI) were used to measure cognitive brain function in the elderly.

Quality assessment / Risk of bias analysis: Quality assessment/Bias risk analysis: Two additional researchers (APC and XL) will participate in the independent extraction of data and filling in the pre-designed form. Information includes the first author, country, year, the method of dual task way on foot, intervention time, participants and baseline characteristics (race, sex ratio, age range, or average age), research, design, as a result, the specific data, conclusions, follow-up, adverse events, local and systemic adverse reactions and laboratory examination indexes and funds, sponsors and registration number conflict of interest, Source of funding and ethical approval.The extracted data will be crosschecked by two researchers. If there is a disagreement, a third researcher (KC) will be involved. If necessary, we will contact the study authors for further information. All data will be transferred to the Review Manager software (RevMan v. 5.3) for analysis and synthesis.

Strategy of data synthesis: In this protocol, Efficacy data will be synthesized and statistically analyzed by 2 reviewers independently using RevMan 5.3. A risk ratio (RR) or odd ration with 95% CIs will be adopted for dichotomous data, whereas a mean difference (MD) or standard mean difference (SMD) with 95% CIs will be utilized for continuous data. SMD will be employed if different assessment tools are used.Statistical heterogeneity will be investigated using chi-square test and I2 statistic. Fixed-effect model will be applied when heterogeneity is low (I2< 50%) and random-effects model will be used for moderate heterogeneity (50% < I2< 75%). When heterogeneity is considerably high, meta-analysis will not be performed.In line with the Cochrane guideline, the fixed effects model will be utilized for the pooled data if heterogeneity is deemed low and the random-effect model will be employed if heterogeneity is deemed moderate. Subgroup analysis or meta-regression will be performed to assess the potential sources with reasonable explanations if heterogeneity is considerably high. The statistical significance is defined as P < 0.05. If the meta-analysis is not feasible, a narrative description of the results will be provided.

Subgroup analysis: We will perform subgroup analysis according to the different details of interventions, study quality and outcome indicators.

Sensitivity analysis: We will perform sensitivity analysis based on sample size, research design, heterogeneity quality, methodological quality and statistical model, exclude trials with low quality, and ensure the stability of analysis results.

Country(ies) involved: China.

Keywords: Cognitive, Dual-task, Elderly, metaanalysis, systematic review, protocol.

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