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Dual-task training to improve gait parameters in people with Parkinson's disease: a systematic review V.1

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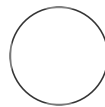
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ABSTRACT

People with Parkinson's disease (PD) frequently exhibit changes in spatiotemporal gait parameters that affect walking abilities. Preliminary studies suggested that dual-task training of gait could enhance walking; nonetheless, it remains unclear whether dual-task training can specifically enhance dual-task gait performance compared to single-task training.

We aim to conduct a systematic review to compare the effect of dual-task training relative to single-task training of gait on specific gait parameters during dual-task tests in subjects with PD.

MATERIALS

INTRODUCTION

People with Parkinson's disease (PD) are often characterized by significant alterations of spatiotemporal gait parameters that impact on walking ability (1). Preliminary studies suggest that dual-task training of gait improves walking (2, 3); however, whether dual-task training can specifically improve dual-task gait performance when compared to single-task training is still unknown. We aim to conduct a systematic review to compare the effect of dual-task training relative to single-task training of gait on specific gait parameters during dual-task tests in

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subjects with PD.

METHODS

Systematic review. Reporting will follow the Preferred Reporting Item of Systematic reviews and Meta-analysis (4).

Inclusion Criteria

We will consider published papers reporting the results of a trial in which people with PD received dual-task gait training (i.e., more than a single session), alone or added to single-task gait training, compared to single-task gait training alone. We will assess efficacy on dual-task spatiotemporal gait parameters.

Information sources and search strategy

We will search MEDLINE (PubMed), Embase, the Cochrane Central Register of Controlled Trials (CENTRAL). The search strategy for PubMed database is in the Appendix.

Study records management, selection and data collection

We will use EndNote software (5) to manage citations retrieved through the electronic searches. Two independent reviewers will determine studies eligible for the inclusion; any discrepancies will be resolved by discussion or with the consultation of a third reviewer. The same two reviewers will extract general characteristics (publication date, study design, description of the intervention and comparator, sample size) and specific information (training characteristics, outcome measures and study results) of included studies on a standardized extraction form.

Risk of bias assessment

Two reviewers will independently assess the risk of bias of included studies using the version two of the Cochrane Collaboration's tool for assessing risk of bias (RoB-2) (6). Discrepancies will be resolved by discussion or with the consultation of a third reviewer.

Data synthesis

We plan to combine data in meta-analyses. We will express the overall estimation of dual task training effect as mean difference (MD) with 95% confidence interval (CI) when studies use similar scale or as standardized mean difference (SMD) with 95% confidence interval (CI) if studies will use different scales/instruments to assess the same outcome. We will use STATA 16 software.

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APPENDIX

Search strategy for PubMed database:

((((Parkinson*[TW] OR "Parkinson disease"[Mesh] OR "paralysis agitans"[TW]) AND ("Walking"[Mesh] OR "Gait"[Mesh] OR (walk*[TIAB] OR gait[TIAB] OR ambulat*[TIAB] OR mobil*[TIAB] OR locomot*[TIAB] OR stride*[TIAB] OR stroll*[TIAB] OR treadmill*[TIAB]) OR (walk* [TW] OR gait[TW] OR ambulat*[TW] OR mobil*[TW] OR locomot*[TW] OR stride*[TW] OR stroll*[TW] OR treadmill*[TW]))) AND (dualtask[TW] OR dual-task[TW] OR dualtasking[TW] OR dual-tasking[TW] OR multimodal[TW] OR multi-modal[TW] OR multi-dimensional[TW] OR multidimensional[TW])) AND ("randomized controlled trial"[PT] OR "controlled clinical trial"[PT] OR "randomized"[TIAB] OR "randomised"[TIAB] OR "placebo" [TIAB] OR "clinical trials as topic"[Mesh] OR "randomly"[TIAB] OR "trial"[TI])) NOT ("animals"[Mesh] NOT "humans"[Mesh])

Search Strategy

- 1 Preparation of the search strategy and first running on April 2023

Records management, selection and data collection

2 Selection and collection starting in January 2024

Risk of bias assessment

3 Assessment planned after study selection

Data synthesis

4 Depending on data availability; if possible a quantitative synthesis will be performed