INPLASY PROTOCOL

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Corresponding author:
Oscar Andrades

oandradesramirez@gmail.com

Author Affiliation:
Universidad de las Américas.

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None declared.

Effect of the manipulation of the variables that configure the stimulus of strength training on motor symptoms in people with Parkinson's disease: A Systematic Review

Andrades, O[1]; Ulloa-Diaz, D[2]; Martínez-García, D[3]; Guede-Rojas, F[4]; Chirosa-Ríos, L[5]; García-Ramos, A[6].

Review question / Objective: **To analyze the evidence on studies that have manipulated the variables that make up the strength training stimulus and its effects on motor symptoms in people with Parkinson's disease.**
Condition being studied: **Parkinson's is a multisystemic neurodegenerative disease that affects the central nervous system and is caused by a loss of dopaminergic neurons in the compact part of the substantia nigra of the basal ganglia of the midbrain. People with Parkinson's disease (PEP) have non-motor and motor clinical symptoms. Classic motor symptoms are rest tremor, joint stiffness, bradykinesia, decreased balance, gait disturbances (speed, temporality, spatiality, support, and freezing) and decreased functional performance.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 November 2022 and was last updated on 17 November 2022 (registration number INPLASY2022110079).

INTRODUCTION

Review question / Objective: **To analyze the evidence on studies that have manipulated the variables that make up the strength training stimulus and its effects on motor symptoms in people with Parkinson's disease.**

Rationale: **Previous systematic reviews and meta-analyses have analyzed the effects of resistance training on motor symptoms in people with Parkinson's disease, reporting improvements after different clinical interventions that included resistance training. However, there are important**

methodological discrepancies in the design and also in the manipulation of the variables that configure the strength training stimulus in the interventions that have been carried out with PEP. For example, the studies present a high variability in the training frequency, exercise intensity, number of series, number of repetitions, duration of the session, which makes it difficult to prescribe strength training in clinical intervention due to the lack of of homogeneity and reproducibility of the studies. However, the manipulation of each one of these variables must be adjusted independently, taking into account that the organization of each one induces different responses in intramuscular and intermuscular coordination, microstructure, morphology, and neuromuscular metabolism.

Condition being studied: Parkinson's is a multisystemic neurodegenerative disease that affects the central nervous system and is caused by a loss of dopaminergic neurons in the compact part of the substantia nigra of the basal ganglia of the midbrain. People with Parkinson's disease (PEP) have non-motor and motor clinical symptoms. Classic motor symptoms are rest tremor, joint stiffness, bradykinesia, decreased balance, gait disturbances (speed, temporality, spatiality, support, and freezing) and decreased functional performance.

METHODS

Search strategy: Studies were identified by searching four electronic databases: Web of Science (WOS), Scopus, PubMed, and EBScoHOST. Articles published from January 2010 to May 2022 in English are included. The keywords used in the search were in English: “"Parkinson Disease" OR "Parkinsonian Disorders" OR "Parkinson Disease, Secondary" AND "Resistance Training " OR "Strength Train*" OR "Weight*” OR “Train*" OR "Exercise" OR "Physical Activity".

Participant or population: People with Parkinson's disease.

Intervention: Strength Training Programs.

Comparator: Does not apply.

Study designs to be included: Randomized studies.

Eligibility criteria: Articles that meet the following inclusion criteria: a) the article evaluates the effects of a strength training program on motor symptoms in FEP, b) consider weight machines, free weights as external resistance training c) objective control of the variables of the strength training programs: weekly frequency, intensity (%1RM or number of RM), volume [number of series and repetitions], duration of the session and exercises performed, d) duration of more than 6 weeks of training , e) PEP older than 50 years, f) randomized experimental trials and g) journal in English.

Information sources: Studies were identified by searching four electronic databases: Web of Science (WOS), Scopus, PubMed, and EBScoHOST.

Main outcome(s): Rest tremor, bradykinesia, balance, gait disturbances, descriptive means (mean, standard deviation), significance level, effect size will be obtained.

Quality assessment / Risk of bias analysis: The methodological quality of the selected articles will be assessed using the PEDro scale checklist.

Strategy of data synthesis: the size of the effect is used the formula of Lakers et 2013.

Subgroup analysis: Does not apply.

Sensitivity analysis: Does not apply.

Language restriction: English.

Country(ies) involved: Chile.

Keywords: physiotherapy, strength training, Parkinson's, motor symptoms.

Contributions of each author:

Author 1 - Oscar Andrades - manuscript writing.
Email: oandradesramirez@gmail.com
Author 2 - David Ulloa - manuscript writing.
Email: davidulloadiaz@gmail.com
Author 3 - Dario Martinez - risk of bias assessment strategy.
Email: damaga1991@gmail.com
Author 4 - Francisco Guede - development of the selection criteria.
Author 5 - Gustava Muñoz - development of translation results the risk of bias assessment strategy.
Author 6 - Luis Javier Chirosa - The author read, provided feedback and approved the final manuscript.
Author 7 - Amador García - The author read, provided feedback and approved the final manuscript.