

EFFECTS OF RESISTANCE TRAINING IN ELDERLY WITH PARKINSON'S DISEASE: A BIBLIOGRAPHIC REVIEW

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Abstract: Parkinson 's disease is an illness neurodegenerative idiopathic, or that is, without a definite cause that affects the system central nervous system (CNS) in region called substance compact black where a collapse occurs at communication between the CNS and the region peripheral causing so abnormalities in the motor system and also with regard to the psychological. Studies demonstrate that resistance training (RT) promotes several benefits for both the body part of body composition as at part psychological, thinking about these benefits that review study bibliographic analyzed 6 articles from 2010 to 2020 in order to collect works published that have the RT as an aid tool in the treatment of patients with Parkinson 's disease. The results demonstrate that only the TR seems no promote benefits direct us symptoms Parkinson 's disease motors, however at part psychological proved to be a method effective.

Keywords: Parkinson 's disease. resistance training.

INTRODUCTION

Parkinson 's disease (PD) is considered one illness neurodegenerative disease that presents itself in the central nervous system (CNS). In 1817 James Parkinson, through analysis and examinations clinicians, described you PD symptoms like tremors, muscle rigidity, akinesia, bradykinesia, anomalies postures and abnormalities that even today are considered you main symptoms of Parkinson 's disease. According to Dmochowsky, the etiology is something undefined, associated with to stress, genetics, exposure to toxic and infectious environments issues among other factors (2). With exams neurological identifies himself to loss of midbrain cells known as the Compact black substance - CNS, this way, it can be seen that PD occurs fur breakdown of CNS communication with the

striatum, synapse responsible for the release of dopamine, and this has as consequence the loss us basal ganglia, promoting alteration at acetylcholine. Dopamine deficit causes severe effects on the system extrapyramidal, resulting in dysfunctions muscle, such as the problems at maintenance of posture, coordination motor thin, in march and enrichment muscular (1).

The disease is among the largest incidence in people elderly. According to the WHO, at least 1% of the population worldwide over 65 years is affected by Parkinson 's disease in Brazil, affects approximately 200 thousand people (3). the most shape effective treatment is the drug that had your emergence in the late 60 's where the drug acts to restore partially the transmission dopaminergic.

A study revealed that 29% of people with PD are physically inactive (4). In that sense methodologies no medication he comes being tested, emerging as resistance training is an alternative, which can be useful in helping to treat these comorbidities, because according to Ferreira or exercise weathered increases the growth factor that is similar to central insulin (IGF1), stimulating the expression of the IGF1 receptor that activates the AKT pathway, which is important for angiogenesis, growth, and proliferation cellular and neural survival (5).

In addition, the muscle under contraction releases many factors related to system endocrine, such as neurotrophic factor derived from the brain, which can cross the barrier blood brain and trigger plasticity neuronal (5). The TR too contributes to improving posture by strengthening the thoracolumbar region, like the strength of the limbs lower limbs and muscle hypertrophy, improvements were considered when analyzing the development of balance, gait, mobility, in addition to the decrease in falls, all those benefits generate one improvement of the UPDRS (Unified Parkinson's Disease

Rate Scale) which is the evaluation scale that determines the stage of Parkinson 's Disease in patients (6).

The anxiety affect approximately 25% to 49% of patients with PD, it is believed that this percentage occurs because the constant stress stimulus is a determinant important for the development of anxiety excessive, and PD is a disorder that causes this type of stimulus in the CNS and the resistance training by having one neuroprotective capacity in these patients, by the stimulation of neurotrophic factors responsible for neurogenesis, processes of neuroplasticity and angiogenesis, which are fundamental to health mental (5). whereas the possible benefits of resistance training, this study has as hypothesis that O training resisted, theoretically he can contribute significantly to the improvement of the quality of life of patients with Parkinson 's disease, because when contrary to action medication, resistance training promotes crosstalk (crosstalk) between tissues, providing metabolism, structural adaptations and functional in various cells at the same time (5).

In the case of a comorbidity, the biggest clarification and for your turn understanding of methodologies, it is done significant for future interventions, being able to lead to disease delay. The resistance training is an agent responsible for improving balance, posture, strengthening lower limbs, reduction of bradykinesia, as well as symptoms of depression and anxiety, it becomes relevant a study that shows you effects of exercise resisted in DP.

Therefore, this study has as objective check the effect of resistance training us symptoms engines, in depression and anxiety in elderly people with Parkinson 's disease, using the review research methodology literary narrative, for this end.

METHODS

In that literature review study, it was carried out one search bibliographic with articles relevant on the effect of resistance training at Parkinson 's disease, enabling one analysis criticism about you results found us studies, such as, trials clinical and reviews literary extracted from Pubmed, Scielo databases, using you terms : Parkinson 's disease (resistance training) choosing you articles written in Portuguese and English that addressed studies on the effect of resistance training at Parkinson 's disease, limited us years 2010 to 2020. There were excluded you articles without contents relevant The That review and also were excluded those who don't had resistance training as exercise method applied, the articles duplicates were accounted for only one time.

STEP 1 → PUBMED, SCIELO → 147 ARTICLES

STEP 2 → EXCLUDED 138 per no be in accordance with the inclusion criteria.

STEP 3 → 7 ELIGIBLE ARTICLES

Flowchart of the study selection process.

DISCUSSION AND RESULTS

(Table below)

That review study bibliographic collected articles among the years from 2010 to 2020, in which it was verified you effects of resistance training programs applied to patients with Parkinson 's disease.(7) Parkinson 's disease affects the central nervous system, causing disturbances motor and psychological factors that affect directly to the quality of life of PD patients and in the case of a disease that affects mainly the system nervous system and the production of neurons, studies found that the exercise physicist stimulates several neurotransmitters in CNS as (7): Gaba (important issues in the synapses); dopamine (acts on movement control,

Author / Year	Objective	Evaluation	Methodology	Result
Barbalho (et al 2019)	To analyze the use of low - volume resistance training alone at muscle strength, body composition and functionality of people with PD.	Evaluation anthropometric, bioimpedance strength tests (1-RM) functionality through the protocol (GDLAM)	15 patients who were divided into 2 groups, one with resistance training (RTG): TR two times per week for 12 weeks.	The TR performed alone is capable of promoting strength gains and significant changes positive at body composition in patients with PD.
Vieira de Moraes Filho (et al 2020)	Analysis of the effect of resistance training at bradykinesia and performance Functional.	Force kinetics (extensors kneeling), TUG, 10m walk, 30sec - "sit and stand" and quiz (UPDRS)	Analyze with 40 people for 9 weeks, RT sessions of 50-60 min, with 2 sets of 10- 12 reps, up to fatigue.	The resistance training programs reduce bradykinesia and improves functional performance .
Renilson Moraes Ferreira (et al, 2018)	To analyze you Effects of resistance training in people with anxiety symptoms and quality of life in the elderly.	Anxiety symptoms were evaluated by BAI, the quality of life assessment he was carried out fur questionnaire (PDQ39) Hand grip strength assessment.	Analyze with 35 patients for 24 weeks with an exercise program of 30-40 min, 2 days no consecutive fromweek, 812 rep series submaximals	effective TR at reduction of anxiety symptoms and promotion of improved quality of life.
Mikhail Saltychev (et al, 2016)	Investigate if there is evidence about the effectiveness of resistance training progressive at rehabilitation from disease Parkinson's.	Revision literary	Defined TRP as training that (A) consists of a small rep number to fatigue, (B) allows rest enough among the recovery exercises (C) increases endurance according to the patient 's ability to generate force get better. TRP versus none treatment, placebo or other treatment in trials clinicians randomized controlled.	There is no evidence about the superiority of progressive TR compared to other treatments to support the use of this technique at rehabilitation of idiopathic PD. There is evidence limited that the training of resistance progressive is ineffective at Parkinson 's disease compared to other physical training regimens.
Alex Tillman (et al 2015)	Resistance training progressive inferior membership improves leg strength but not gait speed or the balance of PD carriers.	Revision literary.	Revision literary	PRT must be used in conjunction with balance and functional training task specific to improve plus gait and balance measurements.
T. Paolucci (et al 2020)	Highlight you goals resistance training specific progressive, in PD rehabilitation and examine the effectiveness of PRT in relation to muscle strength in patients with PD.	Eight articles (six reviews systematic and meta - analyses and two systematic reviews)	The PEAK method (Population, Intervention, Comparison and Result) was used to organize the review.	PRT has benefits, particularly the initial stages of PD, with low to moderate impact training exercises.

cognition, attention); norepinephrine (where activates alert, vigilance and concentration in the CNS); glutamate (for neural plasticity); serotonin (acts in controlling the release of hormones).

One of the effects of PD is bradykinesia, which is characterized by reduced at movement speed, interfering with performance function of patients with Parkinson 's disease in view of this fact Vieira Moraes Filho(8), presented a study showing you effects of a resistance training program in PD with training sessions of 3 times per week for 9 weeks and found one reduction in bradykinesia and functional capacity improvement, one of the impairments of PD and the decrease in gait speed as a result of a mass loss thin us members inferior, in view of that Alex Tillman(9) verified that the resistance training improves strength in the inferior members, however no improves gait speed or the balance at PD, a study accomplished by O Bello(10) demonstrated that specific training on a treadmill at gait and balance proves to be effective, there are studies at use of virtual reality that resulted in a shy improvement in the balance of PD patients, the Exercises improve exchanges metabolism within cells of the system nervous, increasing efficiency energetic, that stimulates the sensitivity of nerve endings, neurons and synapses (7). According to Kamada (11) exercises predominantly aerobics are capable of greater neural plasticity that strength exercises like bodybuilding per consequence of a greater flow increase body blood mainly at brain region.

According to a study by Fuzhong Li(12) the emergence of symptoms of anxiety and depression is common in PD patients, Meenakshi Dauwan (13) found in her revision literary one answer positive for improving the mood of people with PD, Renilson Moraes Ferreira(5), in his study

ratified you benefits of resistance training in relation to depression, an essay clinical accomplished per Jojo Y Y Kwok(14) demonstrated effectiveness of mindfulness Yoga in reduction in symptoms of anxiety and depression us PD carriers. Sarcopenia worsens the condition of PD patients with this T. Paolluci (15) through a revision systematic more meta analytics found strength training benefits in the phases initial PD with low and moderate training impact, force levels predict the appearance of several pathologies in a study accomplished per Barbalho (16) identified improvements in strength gain and capacity functional and also changes positive at body composition of patients,(5) because resistance training he can act by having one neuroprotective capacity in these patients, by the stimulation of neurotrophic factors responsible for neurogenesis, processes of neuroplasticity and angiogenesis, which are fundamental to health.

According to Diego Silva (7) neurogenesis is the neurochemistry who has most association with the impact of exercise physical in the system central nervous system, in addition to exercise influence the morphology of neurons newly born, that suggests that the effects of exercise physicist are both: quantitative and qualitative.

According to Mikhail Saltychev (17), whose study he was based on a revision systematic, it was found that small sample sizes with shorts follow - up periods reported some effects PRT positives in freezing symptoms, gait and muscle strength in the research and analysis of that study in general, there is evidence limited resistance training progressive no being most effective in Parkinson 's Disease than other physical training regimens. Already in a study by Xuexian Fang (18) concluded that moderate and vigorous activities they are associated with a risk reduced DP.

Resistance training is one tool among

others. like specific training and for your improvement there is also training on unstable bases to improve balance maintenance, exercises with task for a part cognitive activation and exercises cardiorespiratory system, aiming at increasing Vo₂max, improving oxygen consumption and consequently generating a benefit in terms of the fitness physics.

PD causes movement disorders, causing one series of symptoms us carriers of the disease and over time will make it difficult to carry out tasks daily, causing disturbances psychological as the anxiety and depression. In that feel the present study observed many different forms of exercise methodologies added to other treatments, once the PD treatment is multidisciplinary, bring repercussions positive at Parkinson 's disease.

CONCLUSIONS

The results presented showed that to occur one improvement us Parkinson 's disease symptoms resistance training must be used with low intensity and volume, in addition to of that the TR can collaborate in the disease variables, but it is necessary that they be made others activities associated like TR like walking, balance programs, mobility, because resistance training applied in isolation no showed effects significant us symptoms engines but it showed effective us symptoms psychological.

Having these results presented the study suggests that they be made most research on the relationship between TR and other methodologies, so that one can support or refute your use in the treatment of Parkinson 's disease.

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