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Systematic Review Protocol: Impact of Physical Exercise as an Adjuvant in Weight Loss Treatment Associated with Liraglutide Use

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We use this protocol and it's working

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Keywords: Physical Exercise , Semaglutide, Weight Control, GLP-1 Receptor Agonist, weight loss treatment associated, adjuvant in weight loss treatment associated, liraglutide use, using liraglutide, interaction between liraglutide, effective in weight control, liraglutide, physical exercise program, weight loss, impact of physical exercise, weight loss in individual, physical exercise, weight control, improvements in metabolic marker, cochrane collaboration, metabolic marker, proposed systematic review, clinical trial, systematic review, adjuvant in the treatment, lipid profile, systematic review protocol

Abstract

The proposed systematic review aims to investigate the impact of physical exercise as an adjuvant in the treatment for weight loss in individuals using Liraglutide, a GLP-1 receptor agonist. Liraglutide has proven effective in weight control, and physical exercise is recognized for its health benefits and maintaining a negative energy balance. However, the effectiveness of combining these interventions is not fully understood. To address this, randomized clinical trials and non-randomized controlled studies assessing the interaction between Liraglutide and physical exercise programs (aerobic, resistance, or both) lasting at least 8 weeks will be analyzed. The focus will be on weight loss and improvements in metabolic markers (glycemia, lipid profile, and blood pressure). The research will be conducted in the databases PubMed, Embase, LILACS and WebOfScience, supplemented by manual searches and contact with authors when necessary. The study selection process will be conducted by two independent reviewers, following PRISMA criteria to ensure transparency. The risk of bias will be assessed using the Cochrane Collaboration's ROB 2.0 tool. The synthesis of results will include a qualitative analysis, and if possible, a meta-analysis will be performed to summarize the results.

Guidelines

This protocol follows PRISMA-P guidelines [2] and will be registered on the PROSPERO platform to ensure transparency and avoid duplication of reviews on the topic. Any modifications to the protocol will be duly recorded.

Introduction

- 1 Weight loss is a common goal in the treatment of various health conditions, such as overweight, obesity, and metabolic disorders. The use of liraglutide, a GLP-1 receptor agonist, has been shown to be an effective option for weight control [1,3]. Simultaneously, physical exercise is widely recognized for its health benefits and its role in maintaining a negative energy balance [4]. However, the combination of physical exercise with liraglutide use for weight loss treatment is not yet fully understood.

Objective

- 2 To assess, through a systematic review, the impact of physical exercise as an adjuvant in the treatment of weight loss in individuals using liraglutide.

Registration and transparency

- 3 This protocol follows PRISMA-P guidelines [2] and will be registered on the PROSPERO platform to ensure transparency and avoid duplication of reviews on the topic. Any modifications to the protocol will be duly recorded.

Eligibility Criteria and Search Strategy

- 4 Studies meeting the following criteria will be eligible: Population: Adults (≥ 18 years) undergoing liraglutide treatment for weight control, regardless of initial body mass index (BMI). Intervention: Physical exercise programs (aerobic, resistance, or both), conducted alongside liraglutide use. Comparison: Groups of individuals using only liraglutide or other control treatments without physical exercise intervention. Primary Outcomes: Reduction in body weight (in kg or percentage of weight loss). Secondary Outcomes: Changes in metabolic markers (glycemia, lipid profile, blood pressure). Study Design: Randomized clinical trials and non-randomized controlled studies. Languages: Studies published in English, Portuguese, or Spanish. Publication Date: No restriction on publication date.

Search Strategy The searches will be conducted in the following databases: PubMed, LILACS, Embase and WebOfScience, including references of major articles and manual searches. If necessary, the authors of the studies will be contacted to request data.

The search strategy will be divided into three categories of terms: Exercise, liraglutide, and Weight Loss. These terms will be combined with Boolean operators

("AND", "OR") and adjusted as needed for each database as shown below:

(Exercise OR "Exercise Therapy" OR "Physical activity" OR "Physical training" OR Aerobic OR Cycling OR Treadmill OR Ergometer OR Swimming OR Swim OR Running OR Run OR "Hand grip" OR "Hand-grip" OR Walking OR Walk OR "Weight training" OR "Resistance exercise" OR "Resistance training" OR "Strength Training" OR Pilates OR Yoga OR Taichi OR "Tai chi" OR "Tai-chi" OR Isometric OR "Combined training" OR "Combined exercise" OR "Concurrent training" OR "Concurrent exercise") AND ("GLP-1 agonist" OR "GLP-1 receptor agonist" OR "Glucagon-like peptide-1" OR Liraglutide) AND ("Weight loss" OR "Weight reduction" OR "Weight management" OR "Obesity management" OR "Fat loss" OR "Body composition" OR "Weight control" OR "Fat reduction").

Study selection process

- 5 Two independent reviewers will screen studies by analyzing titles and abstracts. Articles that meet the inclusion criteria will be evaluated in full text. Discrepancies between reviewers will be resolved by a third evaluator. The selection process will be documented using the PRISMA flow diagram.

Data extraction

- 6 Data extraction will be performed by two reviewers using a standardized spreadsheet. Extracted data will include general information (authors, year of publication, country), intervention details (type of exercise, frequency, duration, and intensity of the physical exercise program), participant characteristics (age, sex, initial BMI, health status), and outcomes (weight loss, changes in metabolic markers, and other relevant outcomes).

Synthesis of results

- 7 The results will be synthesized qualitatively. If feasible, a meta-analysis will be conducted to combine the results of the included studies. A random-effects model will be used due to the inherent heterogeneity of potential studies, such as different types of exercise and populations. The results will be presented using forest plots, and the pooled results will be presented as mean differences or standardized mean differences with respective 95% confidence intervals. Meta-analytic analyses will be performed using R programming language with the META function package.

Risk of bias assessment

- 8 The risk of bias of the included studies will be assessed using the Cochrane Collaboration's ROB 2.0 tool for randomized clinical trials. Two independent reviewers

will assess the methodological quality of the studies, with disagreements resolved by a third reviewer. If a meta-analysis is feasible, the publication bias risk will be analyzed using the "trim and fill" method in the funnel plot and Egger's funnel asymmetry test.

References

- 9
1. Astrup A, Carraro R, Finer N, et al. (2012) Safety, tolerability and sustained weight loss over 2 years with the once-daily human GLP-1 analog, liraglutide. doi:10.1038/ijo.2011.158
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