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The Effect of Physical Activity Interventions on Executive Function in Overweight and Obese Adults: A Systematic Review

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 October 2024 and was last updated on 17 October 2024.

INTRODUCTION

Review question / Objective The PICO research question considered the following elements: Population: overweight and obese adults (≥ 18 years old), Intervention: exercise or physical activity, Comparison: pre-post measure, or comparison groups (control and/or different exercise intensities), Outcome measure: executive function evaluation.

Rationale Physical Activity has been identified as an effective strategy to improve executive function in children and adolescents with overweight and obesity. Additionally, studies focusing on adults with overweight and obesity show impairs on executive function, which is why it is important to systematically analyze changes in executive function associated with physical activity and exercise in adults with these conditions. Therefore, we conducted a systematic review to identify findings in studies from physical activity and

executive function in adults with overweight and obesity.

Condition being studied Overweight and obesity are a global public health problem that results from an imbalance of energy consumption and energy expenditure, and multifaceted nature noting genetic, behavioral, and environmental variables as major contributors. In this regard, sedentarism, lower physical activity, and excess consumption of palatable foods are risk factors that have been identified to lead to overweight and obesity. Additionally, overweight and obesity have been associated with chronic diseases such as cardiometabolic, mechanical disease, cancer, and mental health.

METHODS

Search strategy A systematic search was directed following PRISMA guidelines for systematic reviews and meta-analyses. Three databases were

searched: PubMed, ScienceDirect, 118 and JSTOR. The following terms were used to conduct the search: "physical activity", "exercise", "obese", "overweight", "executive function", and "adults". These descriptors were searched in the title and abstract fields.

Participant or population Overweight and obese adults, 18 years or older.

Intervention Exercise or physical activity.

Comparator Pre-post measure, or comparison groups (control and/or different exercise intensities).

Study designs to be included Longitudinal and/or cross-sectional studies, randomized and/or observational studies.

Eligibility criteria Peer-reviewed articles, longitudinal and/or cross-sectional studies, randomized and/or observational studies, and studies including comparison groups and/or pre-post measures were included in the present systematic review.

Exclusion criteria for articles were: review articles, systematic review and/or meta-analysis articles, studies including participants with comorbidities (diabetes, hypertension, etc.), and studies where full text was not available.

Information sources Three databases were searched: PubMed, ScienceDirect, and JSTOR.

Main outcome(s) Executive function evaluation. Changes in executive function.

Data management PRISMA guidelines were followed for identifying and extracting the articles for this systematic review. Search and extraction of articles were performed by two authors. Title and abstract screening, as well as full-text screening, was made by consensus of all authors.

Quality assessment / Risk of bias analysis Risk of bias assessment was performed using the NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies.

Strategy of data synthesis N/A.

Subgroup analysis N/A.

Sensitivity analysis N/A.

Country(ies) involved Mexico and Spain.

Keywords Physical activity, Executive function, Overweight, Obesity, adults.

Contributions of each author

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