INPLASY PROTOCOL

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The effects of active video games on physical activity among overweight and obese adolescents: A systematic review

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Review question / Objective: The purpose of this review is to analyze the effects of AVGs on physical activity(PA) and some influencing factors of overweight and obese adolescents from different settings, so as to clarify whether AVGs can effectively promote PA in this group.

Condition being studied: In the results of the study, it was revealed that AVGs can effectively reduce sedentary behavior and screen time, but the results of PA and MVPA and relevant physiological(eg.energy expenditure,VO2max) are still unclear due to design problems, measurement issues and other methodology concerns.However, the results of psychological factors (eg.self-efficacy towards PA,intrinsic motivation.) affecting PA are clear, and AVG can effectively improve the psychology of participants.

INTRODUCTION

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METHODS

Participant or population: Overweight and obese adolescents.

Intervention: Active video games.

Comparator: None.

Study designs to be included: Randomized controlled trial (RCT), non-randomized controlled trial (Non-RCT) with two or more groups, and single-group trials with pretest and post-test design RCT.

Eligibility criteria: We used the PICOS (population, intervention, comparison, outcome, study design) as the inclusion criteria, were included. Thus, studies were included if they met the following criteria: (1)A full text, peer-reviewed study published in English, describing the effects of exergames interventions on overweight and obese adolescents (male and female), randomized controlled trial (RCT), non-randomized controlled trial (Non-RCT) with two or more groups, and single-group trials with pretest and post-test design;(2) In this study, only included studies on planned and organized exergames intervention to improve or maintain physical activity, weight-loss and other changes of biochemical indexes;(3) There were no restrictions on the sample size, study location, and intervention time for the included studies.(4) The publication time of the article is from 2010 to July 2021. Articles in this period can be included. Studies were excluded if they met several exclusion criteria: (1) Studies published articles, meeting abstracts, case.

Information sources: In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA)Statement guidelines, this review searched the PubMed, SCOPUS, EBSCOhost (SPORTDiscus), and Web of Science databases for reported studies in recent 10 years(from 2011 to 2021), using a combination of keywords related to physical activity, overweight and obese, and adolescents.

Main outcome(s): In the results of the study, it was revealed that AVGs can effectively reduce sedentary behavior and screen time, but the results of PA and MVPA and relevant physiological(eg.energy expenditure,VO2max) are still unclear due to design problems, measurement issues and other methodology concerns.However, the results of psychological factors (eg.self-efficacy towards PA, intrinsic motivation.) affecting PA are clear, and AVG can effectively improve the psychology of participants.

Quality assessment / Risk of bias analysis: The descriptive data of the AVGs (e.g. location, sample, year, etc.) were calculated to describe the characteristics of the AVGs on overweight and obese. Specifically, shown in Table 1, Each item was rated as "yes" (1), "no" (0), or "not applicable(N/A)".Based upon previous literature [25,26], research design quality of each study was assessed independently by the authors with a 10-item scale . A design quality score ranging from 0 to 10 was calculated by summing up the positive rates. High quality was defined when a RCT or controlled trial scored above the median score 5.5.

Strategy of data synthesis: After the data search was complete, data were obtained from eligible studies in a predeterrmined extraction form [Including, (1)Author, publication year, location of study;(2) Sample characteristics (number, age, gender, etc.); (3) Intervention description (design, duration, characteristics);(4) Measures index, and (5) Research outcomes].One author abstracted information into the standard form and the other author checked it.

Subgroup analysis: None.

Sensitivity analysis: None.

Country(ies) involved: China, Malaysia.
Keywords: physical activity, overweight and obese, adolescents, energy expenditure, self-efficacy.

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Author 3 - Fengmeng Qi.
Author 4 - Yandong Yuan.