INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Acute supplementation to enhancement the sporting performance of young elite athletes / physical activity practitioners: A Systematic Review

Gruska, N[1]; Massart, A[2]; Sarmento, H[3].

Review question / Objective: **The objective of this systematic review is to understand the appropriate protocols for using ergogenic agents to enhance the physical and cognitive performance of children / young athletes, or physical activity practitioners. What are the correct dosages to be used by young athletes? What is the correct protocol to be applied on specific groups of young athletes?**
Condition being studied: **Application of supplements and impacts on physical and cognitive performance of children and young athletes.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 January 2023 and was last updated on 08 January 2023 (registration number INPLASY202310017).

INTRODUCTION

Review question / Objective: **The objective of this systematic review is to understand the appropriate protocols for using ergogenic agents to enhance the physical and cognitive performance of children / young athletes, or physical activity practitioners. What are the correct dosages to be used by young athletes? What is the correct protocol to be applied on specific groups of young athletes?**

Rationale: **The consumption of ergogenics substances during competitions an training sessions is quite common, especially in elite young athletes in the growth and development phases. The research intends to, firstly, understand which substances have positive, negative or null impacts on the physical and cognitive performances of**

these athletic groups. Secondly, it aims to suggest improvements to existing ergogenic agent protocols with safer / more appropriate substances that may benefit future generation of athletes in a variety of sports.

Condition being studied: Application of supplements and impacts on physical and cognitive performance of children and young athletes.

METHODS

Search strategy: The study will be carried out in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analysis) standards. The electronic databases searched will be: Web of Science (all databases/collections), PubMed, SportDiscuss and Scopus. The electronic search protocol will require that the title, abstract or keywords include the following terms: (((Sport* OR exercis* OR athletic? OR soccer OR swim* OR tennis OR gymnastic* OR judo OR basketball OR rugby OR football OR "team sport") AND ("ergogenic effect" OR "ergogenic aid" OR "ergogenic substance$" OR "dietary supplement$" OR "food supplement*" OR carbo* OR resveratrol OR taurine OR beetroot OR ATP OR phosphocreatine OR choline OR magnesium OR vitamin*)) AND (Performance)) AND (youth OR young OR kid* OR Child* OR "pre puberty" OR "young athlete").

Participant or population: Athletes and physical activity practitioners under 18 years old.

Intervention: Administration of acute use supplements and analysis of the effects on physical and cognitive performance.

Comparator: This review will include studies that contain both control groups and studies that do not use them.

Study designs to be included: No limitation to study design.

Eligibility criteria: The eligibility criteria for the study will be: (i) experimental studies using acute supplementation; (ii) containing outcomes related to physical and cognitive performance; (iii) carried out with athletes and/or physical activity practitioners under 18 years of age. The following will be excluded: (i) studies that do not contain relevant data on the subject in question; (ii) experimental studies of chronic use; (iii) gray bibliography; (iv) studies with unhealthy populations.

Information sources: The research will be carried out in the following databases: Web of Science (all databases/collections), PubMed, SportDiscuss and Scopus.

Main outcome(s): Measurement of conditional capacities (strength, resistance, speed, flexibility), coordinative and cognitive capacities. Quantitative internal physical markers (heart rate, glucose and lactate levels, inflammatory markers) and qualitative external indicators (perceived exertion, well-being).

Additional outcome(s): Not applicable.

Data management: Data management will be carried out using the Endnote software.

Quality assessment / Risk of bias analysis: For quality assessment, it will be use the Minors rating scale.

Strategy of data synthesis: We will use an adaptation of the Cochrane template for data extraction and synthesis based on the strategy used to define the research question (e.g. population, intervention, comparator and outcomes). Data will be grouped according to the type of protocol used and the similarity of the evaluated outcomes.

Subgroup analysis: Not applicable.

Sensitivity analysis: Not applicable.

Language restriction: Without criteria.

Country(ies) involved: Portugal.

Keywords: Dietary Supplements; Sports Performance; Young Athlete; Acute Supplementation; Children Athlete.

Dissemination plans: The results will be disseminated through a scientific article publication.

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