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INPLASY

Efficacy of Dietary Supplements on Athlete Performance Outcomes: A Systematic Review of Evidence in Competitive Athletes

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ADMINISTRATIVE INFORMATION

Support - This systematic review is not financially supported by any organization or sponsor.

Review Stage at time of this submission - The review has not yet started.

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 7 November 2024 and was last updated on 7 November 2024.

INTRODUCTION

Review question / Objective The review seeks to address the following question: What is the efficacy of dietary supplements on the performance of competitive athletes?

Rationale The widespread use of dietary supplements for performance enhancement in sports is a significant phenomenon. Kaufman et al. (2022) reports that about 40-100% of trained athletes in all sports are integrating dietary supplements into their regimens. The practice is more pronounced across all sports, from recreational to professional with its use cutting across all demographic boundaries. Despite the widespread use of supplements, there is limited empirical evidence on the efficacy of the supplements among athletes. While there are studies that have examined various supplements and their effects on athlete performance, there is a notable absence of a comprehensive systematic evaluation of supplement efficacy specific to sports performance outcomes. This systematic review of dietary supplement efficacy in sports performance is therefore timely and necessary. The findings will help consolidate existing evidence on the efficacy of dietary supplementation and also identify potential areas for further research.

Condition being studied This review will systematically evaluate the efficacy of dietary supplements on sport-specific performance outcomes among competitive athletes.

METHODS

Search strategy We will search the following databases: PubMed, Web of Science, Scopus, SPORTDiscus, and Google Scholar. The search strategy will include terms related to dietary supplementation ("dietary supplements", "ergogenic aids", “supplemental nutrition") combined with terms related to athletic

performance and specific sports ("athletic performance", "sports performance", "skill performance") focusing on randomized controlled trials or controlled trials. The full search strategy for each database will be developed, refined, and reported in the final review.

Participant or population Healthy athletes of any age, gender, or sport but with a keen focus on competitive athletes will be included. Studies involving injured recreational athletes and non-athletic populations will be excluded.

Intervention Incorporation of dietary supplements into athletes' training regimens. These dietary supplements will include but are not limited to caffeine, creatine, beta-alanine, branched-chain amino acids (BCAAs), vitamin D, protein supplements, multivitamins, and dietary nitrates.

Comparator The comparators will be athletes exposed to no intervention or placebo interventions.

Study designs to be included Randomized controlled trials (RCTs) and controlled clinical trials will be included.

Eligibility criteria Inclusion criteria: (1) RCTs or controlled clinical trials; (2) healthy athletes; (3) any supplement that can be categorised as a dietary supplement for performance enhancement; (4) comparison with no intervention or placebo; (5) reporting at least one measure of athletic performance; (6) articles published from 2004 to date (20 years); (7) involve only competitive athletes.
Exclusion criteria: (1) non-English language publications; (2) studies on injured athletes; (3) studies without a control group; (4) nonhuman studies; (5) studies not reporting quantitative performance outcomes.

Information sources The review will adopt the PRISMA guidelines as the basis for the search and selection of materials to be used in the analysis. The following databases will be considered PubMed, Web of Science, EBSCOhost, Scopus, SPORTDiscus, and Google Scholar.

Main outcome(s) The primary outcome will be to assess the direct performance measures, sport-specific outcomes and quantifiable performance metrics resulting from the use of dietary supplements by the athletes. These outcome measures will be invaluable in vindicating the efficacy of dietary supplements in enhancing the performance of athletes in their respective sports.

Additional outcome(s) Secondary outcomes will include measures and reports on recovery markers, training adaptations and adverse effects reported by the intervention groups.

Data management Two reviewers will independently search the databases and extract the potential sources meeting the inclusion criteria based on the title and abstract review. The two reviewers will consolidate their selected articles for a full-text review and share them with all the other reviewers for the full-text review. The included studies from each reviewer will be consolidated and disagreements settled through a panel review involving all the reviewers. Studies agreed by all the reviewers to meet the inclusion and exclusion criteria will be included in the final review.

Quality assessment / Risk of bias analysis The PEDro scale will be used to assess the methodological quality of included studies. The Cochrane Risk of Bias (RoB) Tool V.2 tool will be used to assess the risk of bias in the studies.

Strategy of data synthesis The following data will be extracted from the included articles study characteristics (e.g. authors, article publication dates, study design), participant demographics, supplement category and type, supplement protocols (durations and frequency), performance outcome measures and study conclusions.

Subgroup analysis N/A.

Sensitivity analysis N/A.

Language restriction Studies in English language.

Country(ies) involved China.

Keywords Athletic performance; dietary supplements; elite athletes; ergogenic aids; sport performance; performance enhancement; nutritional supplements; competitive athlete.

Dissemination plans The results of this review will be submitted for publication in a peer-reviewed.

Contributions of each author
Author 1 - Danfangjun Luo - Writing and revising papers.
Author 2 - Yongsheng Sun - data collection and analysis.