

INPLASY PROTOCOL

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Review Stage at time of this submission: Preliminary searches.

Conflicts of interest:
None declared.

The Impact of Sleep Interventions on Athletes Performance: A Systematic Review

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Review question / Objective: The aim of this systematic review is to analyze the impact of sleep interventions on athletes' performance.

Condition being studied: Athletic performance after a sleep intervention (e.g., sleep hygiene, sleep extension or nap).

Eligibility criteria: This review will be conducted based on the PRISMA guidelines and the PICOS approach. Articles will be eligible if they were published or in-press in peer-reviewed journals (i.e., abstracts published in conference proceedings, books, theses, and dissertations will be not considered), published in English language, and abstract was available for screening. No gender or age restriction will be applied. The PICOS approach will be established as follows: Population: Individual or team sports athletes; Intervention: Strategies to improve or extend sleep; Comparators: Control group or a baseline phase without sleep intervention; Outcomes: Subjective and/or objective measurement of sleep and physical and/or cognitive performance.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 May 2022 and was last updated on 11 May 2022 (registration number INPLASY202250069).

INTRODUCTION

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Condition being studied: Athletic performance after a sleep intervention (e.g., sleep hygiene, sleep extension or nap).

METHODS

Search strategy: The search for the articles will be conducted in May 2022 and three electronic databases will be used: PubMed, SPORTDiscus via EBSCOhost, and Web of Science. In each database, the following descriptors covering the characteristic of participants, intervention and outcomes will be used: (athlet* OR sport*) AND (sleep AND (education OR hygiene OR Duration OR extension OR therapy OR strateg*) OR nap*) AND (performance OR competiti* OR recovery OR fatigue OR outcome*).

Participant or population: Athletes of individual or team sports (from amateurs to elite athletes).

Intervention: Intervention aimed at improving sleep and performance.

Comparator: Control group or a baseline phase without sleep intervention.

Study designs to be included: Interventional studies.

Eligibility criteria: This review will be conducted based on the PRISMA guidelines and the PICOS approach. Articles will be eligible if they were published or in-press in peer-reviewed journals (i.e., abstracts published in conference proceedings, books, theses, and dissertations will be not considered), published in English language, and abstract was available for screening. No gender or age restriction will be applied. The PICOS approach will be established as follows: Population: Individual or team sports athletes; Intervention: Strategies to improve or extend sleep; Comparators: Control group or a baseline phase without sleep intervention; Outcomes: Subjective and/or objective measurement of sleep and physical and/or cognitive performance.

Information sources: PubMed, SPORTDiscus via EBSCOhost, and Web of Science.

Main outcome(s): Subjective and/or objective sleep (e.g., sleep duration; sleep

efficiency), physical and/or cognitive performance (e.g., psychomotor vigilance; speed; power; strength) and physiological outcomes (e.g., heart rate variability; lactate; creatine kinase).

Quality assessment / Risk of bias analysis:

It will be applied the revised Cochrane risk of bias tool for randomized trials (RoB2) to assess the potential risk of bias. RoB2 is an outcome-focused, domain-based tool that evaluates the risk of bias in outcomes in individually randomized, parallel-group trials, randomized crossover trials, and cluster-RCTs. RoB2 has five risk of bias domains covering the different aspects of the trial design, conduct, and reporting. Those include: (1) bias arising from the randomization process; (2) bias due to deviations from intended interventions; (3) bias due to missing outcome data; (4) bias in the measurement of the outcome; and finally (5) bias in the selection of the reported results. We will also apply the RoB2 version for crossover trials, which considers the within-participant design not addressed by the RoB2 for randomized trials and includes an additional domain: bias arising from period and carryover effects and an additional question on domain "bias in the selection of the reported results". In both tools, RoB2 and RoB2 for cross over trials, responses to signaling questions are mapped using a decision algorithm to determine each risk of bias domain judgment. The overall risk of bias judgment will be made for each assessed outcome, in each trial, based on the domain-level assessment. The Risk of Bias Assessment Tool for Nonrandomized Studies (RoBANS) will be applied to analyze non-randomized studies included. The RoBANS is a domain-based evaluation tool, compatible with the Cochrane risk-of-bias tool, that has six risk of bias domains: (1) Selection of participants; (2) Confounding variables; (3) Measurement of exposure; (4) Blinding of outcome assessments; (5) Incomplete outcome data; and (6) Selective outcome reporting. Two researchers (LC and JC) will independently apply both RoB2 tools and RoBANS. After completion, the three tables will be compared, and all disagreements will be discussed and

reanalyzed until consensus be achieved. An additional reviewer will be involved if a consensus is not reached.

Strategy of data synthesis: For the papers include in the analysis, we will consider information about: (1) geographical location where the study was conducted; (2) study design; (3) sport; (4) sample (e.g., size, sex, and age); (5) type of intervention (e.g. sleep hygiene, napping or sleep extension); (6) sleep assessment (objective or subjective); (7) Performance/recovery assessment test (e.g., psychomotor vigilance task, countermovement jump or Wingate test); and (8) main results.

Subgroup analysis: None.

Sensitivity analysis: None.

Language: English.

Country(ies) involved: Portugal, Australia, United Kingdom.

Keywords: Sleep interventions, performance, athletes.

Contributions of each author:

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