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Body mass index and physical training-related injuries in military personnel: A systematic review and meta-regression analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Risk of bias assessment.

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 12 September 2023 and was last updated on 12 September 2023.

INTRODUCTION

Review question / Objective First, we will explore the association of different levels of BMI with the occurrence of physical training-related injuries in military personnel, and whether it changes across military services, age and gender populations. Secondly, the relationship between the occurrence of training-related injuries and the development of training time will be explored after considering the factors of time change.

Condition being studied Physical training-related injuries are common and persistent among military personnel, it has led to the premature retirement of certain experienced military personnel, while also increasing the military expenses on healthcare. Numerous previous studies have explored the etiological factors of training-related injuries, while there is a lack of agreement on the contribution of BMI to the occurrence of training-related injuries, here we focus on BMI, which is easy to detect for each serviceman.

METHODS

Participant or population The subjects of those studies were military personnel.

Intervention Underweight, overweight, obese military personnel. According to WHO standards: underweight (BMI, below 18.5 kg/m^2), overweight (BMI, 25-29.9 kg/m^2) and obesity (BMI, 30kg/m^2 or more).

Comparator Normal weight military personnel. According to WHO standards: normal weight (BMI, 18.5-24.9 kg/m^2).

Study designs to be included Retrospective cohort, prospective cohort, and case-control studies.

Eligibility criteria Eligibility criteria were analytical studies that involved BMI and physical training-related injuries, BMI was classified data here, had reported an association between BMI and physical training-related injuries.

Information sources Literature search will be conducted in MEDLINE, Embase, and Cochrane Library databases for publications in English from 2000 to the present.

Main outcome(s) To assess the association between BMI and physical training-related injuries qualitatively and quantitatively, the relative risk was calculated using military personnel within the normal BMI range as the reference population.

Quality assessment / Risk of bias analysis Methodology quality and risk of bias of included studies were assessed using the Newcastle–Ottawa quality assessment scale, the NOS contains eight terms across three domains (selection, comparability, and outcome), studies with low quality scores were excluded.

Strategy of data synthesis The relative risk (RR) with its 95% confidence interval (CI) was calculated for each study. These relative risks and confidence intervals will be pooled using inverse-variance weighted random-effects models. Finally, publication bias will be assessed by funnel plots, and calculated the Egger's test for funnel plot symmetry. All data will be analyzed using the Stata, version 17.0. statistical significance was set at $P < 0.05$.

Subgroup analysis Subgroup analysis will be performed dividing by genders and by services.

Sensitivity analysis Leave-one-out approach, excluding one study at a time.

Country(ies) involved China.

Keywords military personnel, meta-analysis, physical training-related injuries, body mass index (BMI).

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