INPLASY

Musculoskeletal injuries (MSKIs) on the Military Training: a systematic review

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data analysis.

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 9 February 2025 and was last updated on 9 February 2025.

INTRODUCTION

Review question / Objective Determine the prevalence of musculoskeletal injuries (MSKIs), in the Armed Forces (Navy, Army and Air Force), military personnel in active, all rank, either gender, over 18 years old, in the context of military training. Examples of training courses: Recruit, Military Physical Education Instructor Course, Infantry Course, Special Operations Course, Military Parachuting Course. Operational Training: Readiness of Detached National Forces, during a commission of Detached National Force, Techniques and Procedures Training, Individual combat technique and Combat shooting.
The aim is to understand if there are possible health inequalities in the military context, whether gender or age group, may influence variations in the occurrence of MSKIs, if different type of military training can influence these injuries and thus justify their high rate of occurrence.

Rationale This uncertainty regarding the prevalence of musculoskeletal injuries in military personnel, as well as the doubt about the existence of inequalities in their distribution, makes it necessary to develop scientific knowledge that can address the raised questions. The goal is to enable healthcare professionals in military units and respective sports technicians (among other organizations) to implement a set of measures appropriate to the current reality of military health.
The aim of this study is to contribute to the development of evidence on the prevalence of MSKIs in military personnel of the Armed Forces.

Condition being studied Injuries caused by physical activity through military training, with a minimum duration of 4 weeks, by active-duty military personnel, over 18 years old and either gender.

METHODS

Search strategy Electronic databases, Cochrane, Embase, Medline (PubMed), Scopus, SPORTDiscus, and Web of Science were searched for relevant publications. Keywords and synonyms

were entered in various combinations in all fields: (musculoskeletal injury OR "MSKIs") AND (military training OR "basic training" OR "recruit training") AND (prevalence OR incidence OR "risk factors"). An external expert was contacted to verify the final list of references included in this systematic review and to indicate if there was any study that was not detected through our search.

Participant or population Military personnel in active service in the Armed Forces, over 18 years old, either gender, all rank, without injuries, illnesses or other clinical problems.

Intervention Active groups in military training programs with a minimum duration of 4 weeks in a training context: Recruit, Military Physical Education Instructor Course, Infantry Course, Special Operations Course, Military Parachuting Course and with restriction on the number of sessions per week.

Comparator Active groups in the context of operational training: Readiness of Detached National Forces, during a Detached National Force Commission, Techniques and Procedures Training, Individual Combat Technique, Combat Shooting.

Study designs to be included Observational studies, experimental studies, randomized contracted trials, case studies.

Eligibility criteria Inclusion criteria: Studies up to January 2025 on military personnel from the Armed Forces (Navy, Army, Air Force) over 18 years old, either gender, without injury, illness or other clinical condition. Security Forces personnel, if available, will be included, programs based on military activity training with a minimum duration of 4 weeks and no frequency restrictions (number of sessions per week). Randomized controlled trials, original and full-text studies written in English or Portuguese.
Exclusion criteria: Programs with less than 4 weeks of intervention, not military personnel, injured or in rehab military personnel, non-randomized controlled trials, original and full-text studies not written in English or Portuguese.

Information sources Electronic databases (Cochrane, Embase, Medline (PubMed), Scopus, SPORTDiscus, and Web of Science) were searched for relevant publications.

Main outcome(s) Reported injury rates of MSKIs, incidence or prevalence.

Additional outcome(s) None.

Data management The Zotero software (version 7.0.11) was utilized to compile and organize studies obtained from various databases.

Quality assessment / Risk of bias analysis The quality assessment will be conducted in two ways. The Cochrane Risk of Bias Tool (RoB 2) will be used to assess the risk of bias in randomized controlled trials. Additionally, the Physiotherapy Evidence Database (PEDro) scale will be used to assess the methodological quality of the randomized controlled trials included in this systematic review and meta-analysis. The scale scores the internal study validity in a range of 0 (low methodological quality) to 10 (high methodological quality). Eleven items are measured in the scale. The criterion 1 is not included in the final score. Points for items 2 to 11 were only attributed when a criterion was clearly satisfied.

Strategy of data synthesis When meta-analysis is not feasible, a narrative synthesis will be conducted to describe general trends and study limitations. For continuous outcomes the Effect sizes will be calculated as Mean differences (MD) or standardized mean differences (SMD), with 95% confidence intervals. Heterogeneity will be assessed using the I^2 statistic and Cochran's Q test, considering values above 50% as indicative of high variability. A random-effects model will be used to address variations between studies. Analyses will be performed using Review Manager (RevMan) and Comprehensive Meta-Analysis (CMA) software.

Subgroup analysis None.

Sensitivity analysis One of the sensitivity analyses that will be conducted to assess the robustness and reliability of the meta-analysis results will be the exclusion of studies with a high risk of bias.

Language restriction English.

Country(ies) involved Portugal.

Other relevant information None

Keywords Armed Forces; Military training; Recruit training; Incidence; Risk Factors.

Dissemination plans None.

Contributions of each author
Author 1 - Pedro Oliveira - Lead the project, wrote and revised the original manuscript and analyzed

and interpreted the data, wrote the statistical report.

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