Sports Medicine

What are the Main Running-Related Musculoskeletal Injuries?

A Systematic Review

Lopes AD, et al.

Supplemental Digital Content

This Supplemental Digital Content contains the information referred to in the full version of this article, which can be found at http://adisonline.com/sportsmedicine

SUPPLEMENTAL DIGITAL CONTENT - APPENDIX 1
Risk of Bias Assessment Tool

This tool was designed to assess the risk of bias for incidence or prevalence studies. Please read the additional notes for each criterion before initially using the tool. Note: If there is insufficient information in the article to permit a judgment for a particular criterion, please answer "**No:** high risk of bias" for that particular criterion.

Criterion	Description of criteria and examples	Answers
1. Definition of RRMI	Studies aimed to determine RRMI should present a definition of RRMI informing what was considered as an injury in the study. Studies that present a definition of RRMI receive YES for this criterion. Those that not presented a definition of RRMI receive NO for this criterion.	**YES:** low risk of bias **NO:** high risk of bias
2. Study design	For incidence studies the design should be prospective and include only non-injured runners in selection process of the study. For prevalence studies the design should be cross-sectional or prospective (these studies include non-injured and injured runners in selection process). Prospective (incidence or prevalence) and cross-sectional studies (prevalence) receive YES for this criterion. Retrospective studies (prevalence) receive NO because they present recall bias.	**YES:** low risk of bias **NO:** high risk of bias
3. Description of runners or type of runners	There are several types of runners (recreational, elite, ultra marathoners, marathoners, etc.). Without the description regarding the type runners it is impossible to conclude which population refers the incidence or prevalence rates. Studies that reported the description of runners, or informed the type of runners, or describe the training characteristic receive YES for this criterion. Studies conducted in running races (which may determine the type of runners, e.g. marathon race) and describe the race characteristics receive YES for this criterion as well. Studies that did not describe the characteristics or the type of runners, and studies conducted in running races but did not describe the characteristics of the race receive NO for this criterion.	**YES:** low risk of bias **NO:** high risk of bias
4. Random sample selection process	In order to reduce selection bias in incidence and prevalence studies the inclusion selection process of runners in the studies should be conducted at random. Studies that conducted the random selection process to include runners in the study, or the studies that analyzed the entire target population receive YES for this criterion. Studies that did not conduct a random selection process or did not analyze the entire target population receive NO for this criterion.	**YES:** low risk of bias **NO:** high risk of bias
5. Loss to follow-up	A loss to follow-up greater than 20% may increase the risk of bias in prospective studies. Prospective studies that collected the data of at least 80% of the runners included in the study receive YES for this criterion. Prospective studies that did not collect the data of at least 80% of the runners receive NO. Cross-sectional studies were not considered for this criterion because they do not have follow-up period, and the retrospective studies were not considered for this criterion because these studies do not present loss to follow-up. So, the cross-sectional and retrospective studies receive N/A for this criterion.	**YES:** low risk of bias **NO:** high risk of bias **N/A:** not applicable
6. Data collected directly from the runners	The data collection of RRMI is usually carried out by interviews (face to face, phone calls, etc.), logs or questionnaires (e-mail, in person collection, etc.) or by a healthcare professional evaluation. Studies that the interview or the questionnaire were applied directly to the runners, or the healthcare professional evaluation of the RRMI was carried out during the study receive YES for this criterion. Studies that the interview or the questionnaire were applied to other people other than the runners (coach, physical therapist, physician, etc.), or the healthcare professional evaluation was not carried out during the study and reported by medical records receive NO for this criterion.	**YES:** low risk of bias **NO:** high risk of bias
7. Same mode of data collection	The data collection of RRMI may be carried out by some modes such as interviews (face to face, phone calls, etc.), logs or questionnaires (e-mail, in person collection, etc.) or by health professional evaluation. If the same mode of data collection was established for all runners of the study (e.g. all runners answer an online questionnaire that asked about the RRMI) the study receive YES for this criterion. If the data collection was not carried out by the same mode (e.g. some runners answered a questionnaire, others were interviewed by telephone and others performed a medical evaluation) the study receives NO for this criterion.	**YES:** low risk of bias **NO:** high risk of bias
8. Diagnosis conducted by any physicians	Injuries diagnosed by physicians in studies could minimize the report bias of the injuries. If all injuries reported in the study were diagnosed by any physician the study receives YES for this criterion. If all the injuries reported in the study were not diagnosed by any physician the study receives NO for this criterion.	**YES:** low risk of bias **NO:** high risk of bias
9. Follow-up period	RRMI may be classified as overuse (repetitive microtrauma that overloads musculoskeletal structures) or as acute onset (macrotrauma with an event well identified). However, the majority of RRMI are overuse injuries. A short follow-up period might not be sensitive enough to identify overuse injuries. Prospective studies that carried out a follow-up period of at least six months received YES for this criterion. Prospective studies that carried out a follow-up period less than six months receive NO for this criterion. In addition, retrospective studies are prone to recall bias and those that collected the data with past medical records may present registry bias. Therefore, retrospective studies with follow-up period with 12 months or less receive YES for this criterion. Retrospective studies with follow-up period greater than 12 months receive NO for this criterion. Cross-sectional studies are not considered for this criterion because they do not have follow-up period, so these studies receive N/A for this criterion.	**YES:** low risk of bias **NO:** high risk of bias **N/A:** not applicable
10. Incidence or prevalence rates of each RRMI expressed by any ratio	To compare or to pool the incidence and prevalence rates of RRMI among several studies it is necessary express the rates in comparable units (such as ratios like RRMI/1000 hours of exposure to running), allowing data comparisons even if the runners present different durations of exposure to running. Studies that expressed the incidence or prevalence rates of each RRMI by any ratio that represent both the number of injuries as well as the exposure to running receive YES for this criterion. Studies that did not express the incidence or prevalence rates of each RRMI by any ratio that represent both the number of injuries as well as the exposure to running receive NO for this criterion.	**YES:** low risk of bias **NO:** high risk of bias
RRMI: Running-Related Musculoskeletal Injury. n/a: not applicable.		