

SUPPLEMENTARY MATERIAL

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Are Team Sports Effective in Improving Mental Health? A Systematic Review on the Primary Outcomes of Anxiety and Mood



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Table S1. List of included articles, as well as the reasons.

Author	Title	Year	Source	Status	Observations	Decision
Rhodes <i>et al.</i> , 2025 [44]	Effect of recreational sport and physical activity participation on well-being during early parenthood: a randomized controlled trial	2025	Cochrane and EMBASE	Y	Related	Confirmed
Pedersen <i>et al.</i> , 2017 [39]	Effect of team sports and resistance training on physical function, quality of life, and motivation in older adults	2017	Cochrane and Scopus and PUBMED	Y	Related	Confirmed
Filippou <i>et al.</i> , 2025 [35]	Effects of an exercise and sport intervention on symptoms of post-traumatic stress disorder and other mental health indices among asylum seekers in a camp. A pragmatic randomized controlled trial	2025	Scopus	Y	Related	Confirmed

Author	Title	Year	Source	Status	Observations	Decision
Johnston <i>et al.</i> , 2021 [36]	Effects of team sports on anxiety, depression, perceived stress, and sleep quality in college students	2021	Scopus	Y	Related	Confirmed
Barene and Krustup, 2022 [45]	Football and Zumba Training in Female Hospital Staff: Effects after 12 and 40 Weeks on Self-Reported Health Status, Emotional Wellbeing, General Self-Efficacy and Sleep Problems	2022	PUBMED	Y	Related	Confirmed
Romdhani <i>et al.</i> , 2024 [37]	Small-sided-games with coaches' verbal encouragement have a positive effect on aerobic performance, mood state, satisfaction and subjective effort in male semi-professional soccer players	2024	Scopus	Y	Related	Confirmed

Table S2. List of excluded articles, as well as the reasons.

Author	Title	Year	Source	Status	Observations	Decision
Xu and Sun, 2021	Campus Football Activities On Relieving College Students' Social Anxiety	2021	Cochrane	N	Related	Not included. This is a Abstract
Fu <i>et al.</i> 2025	Group sports games for social anxiety in university students: a randomized controlled trial revealing gender-specific efficacy	2025	Scopus	N	Related	Not included. This is group recreation.
Filaire <i>et al.</i> 2001	Preliminary results on mood state, salivary testosterone:cortisol ratio and team performance in a professional soccer team	2001	PUBMED	N	Related	Not Included. Athletes population

Prisma Checklist.

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	reported
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Done as required
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Line 77-96
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Line 92-96
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Line 138-168
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Line 180-190
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Line 191-194
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Line 219-226
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Line 228-238
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Line 196-217
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Line 151-162
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Line 275-282
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Line 242-254

(Table) contd.....

Section and Topic	Item #	Checklist item	Location where item is reported
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Line 242-254
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Line 254-260
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Line 261-267
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Line 268-272
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Not required
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Not required
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Not required
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Line 283-294
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Line 298-305
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Line 298-305
Study characteristics	17	Cite each included study and present its characteristics.	Line 311-318
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Line 353-367
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Line 412-413
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Line 376-384
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Not required
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Not required
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Not required
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Not required
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Line 385-390
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Line 415-424
	23b	Discuss any limitations of the evidence included in the review.	Limitations of Evidence session
	23c	Discuss any limitations of the review processes used.	Limitations of the Review Processes session
	23d	Discuss implications of the results for practice, policy, and future research.	Implications for Practice and Future Research session
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Line 135
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Line 136
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not required
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Properly reported
Competing interests	26	Declare any competing interests of review authors.	Properly reported
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Not required

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, *et al.* The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

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