INPLASY

A Systematic Review of the Combined Application of Functional Movement Screen and Y Balance Test in Predicting Athletic Injuries

Corresponding author:
Ye Yuan

yuanye3710@163.com

Author Affiliation:
Harbin Sport University, Harbin, China.

Yuan, Y[1]; Zang, WL[2]; Wang, S[3]; Jing, HY[4]; Liu, YF[5]; Chen, MH[6].

ADMINISTRATIVE INFORMATION

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023100044

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 October 2023 and was last updated on 11 October 2023.

INTRODUCTION

Review question / Objective The purpose of this study is to collect and collate the research on the combined application of FMS and YBT to predict the risk of sports injury in different populations, and to explore and summarize the inherent law of the prediction of sports injury risk, so as to provide referable methods and ideas for the prevention and treatment of sports injury in the future.

Rationale According to the research topic, the search scheme is formulated, the search results are screened, the data extraction of the screening results is carried out and the bias risk assessment is carried out, and finally the obtained information is analyzed and studied.

Condition being studied Physical injury caused by sports.

METHODS

Search strategy PubMed, Web of science, Scopus, EBSCO Host, Cochrane library, China National Knowledge Network (CNKI), Wanfang Data Knowledge Service Platform and VIP network were used for literature search based on Boolean logic. The search period is up to October 2, 2023. Chinese literature is limited to original research papers published in Chinese core journals, and English literature is limited to original research papers published in English journals. Finally, manual retrieval of the included references is carried out, and the missing references are supplemented in the retrieval process.
In PubMed database, using the search terms "(" FMS" OR "Functional Movement Screen") AND "("

YBT" OR "Y-balance test") ", a total of 53 English literatures were retrieved.

In the Web of science database, use the search formula "(TS=(FMS) OR TS=(Functional Movement Screen)) AND (TS=(YBT) OR TS=(Y-balance test))" to search. A total of 114 articles in English journals were retrieved.

In the Scopus database, Use the search formula "(TITLE-ABS-KEY (FMS) OR TITLE-ABS-KEY (Functional Movement Screen)) AND (TITLE-ABS-KEY (YBT) OR TITLE-ABS-KEY. (Y-balance test), and a total of 76 English literatures were retrieved.

In EBSCO Host database, the search formula "SU (FMS OR Functional Movement Screen) AND SU (YBT OR Y-balance test)" were used to search, and a total of 10 English literatures were retrieved.

In Cochrane library database, the search formula "(FMS OR Functional Movement Screen):ti, ab, kw AND (YBT OR Y-balance test):ti, ab, kw" were used for search. A total of 19 English literatures were retrieved.

In the database of China National Knowledge Network (CNKI), using " （主题：FMS） AND （主题：YBT） " for advanced search, a total of 9 Chinese journal papers were retrieved.

In Wanfang data knowledge service platform, using "主题:(FMS or 功能性动作筛查) and 主题:(YBT or Y平衡测试)" for professional search, a total of 12 Chinese journal papers were retrieved.

Using " M=(FMS OR 功能性动作筛查) AND M=(YBT OR Y平衡测试)", a total of 8 Chinese journal papers were retrieved.

Participant or population People with a need to prevent and reduce the risk of sports injuries.

Intervention Combined application of FMS and YBT to predict the risk of sports injury.

Comparator Functional Movement Screen and Y-balance test.

Study designs to be included Literature retrieval, Q-Coh literature quality assessment, information extraction, literature characteristics induction, intervention mechanism analysis.

Eligibility criteria (1) Research objects: people who have the need to prevent sports injuries and reduce the risk of sports injuries; (2) Intervention measures: Combined application of FMS and YBT to predict the risk of sports injury; (3) Research methods: Prospective study on the combined application of FMS and YBT to predict the risk of sports injury; (4) The study showed that the combined application of FMS and YBT predicted the risk of sports injury. (5) Written in English and Chinese. Exclusion criteria: (1) Only cross-sectional study of correlation analysis between FMS and YBT combined application indexes and sports injuries; (2) Studies of exercise or other interventions on FMS and YBT test results; (3) Conference papers and their abstracts, dissertations, reviews, unpublished papers and papers with incomplete information; (4) The full text of the paper is not available.

Information sources PubMed, Web of science, Scopus, EBSCO Host, Cochrane library, China National Knowledge Network (CNKI), Wanfang Data Knowledge Service Platform and VIP network were used for literature search based on Boolean logic. The search period is up to October 2, 2023.

Main outcome(s) As two popular simple motor function evaluation methods, FMS and YBT enjoy a high degree of recognition, but their reliability and validity are also questioned to a certain extent. The combined application of the two for the purpose of functional complementarity also presents different research results in the included studies, which is related to various bias factors in the studies. In studies where the factors are more comprehensive and the subjects have a higher degree of execution of the experimental procedure, the combined application of FMS and YBT to predict sports injuries can produce a relatively considerable effect. Based on the above, the effect and repeatability of combined application of FMS and YBT in predicting sports injury as well as its applicable scope still need to be further explored and discussed.

Quality assessment / Risk of bias analysis According to the Q-Coh evaluation of the included literatures, only 1 out of 14 literatures was of high quality, 5 literatures were at the acceptable level, and 8 literatures were of low quality. The overall quality of the included literatures was low. All the literatures failed to meet the criteria for the item of inter-group comparability. There were 7 literatures whose samples were slightly different from the target group and failed to meet the criteria for sample representativeness. There were 7 literatures whose assessment criteria for damage were relatively broad and failed to meet the criteria for risk measurement. During the follow-up of the subjects in the study, there were bias factors affecting the study results in 6 literatures, which did not meet the criteria of comparability maintenance; the lost samples in 2 studies would cause bias in the study results, which did not meet the criteria of participant participation integrity; and the risk of bias in the collection of injury results in 3

studies, which did not meet the consideration of outcome measurement dimensions.

Strategy of data synthesis Due to the quantity and characteristics of the existing literatures, there are some differences in the research purposes and experimental designs of the 14 literatures included (such as subjects' groups, exercise levels, test items, gender, etc.). Therefore, meta-analysis was not used in this study to conduct a quantitative study on the effect of combining FMS and YBT in predicting sports injuries. Instead, a systematic review of qualitative studies was used.

Subgroup analysis unused.

Sensitivity analysis unused.

Language restriction Some of the included documents were in Chinese.

Country(ies) involved China.

Keywords FMS, Functional Movement Screen, YBT, Y-balance test, injury prediction.

Contributions of each author
Author 1 - Ye Yuan - Formulate the paper framework, formulate the search strategy, complete the search work and information sorting, and write the first draft of the paper.
Email: yuanye3710@163.com
Author 2 - Zang, WL.
Author 3 - Wang, S.
Author 4 - Jing, HY.
Author 5 - Liu, YF.
Author 6 - Chen, MH.