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Screening Tools and Its Accuracy for Common Soccer Injuries: A Systematic Review

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Abstract : Background: The sequence of prevention model states that by constant assessment of injury, injury mechanisms and risk factors are identified, highlighting that collecting and recording of data is a core approach for preventing injuries. Several screening tools are available for use in the clinical setting. These screening techniques only recently received research attention, hence there is a dearth of inconsistent and controversial data regarding their applicability, validity, and reliability. Several systematic reviews related to common soccer injuries have been conducted; however, none of them addressed the screening tools for common soccer injuries. Objectives: The purpose of this study was to conduct a review of screening tools and their accuracy for common injuries in soccer. Methods: A systematic scoping review was performed based on the Joanna Briggs Institute procedure for conducting systematic reviews. Databases such as SPORT Discus, Cinahl, Medline, Science Direct, PubMed, and grey literature were used to access suitable studies. Some of the key search terms included: injury screening, screening, screening tool accuracy, injury prevalence, injury prediction, accuracy, validity, specificity, reliability, sensitivity. All types of English studies dating back to the year 2000 were included. Two blind independent reviewers selected and appraised articles on a 9-point scale for inclusion as well as for the risk of bias with the ACROBAT-NRSI tool. Data were extracted and summarized in tables. Plot data analysis was done, and sensitivity and specificity were analyzed with their respective 95% confidence intervals. I^2 statistic was used to determine the proportion of variation across studies. Results: The initial search yielded 95 studies, of which 21 were duplicates, and 54 excluded. A total of 10 observational studies were included for the analysis: 3 studies were analysed quantitatively while the remaining 7 were analysed qualitatively. Seven studies were graded low and three studies high risk of bias. Only high methodological studies (score > 9) were included for analysis. The pooled studies investigated tools such as the Functional Movement Screening (FMS™), the Landing Error Scoring System (LESS), the Tuck Jump Assessment, the Soccer Injury Movement Screening (SIMS), and the conventional hamstrings to quadriceps ratio. The accuracy of screening tools was of high reliability, sensitivity and specificity (calculated as ICC 0.68, 95% CI: 52-0.84; and 0.64, 95% CI: 0.61-0.66 respectively; I^2 = 13.2%, P=0.316). Conclusion: Based on the pooled results from the included studies, the FMS™ has a good inter-rater and intra-rater reliability. FMS™ is a screening tool capable of screening for common soccer injuries, and individual FMS™ scores are a better determinant of performance in comparison with the overall FMS™ score. Although meta-analysis could not be done for all the included screening tools, qualitative analysis also indicated good sensitivity and specificity of the individual tools. Higher levels of evidence are, however, needed for implication in evidence-based practice.

Keywords : accuracy, screening tools, sensitivity, soccer injuries, specificity
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