Prevention of Sports Injuries: A Systematic Review and Meta-Analysis of Randomised Controlled Trials

Mari Leppänen¹, Sari Aaltonen², Jari Parkkari¹, Ari Heinonen², Urho M Kujala²
1 Tampere Research Center of Sports Medicine, UKK Institute, Tampere, Finland
2 Department of Health Sciences, University of Jyväskylä, Finland

INTRODUCTION

Although physical activity has multiple health benefits participation in sports also carries a risk of injury. Sports-related injuries are detrimental to an injured athlete’s health, may cause permanent disability, or even terminate the athlete’s sports career. In the last ten years, the number of published sports injury prevention studies has increased. Due to this, what is known about preventing sports injuries needs updating. The aim of the study was to update and summarise the effects of preventive interventions.

METHODS

The systematic literature search was conducted in November 2012. Relevant trials were searched for in the following databases: PubMed, MEDLINE, SPORTDiscus, the Cochrane Central Register of Controlled Trials, CINAHL, PEDro, and Web of Science. The following key words were used in the search: sports injury/ies, athletic injury/ies, prevention, preventive, randomiz/s/ed, controlled trial, and randomiz/s/ed controlled trial. The reference lists of retrieved articles and reviews were hand searched. To be selected articles had to examine the effects of any preventive intervention on sports injuries, be randomised/quasi-randomised and controlled trials, published in a peer-reviewed journal. The outcome of the trial had to be injury rate or the number of injured individuals.

RESULTS

Of the 5490 articles retrieved after a search of databases and the relevant bibliography, 67 randomised controlled trials were included in the systematic review and 59 trials were included in the meta-analysis. Insoles (OR 0.51, 95%CI 0.32 to 0.81), external joint supports (OR 0.40, 95%CI 0.30 to 0.53), and specific training programmes (OR 0.55, 95%CI 0.46 to 0.66) appeared to be effective in reducing the risk of sports injuries. Stretching (OR 0.92, 95%CI 0.80 to 1.06), modified shoes (OR 1.23, 95%CI 0.81 to 1.87), and preventive videos (OR 0.94, 95%CI 0.43 to 2.04) seemed not to be effective.

DISCUSSION

This meta-analysis showed that certain interventions can reduce the risk of sports injuries. There were limitations regarding the quality of the trials, generalisability of the results, and heterogeneity of the study designs. In future, the mechanisms behind effective methods and the most beneficial elements of preventive training programmes need to be clarified.