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SPORTS INJURY PREVENTION PROGRAMS: AWARENESS, IMPLEMENTATION AND OPINION OF PHYSICAL THERAPISTS WORLDWIDE

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Background Injury prevention programs have been shown to prevent and reduce injuries in different sports. Awareness for such programs is crucial, however, implementation and adoption of injury prevention programs in team sports is a multi-faceted and complex process.

Objective To assess physical therapists' awareness, implementation, and opinion of sports injury prevention programs, from an international perspective.

Design A cross-sectional study.

Setting Online survey.

Patients (or Participants) A total of 484 male (44.4%) and female (55.6%) physical therapists participated in the study.

Interventions (or Assessment of Risk Factors) The questionnaire consisted of questions covering the awareness, implementation, and physical therapists' opinion of different injury prevention program such as: (The FIFA 11 +, 11+ Kids, 11+ Referees, 11 + Goalkeepers, GAA15, PEP, KIPP, Boksmart Rugby, Knäkontroll, iSPRINT and ACC SportSmart injury prevention programs).

Main Outcome Measurements The study primary outcomes were awareness level, implementation rate, and opinion of the effectiveness of the sports injury prevention programs.

Results A total of 287 (59.3%) of the participants were aware of the current sports injury prevention programs, 177 (36.6%) were implementing sports injury prevention programs in their current practice. Participants who implemented the sports injury prevention programs reported a positive opinion about the program efficacy, with a score of 7.3 ± 2.1 out of 10.

Conclusions In order to increase the awareness and implementation of sports injury prevention program, further work needs to be done to educate physical therapists about the importance of implementing sports injury prevention programs and the effectiveness in preventing injuries.

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THE EFFECT OF THE FÉDÉRATION INTERNATIONALE DE FOOTBALL ASSOCIATION (FIFA) 11+ REFEREES INJURY PREVENTION PROGRAM IN REDUCING INJURY RATES AMONG SOCCER REFEREES AND ASSISTANT REFEREES: A RANDOMIZED CONTROLLED TRIAL

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Background The Fédération International de Football Association (FIFA) 11+ Referees injury prevention program is a structured warm-up program specially designed to prevent injuries among soccer referees and assistant referees and its efficacy is yet to be fully documented in the literature.

Objective The purpose of this study was to investigate the effectiveness of the FIFA 11+ Referees injury prevention program in reducing injury rates among soccer referees and assistant referees.

Design Randomized controlled trial.

Setting Competitive soccer.

Patients (or Participants) Two hundred male soccer referees and assistant referees aged (32 ± 4.24), participated in this study. The participants were randomly allocated into the experimental or a control group.

Interventions (or Assessment of Risk Factors) The experimental group performed the FIFA 11+ program as warm-up during training sessions for at least twice a week, and the control group performed their usual warm-ups. Participants were prospectively followed during one season (6 months).

Main Outcome Measurements The primary outcome was to investigate the incidence of initial, recurrent injury and injury severity. The secondary outcome was to measure the rate of compliance by a review of the registered participations.

Results A total of 24 injuries were reported among 100 referees in the control group in 16,606 h of exposure (1.45 injuries/1000 h), and a total of 9 injuries were reported across 100 referees within the experimental group in 17,834 exposure hours (0.50 injuries/1000 h). The injury risk ratio IRR was 0.35 (95% CI 0.26 to 0.45), which indicates that the injuries in the experimental group reduced by 65% when compared to the control group.

Conclusions Implementation of the FIFA 11+ referees injury prevention program reduced overall injury rates in male soccer referees and assistant referees more than the usual warm-up.

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CHARACTERIZING INJURY PREVENTATIVE BEHAVIOR: A SPORT PSYCHOLOGY PERSPECTIVE

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Background Sustainable injury preventative behavior is a key factor in increasing the duration an athlete is free from injury. A better understanding of the interplay between different psychological factors and injury preventative behavior (IPB) is needed to be able to translate current knowledge to real-life injury prevention.

Objective The aim of this study is to identify profiles that characterize self-determined motivation, intention of IPB, and enacted IPB among high-level athletes.

Design Cross-sectional descriptive study.

Setting On-line data collection.

Participants In total 90 high-level athletes gave consent and 29 golfers and 22 volleyball players completed all questionnaires (21.6 ± 3.8 years, male = 30, female = 21, level: regional 5, national 30, international 16)

Assessment of Risk Factors The *OSTRC Questionnaire* for overuse injury was used to collect data on injury severity. Self-determined motivation (SDT) and planned and enacted injury

behavior was collected using the *injury preventative behavior questionnaire*. We applied the average linkage hierarchical agglomerative cluster method using the Euclidean distance as the similarity measure. Cluster determination was optimized according to the BIC score. The model was validated by randomly splitting the data into two groups and confirming the number of clusters.

Main Outcome Measurements Total cumulative severity score, injury preventative behavior, SDT.

Results The analysis revealed three clusters accounting for 50% of the variance in the data. Cluster 1 showed low levels of motivation and a positive association between injury severity and enacted IPB. Cluster 2 showed high levels of autonomous motivation who reported both low injury severity and low enacted IPB. Cluster 3 showed high levels of motivation, planned and enacted IPB regardless of injury severity.

Conclusions Close collaboration between practitioners and scientists may prove a fruitful strategy when identifying an athlete's characteristics and then translating this into a real-life injury prevention program.

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PREVALENCE OF CROSSFIT® RELATED INJURIES IN FRANCE: A RETROSPECTIVE STUDY ON 3023 PARTICIPANTS

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Background Crossfit® has become a very popular activity across the world. The prevalence of Crossfit®-related injury (CRI) has never been studied in France.

Objective To determine the prevalence of CRI in France.

Design Retrospective study using a questionnaire.

Setting Seventy-four affiliated Crossfit® Boxes provided an online questionnaire to their athletes.

Patients (or Participants) The online questionnaire was distributed to Crossfit® athletes through private social medias groups and emails. Inclusion criteria were: male or female, aged more than 18, registered in an affiliated Crossfit® setting. Three thousand and twenty-three athletes participated in the study.

Interventions (or Assessment of Risk Factors) Data collection was done between November 4th and January 31th, 2018. The number, the location and the duration of the injury were recorded. We also gathered the athletes' training behavior when they got injured and their own explanations on the reason they think they got injured.

Main Outcome Measurements Prevalence of CRI. The hypothesis was that the prevalence of CRI would be comparable to other studies in different countries.

Results Shoulder accounted for (26%), lower back pain (18%) and knees (11%) of total injuries. The prevalence of CRI was dependent of training volume ($\chi^2_{(18)} = 56.6, p < .001$). The prevalence of CRI compared to training volume showed that more people got injured when they had less training hours. Moreover results showed that the reason expressed by athletes on why they got injured is related to their time experience in Crossfit® ($\chi^2_{(24)} = 58.5, p < .001$).

Conclusions This is the first study reporting on CRI in France. The prevalence of CRI was comparable to other

countries. Although this is just an association, athletes training less had a greater chance to become injured. The reason expressed by athletes on why they were injured depends on their training experience. These results may help health care professionals and coaches in the management of athletes for injury prevention.

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INJURY DISTRIBUTION ANALYSIS OF THE FRENCH HANDBALL CHAMPIONSHIP USING ELECTRONIC GAME REPORTS: A ONE-YEAR LONGITUDINAL STUDY AMONG 323 628 PLAYERS

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Background Handball is one of the most traumatic Olympic sports, with a growing number of participants. Large sample size epidemiological studies across various playing levels are lacking in this sport.

Objective To determine injury incidence over one season of the French championship and according to sex, level of play and time schedule as well as the most common injury locations.

Design Prospective total cohort study.

Setting French Handball championship over the whole 2016–17 season.

Participants 323 628 amateur and professional French handball players.

Interventions The injuries that occurred during matches of the French handball championship were recorded by the officials of each team with the help of a specific medical questionnaire of the electronic match report.

Main Outcome Measurements The number of injuries as well as injury rate expressed per 1000 Athlete Exposure (AE). The relative risks (RRs) were calculated and compared across the different categories.

Results 78 147 TE were recorded from the 202 394 official championship matches. The overall incidence was 23.5 TE/1000AE. Incidence rate was higher for national-level players (RR=1.22; CI 95% 1.19 to 1.25) compared to regional level, and 1.52 (CI 95% 1.50 to 1.54) at regional level compared to county level. Males were at lower risk of injury (RR=0.78; CI 95% 0.77 to 0.79). Three main injury incidence peaks were observed (October, February and April) corresponding to the academic holidays. The most common injury locations were Foot/Ankle (19.8%), Knee (15.5%), Hand/Wrist (15.2%) and Head/Neck (14.6%).

Conclusions Handball is a sport with a high injury rate during matches, especially among female players from high level of play. The scheduling of matches during the season also appears to influence the number of injuries. Electronic databases could be considered as a promising tool to assess injury distribution in the context of epidemiological studies and sports prevention.