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INJURY PREVENTION STRATEGIES IN PORTUGUESE YOUTH SOCCER: PERCEPTIONS OF U14 MALE PRACTITIONERS

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Background Athletes' knowledge about sports injuries can influence the adoption of prevention strategies aimed at reducing the incidence of injuries.

Objective The aim of the study was to investigate the perceptions of U14 male soccer players about the strategies for the prevention of injuries.

Design Sports injury prevention strategies survey.

Setting Youth Portuguese male soccer players competing at the national or regional level.

Participants 263 U14 male soccer players volunteered and, written informed consent was obtained from the athletes and parents or guardians.

Interventions (or Assessment of Risk Factors) A questionnaire on sports injuries prevention strategies was completed by the U14 male players selected among the 22 Portuguese regional teams competing in the Inter-Associations Tournament.

Main Outcome Measurements Knowledge and beliefs of the players about the strategies for preventing soccer injuries which might be an important approach as a primary prevention measure.

Results The strategies believed to prevent injuries main reported were performing specific preparation exercises before training and games (83,3%), pre-season physical conditioning (73,4%), complementary soccer training physical conditioning (70%), and nutritional counselling (49,8%). The less reported strategies were being informed by physiotherapists about injury risks (49,4%), having more health professionals working with the team (41,8%); using protective equipment (33,5%), materials of better quality (25,1%), and material innovation (16,3%).

Conclusions A sample of U14 Portuguese male soccer players perceived the need to perform specific preparation exercises before training and games, as well as physical conditioning that complements soccer training, in the pre-season and during the season, as the main measures to prevent injuries in youth soccer. Evidence shows that the strategies identified by the athletes have a beneficial impact on injury prevention. Future studies should analyse the relationship between the incidence and mechanism of injury and preventive strategies in Portuguese youth soccer.

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GENDER-SPECIFIC DIFFERENCES IN NEUROMUSCULAR ACTIVATION IN THE KNEE STABILIZING MUSCLES IN ADULTS – A SYSTEMATIC REVIEW

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Background Women have a higher injury rate for anterior cruciate ligament ruptures than men. Various indicators for this gender-specific difference are controversially discussed.

Objective To find out if there is a gender-specific difference in neuromuscular activation of the knee stabilizing muscles in adult female and male subjects measured with surface electromyography (EMG).

Design Systematic literature review, registered in PROSPERO (CRD42020189504).

Setting PubMed, CINAHL, Embase, Cochrane and SPORTDiscus were searched from inception until September 2020 including e-mail alerts. The quality of included studies was assessed according to the National Heart, Lung and Blood Institute study quality assessment tool.

Patients (or Participants) Healthy female and male subjects (≥ 18 years of age).

Interventions (or Assessment of Risk Factors) Neuromuscular activation of the knee stabilizing muscles in different task (e.g. cutting manoeuvres) comparing female and male subjects.

Main Outcome Measurements Outcome measures describing neuromuscular activation of the knee stabilizing muscles with amplitude magnitude and time domain variables.

Results A total of 2'612 articles were identified. After deduplication, 1'802 articles were screened for title and abstract. Sixty-five articles were fully read and assessed for eligibility. Finally, a total of 15 articles, all cross-sectionally designed, were included in the qualitative synthesis. The methodological quality of the studies was mostly rated 'fair' (40%). A significantly higher activity of the quadriceps muscle in females was found in three studies. Two studies found significantly lower neuromuscular activity in the hamstrings in females. The remaining studies found no significant difference or even contradicting results.

Conclusions The controversial findings do not allow for a concluding answer to the question of a gender-specific neuromuscular activation. Further investigations with higher statistical power and a more homogeneous methodological approach (tasks and data normalization) of the included studies may help to gain better insight into any gender-specific differences in neuromuscular activation that may exist.

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IS IT POSSIBLE TO PREVENT RUNNING RELATED INJURIES IN ADULT NOVICE RUNNERS WITH AN ONLINE BEHAVIORAL INTERVENTION?

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Background Novice runners have a high injury risk. The online behavioral intervention Runfitcheck was effective in stimulating preventive behavior in novice runners, but its effectiveness on running-related injuries (RRI) remains unknown.

Objective To evaluate the effectiveness of the Runfitcheck on RRIs among adult novice runners.

Design A three-arm randomized controlled trial was conducted over a period of seven months.

Setting Competitive level: novice runners.

Participants A total of 851 participants of 18 years or older, considering themselves as inexperienced, slightly or rather experienced runners or having less than one year running

experience, were eligible. From those, 741 participants completed at least one of the health monitors and were included in the analysis.

Intervention The Runfitcheck is an online intervention to stimulate injury-preventive behavior. The participants were allocated to one of two intervention groups or the control group. One intervention group obtained access to the Runfitcheck and was fortnightly stimulated to use Runfitcheck, the other intervention group was attended to the Runfitcheck once. Participants were followed over a period of four months.

Main outcome measures The main outcome measure was a new RRI, measured fortnightly with the Oslo Sport Trauma Research Centre overuse injury questionnaire.

Results The time to the occurrence of the first RRI did not differ between the study groups (Wald Chi-square 0.893). There was also no difference in risk of a new RRI in the group attended to the Runfitcheck once (OR 1.22 (95% CI:0.86–1.74)) nor in the active approach group (OR 1.01 (95%CI: 0.71–1.45)) compared to the control group. Furthermore, the onset of the new RRIs did not change over time (OR 0.96 (95%CI: 0.91–1.01)).

Conclusions The online intervention Runfitcheck was not effective in reducing the risk of new RRIs in adult novice runners. More research is needed to determine how injuries in novice runners can be prevented.

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DEVELOPMENT OF A PROTOCOL TO EVALUATE BASEBALL PITCHER'S WORKLOAD AND PREVENTION OF INJURY

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Background Pitch counts are one measure of workload in baseball. Newer research indicates pitch counts underestimate true total workload. Thus, current monitoring systems gauging throwing injury threshold may be considered inadequate.

Objective Develop a novel technique to determine workload in baseball pitchers to provide an implementable method for prevention of throwing related injuries.

Design Prospective observational study

Setting Academic medical center and community baseball fields.

Participants Pitchers aged 13–18 from the 2019 to 2021 seasons.

Assessment of Risk Factors The independent variable was innings pitched, grouped by 1–2 innings, 3–4 innings, 5–6 innings, and 7 innings.

Main Outcome Measurements Workload percent, calculated by multiplying volume of total gameday pitches by intensity, was the primary measure. Intensity was determined by maximum pre-season velocity compared to game velocity of pitches thrown. Velocity was measured during a pre-season practice and the first 10 pitches of each inning. Total gameday pitches included bullpen, warm-up, and game pitches.

Results 147 total pitcher outings, 42 total pitchers, 4 pitching related injuries. Total game pitch counts ranged from 17 to 219 (mean 78.8, SD 38.7). Velocity ranged from 74.4 to

136.5 km/hour. Intensity ranged from 0.68 to 1.26 with a mean of 1.0 (SD 0.09). ANOVA was completed with significant differences noted for total pitches ($p<0.001$) and workload percent ($p<0.001$). Post hoc analyses for total pitches and workload percent resulted in significant differences ($p<0.001$) between all inning groupings except innings 5–6 compared to inning 7.

Conclusions Our workload model indicated that workload and pitch counts are associated. As we gather more data (2022 season), if workload and injuries are significantly associated, then by extension total gameday pitch count would become a correlate to workload and injuries. Workload monitoring using our system may lead to prevention of injuries in baseball pitchers.

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SPORTS INJURY PREVENTION PRACTICES AND DIRECTIONS FOR IMPROVEMENT: A MULTI-CENTRE QUALITATIVE STUDY IN PHYSICAL EDUCATION TEACHER EDUCATION STUDENTS

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Background Injury risk is high in Physical Education Teacher Education (PETE) student. Insight in the population's perspectives on injury prevention supports developing context-driven preventive strategies.

Objective The objective was to describe sports injury prevention practices from PETE students' perspective and map their suggestions for improvement.

Design Qualitative study.

Setting PETE programs at Dutch Universities of Applied Sciences.

Participants Recruitment took place via convenience sampling. Students were invited to participate by e-mail. Participants were informed about the study's goals and procedures and completed informed consent and a baseline questionnaire (e.g., age, sports participation, injury history). Inclusion criteria for participants were: 1) completed the first three years of the PETE program; 2) understanding of the Dutch language at the native level. In total 21 participants from four different PETE schools were included.

Main Outcome Measurements We conducted semi-structured interviews, which were transcribed verbatim and analysed using the thematic analysis method.

Results All the participants mentioned applying various preventive measures. They described injury prevention as a standard part of daily life an approached it in a dynamic way. Their primary strategy was to balance load and recovery. The critical factors to apply injury prevention successfully mentioned were: communication, learning what works, self-management, shared responsibilities, and social support. The main motives for injury prevention were to care for the body and perform well (e.g., academic success, sports). Given the participants, injury prevention could be improved in various ways, but mostly by enhancing the PETE program's load management