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General Guidelines for Injury Prevention

0. Introduction to Injury Prevention

There are many risk factors involved in explaining why an injury occurs, so it is very adventurous to reduce the explanation to a unique factor (West et al., 2021). In this sense, injuries are multifactorial and several factors (e.g., match, training, environment, physical, physiological, and individual characteristics of players) should be attended.

These Guidelines aim to address the problem of injuries in youth soccer by providing a set of evidence-based, easy to follow recommendations for sport coaches and trainers to implement as part of regular activities.

The following suggestions and recommendations should be considered with the aim to prevent injuries in youth soccer players:

1. Workload monitoring
2. Preventive training programmes
3. Return to play decision-making
4. Healthy Lifestyles
5. Recovery Strategies

1. Workload Monitoring

Training- and match-load monitoring allows practitioners to periodize training strategies and prescribe adequate training stimulus, to optimize the physical performance and preparedness of athletes, as well as to mitigate the negative consequences of training (risk of injury, overtraining) (Bourdon et al., 2017; Gabbett, 2016).

The evidence available is insufficient for providing practical recommendations on how to quantitatively modify the training load to reduce the injury risk. Thus, practitioners should adjust training loads based on players´ responses individualizing the system of workload and well-being monitoring on a daily basis (Impellizzeri et al., 2020; Mujika, 2013).

2. Preventive Training Programmes

A preventive training program should be personalized and based on the principles of overloads and progression (Impellizzeri et al., 2020).

Strength and conditioning specialist should implement dynamic warm-up programs that include preventive exercises before competition, and add strength, balance, and mobility exercises to the training sessions (Pérez-Gómez et al., 2022).

The most used warm-up programs in youth soccer are the FIFA 11+ Kids, the FIFA 11+, the F-MARC and the Knäkontroll. The most recommended exercises in these warm-up programs are focused on core stability, balance, dynamic stabilization, eccentric hamstrings strength, unilateral, strength, and jumping exercises (Owoeye et al., 2020).

Injuries in youth soccer may be also reduced including an exercise-based neuromuscular training warm-up program at least twice a week (Al Attar & Alshehri, 2019).

Body mass-based resistance training may also play an important role in injury prevention in youth soccer players (Torres Martín et al., 2023).

One session per week during at least 6-8 weeks of exercises with bilateral and unilateral orientations in inertia-based devices (flywheel paradigm) may have positive effects on injury rate and severity (Raya-González et al., 2020).

Since hamstring injuries is the most prevalent time-loss injury in soccer in senior and young players (Ekstrand et al., 2016), it is advisable to include training programs based on eccentric strength exercises, including Nordic hamstring exercise, and proprioceptive and neuromuscular control training (Raya-Gonzalez et al., 2021). Also, adding strength exercises to generate high muscle tension at high-speed actions (Van Den Tillaar et al., 2017).

3. Return to play decision-making

Return to play decision-making is often characterized by uncertainties, such as re-injury risk (Yung et al., 2022). Considering that there is often little agreement between players and coaches regarding return to play decisions (Loose et al., 2018), it should be advisable to improve the prevention process and communication among players, coaches and medical staff.

4. Healthy lifestyle

The “invisible” training help athletes to optimize short- and long-term sports performance and prevent injuries. Attending to those invisible strategies, such as activity in leisure time, nutritional habits, sleep, etc., undertaken outside the training plan is relevant because it helps optimize athlete health and performance (Sánchez-Díaz et al., 2022). Return to play decision-making is often characterized by uncertainties, such as re-injury risk (Yung et al., 2022). Considering that there is often little agreement between players and coaches regarding return to play decisions (Loose et al., 2018), it should be advisable to improve the prevention process and communication among players, coaches and medical staff.

5. Recovery strategies

Fatigue and poor recovery may contribute to the onset of overuse injuries in youth soccer players (Mandorino et al., 2023) so prescription of recovery strategies in youth soccer players should be a key point to prevent injuries. However, their prescription appears to depend upon the peak height velocity (PHV) of the players. Due to the soccer-induced fatigue, only post-PHV players may require recovery interventions and the implementation of recovery strategies in pre-PHV is questionable (Buchheit et al., 2011).

Evidence providing definitive conclusions that justify the prevalence of one or other recovery method with youth soccer players is inconclusive (Calleja-González et al., 2021), but we can adopt some recommendations in terms of recovery strategies that optimize players' performance.

A primary objective following a match is to reduce the time needed to fully recover by the consumption of drinks and snacks immediately after the match (Collins et al., 2021). In addition, post-match meals and snacks should target a carbohydrate intake of 1.2 g per kg of body weight per hour for 3-4 h, and achieving protein intakes of 20-25 g of protein at 3-4 h intervals (Collins et al., 2021).

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Cold water immersion (hydrotherapy) at 8-15°C, 1-3 sessions, 5-15 min, and cryotherapy can reduce muscle soreness, swelling, and inflammation. It can help lower body temperature after the match, aiding the player in feeling “fresher” and reducing the sensation of heavy legs (Costello et al., 2015).

Contrast therapy, alternating between cold (8-15 °C) and hot (33-45 °C), for 3-6 min per exchange, totaling 9-15 min (1 min cold; 1-3 min hot) (Bieuzen et al., 2013).

Low-intensity, low-impact exercise can help clear lactate, reduce blood markers of muscle damage, and alleviate the sensation of pain (Hausswirth & Mujika, 2013).

Sleeping higher than 8 h in a quite environment with appropriate temperature (16-20 °C) at the same hour and avoiding caffeine in the afternoon (Nédélec et al., 2015).

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