180 ABSTRACT WITHDRAWN

181 PREVENTION OF FIFTH METATARSAL BONE STRESS FRACTURE IN YOUTH JAPANESE SOCCER PLAYERS

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Background The stress fracture of the fifth metatarsal bone (5MT) frequently occurs in youth soccer players in Japan, and it is very important issue to prevent this fracture.
Objective To confirm whether preventive intervention successfully reduced the incidence of 5MT
Design Observational cohort study to compare the occurrence of 5MT before (2003–2009) and after (2010–2016) intervention.
Setting One football (soccer) club in Japan.
Patients (or Participants) One hundred and fifty-nine elite Japanese youth (under 18) football (soccer) players belonged to one football club from 2003 to 2016. The incidence of 5MT were compared before intervention (7 years) and after intervention (7 years).
Interventions (or Assessment of Risk Factors) We proposed the prevention strategy on 2010 based on our clinical experiences and past publications regarding with 5MT (https://saita0617.wixsite.com/jones/english-ver).
Main Outcome Measurements Incidence of 5MT.
Results The incidence of 5MT before intervention was 11 cases, while it was decreased to 2 cases after intervention. The hazard ratio for the incidence of 5MT was 3.99 (95%CI: 1.06 to 15.05, p=0.04) in the 88 soccer players prior to prevention compared with 71 players post prevention.
Conclusions The prevention intervention was effective to reduce the incidence of 5MT in youth Japanese football players.

182 ACUTE EFFECTS OF SMALL-SIDED GAMES ON THE LOWER LIMB FUNCTIONAL ASYMMETRY IN YOUNG SOCCER PLAYERS

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Background Lower limb asymmetry is defined in relation to the observed performance differences (Bishop et al., 2018) and is found in athletes practicing different sports (Bishop et al., 2019&2018). The Small-Sided Games (SSG) represent a specific form of exercise widespread in soccer training (Kunz et al., 2019). Some authors have described the acute effects of fatigue on hamstring strength in professional soccer players (Madison et al., 2019). In the literature there are no similar studies conducted on young soccer players.
Objective To verify if the SSG practice conditions lower limb asymmetry in U15 young players.
Design Within subject repeated measures design.
Setting Youth soccer
Patients (or Participants) n=16 young players (age: 14.1±0.6; weight: 58.5±7.4 kg; height: 166.3±4.1 cm).
Interventions (or Assessment of Risk Factors) The sample was evaluated before warm up (15 minutes), after 10 minutes of mastery ball and 4vs4 (3x3 minutes, rec.2' field:24x36m, with staff encouragement and 30 balls available) through Hop Test (HT), Side Test (ST), Crossover Test (CT), peak strength (PS) and hamstring eccentric average (in 5 repetitions) strength (EAS) by dynamometer (N3, Easytech, Italy).
Main Outcome Measurements Asymmetry value was calculated using the formula: Non-Dominant Leg/Dominant Leg x 100 (Ceroni et al., 2012).
Results The pre/post intervention comparison showed an increase in asymmetry in HT (2.59±1.72% vs 12.35±4.23%), in ST (3.79±2.21% vs 16.61±3.35%), in the CT (2.75±2.52 vs 10.98±7.16%), in the PS (4.49±3.16 vs 15.41±5.53%) and in the EAS (3.93±2.48 vs 20.09±5.25%). All differences were significant for p<0.0005.
Conclusions The SSG training seems to determine a significant increase lower limb asymmetry values, most likely due to fatigue as described in professional soccer players (Madison et al., 2019). These values must be carefully evaluated by the coaches in the training scheduling in youth soccer.

183 ACUTE FATIGUE EFFECTS AFTER SMALL-SIDED GAMES ON FUNCTIONAL ASYMMETRY AND SHORT SPRINT PERFORMANCE IN YOUNG SOCCER PLAYERS

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Background Lower limb strength asymmetry (SA) is monitored to reduce the injury risk in the young player. Asymmetry values values greater than or equal to 15% indicate a potential injury risk (Noyes et al., 1991). Small-Sided Games (SSG) are widespread in youth training but not all load effects have been analyzed (Kunz et al., 2019).
Objective To describe the fatigue effects on lower limb SA values and sprint values after each SSG series.
Design Within subject repeated measures design.
Setting Youth soccer. Patients (or Participants) n=16 regional level young players (12.1±0.9years, 43.8±8.3kg, 147.8 ±9.3cm)
Interventions (or Assessment of Risk Factors) The sample was evaluated after the warm-up of 15 minutes and 10 minutes of mastery ball exercises, and at the end of each series (3) of 4vs4 (duration: 3 minutes, rec: 2 'field: 24x36 meters, with encouragement of staff and 30 balls available) through Hop Test (HT), Side Test (ST), Crossover Test (CT), 5 meters sprint (5M).
Main Outcome Measurements Asymmetry value was calculated using the formula: (Non-Dominant Leg/Dominant Leg)x100 (Ceroni et al., 2012).
Results The results are summarized as follows:

Abstract 183 Table 1

	% Asymmetry HT	% Asymmetry ST	% Asymmetry CT	5m(sec)
After warm up	10.2±10.1	5.2±3.1	5.1±5.5	1.31±0.05
After series 1	11.3±9.6	17.1±17.6**	13.1±5.5**	1.52±0.11*
After series 2	14.1±7.7	20.2±16.7**	15.1±9.8**	1.59±0.07*
After series 3	14.7±7.6	19.9±15.1**	20.2±5.6***	1.72±0.13*

*p<0.05 **p<0.01 p<0.001 (from after-warm-up value)

Conclusions The jumps with frontal plane displacement and those on the two planes (the CT is perfomed by jumping simultaneously on the sagittal and frontal plane) have the highest asymmetry values and seem influenced by post-SSG fatigue. Sprint values undergo acute decreases in performance too.

184 MANAGING VITAMIN D SUPPLEMENTATION IN ELITE ACADEMY FOOTBALLERS

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Background The maintenance of phosphate and calcium homeostasis alongside optimal vitamin D status is essential for bone health. Moreover, low vitamin D is associated with an increased risk of stress fracture, impaired muscular remodelling and increased risk of upper respiratory tract infections.
Objective The primary objective was to assess the efficacy of an individualised in-season vitamin D supplementation programme. The secondary aim was to observe for regression of vitamin D levels during the longer daylight months (April-October) in players where vitamin D was not routinely supplemented.
Design Serum 25 Hydroxyvitamin D (Serum 25[OH]D) levels were collected twice a year (October and April). Levels were categorised as: deficient (<30 nmol/l), insufficient (31–75), sufficient (76- 175) or overloaded (>175). Players with sufficient levels were given a maintenance protocol (20,000iu once weekly) October-April. Players who were deficient/insufficient were given a loading regimen (20,000iu twice weekly for three weeks) and the maintenance protocol thereafter.
Setting A category one Premier League Elite Player Performance Plan (EPPP) youth football academy.
Participants 13 participants from the u23s and u18s squads.
Interventions Serum 25[OH]D levels were collected (via venous blood sample) twice a year (October and April). Levels were categorised as: deficient <30nmol/l, insufficient 31–75nmol/l, sufficient 76–175nmol/l or overloaded >175nmol/l.

Players with sufficient or insufficient levels were given a maintenance protocol (20,000IU once weekly) during October-April. Players who were deficient were given a loading regimen (20,000iu twice weekly for three weeks) and the maintenance protocol for the remainder of winter (22 weeks). Oral supplementation was administered using Synergy Biologics LTD Pro D3 Sport 20k (UK).
Results There was no significant increase in serum 25[OH]D during the supplementation period (October-April). However, 20,000iu of supplemental Vitamin D over a 25-week period was sufficient to maintain vitamin D status. Baseline serum 25[OH]D was not significantly increased after a period of supplemental vitamin D during winter months. Further studies in this population group would be beneficial to assess the effects of longer term season-on-season supplementation.

185 REVIEW OF THE PHYSIOTHERAPY SERVICE FOR ATHLETES IN 2018 OLYMPIC WINTER GAMES

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Objective This study will provide to better understand the needs for physiotherapy services during the 2018 Pyeong-Chang Olympic Winter Games (POG) from two polyclinics. It is necessary to understand the needs and what physiotherapists do during the Olympic Winter games for first time.
Design An observational study.
Setting 2018 PyeongChang Olympic Winter Games.
Participants Athletes who visited the physiotherapy department of polyclinics.
Results During 25 the days of the POG, a total of 125 athletes (n = 125, 83 males, 42 females) visited the two polyclinics. Of all visits, 69.6% were from the mountain polyclinic and 30.4% from the city. There were three reasons for visit, most of the reason for visit was injury and injury with recovery or injury prevention. Overall, the injury rate (per 1000 athletes) was 42.8 across 13 sports visited the physiotherapy department during the POG. Total numbers of treatments sessions were 823 provided and electrophysical modalities (36.2%) was the most utilized service in POG. And also there were significant differences in the physiotherapy services provided at the two polyclinics.
Conclusion As each polyclinic differed in location, they addressed different populations of athletes; hence, the study provides insights into the injury trends and different physiotherapy treatments.

186 EPIDEMIOLOGY OF INJURY AND RETIREMENT FROM SPORT AMONG FORMER INTERNATIONAL ATHLETES

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Background High-level athletes are at an increased injury risk. Yet relatively little is known about the prevalence of career-ending injuries in high-level sport.