Characteristics and risk factors of sport injuries in physical education students
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BOOK OF ABSTRACTS

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for succeeding and relatively younger children may refrain from sport participation. The relative age effect (RAE) is known as the circumstance of being selected into a representative team with increased likelihood when born early in the year.1 We analysed if “RAE” is present in children’s football (average level of play). As maturation status may also affect injury risk,2 we were interested if injury risk and injury severity differ between relatively younger and older children. Methods In a prospective observational cohort study over 2 years we collected injury and exposure data in 7 to 12 years old football players. In total we recorded 6038 athlete seasons. Players were divided into 4 birth quarters (BQ). Number and severity of injuries (lay off time in days) and anthropometric data were analysed. One-way ANOVA was used to compare anthropometric differences between BQ. Chi²-statistics were used to compare injury data between BQ. Results Players’ mean age was 9.5 yrs (SD 2.0). Mean height and weight were 1.36 m (±0.12) and 31.0 kg (±7.7), respectively. In total 417 injuries occurred. Average layoff time was 18.9 days (27.1). Players were more often (chi²=152.26, P<0.001) born early in the year (BQ1: 29.6%, BQ2: 28.5%, BQ3: 24.0%, BQ4: 18.2%) and also injured players were more often (chi²=27.86, P<0.001) born early in the year (BQ1: 32.6%, BQ2: 29.7%, BQ3: 21.1%, BQ4: 16.5%). BQ-distribution of the whole sample did not differ (P=0.29) from injured players. Relatively older players were taller and heavier (P<0.001; η²=0.01) but there were no differences in height and weight of injured children between BQ (P=0.26, η²=0.14). In all four BQ injured players were taller and heavier (P<0.001; η²=0.02) compared to non-injured players. There was no difference in injury severity between BQ (P=0.69; η²=0.04). Discussion RAE is especially known from high-level youth sport.1 RAE was reported for 10-15 years old injured ice hockey players in higher levels of play but not for low or intermediate levels.3 In our study, RAE was present in the whole sample and in injured children with no differences between BQ in injury risk and severity. Increased height and weight might be risk factors in children’s football.References1 Helsen WF, van Winckel J, Williams AM. J Sports Sci. 2005;23(6):629-636.2 Faude O, Rößler R, Junge A. Sports Med. 2013;43(9):819-837.3 Wattie N, Cobley S, Macpherson A, Howard, A, et al. Pediatrics. 2007;120(3):142-148. Contact roland.roessler@unibas.ch

INCREASED PHYSICAL ACTIVITY IN CHILDHOOD REDUCES ADOLESCENT FRACTURE RISK – AN EIGHT-YEAR INTERVENTION STUDY IN 3 534 CHILDREN


Clinical Sciences

Introduction Physical activity (PA) in childhood is associated with higher bone mass and better neuromuscular function, but the effect on fracture risk is not clear. Methods We conducted an intervention program with 40 minutes of moderate PA per school day for eight years in 1339 children aged six to eight years at study start. As controls served 2195 age matched children who continued with the national standard of 60 minutes of physical education per week. We registered objectively verified fractures in all these participants. In a sub-cohort of 234 children we also measured bone mineral content (BMC) and bone mineral density (BMD) at the total spine with dual energy X-ray absorptiometry, and muscle strength in knee extension and flexion by a computerized dynamometer (Biodex®). We calculated annual fracture risk ratios (RR) as well as changes in bone mass and muscle strength. Results The RR of fractures decreased with each year of extended PA (r=-0.86, p=0.007) so that the RR after eight years [RR 0.48 (0.25, 0.91)] was lower in the intervention than in the control group. The gains in BMD and knee extension and flexion were greater in the intervention than in the control group (all p <0.001 to <0.05). Discussion A population-based pediatric PA intervention program reduces adolescent fracture risk, probably due to PA-induced benefits in BMD and muscle function. Contact marcus.coster@med.lu.se

SOCCER INJURIES IN SWITZERLAND

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Introduction Soccer injuries are financially relevant and therefore constitute an important public health issue. According to the study “Sport Schweiz” (Lamprecht et al., 2013) approximately 480'000 persons aged between 15 and 74 years are playing soccer in Switzerland. All in all, every third of them is licensed (SFV, 2013). The large number of players leads to a lot of soccer related injuries. For methodical reasons a lot of studies about the injury risk in soccer concentrate on professional soccer and a few studies focus on amateur soccer. As a consequence, there is incomplete knowledge about the context of injury events when soccer is played informally. Therefore, the aim of this study was to learn more about the context and characteristics of all soccer injuries in Switzerland to provide a basis for further improvements in injury prevention. Methods The support of the Suva allowed us to retrospectively consult a random sample of persons insured by Suva who had sustained an injury while playing soccer between July 1, 2013 and June 31, 2014. A total of 822 persons participated in the standardised telephone survey which took 16 minutes on average. Results Around 30% of the injuries occurred in informal soccer (free time with friends/family, informal tournaments etc.) whereas 70% came up in formal soccer (50% game, 20% practice). In addition to the standardised telephone survey which took 16 minutes on average. Results Around 30% of the injuries occurred in informal soccer (free time with friends/family, informal tournaments etc.) whereas 70% came up in formal soccer (50% game, 20% practice). In addition to

CHARACTERISTICS AND RISK FACTORS OF SPORT INJURIES IN PHYSICAL EDUCATION STUDENTS: PRELIMINARY RESULTS

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factors for sustaining an injury in PE students. Methods Dutch first-year PE students are followed during the academic year 2014-2015. Prior to the start of the academic year, all PE students underwent a sports medical exam, performed a maximal Interval Shuttle Run Test (ISRT) and filled in a baseline questionnaire. During the follow-up period students fill in an online questionnaire every 5 weeks for retrospective registration of time-loss injuries. Results In total, 292 students were included in this study (70% men and 30% women) with a mean age of 19.6 ± 2.11 years. During the first 15 weeks of the study 670 follow-up questionnaires were returned and 247 injuries were registered by 174 students (59%). Students reported on average 267 ± 205 minutes of extracurricular sporting time per week. On average, 690 minutes of intracurricular sport classes were scheduled. Preliminary results show an average time loss duration of 17 ± 17 days, with a range of 1-85 days and a median of 10 days. Most injuries occurred during intracurricular sport classes (56%) and were acute (64%). Injuries occurred most frequently during soccer (27%), gymnastics (23%), other activities (21%) and martial arts (6%). The most common localizations were knee (15%), ankle (15%), lower leg (12%) and lower back (9%). Significant risk factors for sustaining an injury are an injury in the previous year (p<0.01) and an injury at the start of the academic year (p<0.01). Of 247 possible risk factors were not significantly associated with sustaining an injury: gender (p=0.06), chronic illness (p=0.21), age (p=0.43), sporting hours prior to the start of the academic year (p=0.10), ISRT score (p=0.44 for men and p=0.42 for women) and extracurricular sporting time (p=0.92). Discussion The risk of sustaining an injury is high for first-year PE students and this can be considered as an extensive problem. Intracurricular sport classes are a substantial cause of sport injuries. Injuries most often involved the lower extremities. Important risk factors are an injury in the previous year and an injury at the start of the academic year. Contact s.blickendaal@hva.nl

EFFECTS OF WEIGHT LOSS AND ISOTONIC CORE EXERCISE OF 8 WEEKS ON PAIN, STRENGTH AND BALANCE IN OBESE MIDDLE AGED WOMEN WITH LOW BACK PAIN

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Introduction Low back pain (LBP) is a common musculoskeletal disorder (Alexopoulos et al., 2003). LBP is caused by obesity, poor muscle strength, and reduced spinal mobility (Bayramoglu et al., 2001). LBP has been not only pain and trunk muscle weakness, but also poor balance control caused of deficit in proprioception in the spine and intermuscle control (Bouche et al., 2006). Therefore, the purpose of this study was to determine the effects of weight loss and isokinetic core exercise on low back pain, core muscle strength/body weight, and balance strategy in obese middle aged women with LBP. Methods Eighteen obese middle aged women with low back pain (waist-hip ratio, WHR ≥ 0.85) were divided to weight loss and isokinetic core exercise group (WL+CE, n = 6), isokinetic core exercise group (CE, n = 6) and control group (CON, n = 6). The goal of the weight loss was set loss of 0.5 to 1 kg body mass/week and, isokinetic core exercise was performed for 1 hour, three times a week, for 8-week at 50 % their individual core muscle strength. Physical characteristics (body mass, BMI, % body fat, muscle mass, WHR, low back pain (ODI, VAS), core muscle strength/body mass (trunk extensor, trunk flexor, hip flexor) and balance strategy (balance, reaction time, adaptation) were measured before (pre), after 4-week (post) and 8-week exercise (post 1) each groups. Results WHR was significantly decreased in WL+CE after post and post 1 than pre (p<0.05). ODI and VAS were significantly decreased in WL+CE after post and post 1 than pre (p<0.01). Trunk extensor strength/body mass was significantly increased in WL+CE at 146° (p<0.01), 158° (p<0.01), 170° (p<0.01) and 182° (p<0.05) after post 1 than pre, Trunk flexor strength/body weight was significantly increased in WL+CE at 146° (p<0.01), 158° (p<0.05) and 182° (p<0.01) after post 1 than pre. Hip flexor strength/body weight was significantly increased in the WL+CE after post 1 than pre (p<0.01). However, weight, BMI, % body fat, body mass, reaction time, and adaptation were not significantly different between time and groups. Discussion Generally, acute weight reduction leads to decrease lean body mass such as decrease muscle mass, consequently decrease strength and physical fitness (Ellhag & Rossner, 2005). However, the present study showed that weight loss and isokinetic core exercise reduced low back pain, improved core muscle strength and balance compared with isokinetic core exercise only, probably due to increased muscle strength and decreased body mass. Therefore, we suggest that obese patients with LBP need to perform combination of core muscle strengthening and weight loss in order to effectively decrease low back pain. References Alexopoulos EC, Burdorf A, Kalokerinou A. (2003). Int Arch Occup Environ Health. 76(4), 289-294. Bayramoglu M, Atkan MN, Kilinc S, Celin N, Yavuz N, Ozker R. (2001). Am J Phys Med Rehabil. 80(9), 650–655 Bouche K, Stevens V, Cambier D, Caemaert J, Danselels L. (2006). Eur Spine J. 15(4), 423–432. Ellhag K, Rossner S. (2005). Obes Rev. 6(1), 67–85. Contact hose28@dkangook.ac.kr

Oral presentations

OP-PM45 Training & Testing: Teamsport III

THE EVALUATION OF VALIDITY AND RELIABILITY OF A NEW SOCCEER SPECIFIC TEST

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Introduction Maximal oxygen uptake is largely associated with match activity profile of soccer players (Helgerud, 2001). Therefore, maximal oxygen uptake is one of the most important indicator of physical performance in soccer. Soccer Specific Modified 1.5 Mile Run Test is a new field test which improved by modifying “Cooper 1.5 mile Run Test” with soccer specific movement pattern. The aim of this study was to evaluate the criterion and construct validity and reliability of Soccer Specific Modified 1.5 Mile Run Test. Methods Totally 48 athletes were participated in the study. To evaluate the construct validity, 16 athletes from other team sports (handball, basketball and volleyball) were recruited in the study in addition to 32 soccer players. Participants visit the laboratory once. Height, weight, body fat percentage and maximal oxygen uptake were measured during laboratory session. In subsequent 2-7 days, Soccer Specific Modified 1.5 Mile Run Test is performed two times in the soccer pitch with 2-7 days apart. Results Soccer players completed the field test in a shorter time, significantly (p<0.001). There is a significant strong and positive correlation between maximal oxygen uptake and time to complete Soccer Specific Modified 1.5 Mile Run test in soccer players (r=0.83). However, there is no significant correlation between maximal oxygen uptake and time to complete Soccer Specific Modified 1.5 Mile Run test for athletes from other team sports. There is a significant, strong and positive correlations between two field test both groups (r=0.91, r=0.87 respectively). Discussion Soccer Specific Modified One and Half Mile Run Test is a valid test only for soccer players unlike the athletes from other team sports. Such a result may be caused according to soccer...