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

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INCREASED PHYSICAL ACTIVITY IN CHILDHOOD REDUCES ADOLESCENT FRACTURE RISK – AN EIGHT-YEAR INTERVENTION STUDY IN 3534 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-sample 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 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.2 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. References 1 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(1):142-148. Contact marcus.coester@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., 2014) approximately 480'000 persons aged between 15 and 74 years are playing soccer in Switzerland. All in all, every third of them is licenced (SFV, 2013). The large number of players leads to a lot of soccer related injuries. Methods We conducted a prospective observational cohort study over 2 years we included all 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-sample 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). 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.2 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. References 1 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(1):142-148. Contact roland.roessler@unibas.ch

CHARACTERISTICS AND RISK FACTORS OF SPORT INJURIES IN PHYSICAL EDUCATION STUDENTS: PRELIMINARY RESULTS
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Introduction Sport injuries can have a major impact on the career of Physical Education (PE) students. They can lead to physical limitations, absence from sport classes and study delay. This study aims to investigate the magnitude of the injury problem and to explore the risk factors in injury prevention. Methods The support of the Suva allowed us to retrospectively consult a random sample of persons insured in accident insurance “Schweiz” (Lamprecht et al., 2014) approximately 480'000 persons aged between 15 and 74 years are playing soccer in Switzerland. All in all, every third of them is licenced (SFV, 2013). The large number of players leads to a lot of soccer related injuries. For methodical reasons the study was to learn more about the context and characteristics of all soccer injuries in Switzerland to provide a basis for further improvement. 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. Discussion Around 30% of the injuries occurred in informal soccer whereas 70% came up in formal soccer which 20% were practice. In addition to the standardised telephone survey which took 16 minutes on average. Results Around 30% of the injuries occurred in informal soccer whereas 70% came up in formal soccer which 20% were practice. In addition to the standardised telephone survey which took 16 minutes on average. Results Around 30% of the injuries occurred in informal soccer whereas 70% came up in formal soccer whereas 70% came up in formal soccer.
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). Other 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.blienkoaol@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 in proprioception in the spine and alter muscle control (Bouche et al., 2006). Therefore, the purpose of this study was to determine the effects of weight loss and isotonic 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 isotonic core exercise group (WL+CE, n = 6), isotonic 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 mass/week and, isotonic 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 (post1) and 8-week exercise (post 2) 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 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, consequentially decrease strength and physical fitness (Elfhag & Rossner, 2005). However, the present study showed that weight loss and isotonic core exercise reduced low back pain, improved core muscle strength and balance compared with isotonic core exercise only, probably due to increased muscle strength and decreased body mass. Therefore, we suggest that obese patients with LBP need to performing 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, Akman MN, Kilinc S, Cetin N, Yavuz N, Ozbek R. (2001). J Phys Med Rehabil. 80(9), 650–655. Bouche K, Stevens V, Cambier D, Caemaert J, Dannes, L. (2006). Eur Spine J. 15(4), 423–432. Elfhag K, Rossner S. (2005). Obes Rev. 6(1), 67–85. Contact [hoseh28@dankook.ac.kr]

Oral presentations

OP-PM45 Training & Testing: Teamsport III

THE EVALUATION OF VALIDITY AND RELIABILITY OF A NEW SOCCER 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 correlations 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