Results The median number of completed weekly reports was 45 (IQR 25–52). The annual IP for injury was 68% and for illness 77%. The injury IR was 6.9/1000 hours and the illness IR 9.3/1000 hours. The median time to injury was 19 weeks (95% CI: 10.5–27.4) and to illness 9 weeks (95% CI: 1.4–16.6). Most injuries occurred during training and 34% were classified as severe (≥ 21 days of time loss). An increased injury risk was observed among athletes in team sports (HR 1.88; 95% CI: 1.19–2.99), athletes with a previous severe injury (HR 2.37; 95% CI: 1.47–3.83) and male athletes (HR 1.76; 95% CI: 1.06–2.93). The most common illness type was infection (84%). Athletes in team sports (HR 1.64; 95% CI: 1.05–2.54) had a higher illness risk. One third of the athletes (34%; 95% CI 32.0–35.2) reported weekly that they felt anxious/depressed and 48% (95% CI 45.7–50.1) reported moderate or extreme pain every week.

Conclusions Paralympic athletes report a considerably high incidence of injuries and illnesses as well as pain and psychological complaints. This emphasizes the need to develop preventive strategies and optimize medical services for this heterogeneous athlete population.

077

THE IMPORTANCE OF HEALTH MONITORING IN COMPETITIVE PARA ATHLETES: RESULTS OF THE GERMAN INJURY AND ILLNESS SURVEILLANCE SYSTEM

¹Anja Hirschmüller, ¹Katharina Fassbender, ¹Johanna Kubosch, ³Rainer Leonhart, ²Kathrin Steffen. ¹Department of Orthopedics and Trauma Surgery, Medical Center – Albert-Ludwigs-University of Freiburg, Faculty of Medicine, Albert-Ludwigs-University, Freiburg, Germany; ²Norwegian School of Sports Science, Oslo, Norway; ³University of Freiburg, Department of Psychology, Freiburg, Germany

10.1136/bjsports-2021-IOC.73

Background Injury profiles during Paralympic Games have been extensively studied, whereas longitudinal monitoring data of para-athletes are still sparse.

Objective Implementation of an injury and illness surveillance system in high-level Paralympic athletes.

Design Longitudinal monitoring of injuries and illnesses within the German National Paralympic Team.

Setting In preparation for the Paralympic Games in Rio de Janeiro 2016, all German elite athletes (n=178) were invited to take part in the weekly monitoring program using the Oslo Sports Trauma Research Center Questionnaire. The prevalence data on injury and illness were extracted and analysed with regard to age, sexes, impairment, sports and training volume. Acceptance of the program was evaluated at the end.

Patients (or Participants) 58 athletes comprised the final cohort (32 male, 26 female; main sports: paracycling (n=18), wheelchair basketball (n=12), swimming (n= 8). Main disabilities: SCI (n=19), limb pathologies (n=15), neurological impairments (n=17).

Interventions (or Assessment of Risk Factors) Prospective cohort study.

Main Outcome Measurements Weekly prevalence of injuries and illnesses, injury rate per 1000 athlete-days.

Results With a weekly response rate of $92.4 \pm 8.5\%$, 10.927 athlete-days were recorded with 306 (199) training-days being lost due to illnesses (injuries). The weekly prevalence of all health problems was 26% (95% CI 23% - 29%). Female

athletes had a higher prevalence (30.6%) compared to males (22.4%). The number of substantial complaints did not change over time, whereas the overall prevalence declined. Wheelchair athletes had higher incidence rates for gastroenterological problems, urinary tract infections and neurological complaints as well as higher rates of shoulder and elbow injuries. The participating athletes reported a high satisfaction with the weekly monitoring program.

Conclusions The weekly prevalence of overuse injuries and illnesses in Paralympic athletes is high, even early in the season, and varies substantially between handicaps and disciplines. Illnesses seem to be even more important than injuries.

078

INJURY RISK IN SCHOOL CHILDREN WITH PROBABLE DEVELOPMENTAL COORDINATION DISORDER OR ATTENTION DEFICIT HYPERACTIVITY DISORDER

¹Kyle McCallum, ¹Benjamin Tan, ¹Rebecca Marjoram, ²Carly McKay, ¹Patricia K Doyle-Baker, ³Tal Jarus, ⁴Deborah Dewey, ^{1,4}Carolyn Emery. ¹Faculty of Kinesiology, University of Calgary, Calgary, Canada; ²Department of Health, University of Bath, Bath, UK; ³Occupational Science and Occupational Therapy, University of British Columbia, Vancouver, Canada; ⁴Cumming School of Medicine, University of Calgary, Calgary, Canada

10.1136/bjsports-2021-IOC.74

Background Sport and recreation-related (S&R) injury burden is high in adolescents (ages 13–19; incidence proportions (IP) ranging 29.4–40.2 injuries/100 students/year). There is a paucity of S&R injury data in children (<13 years). Individuals with Developmental Coordination Disorder (DCD) and/or Attention Deficit Hyperactivity Disorder (ADHD) may have a higher risk of injury; however, the focus has not been S&R injury or children in these studies.

Objective To examine S&R injury risk in school children, comparing typically developing children to those screening positive for probable (p) DCD and/or ADHD.

Design Cross-sectional study.

Setting Elementary schools in Calgary, Canada.

Patients (or Participants) In total, 681 students (grades 4–6; ages 8–13) from 33 randomly selected schools were recruited.

Interventions (or Assessment of Risk Factors) Children were screened for pDCD and/or pADHD through the DCD Questionnaire (DCDQ'07) and the Vanderbilt ADHD Rating Scale (VADPRS), respectively.

Main Outcome Measurements S&R participation and one-year injury history (medical attention and time loss) were child/parent/guardian reported on a survey.

Results The overall S&R IP was 28.2 injuries/100 participations (95%CI: 24.8–31.6). The injury rate (IR) was 2.43 injuries/1000-participation hours (95%CI: 2.06–2.85), with no significant differences between typically developing children and those screening positive for pDCD and/or pADHD. The IR for typically developing children was 2.2 injuries/1000-hours (95%CI: 1.79–2.68), 3.13 (95%CI: 2.21–4.42) for pDCD, 2.82 (95%CI: 1.29–5.34) for pADHD, and 2.93 (95%CI: 1.52–5.12) for children with pDCD and ADHD. Compared to typically developing children, children with pDCD [adjusted odds ratio (OR) = 1.08; 95%CI: 0.64–1.84], pADHD (OR = 1.14; 95%CI: 0.53–2.45), and pDCD/ADHD (OR = 1.24; 95%CI: 0.58–2.65) were at no greater risk for S&R injuries.

Conclusions Similar to adolescents, burden of S&R injury is high in children. Children with pDCD and/or pADHD were not at a greater risk of S&R injury than typically developing children. Injury prevention strategies should target children and adolescents.

079

SPORT-RELATED INJURY IN HIGH SCHOOL STUDENTS: CHECKING IN AFTER A DECADE OF INJURY PREVENTION INTERVENTIONS

^{1,2,3}Amanda M Black, ¹Derek Meeuwisse, ^{1,2,3}Paul H Eliason, ^{1,2,3,4,5}Kathryn Schneider, ^{1,3,6,7,8}Brent E Hagel, ^{1,2,3,4,6,7,8}Carolyn Emery. ¹Sport Injury Prevention Research Centre, Faculty of Kinesiology, University of Calgary, Calgary, Canada; ²Hotchkiss Brain Institute, Cumming School of Medicine, University of Calgary, Calgary, Canada; ³Alberta Children's Hospital Research Institute, Cumming School of Medicine, University of Calgary, Calgary, Canada; ⁴Sport Medicine Centre, University of Calgary, Calgary, Canada; ⁵Evidence Sport and Spinal Therapy, Calgary, Canada; ⁶Community Health Sciences, Cumming School of Medicine, University of Calgary, Calgary, Canada; ⁷Department of Pediatrics, Cumming School of Medicine, University of Calgary, Calgary, Canada; ⁸O'Brien Institute for Public Health, Cumming School of Medicine, University of Calgary, Calgary, Canada

10.1136/bjsports-2021-IOC.75

Background In 2004, a survey conducted in Alberta, Canada (n=2850) reported that 93.8% of high school students (ages 14–19) participated in sport over the previous year with injury rates (IR) of 65.7 injuries/100 students/year, 40.2/100 students/year for injuries requiring medical attention and 49.9 injuries/100 students/year for time loss injuries. Over the past decade, the Sport Injury Prevention Research Centre has introduced injury prevention programs to decrease the risk of sport-related injury among adolescents in schools and the community.

Objective To examine sport participation and injury rates in high school students.

Design Cross-sectional survey.

Setting High schools (Alberta, Canada).

Participants High school students (n=2029; 958 male, 1048 female, 23 identified as 'other') from 24 of 63 (38%) schools targeted for recruitment.

Assessment of Risk Factors Students completed a web-based survey during class (October 2018 –March 2019). Students identified the top 3 sports for participation in the past year.

Main Outcome Measurements Self-reported IR for 1) any sport-related injury over the last year, 2) most serious injury resulting in medical attention, and 3) most serious injury resulting in being restricted from sport $\geq$ one day adjusting for cluster by school.

Results Of the 2029 respondents, 861/958 (89.9%) males, 886/1048 (84.5%) females and 16/23 (69.6%) of those who identified as 'other', participated in a sport/recreational activity in the last year. Of the 1971 students who completed the question on sport injury, 892 reported at least one injury over the last year (IR=45.3 injuries/100 students/year (95%CI, 40.1–50.8)). The IR including only injuries resulting in medical attention was 27.8 injuries/100 students/year (95%CI, 23.4, 32.7) and resulting in time loss from sport was 35.9 injuries/100 students/year (95%CI, 40.4–41.8).

Conclusions The sport-related injury rate for adolescents in Alberta is lower than previously reported 10 years ago. While, the decrease may be associated with wide scale injury prevention initiatives, it may also be related to a decline in sport

participation. Future studies evaluating injury prevention strategies broadly are necessary.

080

THE PREVALENCE OF INDICATORS OF RELATIVE ENERGY DEFICIENCY IN SPORT (RED-S) IN AUSTRALIAN ELITE AND PRE-ELITE FEMALE ATHLETES

^{1,2}Margot Rogers, ¹Nicole Vlahovich, ¹David Hughes, ²David Pyne, ³Shona Halson, ²Gregory Lovell, ^{1,2}Renee Appaneal, ⁴Nic West, ⁵Bronwen Lundy, ¹Marijke Welvaert, ^{1,5}Louise Burke, ^{1,2}Gordon Waddington, ^{1,2}Michael Drew. ¹Australian Institute of Sport, Canberra, Australia; ²University of Canberra Research Institute for Sport and Exercise, Canberra, Australia; ³School of Behavioural and Health Sciences, Australian Catholic University, Brisbane, Australia; ⁴Mucosal Immunology Research Group, Griffith University, Gold Coast, Australia; ⁵Mary MacKillop Institute for Health Research, Australian Catholic University, Melbourne, Australia

10.1136/bjsports-2021-IOC.76

Background Athlete health, training availability and performance can be impeded due to Relative Energy Deficiency in Sport (RED-S). Development of RED-S is underpinned by low energy availability (LEA), however its natural history is yet to be defined.

Objective To quantify the prevalence of issues previously described in association with RED-S in a mixed-sport cohort of female athletes, to inform the definition of its natural history.

Design This cross-sectional, observational study in athletes from eight sports utilised validated screening questionnaires and clinical investigations.

Setting Athletes were competing and/or training at a state, national or international level at the time of recruitment. Questionnaire data were collected electronically, whilst clinical investigations were undertaken at the Australian Institute of Sport.

Participants Females ≥ 15 years old from the National Sporting Organisations approached by the researchers were eligible (n=112).

Assessment of Risk Factors Psychology, nutrition and sleep screening questionnaires were administered. Fasted blood tests, indirect calorimetry, dual-energy x-ray absorptiometry scans, and diagnostic psychiatric clinical interviews were undertaken.

Main Outcome Measurements Menstrual function, bone mineral density, thyroid function, resting metabolic rate, serum ferritin, mental health, lipid profile, gastrointestinal symptoms and recent illness and/or injury resulting in sports incapacity were assessed as indicators of the health consequences associated with RED-S.

Results Almost all (87%) participants demonstrated at least one indicator of RED-S consequences, with 81% exhibiting between one and three indicators. Participants most commonly displayed impairments of the immunological (24%), cardiovascular (28%), haematological (29%) and gastrointestinal (46%) systems. Risk of LEA was identified in 11–55% of participants, and one third of the assessed cohort had a diagnosed psychiatric condition.

Conclusions RED-S consequences were prevalent.

These results have informed secondary prevention strategies whereby early detection of symptoms leads to early intervention prior to multi-system involvement. Further work is warranted to determine the interactions between these impairments, LEA and subsequent RED-S, to inform treatment and prevention.