

**Methods** Data collection was done from various agencies, namely, Bureau of Labour and Employment Statistics (BLES) of the Department of Labour and Employment (DOLE), Labour Force Survey of National Statistics Office, Occupational Safety and Health Centre (OSHC), National Electronic Injury Surveillance System (NEISS) under Department of Health (DOH), Overseas Employment Statistics (OES) of the Philippine Overseas Employment Administration (POEA), and International Labour Organisation (ILO).

**Results** Occupational injuries in the Philippines showed 22,265 cases in 2003, and 47,235 cases in 2007. The manufacturing industries registered the highest number of cases. Out of the reported cases of occupational injuries, 178 resulted in death in 2000, and 116 deaths in 2007. Injury occurred at 6 injury cases per 500 full-time workers in 2000. In the following years, it declined to 4 cases per full-time worker in 2003, and 3 cases for every 88 workers in 2007. Superficial injuries and open wounds were the most common type of injuries. Acute poisoning and infections increased by 2.39 times from 2003 to 2007. Other serious injuries were burns, corrosions, scalds, and frostbites and still registering with 2,065 cases in 2007. Fractures also registered at 1,839 cases in 2007. Based on hospital records, there was a total of 9,521 injury cases reported for the first quarter of 2010 in 77 government and private hospitals in the country. The cause of injury mostly occurred on the road (44.4%), and work-related injuries were reported at 7.8%.

**Conclusions** The records and data show that occupational injuries are prevalent in the Philippines. It is suggested that data collection on occupational injuries be a national scale, and not merely randomised collection of data from small, medium and large industries. Data on occupational injury should also include the agricultural sector, the informal sector, and small enterprises.

## Sports and Exercise Safety

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152

### EXERCISE TRAINING TO PREVENT SPORTS INJURIES: RESULTS FROM A CLUSTERED RANDOMISED CONTROLLED TRIAL

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**Background** Exercise-based training programs are a popular injury prevention measure to prevent sports injuries but there have been few trials of their effectiveness in real-world sports settings.

**Methods** A clustered randomised controlled trial was undertaken in 18 community-level (non-elite) Australian Football (AF) clubs in two states with multiple teams of adult male players. Clubs/teams were randomly allocated to either a neuromuscular control (NMC) (intervention n = 679 players) or standard-practice (control n = 885 players) exercise training program delivered as part of regular team training sessions (twice weekly over an 8-week pre-season and 18-week regular-season). All game-related injuries and hours of game participation were recorded. Training attendance was recorded as a proxy for compliance with the allocated program. Generalised estimating equations, adjusted for

clustering (club), were used to compute injury incidence rates (IIR) for all injuries, lower limb injuries (LLI) and knee injuries only. Using an intention-to-treat analysis, the IIRs were compared across groups with cluster-adjusted injury rate ratios (IRR).

**Results** A total of 773 game injuries was recorded, of which 50% (n = 386) were LLI and 12% (n = 96) were to the knee. Compared with control players, NMC players had both a reduced overall LLI rate (IRR: 0.78 (95% CI: 0.56 to 1.08), p = 0.14) and knee IRR (IRR: 0.50 (95% CI: 0.24 to 1.05), p = 0.07). Variation in player training attendance across the season influenced exposure to the implemented programs.

**Conclusions** Injury reductions can be achieved from implementing targeted training programs in men's community sport. While nearly statistically significant, reducing the knee injury rate by half and the LLI rate by 22% is still a clinically important outcome. Further injury reductions could be achieved with improved training attendance and participation in the program.

153

### CONCUSSIONS IN UNITED STATES HIGH SCHOOL BOYS' AND COLLEGE MEN'S ICE HOCKEY PLAYERS

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**Background** Research in high school and college sports has found high concussion rates in ice hockey. This study describes the epidemiology of concussions in high school boys' and college men's ice hockey.

**Methods** Data originates from High School RIO during the 2008/09-2014/15 academic years (191 team-seasons); and the National Collegiate Athletic Association Injury Surveillance Program (NCAA-ISP) during the 2009/10-2014/15 academic years (148 team-seasons). A reportable concussion occurred as a result of participation in an organised game/practice and required attention from an athletic trainer or physician. Concussion injury rates per 10000 athlete-exposures (AE), injury rate ratios (RR), and 95% confidence intervals (CI) were calculated.

**Results** Overall, 279 and 309 concussions were reported in high school boys' and college men's ice hockey, respectively, for rates of 6.8 and 7.6/10000 AE. Player contact was the most common injury mechanism in boys (46.6%) and men (71.5%). Contact with boards comprised a larger proportion of concussions in boys (31.2%) than men (9.4%). Checking was the activity during which injury occurred for 42.7% of boys' and 28.5% of men's concussions. Concussion rates did not differ between boys and men (RR = 0.9; 95% CI: 0.9–1.3). However, the concussion rate due to player contact was higher in men than boys (RR = 1.7, 95% CI: 1.4–2.1). In contrast, concussion rates due to contact with boards (RR = 3.0, 95% CI: 2.0–4.6) and checking (RR = 1.3, 95% CI: 1.0–1.8) were higher in boys than men.

**Conclusions** Although overall concussion rates did not differ between high school boys' and college men's ice hockey players, mechanism- and activity-specific rates varied. Such differences may be associated with physical maturation differences between high school boys' and college men's ice hockey athletes, and may indicate a need for continued skill development at lower levels of competition.