Conclusion Training, rehabilitation and pre-hab programmes for female athletes need to be tailored and different approaches to the established male-driven evidence should be considered. Despite abduction and flexion strength being higher in these athletes, muscles involved in these movements may have to be targeted in the training long-term due to their decrease of strength associated with age.

Athlete Health and Prevention

HEAD-TO-HEAD COMPARISON OF INJURIES IN WOMEN’S AND MEN’S ELITE FOOTBALL CLUBS: UEFA ELITE CLUB INJURY STUDIES 2018/19 TO 2022/23

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Introduction Players in women’s elite football teams appear to have a lower risk for sustaining injuries compared to players in men’s elite teams, especially during matches. Between-study comparisons are, however, difficult to interpret because of different designs/definitions. The objective of this study was to investigate potential differences in injury incidence between women’s and men’s elite football players from the same clubs using an identical study methodology.

Materials and Methods This is a club-matched prospective cohort study using data from the UEFA Women Elite Club Injury Study (WECIS) and the UEFA Elite Club Injury Study (ECIS). Thirteen top clubs in Europe with 26 teams and 82 team-seasons that have delivered complete data in both studies for at least one season from 2018/19 to 2022/23 were included. Injury incidence was expressed per 1000 hours and compared using a rate ratio (RR) with 95% confidence interval (CI).

Results 2941 time-loss injuries were reported, 1465 injuries in WECIS (842 training, 623 match) and 1476 injuries in ECIS (666 training, 810 match injuries). There was no difference in match injury incidence between WECIS and ECIS clubs (19.7 vs. 19.4 per 1000 match hours, RR 1.0 95% CI 0.9 to 1.1, p=0.780), but the training injury incidence in WECIS clubs was significantly higher (4.7 vs. 3.7 per 1000 training hours, RR 1.3 95% CI 1.2 to 1.4, p<0.001).

Conclusion WECIS players have a similar risk of match-related injuries as ECIS players, but a higher risk of training-related injuries.

POPPING PILLS IN YOUTH ELITE SPORTS: FACT OR FICTION? A PROSPECTIVE COHORT STUDY OF ANALGESIC USE IN YOUTH ATHLETES

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Introduction According to the International Olympic Committee, longitudinal data on analgesic use in elite athletes is lacking. We aimed to investigate and compare analgesic use in a cohort of Danish youth elite athletes with student controls.

Materials and Methods 690 youth elite athletes and 505 student controls (15-20 years) provided weekly reports on number of days with analgesic use, reasons for use, and types of analgesics used for 36 weeks (mean weekly response rate 87%). We compared prevalence and frequency of analgesic use, reasons for use, and types of analgesics used between youth elite athletes and student controls. These analyses were repeated comparing male or female athletes with male or female student controls, respectively.

Results Overall, athletes had lower odds of analgesic use (OR 0.78, 95% CI 0.64 to 0.95) compared with student controls, but the overall usage rate was similar between the groups (IRR 1.04, 95% CI 0.99 to 1.11). No differences in odds or rate of analgesic use were observed when comparing athletes and students controls of same gender, but the average weekly prevalence of analgesic use was higher among females (~29%) than in males (~14%), irrespective of athletic status. Statistically significantly more athletes reported using analgesics to prevent or treat pain or injury in relation to sports participation and to use topical analgesic gels compared with student controls.

Conclusion Participation in youth elite sports was not associated with increased analgesic use compared with student controls, but seems to influence reasons for use and types of analgesics used.

THE HEALTH AND PERFORMANCE PROMOTION IN YOUTH (HAPPY) TRIAL: EFFECT OF AN ONSITE IMPLEMENTATION STRATEGY ON HANDBALL COACHES’ BEHAVIORAL FACTORS

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Introduction Behavioral factors (BFs) are associated with adherence to injury prevention exercise programs (IPEPs). We investigated the effect of adding an onsite implementation strategy to an online-only strategy of an IPEP on handball coaches’ BFs.

Materials and Methods In a one-season randomized controlled trial, 20 youth handball clubs were assigned to an online and onsite strategy (intervention group, IG) including a workshop at season start, utilizing the Health Action Process Approach (HAPA) behavior change model, and health service provider support, or online-only strategy (control group, CG). Coaches’ BF were assessed on a 7-point Likert scale using a web-based HAPA-questionnaire at season start, after workshop (IG only), and midseason. We measured changes in six BFs: intention,
action self-efficacy, coping self-efficacy, outcome expectancies, action planning, coping planning. Likert scale responses were aggregated into BF-scores ranging from 0.14-1, worst-best, for each domain, and analyzed using t-test.

**Results**
Fifty-eight handball coaches were included; IG: n = 35, mean age 42.6 years, 34.3% female; CG: n = 23, mean age 42.3 years, 26.1% female. The IG improved significantly (p<0.05) in all BFs from season start to immediately after workshop (mean difference range of BF-scores 0.6 to 0.11). At midseason both groups had deteriorated in all BFs compared to season start (mean difference range of BF-scores 0.01 to 0.09), with no significant between-group differences.

**Conclusion** Adding an onsite strategy to an online implementation strategy of an IPEP had no additional effect on handball coaches’ behavioral factors from baseline to midseason, compared to an online-only strategy.

### Digital Health and Technology

**THE HAPPY HYBRID EFFECTIVENESS-IMPLEMENTATION CLUSTER-RANDOMISED TRIAL: COMPARISON OF TWO STRATEGIES TO IMPLEMENT AN INJURY PREVENTION EXERCISE PROGRAM IN YOUTH HANDBALL**

1.18

**Introduction**
Injury prevention exercise programs (IPEPs) are insufficiently implemented in practice. We hypothesized that a combination of an online and onsite implementation strategy would be superior to an online-only strategy in enhancing adherence to an injury prevention exercise program (IPEP), and in reducing shoulder, knee and ankle injury risk in youth handball players over a handball season.

**Materials and Methods**
In this 30-week hybrid effectiveness-implementation cluster-randomized study, 20 youth handball clubs were assigned to an online and onsite strategy (workshop utilizing the Health Action Process Approach [HAPA] behavior change model and health service provider [HSP] support) or an online-only strategy (control group). The primary implementation outcome was coach-reported adherence, measured as the average IPEP team usage over 30 weeks (weekly-exercise usage range 0-33). The primary effectiveness outcome was player-reported handball time to any new handball-related shoulder, knee, and ankle injury, reported weekly using the Oslo Sports Trauma Research Centre Questionnaire on Health Problems.

**Results**
We enrolled 945 players (mean age 14.5 years, 55% girls) and 63 coaches (27% woman). Intention-to-treat analyses showed no statistically significant difference between implementation strategies in mean weekly exercise utilization (between-group difference -1.4, 95% CI -3.4 to 0.6) or in cumulative injury risk (between-group difference -5.5, 95% CI -13.1 to 2.2).

**Conclusion**
Our findings suggest that in youth handball, a combined online and onsite implementation strategy including a workshop and HSP support was not superior to an online-only strategy in improving adherence to an IPEP or in reducing shoulder, knee and ankle injury risk.

### Longitudinal Feasibility Study

**USING WEARABLE TECHNOLOGY DATA TO EXPLAIN RECREATIONAL RUNNING INJURY: A PROSPECTIVE LONGITUDINAL FEASIBILITY STUDY**

1.19

**Introduction**
Running offers a 40% reduction in premature mortality risk, but high rates of musculoskeletal injury. We aimed to investigate 1) if collecting and analysing wristwatch inertial measurement unit (IMU) and global positioning system (GPS) data using a commercially-available training platform was feasible in recreational runners and 2) which variables were associated with subsequent injury.

**Materials and Methods**
We sought a minimum of 120 healthy recreational runners currently running with an IMU/GPS wristwatch. We set a priori feasibility thresholds for recruitment (maximum six-months), acceptance (minimum 80%), adherence (minimum 70%), and data collection (minimum 80%). Participants completed three patient-reported outcome measures (PROMS) detailing their psychological health, sleep quality, and intrinsic motivation to run, before linking their IMU/GPS wristwatch to the commercially-available DashLX platform. We extracted baseline anthropometric, biomechanics, metabolic, and training load data from the prior 12-weeks for analysis. Participants completed a weekly injury surveillance questionnaire to confirm their injury status over the next 12-weeks. Feasibility outcomes were analysed descriptively and between group differences with 95% confidence intervals were calculated for PROM/IMU/GPS data.

**Results**
149 recreational runners participated. 86 participants completed the study (55 men, 31 women) and 21 became injured (0.46 injuries/1,000km). All feasibility outcomes were satisfied (recruitment=47 days; acceptance=133/149 [89%]; adherence=93/133 [70%]; data collection=86/93 [92%]). Acute load by effort was associated with subsequent injury (mean difference -562.14, 95% CI -1019.42, -21.53).

**Conclusion**
Collecting and analysing wristwatch IMU/GPS data using a commercially-available training platform was feasible in recreational runners and could be scaled up for an adequately powered prospective cohort.