

093 **THE INCIDENCE OF INJURIES AND ILLNESS DURING OPEN-WATER SWIMMING EVENTS: OPTIMISING SWIMMER SAFETY**

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**Background** Open-water swimming (OWS) is a popular mass-participation sport in the UK; however, it presents unique safety and medical challenges.

**Objective** To compare the incidence of illness and injury during OWS events with those in the swim leg of similar distance triathlon events.

**Design** Retrospective analysis of OWS and triathlon water rescue race reports.

**Setting** Mass-participation community-based OWS races (between 200m and 1900m distance) and triathlons (400m, 750m and 1500m swim leg) in the UK between 2013–2016.

**Patients (or Participants)** All participants requiring intervention from the water rescue team were included. Relay participants were excluded.

**Interventions (or Assessment of Risk Factors)** Event type, swimming distance, and participant demographics were recorded.

**Main Outcome Measurements** Reasons for intervention and/or extraction from the water by the rescue teams were logged.

**Results** Reports from 4 OWS races and 7 triathlons were analysed. There were 60,859 participants in total. 490 swimmers required intervention from the water rescue team in the OWS races, of which 50/490 (11%) required extraction (3/1000 swimmers). In triathlon events, 818 required intervention during the swim leg, and 232/818 (28%) required extraction (5/1000 participants).

Reasons cited for extractions in both groups were tiredness (approximately one third) and breathing difficulties (18% OWS extractions, 15% triathlon extractions). Cramp was more common in the OWS group (31% vs 12% in the triathlon group), whereas injury was more likely to be a cause for extraction in the triathlon (8% vs 1.4% in OWS). In the triathlon there were two cases of cardiac arrest in the water.

**Conclusions** Open-water swimming has a low incidence of illness and injury, but in some cases can result in serious medical illness and death. This study gives an insight into the common causes for intervention from the water rescue teams. Event organisers and medical teams should be aware of the risks to ensure optimal medical care and competitor safety for all open-water swimming and triathlon events.

094 **ABSTRACT WITHDRAWN**

095 **RISK FACTORS FOR BOTH RETROSPECTIVE AND PROSPECTIVE SHOULDER INJURIES IN WATER POLO**

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**Introduction** The main objective was to estimate whether previous injury, changes in strength, range of motion (ROM) or upward scapular rotation (UR) are related to new shoulder injuries in water polo players.

**Methods** Thirty-nine players with were included in the study. Frontal plane shoulder internal (IR) and external rotation (ER) peak torque was measured using an isokinetic device at 90° abduction (CONtrex MJ). Shoulder flexibility for both ER and IR was measured using standard goniometry. Scapular upward rotation (UR) was measured with the shoulders at 90° abduction using a laser digital inclinometer. Independent t-tests and Mann-Whitney U tests were used to compare groups with and without new injuries. Effect sizes were calculated with a Hedge's g correction. Chi squared analysis compared proportion of injured players with and without previous injury.

**Results** Eighteen participants (46%) had previous injuries at baseline. Players with a previous injury showed higher peak torques for IR ( $0.62 \pm 0.15$  vs  $0.54 \pm 0.13$  N/kg,  $p=0.04$ ,  $g=0.60$ ); larger loss of IR ROM ( $9.9 \pm 9.1$  vs  $4.1 \pm 7.5^\circ$ ,  $p=0.04$ ,  $g=0.68$ ), but no statistical difference in UR ( $p=0.70$ ). After nine months, there were no statistical strength differences between groups. Loss of IR ROM was significantly higher in the injured group ( $9.8 \pm 9.8$  vs  $4.0 \pm 6.7^\circ$ ,  $p=0.04$ ,  $g=0.68$ ), as well as UR ( $13.0 \pm 3.0$  vs  $10.4 \pm 3.3^\circ$ ,  $p=0.01$ ,  $g=0.81$ ). History of previous injury was significantly related to developing a new injury (OR 6.5,  $p=0.02$ ). Logistic regression found previous injury and UR most important contributors to injury risk.

**Conclusions** Previous injury, changes in IR ROM and UR are related to new shoulder injuries in water polo, but further variables such as rest, training load, or psychosocial factors may explain the incidence of new injuries.

096 **ABSTRACT WITHDRAWN**

097 **ABSTRACT WITHDRAWN**

098 **THE INCIDENCE OF SWIMMER'S SHOULDER AND ITS RELEVANCE WITH THE RANGE OF MOVEMENT AMONGST YOUNG SWIMMERS**

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**Background** The main symptom of the swimmer's shoulder is the pain in the shoulder region during or after the swimming action. This is followed by the gradually increasing restriction of the ROM and deterioration in function.

**Objective** Our study aimed to establish the prevalence of the swimmer's shoulder amongst competitive swimmers at a young age.

**Design** Non-randomised cross-section study.

**Setting** The measurements were carried out in the major regional swimming centers across Hungary.

**Patients (or Participants)** 304 children (164 male, 140 female), aged 11–13 were involved in the study.

**Interventions (or Assessment of Risk Factors)** During the two year study period questionnaires about swimming training methods and the existence of shoulder pain were collected, as well as physical examinations were performed.

**Main Outcome Measurements** The following variables were measured: weekly training hours, the ROM (rotational and elevation) of the shoulders, the ratio of the isometric muscle power, special physical examination tests for impingement syndrome, rotator cuff malfunction, and biceps pathologies.

**Results** 30% of the children reported shoulder pain. The following risk factors were common: decreased elevation and internal rotation, increased external rotation and the disbalance of the rotational muscle strength. Children with positive impingement tests had significantly decreased elevation in both shoulders comparing with children with negative physical examination tests ( $172^\circ - 179^\circ$ ). There was a significantly decreased elevation of the left infraspinatus ( $176^\circ-179^\circ$ ) and teres minor ( $177^\circ-179^\circ$ ) and the right teres minor ( $176^\circ-179^\circ$ ).

**Conclusions** There is evidence that the swimmer's shoulder also exists and shows a relationship with the deviation of the ROM in children who swim actively. It is recommended the optimization of the ROM and the muscle balance of the shoulder muscles. This can only be achieved by performing regular and proper stretching exercises, which therefore can play a huge role to prevent the swimmer's shoulder.

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#### THERE IS NO CONSENSUS ON MOUTHGUARD USE ACROSS SPORTS

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**Background** Mouthguards are important for injury prevention in athletes. The American Dental Association (ADA) advocates the use of a properly fitted mouthguard in thirty sports to reduce the incidence and severity of sports-related dental injury and oro-facial trauma. Despite this, many athletes cite a lack of formal guidance from individual sport governing bodies as a key reason for not wearing mouthguards.

**Objective** To audit the current recommendations on mouthguard use, as advised by individual sport governing bodies. The audit standard is the current recommendations from the ADA.

**Design** An online search was performed of each Olympic, international and national sport governing body. The websites were reviewed for medical guidance, and this was audited to determine whether mouthguards were 'Mandated', 'Recommended', 'Optional', 'Not recommended' or if there was 'No guidance'. Where guidance was available, details on the type and fit of mouthguard recommended and mouthguard care/maintenance were recorded.

**Setting** Olympic, international and national sports.

**Patients** Athletes competing across the thirty ADA 'at-risk' sports.

**Interventions (or Assessment of Risk Factors)** N/A

**Main Outcome Measurements** The proportion of 'at risk' sports that have medical guidance on mouthguard use at the level of international governing bodies and national governing bodies. The number of sports with guidance on type, fit and maintenance were also assessed.

**Results** 10/30 'at risk' sports issue medical guidance on mouthguard use at an international governing body level, of which five mandate usage. 11/30 sports issue guidance at a national governing body level, of which seven mandate usage. 5/30 sports have guidelines on mouthguard type or fit, and only 1/30 offered guidance on mouthguard care and maintenance.

**Conclusions** There is a lack of clear guidance for athletes on mouthguard use and care consensus across sports is needed, which could contribute to enhanced protection of athlete health and wellbeing.

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#### IMPACT OF NUTRITIONAL ROUTINE AND TRAINING METHODS USED BY SRI LANKAN NATIONAL TAEKWONDO PLAYERS FOR WEIGHT LOSS PRIOR TO COMPETITION

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(n = 25)

**Objective** To determine the weight control strategies used by Sri Lankan national Taekwondo players who were in the SAG (South Asian Games) pool 2020.

**Design** A population study.

**Setting and Participants** Sri Lankan national taekwondo pool (n=25). The national taekwondo pool consists of 14 female athletes and 15 male athletes who engage in sparring.

**Assessment of Risk Factors** Duration of administration was June to August of 2020 in Sri Lanka. Weight loss training methods were identified as the independent variable. Data were collected through questionnaires; mainly weight loss methods and eating attitude questionnaire.

**Main Outcome Measurements** Physiological and psychological effects of weight loss methods and eating disorders were considered as the dependent variable.

**Results** Of the 25 participants, 40% of the athletes reported using a method of rapid weight loss. Five methods were more frequently used, as follows: reduce food consumption 68%, skipping meals 28%, fasting 32%, restricting fluids 72% and using ergogenic aids 12%. The highest weight loss rate before the competition is  $6.00 \pm 1.50$  (kg) in males and  $6.00 \pm 1.00$  (kg) in females. Athletes reported to usually lose ~2% of their body weight. The athletes do not use ergogenic aids and the frequency percentage of physiological and psychological adverse effects of rapid weight loss is very low. Athletes of 48% of athletes having eating disorders and need for an investigation by a qualified professional. Of them, 60% are using rapid weight loss method.

**Conclusions** According to the results, the rapid weight loss training methods, lead to significant undernutrition, with potential dangers for health and performance because of certain deficiencies.