

Background In recent years there has been an increase in focus on the potential role neck muscle strength and strengthening may play in helping to mitigate the risk of sports related concussion (SRC). However, to date there has not been any systematic reviews or analysis to help quantify this role and provide guidance.

Objective To systematically review the literature surrounding the neck strength and strengthening in reducing the risk of SRC.

Design Systematic review and meta-analysis.

Data sources SportsDISCUS, Ovid Medline, Web of Science, CINAHL and EMBASE

Patients (or Participants) Athletic population regardless of age or sex.

Study selection The above databases were searched using a combination of keywords and medical subject headings to identify studies that examined the association between SRC and neck strength and or neck strengthening programs.

Results The initial search produced 593 studies, of which 6 were included for review and meta-analysis. Intervention programs that included neck strengthening were shown to be effective at decreasing the incidence of SRC RR 0.54 (95% CI 0.50–0.95)

Conclusions Neck strengthening intervention programs can reduce the incidence of SRC in an athletic population. Athletes who participate in high-risk sports or are from high-risk populations (i.e. adolescents and females) should incorporate neck strengthening into their respective training programs.

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332 **LEG COMPARTMENT PRESSURES IN COLLEGIATE RUNNERS: A COMPARISON OF SYMPTOMATIC AND ASYMPTOMATIC ATHLETES**

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10.1136/bjsports-2021-IOC.301

Background Chronic exertional compartment syndrome (CECS) is an uncommon cause of leg pain in running athletes. Post-exercise compartment pressure measurements are an invasive test that many clinicians rely upon for making the diagnosis of CECS.

Objective The authors sought to determine if intracompartmental pressures in the anterior leg compartments of asymptomatic collegiate distance runners meet established criteria for diagnosis of exertional compartment syndrome and to

compare these measurements with those of symptomatic athletes.

Design Thirty collegiate running athletes underwent 1-minute post-exercise compartment pressure measurements of bilateral anterior leg compartments. Each was asked to run for 15 minutes at a moderately intense pace and then underwent measurements performed at 1 minute post-exertion with a slit catheter manometer. Fifteen male and 15 female collegiate running athletes age 18–23 years (average 20.8 years) underwent post-exercise compartment pressure testing of the legs. The pressure measurements were then compared with those of 30 symptomatic age- and activity-matched control athletes.

Setting Collegiate (University) Athletics.

Patients (or Participants) Collegiate Track and Field and Soccer (Football) Athletes.

Interventions (or Assessment of Risk Factors) Post-exercise leg compartment pressure testing with slit catheter pressure measurements.

Main Outcome Measurements Bilateral leg anterior muscular compartment pressures immediately following provocative exercise.

Results Measurements of leg compartment pressures performed at 1-minute post-exercise were indicative of exertional compartment syndrome in more than one-third of asymptomatic running athletes tested (11/30, 36.7%). Six male and 5 female runners demonstrated 1-minute post-exercise compartment pressure measurements > 30 mmHg in at least one leg. Of these 11 athletes, 4 demonstrated positive measurements bilaterally (2 men, 2 women). Intracompartmental pressure measurements ranged from 16 mmHg to 88 mmHg. The range of pressure measurements were nearly identical in the symptomatic runners.

Conclusions Elevated intracompartmental pressures were prevalent in collegiate runners despite a lack of symptoms. Post-exercise compartment pressure measurements should be viewed as only an indicator of exertional compartment syndrome and should not be relied upon as a confirmatory test.

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334 **TRAINING FACTORS AND ACUTE ILLNESS IN MARATHON RUNNING EVENT PARTICIPANTS**

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10.1136/bjsports-2021-IOC.302

Background Acute illness during training for an endurance running event reduces the likelihood of completing the event. A greater understanding of the risk factors for acute illness during training may inform prevention strategies and advice.

Objective To describe training factors and acute medical conditions amongst participants in mass-participation community-based marathon events.

Design Observational questionnaire-based study.

Setting Two large UK city mass-participation marathon events.

Patients (or Participants) Entry to both events was open to novice runners, with no qualifying time for general entry. All registered participants were invited to complete an online