Interventions (or Assessment of Risk Factors) In total 47 matches by basketball team A (9 players) and 41 matches by team B (7 players) were performed throughout the season. All training sessions and matches were executed as prescribed by the training and coaching staff without interference or manipulation.

Main Outcome Measurements The Oslo Sports Trauma Research Center (OSTRCC) Questionnaire on Health Problems was used to collect data on injuries and illnesses on a weekly base. Furthermore, players filled in s-RPE and duration for each training and match. Prevalence’s, severity scores, time-loss and total weekly load were compared for 1-match weeks and ≥2-match weeks. The data were analyzed using multi-level modeling.

Results Prevalence of injuries and illnesses were 18.1% and 4.6% for 1-match weeks and 17.2% and 3.3% for ≥2-match weeks. Severity scores and time-loss were not significantly different for 1-match weeks compared to ≥2-match weeks. Total weekly load was lower during ≥2-match weeks compared to 1-match weeks.

Conclusions No significant differences for injuries and illnesses were observed between 1-match weeks and ≥2-match weeks. Coaches appeared to reduce training load to compensate for multiple matches during short-term match congestion.

Background Wearable sensor systems have the potential to quantify head kinematic responses of head impacts in football. However, on-field use of sensors (e.g. accelerometers) remains challenging due to factors such as poor coupling to the head.

Objective To test the validity of a novel in-ear sensor for quantifying head-impact exposure in youth football.

Participants Six male youth football players (15.3±0.3 years).

Evaluations In step 1, the sensor was mounted to a Hybrid III headform (HIII) and impacted with a linear impactor or foot-ball (range: 9.55–55 g). Accelerative forces, including peak linear acceleration (PLA), were obtained from both systems. In step 2, six youth soccer players wore sensors during a structured training protocol including heading and non-heading exercises; in step 3, they completed two regular football sessions. For each recorded accelerative event, PLA outputs were compared to video.

Main Outcome Measurements In step 1, random and systematic error were calculated using HIII as reference. In steps 2 and 3, mean values (±SD) were calculated for (1) all heading and (2) all non-heading events. Receiver operating characteristic curves were used to determine the sensor’s discriminatory capacity in both on-field settings, and cut-off values for predicting outcomes were identified.

Results In step 1, random and systematic error were both 11% for PLA. In step 2, heading events resulted in higher absolute values (PLA=15.6±11.8g) than non-heading events (PLA=4.6±1.2g); area under the curve (AUC) was 0.98. In step 3, AUC was >0.99. A 9g cut-off value yielded a positive predictive value of 100% in the structured training protocol vs. 65% in regular football sessions.

Conclusions The in-ear sensor displayed considerable random error and overestimated head impact exposures substantially. It showed excellent on-field accuracy for discriminating headings from other accelerative events, but secondary means of verifying events are still necessary.