Exposure assessment

**0-134** EXPOSURE ASSESSMENT FOR SUB-CONCUSSIVE HEAD IMPACTS AMONG FORMER ENGLISH PROFESSIONAL FOOTBALL PLAYERS: RESULTS FROM THE HEADING STUDY

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Objective To develop exposure estimates for sub-concussive head impacts (SCHI) for use in retrospective epidemiological studies among former professional association football players.

Methods Playing and heading history data were available from questionnaires of ex-professional association football players (n=163) participating in the Health and Ageing Data in the Game of football (HEADING) study (https://www.lshtm.ac.uk/research/centres-projects-groups/heading-study). We use linear mixed effect regression to model the number of headers and other head impacts as a function of potential exposure affecting factors including decade of play (playing position, level of play, league) and context of event (games vs training). Models are elaborated with player identifier as the random effect and potential exposure affecting factors as the fixed effects. Model selection is based on a stepwise approach.

Results Results from models based on 1463 observations representing individual playing periods defined by club and decade of play suggest the number of head impacts to differ significantly between playing positions, event context, decades and level of play. Number of head impacts was higher among defenders and utility players when compared with players in other positions. Professional play was also associated with an increased number of head impacts compared to apprentice, amateur and semi-professional play, with the average number of reported head impacts declining throughout the observation period (1949–2015). The model explained 40% of the total variability in reported number of head impacts.

Conclusion Currently further models for blows and head-to-head collisions are being developed. Validation exercises including comparisons of bias and precision against observations not included in the modelling processes are also underway. At the conference we will report the results of the final models alongside those of the validation exercises. The model results will be used to estimate cumulative exposure to SCHI in epidemiological studies of former association football players.