

Athletes' Selected Micro-Activities on Turf Fields: Utilizing Extant Videography for Quantification of Events During Soccer, American Football, and Field Hockey Play

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ABSTRACT

Concerns have been recently raised about the potential exposures of athletes to chemicals when playing on synthetic turf fields. Previous research has shown that micro-activities (i.e., hand-to mouth and skin-to-surface contacts) are important factors in people's exposures to chemicals in outdoor settings. However, no published data have been identified for exposure-related micro-activities of athletes engaged in various sports on synthetic turf fields needed for exposure modeling. The objective of this study was to quantify the frequency of micro-activity events of participants playing soccer, field hockey, and (American tackle) football on synthetic and natural turf fields from publicly-available videos. Using the social media website YouTube, extant videography was systematically mined for children and adults playing soccer/field hockey or football for a minimum of 15-minutes or 10-minutes, respectively. A total of 60 players were identified playing soccer (children: n = 10; adults: n = 10), field hockey (children: n = 10; adults: n = 10), and football (children: n = 10; adults: n = 10). Videos were downloaded as mp4 files and viewed on a computer using Windows Media Player software. Trained technicians tallied on paper the frequencies of hand-to-mouth, object to-mouth, hand-to-turf, and object-to-turf events of each athlete. Frequency events for each type of micro-activity were normalized to one hour per athlete. Preliminary results showed no significant differences in frequencies of micro-activities depending on type of field. Also, there were no significant differences for individual micro-activities by age (children vs. adults). ANOVA analysis revealed significantly higher ($p < 0.001$) hand-to-mouth, object-to mouth, hand-to-turf, and body-to-turf events for football players compared to soccer and field hockey players. This information suggests that type of sport played may have greater impact on potential exposures to chemicals than age or field type.