

## Medical Encounters at Community-Based Physical Activity Events (parkrun) in the United Kingdom

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### Supplementary material

**Supplementary Table S1:** Medical encounter categorisation at parkrun; levels of severity. CPR = cardiopulmonary resuscitation; AED = automated external defibrillator.

Severity classification	Descriptor	Examples
5	Significant threat to life	Collapse involving loss of consciousness/cessation of breathing/loss of pulse. CPR and/or AED required.
4	Possible threat to life; or significant risk of life-changing injury	Collapse involving seizure, possible loss of consciousness/serious head injury/multiple fractures/stroke
3	Individual requiring hospital treatment; or fit/seizure/extended loss of consciousness	Fractures/dislocations/severe sprains/cuts requiring stitches/epilepsy
2	Treatment required at the scene	Minor sprains/cuts requiring bandaging/fainting
1	Little or no treatment required at the scene	Minor cuts/grazes possibly requiring cleaning

**S2. Life-threatening medical encounters.** Following this confirmation of a serious life-threatening medical encounter by the central parkrun team, additional data were collected to further characterize each event including: 1) sex, age, and runner or volunteer status of the

afflicted participant, 2) medical description of the event, 3) location where the incident occurred on the parkrun course, 4) requirement for on-site emergency medical services treatment, ambulance transport, and hospitalization, 5) use of an automated external defibrillator (AED), 6) survival or non-survival of the afflicted participant, and 7) number of previously completed parkruns and personal best parkrun time of the afflicted participant.

**S3. *Non-life-threatening medical encounters.*** The two trained research assistants used all available data to assign each medical encounter an aetiology or mechanism of pathology using the following designations: 1) cardiovascular, 2) disorder of thermoregulation, 3) pulmonary, 4) anaphylactic, 5) gastrointestinal, 6) neurologic, and 7) musculoskeletal which was further subdivided into cramping, sprain, fracture and dislocations, head and neck injury, skin abrasion, contusion, or blister. The cases deemed to be of ambiguous aetiology (147/7840, 1.9%) were subsequently reviewed by an independent 4-person panel to establish a consensus aetiology, or to categorise as ‘unknown’.

#### **S4. Statistical analysis**

The data were cleaned prior to modelling by removing parkrun times where no or unreliable data are available on the athlete’s age, sex and previous run history (n=1,940,322). This further reduces the denominator in the calculation of the rate of serious encounters, so leads to an over-estimation of risk (more conservative). Multiple imputation was used for missing parkrun times (typically due to failed timing systems) based on each athlete’s previous or following parkrun time, where available. No substantive changes in the results presented were observed when the missing run times were simply dropped from the dataset, instead of being imputed.

The age categories of 80-84 to 105-109 were combined to 80-109 due to the small number of participants (851 equating to less than 0.05% of all participants). Junior parkrun participants (4-14 years olds in 2 km or 5 km parkrun events) were excluded from statistical analyses (n=5,115,301) since their risk factors are so different. Further, most junior runners undertake a shorter run of 2 km so the runtime are not comparable to the 5km runs, and the junior's performance varies substantially with age.

The risk exposure for each runner is accumulated by the number of parkruns completed during 2014-2019, assuming the risk is independent for each parkrun. An athlete's main age was defined by the lower bound of the age group that the athlete participated most frequently during 2014-2019, since their date of birth was not available. The effect of age was modelled as a smooth function of main age category (using thin plate splines) while linear effects were assumed for the effect of personal best parkrun performance, average number of parkruns/year and number of years of parkrun participation during 2014-2019.

Cohen's kappa was calculated to assess the level of inter-observer agreement by the two trained research assistants categorising medical encounters using a (random) sample of all reported cases. The inter-observer agreement was determined to be strong (Cohen's  $\kappa = .85$ ,  $p < 0.001$ ).