## Appendix 3: STROBE-SIIS (Sports Injury and Illness Surveillance) Statement 1.0—Checklist of items for the reporting of observational studies on injury and illness in sports

| Item | Item No | Recommendation from the STROBE Statement | STROBE-SIIS Extension [+] | Comments from authors |
|---|---|---|---|---|
| **Title and abstract** | 1 | (*a*) Indicate the study's design with a commonly used term in the title or the abstract | | Prospective cohort study included in the title |
| | | (*b*) Provide in the abstract an informative and balanced summary of what was done and what was found | SIIS-1.1. Include information on the sport, athlete population (sex, age, geographic region) and level of competition.<br>SIIS-1.2. Include the duration of observation (e.g. one season, one year, multiple years). | Data collected from all Biathlon athletes over 2-years included |
| **Introduction** | | | | |
| Background/rationale | 2 | Explain the scientific background and rationale for the investigation being reported | | Line 59-108 |
| Objectives | 3 | State specific objectives, including any pre-specified hypotheses | SIIS-3.1. State whether study was registered. Identify the registration number and database used.<br>SIIS-3.2. State the specific purpose of your study (e.g. to describe the injury burden associated with Olympic level rowing) | Line 103-108 |
| **Methods** | | | | |
| Study design | 4 | Present key elements of study design early in the paper | SIIS-4.1. Clearly specify which health problems are being observed. | Line 110-145 |

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| | | | SIIS-4.2. State explicitly which approach was used to record the health problem data, including all outcome measures or tools<br><br>SIIS-4.3. State explicitly which coding system was used to classify the health problems (e.g. OSIICS, SMDCS, ICD, etc.)<br><br>SIIS-4.4. Where relevant, clearly describe how athletes were categorised. Variables to consider could include the type of athlete and/or sport, the environment in which the sport occurs (e.g. type of course or playing area), the typical duration of the sport, the degree of physical contact permitted in the sport, and the equipment permitted. | SIIS-4.2. 'Data collection methods' - Line 150-196<br><br>SIIS-4.3. 'Classifying sports injury and illness diagnoses' Line 155-161 and Line 174-179<br><br>SIIS-4.4. 'Study population characteristics' Line 147-149 |
| Setting | 5 | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection | SIIS-5.1. Describe the location, level of play, dates of observation and data collection methods (i.e. who, what, where).<br><br>SIIS-5.2. Specify the dates of the surveillance period and how the data were handled when the study covered more than one season/calendar year.<br><br>SIIS-5.3. Define whether the health problem data were collected prospectively or retrospectively. | Line 150 - 196 |

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| Participants | 6 | (*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up<br><br>*Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls<br><br>*Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants | SIIS-6.1. Define the population of athletes and how they were selected and recruited. | Line 147-149 |
| | | (*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed<br><br>*Case-control study*—For matched studies, give matching criteria and the number of controls per case | | |
| Variables | 7 | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | SIIS-7.1. Justify why you measured your primary and secondary outcomes of interest in the specific way chosen.<br><br>SIIS-7.2. Describe the method for identifying your health problem outcome of interest. | Line 110-145 |
| Data sources/ measurement | 8* | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe | SIIS-8.1. Specify who collected/reported the data for the | Line 110 - 229 |

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| | | comparability of assessment methods if there is more than one group | study and their qualifications (e.g. qualified doctor, data analyst, etc.).<br><br>SIIS-8.2. Specify who coded the data for the study and their qualifications (e.g. qualified doctor, data analyst, etc.). In many instances, this will not be the same as SIIS-8.1.<br><br>SIIS-8.3. Specify the direct methods used to collect the data, and the use of physical documents or an electronic tools. If extracting information from existing sources, specify the data source.<br><br>SIIS-8.4. Specify the timing of and window for data collection (e.g. day health problem occurred or following day). Specify the frequency of data collection (e.g. daily, weekly, monthly).<br><br>SIIS-8.5. Report the duration of surveillance (e.g. tournament, season, whole year, playing career). | |
| Bias | 9 | Describe any efforts to address potential sources of bias | SIIS-9.1. Clearly report any validation or reliability assessment of the data collection of tools.<br><br>SIIS-9.2. Formally acknowledge any potential biases in associated with the data collection method (e.g. self- | Line 110-115<br>Line 224-229 |

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| | | | report, recall bias, reporting by non-medically trained staff, etc.) | |
| Study size | 10 | Explain how the study size was arrived at | | Sample size - not calculated |
| Quantitative variables | 11 | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why | SIIS-11.1 Explain in detail how multiple injuries/illness episodes are handled both in individual athletes and across athletes/surveillance periods.<br>SIIS-11.2. Specify how injury severity was calculated. | Line 171-173 |
| Statistical methods | 12 | (*a*) Describe all statistical methods, including those used to control for confounding | SIIS-12.1. Specify how exposure to risk has been adjusted for and specify the units (e.g. per participant, per athlete exposure, etc.).<br>SIIS-12.2 Specify how relevant risk measures (incidence, prevalence, etc.) were calculated.<br>SIIS-12.3. When relevant to the study aim, specify how injury burden was calculated and analysed. | Line 212-217 |
| | | (*b*) Describe any methods used to examine subgroups and interactions | | |
| | | (*c*) Explain how missing data were addressed | SIIS-12.4. For studies reporting multiple health problems, state clearly how these were handled (e.g. time to the first injury only, ignoring | Line 228-232 |

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| | | | subsequent return to play and re-injuries, or modelling of all injuries).<br><br>SIIS-12.5. Explain how/if athletes not included at outset (e.g. those already injured) were handled in the analyses. | |
| | | (*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed<br><br>*Case-control study*—If applicable, explain how matching of cases and controls was addressed<br><br>*Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy | SIIS-12.6. In longitudinal studies, it is particularly important to explain how athlete follow-up has been managed. For example, what happened if a player was transferred to another team or has been censored (for those no longer part of the study due to removal during the observation period). Censoring can occur when athletes are removed due to transfer out of the team/study, injury/illness or due to study design. | Line 180-196 |
| | | (*e*) Describe any sensitivity analyses | | |
| **Results** | | | | |
| Participants | 13* | (a) Report numbers of individuals at each stage of study—e.g. numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed | SIIS-13.1. Clearly state the number of athletes followed-up, the number (and %) of those with the health problem and the number of problems reported among them (a median number of problems per affected athlete could be useful).<br><br>SIIS-13.2. For studies over multiple seasons/years, report the total | NA -Protocol paper |

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| | | | numbers of health problems for each year and numbers common to each period. | |
| | | (b) Give reasons for non-participation at each stage | SIIS-13.3. Report how athletes removed (e.g. due to transfer of teams or time-out due to injury or illness) impact upon data at key data collection/reporting points, ideally with a flow diagram | |
| Descriptive data | 14* | (a) Give characteristics of study participants (e.g. demographic, clinical, social) and information on exposures and potential confounders | SIIS-14.1. Include detail on the level of competition being observed (e.g. by age levels, skill level, sex, etc.). | NA -Protocol paper |
| | | (b) Indicate number of participants with missing data for each variable of interest | | |
| | | (c) *Cohort study*—Summarise follow-up time (e.g. average and total amount) | | |
| Outcome data | 15* | *Cohort study*—Report numbers of outcome events or summary measures over time | SIIS-15.1. In many observational studies, individuals will sustain more than one health problem over the surveillance period. Take care to ensure descriptive data representing both the number of health problems and the number of athletes affected. It is important to represent effectively both the analysis and reporting of correct units for frequency data, i.e. the % of affected | NA -Protocol paper |

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| | | | athletes or the % of injuries, body regions, etc. | |
| | | *Case-control study*—Report numbers in each exposure category, or summary measures of exposure | | |
| | | *Cross-sectional study*—Report numbers of outcome events or summary measures | | |
| Main results | 16 | (*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g. 95% confidence interval). Make clear which confounders were adjusted for and why they were included | SIIS-16.1. Report exposure-adjusted incidence or prevalence measures with appropriate confidence intervals when presenting risk measures.<br>SIIS-16.2. Report details of interest, such as mode of onset | NA -Protocol paper |
| | | (*b*) Report category boundaries when continuous variables were categorized | | |
| | | (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | | |
| Other analyses | 17 | Report other analyses done—e.g. analyses of subgroups and interactions, and sensitivity analyses | SIIS-17.1 Report injury diagnosis information, including region and tissue type in tabular form. | NA -Protocol paper |
| **Discussion** | | | | |
| Key results | 18 | Summarise key results with reference to study objectives | | NA -protocol paper |
| Limitations | 19 | Discuss limitations of the study, taking into account sources of potential bias or | SIIS-19.1. Discuss limitations in the data collection and coding procedures adopted, including in | Line 240-249 |

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| | | imprecision. Discuss both direction and magnitude of any potential bias | relation to any risk measures calculated. | |
| Interpretation | 20 | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence | | NA - protocol paper |
| Generalisability | 21 | Discuss the generalisability (external validity) of the study results | SIIS-21.1. Discuss the generalizability of the athlete study population, and health problem sub-groups of interest, to broader athlete groups. | Line 278-280 |
| **Other information** | | | | |
| Funding | 22 | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based | | Line 301-303 |
| Ethics | 23 | | SIIS-23.1. Outline how individual athlete data privacy and confidentiality considerations were addressed, in line with the Declaration of Helsinki. | Line 251-274 |

**Note:** The STROBE-SIIS checklist with additional sports epidemiology annotations should be used in conjunction with the original STROBE guideline (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

[+]For brevity, the phrase health problem is used here to encompass both injury and illness.

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

^^ Where there is a blank cell in this column, there are no specific additional reporting requirements for sports injury and illness surveillance over what is already covered in the original STROBE checklist.

## Reference

1. Orchard O, Meeuwisse W, Derman W, et al. Refinement and presentation of the Calgary Sport Medicine Diagnostic Coding System (SMDSC) and the Orchard Sport Injury & Illness Classification System (OSIICS). *Br J Sports Med* In preparation