

# Using R to protect athletes' health

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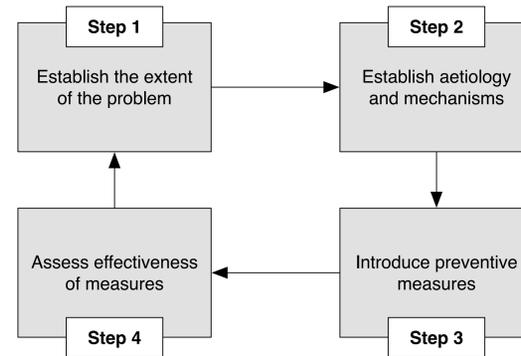
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## Background

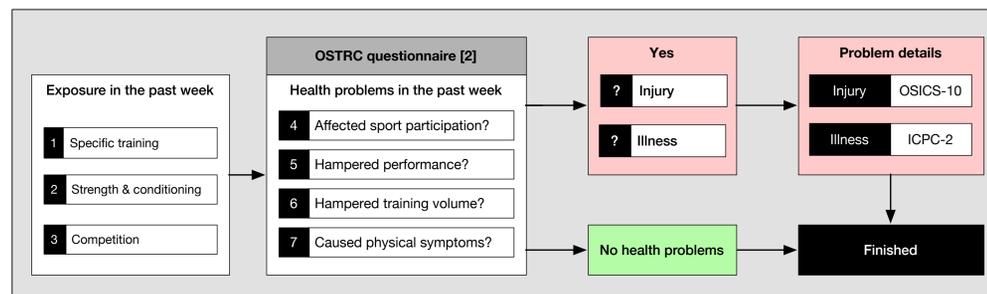
- Participation in sports at all levels exposes participants to an increased risk of injury and illness.
- At the recreational level, sports related injury and illness result in societal costs, posing a burden for contemporary society.
- At the elite level, sub-optimal health and injury are detrimental for performance.
- Consequently, prevention is of great importance, and monitoring athletes' health is considered the first step towards effective prevention [1].



The sequence of prevention of sports injuries. Adapted from van Mechelen et al. [1]

## Current strategy towards solution

- Facilitate sports-health surveillance (step 1 of the sequence of prevention).
- Early detect athletes' symptoms of injury and illness to facilitate early intervention.
- Our sports-health surveillance workflow is managed and documented in R.



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**Team Weekly Report Example**  
Summary of the week 53-2015

Participants	Answers	Health complaints*	Substantial complaints**	Injury	Illness
12	8	2	2	1	1

\*Health complaints: all health symptoms/complaints reported  
\*\*Substantial complaints: health symptoms/complaints that hampered training and/or performance

**Non-respondents**  
Athlete 1  
Athlete 2  
Athlete 3  
Athlete 4

Athlete	Specific training	Strength & conditioning	Competition	Total exposure
Athlete 1	10	2	5	17
Athlete 2	12	3	0	15
Athlete 3	12	3	0	15

**Symptoms of injury**

Athlete	Body location	Severity*	Type	First report	Substantial
Athlete 1	Knee	92	Sprain	Yes	Yes

\*Maximum severity = 100; minimum severity = 0

**Symptoms of illness**

Athlete	Symptoms	Severity*	First report	Substantial
Athlete 5	Sore throat, fever	92	Yes	Yes

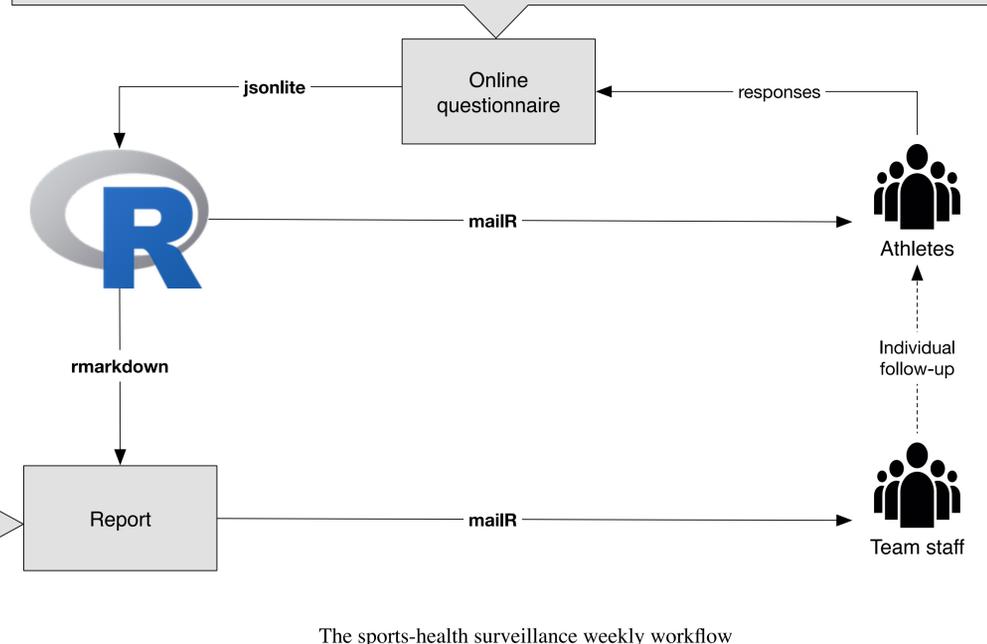
\*Maximum severity = 100; minimum severity = 0

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**Team status over time**  
Response rate

**Prevalence of injury**  
Injuries are disorders of the musculoskeletal system or concussions. Substantial injuries are those hampering sport participation and/or performance.

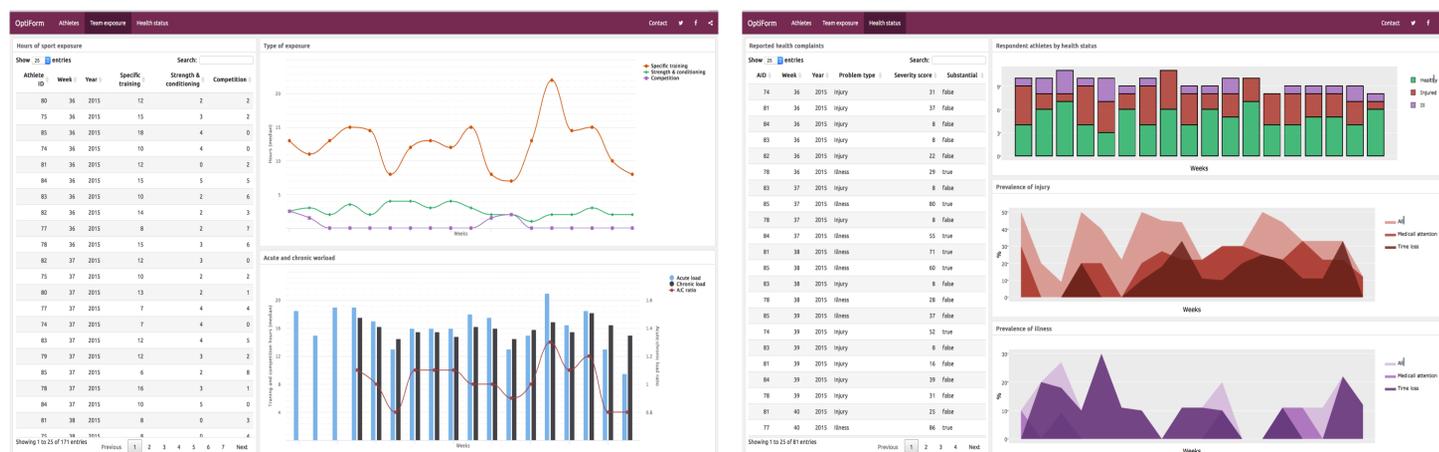
**Prevalence of illness**  
Illnesses are symptoms involving other body systems than the musculoskeletal. Substantial illnesses are symptoms hampering sport participation and/or performance.



The sports-health surveillance weekly workflow

## Work in progress

- Flexdashboards for sporting teams.
  - Personalised dashboards for athletes.
- This can be useful to provide tailored (evidence-based) feedback on health and safety behaviours. Although the possibility in theory exists, we are still investigating how to implement this in a feasible way.



## Acknowledgements

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## References

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