

# The Challenge

The Canadian National Women's Rugby Team seeks your advice on the role of workload and fatigue in Rugby 7s. Rugby 7s is a fast-paced, physically demanding sport that pushes the limits of athlete speed, endurance and toughness. Rugby 7s players may play in up to three games in a day, resulting in a tremendous amount of athletic exertion. Substantial exertion results in fatigue, which may lead to physiological deficits (e.g., dehydration), reduced athletic performance, and greater risk of injury.

Despite the importance of managing player fatigue in professional athletics, very little is known about its effects, and many training decisions are based on “gut feel.” Currently, training load is measured through a combination of subjective measurements (asking players how hard they worked) and objective measurements from wearable technology. Fatigue is typically estimated by asking players how they feel in wellness surveys. However, there is no agreed-upon standard of defining fatigue so the relationship between workload and fatigue is unclear. In this challenge, we encourage you to explore new ways of measuring fatigue and examine its effects on players’ performance and physical wellness. The datasets provide a number of observations that we believe will be useful to measure fatigue in players of the Canadian National Women's Rugby Team in the 2017-2018 season. Remember that training load is not the same as fatigue, and one question to explore is whether you can find evidence that some measures of training load are better than others.

## Some issues to consider:

1. How reliable are subjective wellness data? Can you quantify the individual variation in self-reported data and use this to adjust measures of wellness?
2. Should the quality of the opponent or the outcome of the game be considered when examining fatigue during a game?
3. Some accepted (and even widely used) measurements of training load or fatigue are naive. For example, you'll find in these data a "Monitoring Score" which simply sums the values of other subjective scores in an attempt to create a single overall measure of fatigue. Is a simple sum useful? Or can it be improved? For example, are all components of this Monitoring Score needed? Are some more important than others, and why?
4. Be wary of missing variables. Most often they indicate that a player simply did not provide information or that sensors were not functioning. But in some situations values are missing because they are not meaningful in a certain context. You'll find that a one-size-fits-all approach is not useful.
5. You will find it tempting to use the location data to help inform on-field strategy. We advise against this because it is unlikely to help you understand fatigue. The location data are provided in order to help you study fatigue. For example, it could be used to, verify hypotheses, or evaluate player fatigue in different positions (e.g., how does a player's position contribute to their fatigue?).

## General Advice

The challenge is deliberately large and vague. You should feel welcomed to identify a small problem within this much larger problem and even to examine only a subset of the data (e.g., a single game or a single tournament).

## Where to Begin

First, read the Data Overview.

Read the data codebook.

Consider learning about Rugby 7s: <https://youtu.be/dhmi72KBRTY>

## Questions about the data?

We have created a google doc for you! Please ask one of the DataFest assistants to post your question or to check to see if the question has already been answered. Our "data experts" will check frequently. <http://bit.ly/df19-qa>