# Optimizing Rugby Training Under Fatigue

Data Me Down

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Data Me Down

# Properly defining and measuring fatigue will lead to significant increase in player performance and well-being

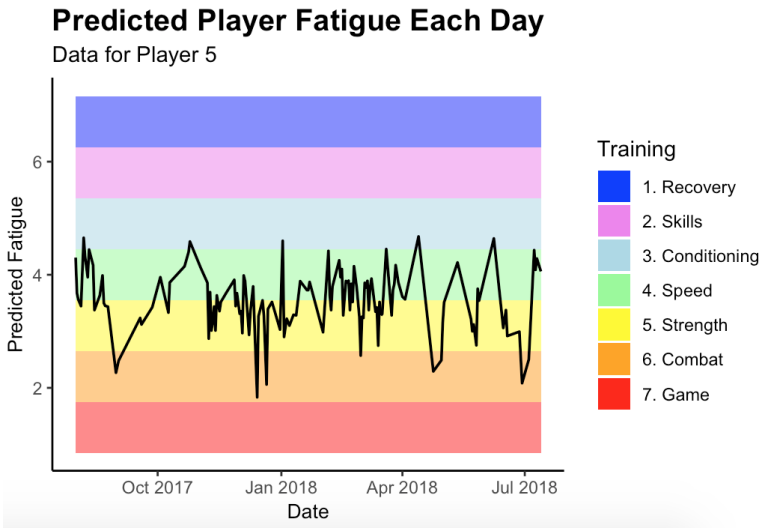
## Problem Statement

In our analysis, the Data Me Down team attempts to identify, using regression techniques:
(1) the factors that allow us to **define** and **measure fatigue**, and
(2) how we can **optimize** our **program** around **predicted fatigue** throughout the season to **maximize game performance**.

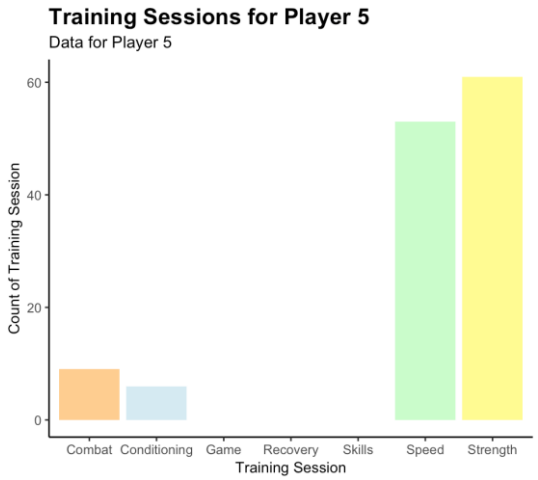
## Solution

Our solution consists of a two-prong **load management approach**.
(1) We have created an interactive line chart that shows the predicted fatigue of all players on each given day. This is used to **assign a training regime** that will allow a player to perform training that will push them **optimally.**
(2) Graphic that shows **how many times** each training regime was prescribed for a **given player**. Based on this figure, we can identify ways to **improve certain types of training** or **identify players** that spend **greater than average time with high fatigue** and address their lifestyle habits to reduce time spent in fatigue.

### Fatigue Over Time




### Training Regime Quantity/Player



# Optimization of training regime will produce significant economic impact

| Regression Predicting Fatigue | | | | | |
|---|---|---|---|---|---|
| **Predicted Fatigue** | **Coef.** | **P-value** | **Model Characteristics** | | **Comments** |
| Soreness | 0.2601 | 0.000 | R-square | 0.961 | *We ran a number of models to accurately predict and define "Fatigue"; this model was the most accurate for our purposes. All predictors are significant and 96.1% of the variation in y-hat is explained by our predictors. This model also fulfills all 4 key assumptions to validate our model.* |
| Desire | 0.3215 | 0.000 | F-sig | 0.000 | |
| Irritability | 0.1616 | 0.000 | | | |
| Illness | -0.1065 | 0.000 | | | |
| SleepIndex | 0.0233 | 0.000 | | | |

## Economic Impact

| Cost Savings | |
|---|---|
| Injuries per Season | 22 |
| Expected Value of Cost per Injur | $159,000 |
| **Total Cost Savings on Injury** | **$3,498,000** |

| Revenue Generation | |
|---|---|
| Sponsorships | $539,000 |
| Sale of Merchandise | $286,000 |
| **Total Increase in Revenues** | **$825,000** |

| | |
|---|---|
| **Total Financial Benefit** | **$4,323,000** |