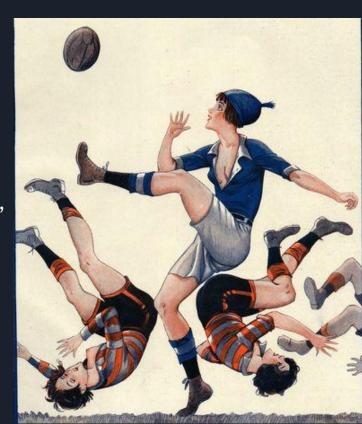
# Wellness and Performance in Rugby

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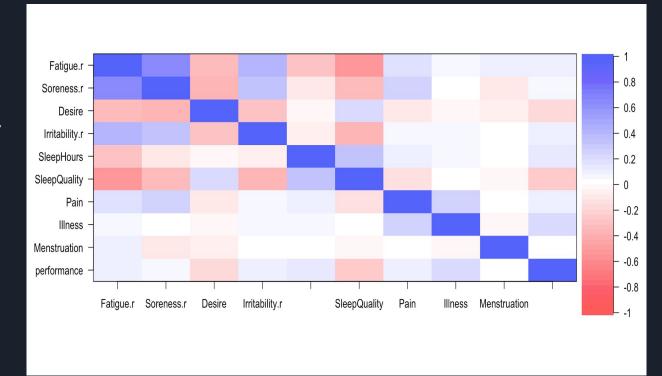
# Understanding of the DATA

- Performance: Weighted average of four variables in GPS dataset: Mean(speed), Max(speed), Mean(accell), Max(accell)
- Factors considered: Fatigue, Soreness, Desire, Irritability, Sleep Hours, Sleep Quality, Pain, Illness, Menstruation, Performance.
- Special Note: Reverse coded fatigue, soreness and irritability.

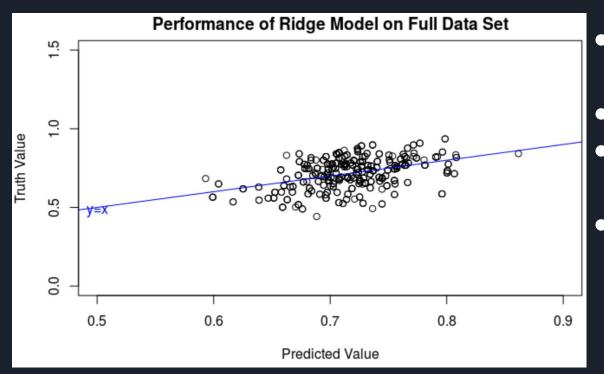


### What are the correlations?

- Fatigue is positively strongly correlated with soreness (r = 0.64) and negatively strongly correlated sleep quality (r = -0.54).
- Both fatigue and soreness are weakly correlated with pain, illness, and menstruation.



# Machine Learning Model: Use Ridge Regression to Predict Performance



- Use Wellness data to predict performance
- Training set & Test set
- Test Mean Square Error:0.0085
- Best result comparing to Lasso and Principal Component Regression

## Results, Interpretations & Suggestions

```
(Intercept) Fatigue Soreness * Desire Irritability * SleepHours * SleepQuality 0.728373482 -0.008867016 -0.046153185 -0.074925384 -0.058935602 0.019916013 -0.176153082 Pain *Illness Menstruation -0.004157314 0.130421044 -0.003436111
```

#### Future Research:

- Include number of assists, tackle number in Performance
- Response Bias

### Suggestions:

- Sleep!
- Modify questionnaire
- Further Investigation on unexpected relationships