
# THE EFFECTS OF HEAVY-SLED SPRINT TRAINING ON ACCELERATION CAPABILITIES IN FEMALE RUGBY SEVENS ATHLETES: A PILOT STUDY

**Francesco S. Sella[1], D. Travis McMaster[1], Brad Mayo[1,2], Kim Hébert-Losier[1], Nicholas D. Gill[1], and C. Martyn Beaven[1]**

1. Faculty of Health, Sport, and Human Performance, University of Waikato
2. Bay of Plenty Rugby Union

**Contacts:**
**fss4@students.waikato.ac.nz**
**martyn.beaven@waikato.ac.nz**

## INTRODUCTION

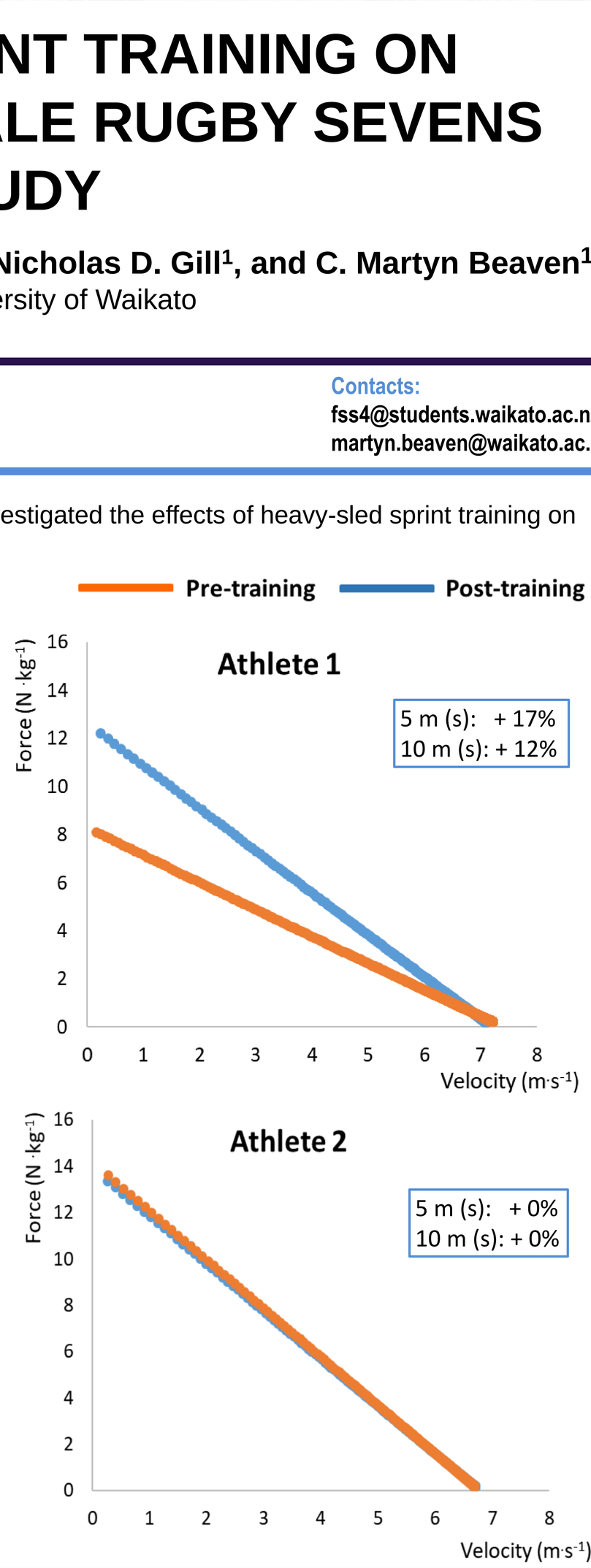
Well-developed acceleration abilities are critical for performance in rugby sevens. In this pilot study, we investigated the effects of heavy-sled sprint training on acceleration in female rugby sevens athletes.

## METHODS

Eleven junior female rugby sevens athletes completed 3-weeks of resisted sprint training (5-30 m) with heavy sleds (30 to 85% of body mass). Acceleration performance and horizontal force-velocity (F/V) profile were computed pre- and post-intervention using the methods described by Samozino *et al*. (2016). Training-induced changes were calculated using effect size (ES) and magnitude-based inferences. Correlations (r) between changes in sprint performance and biomechanical outputs (pre-post changes, and at baseline) were calculated.

## RESULTS

Likely small improvements in 5 m and 10 m times, and changes in mechanical effectiveness of force application (RF max), maximum power output (Pmax), and force-velocity slope ($S_{FV}$) were observed (ES = 0.36 to 0.40). Very large to almost perfect correlations were found between changes in 5 m and 10 m times with changes in Pmax, theoretical maximal horizontal force (F0), RF max, rate of decrease in mechanical effectiveness ($D_{RF}$), and $S_{FV}$ (r = 0.85 to 0.96). Changes in 5 m and 10 m times were also very largely to almost perfectly correlated with initial individual F/V profiles ($S_{FV}$, $D_{RF}$, F0, and Pmax) (r = 0.73 to 0.91).




## CONCLUSIONS

Heavy-sled sprint training is likely to increase acceleration capabilities over short distances in female rugby sevens athletes. Changes in defined biomechanical outputs, and individual force-velocity profiles appear to be associated with these improvements.

Hopkins (2006). Spreadsheets for analysis of controlled trials with adjustment for a predictor. Sportscience 10 (sportsci.org/2006/wghcontrial.htm).
Samozino et al., (2016). A simple method for measuring power, force, velocity properties, and mechanical effectiveness in sprint running. *Scandinavian J Med Sci Sports, 26*(6), 648-658.