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Citation:

Burgin, A and Blannin, AK and Peters, DM and Holliday, A (2017) Acute physiological, affective and enjoyment responses to apparatus-free protocols of high-intensity intermittent exercise in inactive females. In: 13 Annual Meeting and 8th Conference of HEPA Europe, 2017, 15 November 2017 - 17 November 2017, Zagreb, Croatia.

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# Acute physiological, affective and enjoyment responses to apparatus-free protocols of high-intensity intermittent exercise in inactive females

*Alice Burgin, Dr Andrew Blannin, Prof Derek Peters, Dr Adrian Holliday*

ALICE BURGIN

PhD STUDENT

UNIVERSITY OF WORCESTER, UK

13<sup>th</sup> Annual Meeting  
and  
8<sup>th</sup> Conference  
of HEPA Europe



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# INTRODUCTION

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- Perceived lack of time most commonly reported barrier to regular physical activity (Salmon et al., 2003; Cerin et al., 2010)
- High-intensity intermittent exercise (HIIE) is posed as a time-efficient physical activity strategy (Gillen & Gibala, 2014)
- Many HIIE protocols are high-intensity intermittent cycling-based and so require specialised apparatus (braked cycle ergometer)
- Access to facilities and enjoyment are positive correlates whilst perceived effort is a barrier to regular physical activity (Troost et al., 2002)
- Biddle & Batterham (2015) propose likely aversive psychological responses which may limit sustainable adoption of HIIE

# AIM



To determine if apparatus-free HIIE elicits similar acute physiological responses and more positive affective and enjoyment responses compared with traditional, apparatus-based HIIE in inactive females.

# METHODS



- 18 inactive females ( $35 \pm 11$  years,  $25.5 \pm 4.1 \text{ kg} \cdot \text{m}^2$ ,  $1244 \pm 694 \text{ MET minutes} \cdot \text{week}^{-1}$ )
- Within-subject, counterbalanced, crossover design of 4x30 seconds high-intensity intermittent cycling/squats/star jumps



Standardised breakfast

2 hour rest period

Exercise condition

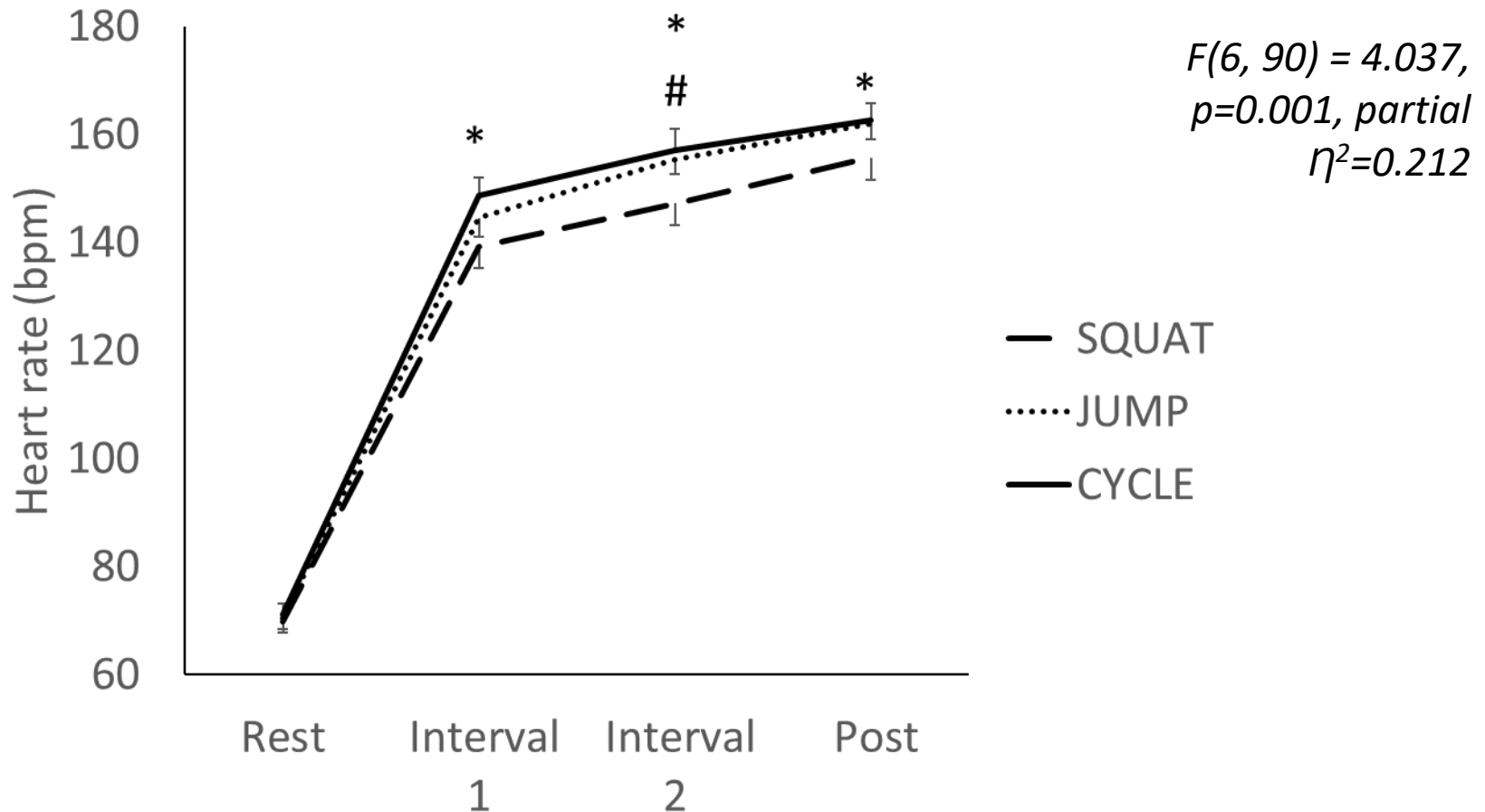
30 minutes rest period



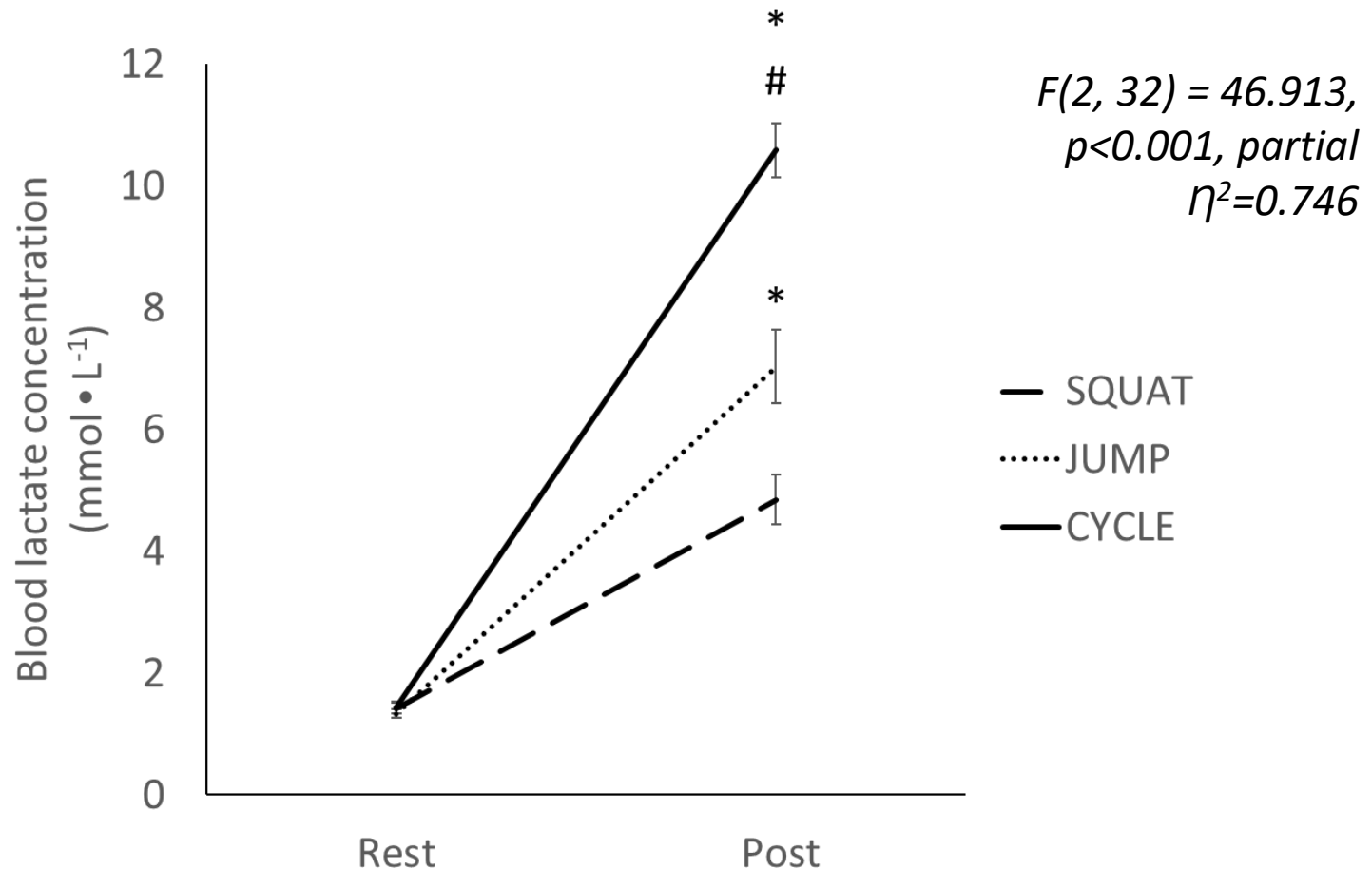
Heart rate (HR)  
Blood lactate concentration  
Rate of perceived exertion (Borg, 1982)  
Feeling Scale (Hardy & Rejeski, 1989)

Physical Activity Enjoyment Scale (Kendzierski & DeCarlo, 1991)

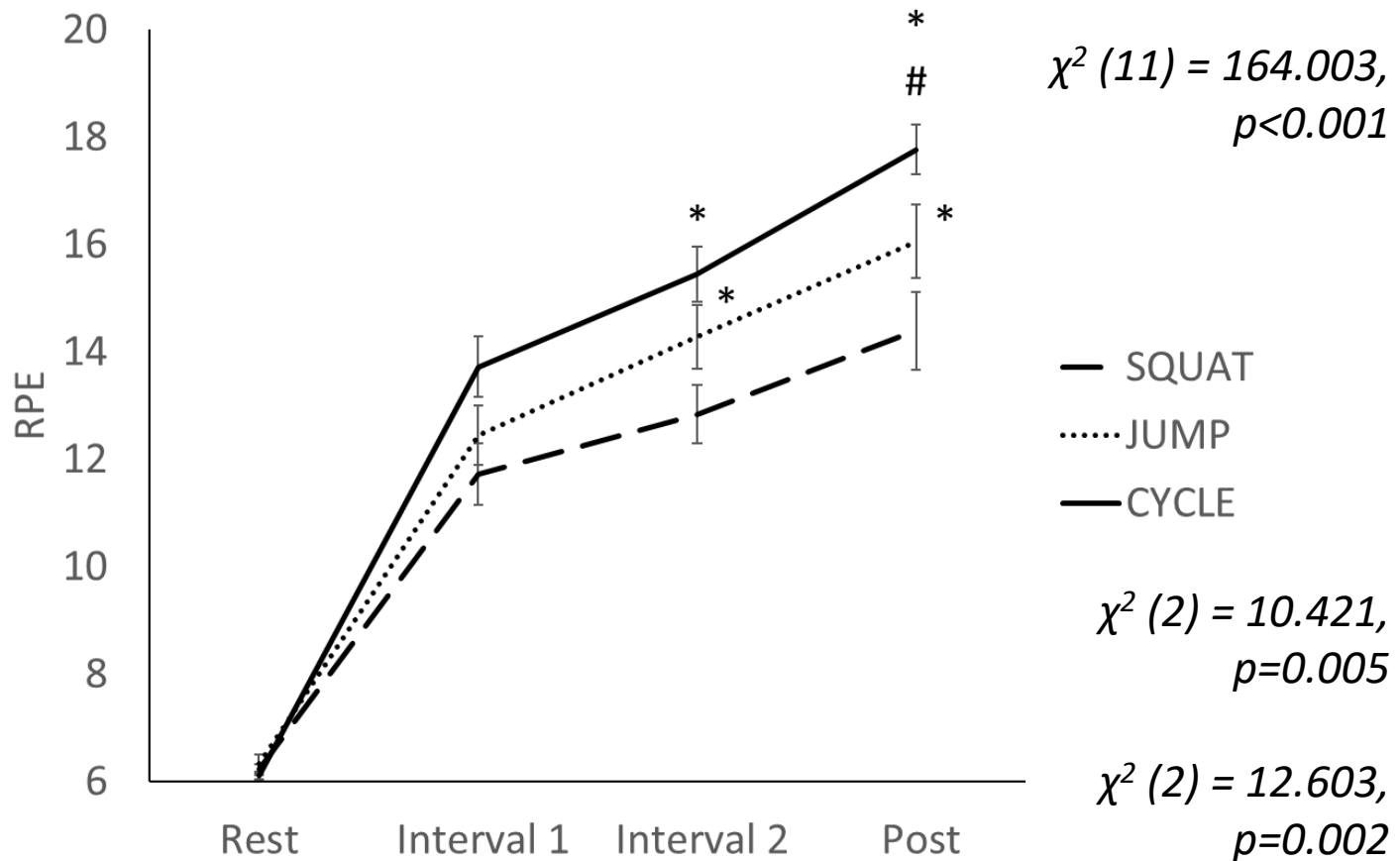
# RESULTS: HEART RATE



# RESULTS: BLOOD LACTATE

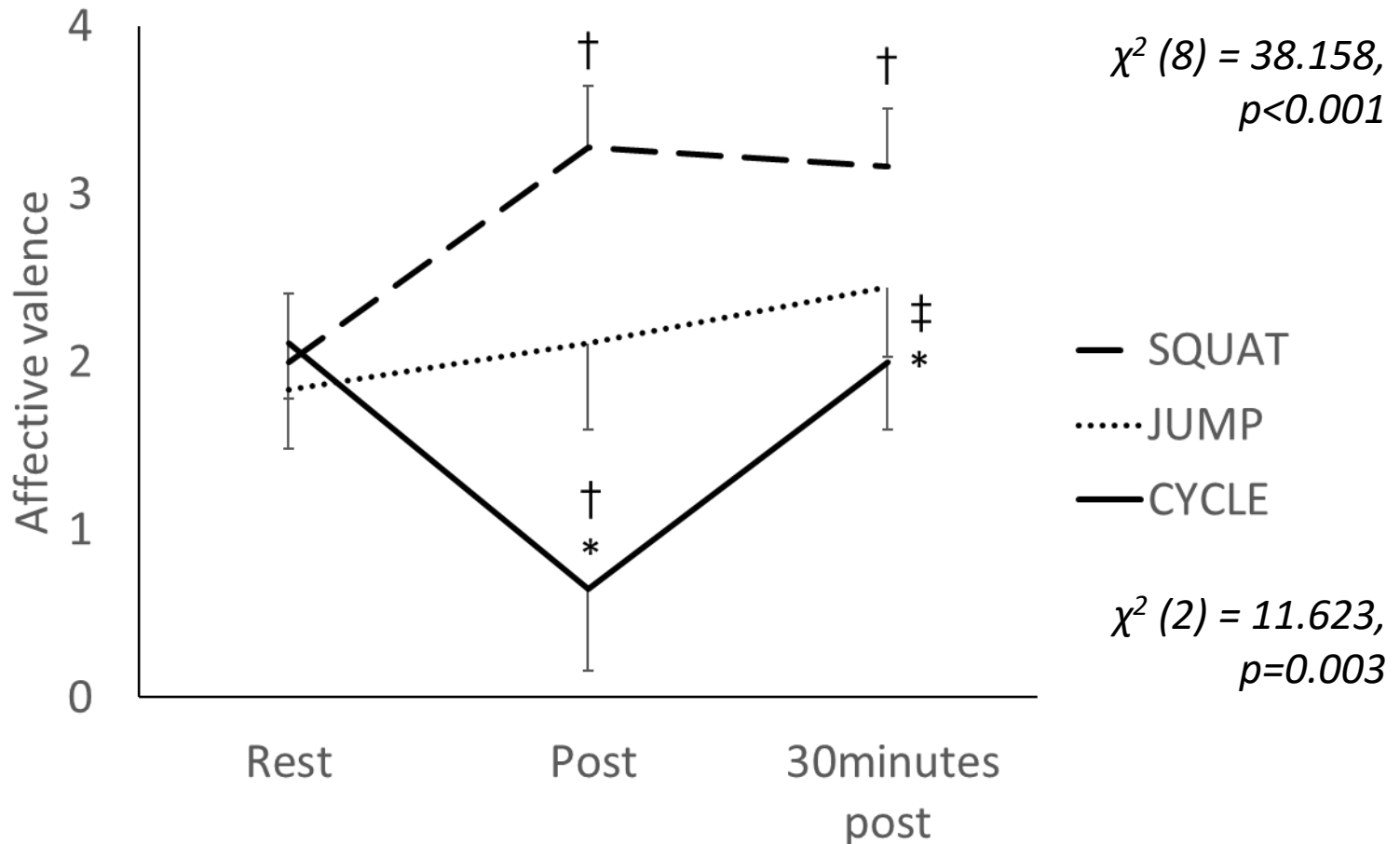


# RESULTS: RATE OF PERCEIVED EXERTION

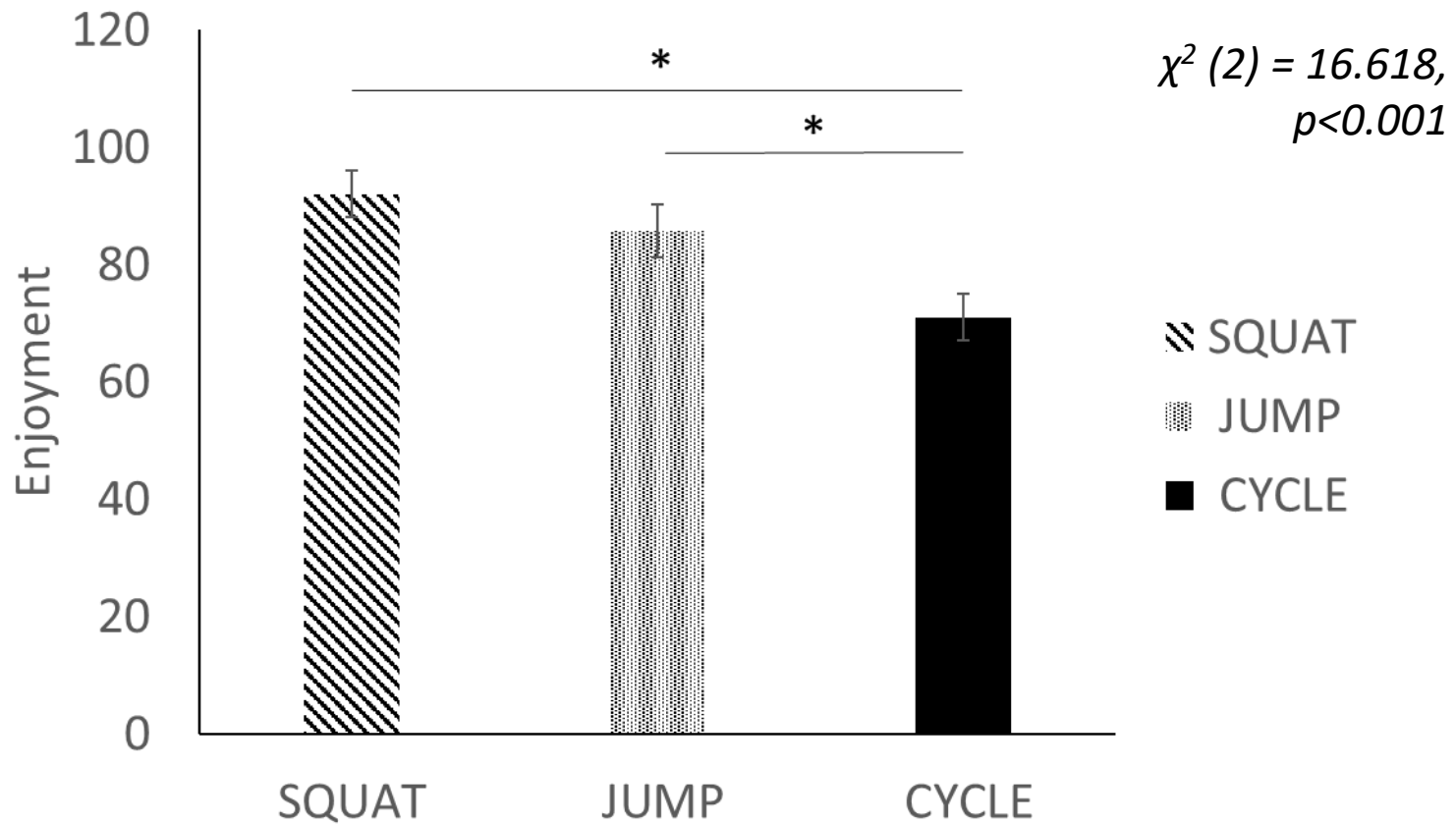




# RESULTS: AFFECTIVE VALENCE



# RESULTS: ENJOYMENT



# CONCLUSIONS

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- High-intensity intermittent star jumping saw no differences in heart rate compared with 4x30 seconds of high-intensity intermittent cycling at any time point
- High-intensity intermittent star jumping reached blood lactate concentrations similar to previous literature for typical HIIE protocols
- Immediately post-exercise, affect was lower in high-intensity intermittent cycling compared with the high-intensity intermittent squat protocol as well as a trend for being lower than the star jump protocol
- High-intensity intermittent cycling perceived to be less enjoyable than both the star jumps and squat protocols

# IMPLICATIONS

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- High-intensity intermittent star jumping can achieve a high-intensity physiological stimulus
- No requirement of particular physical activity apparatus or facilities
- Preferable levels of enjoyment and significantly lower perceived difficulty compared with traditional cycling-based HIIE, despite similar heart rate reached
- Future work to explore effects on long-term health adaptations and markers, including peak oxygen uptake, insulin sensitivity and body composition



# THANK YOU FOR LISTENING!

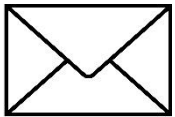
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@\_aliceburgin



University  
of Worcester



a.burgin@worc.ac.uk

## Questions?



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