



Difference in Rate of Perceived Exertion Among Males and Females During Fatiguing Exercise Protocol

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Abstract

While previously literature clearly articulates the OMNI Scale of Perceived Exertion (RPE) as a quality tool for identifying resistance training perceived difficulty, sex-specific RPE differences during fatigue induced resistance training still remain unclear. **PURPOSE:** The aim of the current investigation was to examine the difference in male and female intrasession and session RPE (sRPE) during fatiguing upper and lower body resistance exercise. **METHODS:** Fourteen resistance trained individuals (7 males, 7 females, age = 20.93 ± 1.54 , height = 68.07 ± 4.16 cm, weight = 78.33 ± 12.86 kg) performed 5 sessions of resistance training. Session 1 involved familiarization of the RPE scales, anthropometric and skinfold measurements, and 1-repetition maximum (1RM) testing of barbell back squat (SQ) and barbell bench press (BP). Sessions 2-5 participants completed a dynamic warm up followed by 1 set of as many repetitions as possible (AMRAP) at 85% 1RM on SQ and BP, with 10 min rest between exercises. Intrasession RPE was recorded immediately after AMRAP set completion for SQ and BP. To simulate a typical resistance training routine, 4 sets of accessory lifts were performed following BP AMRAP sets. Session RPE was recorded 30 min after completion of each session. Between sessions rest incrementally declined (72, 48, 24, and 6 h) to elicit fatigue. A 2 (sex) x 2 (exercise) x 4 (session) mixed factorial ANOVA was employed to examine sex-specific responses to upper and lower body fatigue induced resistance training. A 2 (sex) x 4 (session) factorial ANOVA was used to assess sRPE sex differences. Alpha level set at $p < .05$. **RESULTS:** There was no significant main effect or interaction revealed ($F(2,27) = 4.467, p = .021$). However, a medium effect size was established between sexes during session 1 squat average intrasession RPE ($d = -0.33$) and session 4 sRPE ($d = -0.32$). A large effect size was found between males and females in session 3 sRPE ($d = -3.31$). Intrasession RPE and sRPE were collapsed and female reported substantially lower sRPE than males ($d = .49$); however, a small magnitude ($d = -.18$) of difference or no difference was identified between sexes for intrasession RPE. **CONCLUSION:** In conclusion, these findings suggest that female possess greater fatigue resistance during lower body exercises when assessed utilizing intrasession RPE. Moreover, males and females differ in their perception of exertion as intersession recovery periods decline, illustrated by decreased sRPE reported by females upon completion of sessions 3 and 4 compared to men. This data also indicated intrasession RPE does not markedly vary between sexes; however, retrospectively (sRPE), females appear to be less effected by fatigue induced exercise or females' recollection of difficulty diminished post exercise. In conclusion, RPE should be interpreted and utilized differently for males and females.

Introduction

While previously literature clearly articulates the OMNI Scale of Perceived Exertion (RPE) as a quality tool for identifying resistance training perceived difficulty

Sex-specific RPE differences during fatigue induced resistance training still remain unclear.

Purpose Statement

The aim of the current investigation was to examine the difference in male and female intrasession and session RPE (sRPE) during fatiguing upper and lower body resistance exercise.

Method

Participants: Fourteen resistance trained individuals (7 males, 7 females, age = 20.93 ± 1.54 , height = 68.07 ± 4.16 cm, weight = 78.33 ± 12.86 kg).

Descriptive Characteristics

Variables	M \pm SD
Height	68.07 ± 4.16 cm
Weight	78.33 ± 12.86 kg
Age	20.93 ± 1.54

Experimental Approach:

Session 1:

- familiarization of the RPE scales,
- anthropometric and skinfold measurements,
- and 1-repetition maximum (1RM) testing of barbell back squat (SQ) and barbell bench press (BP)

Sessions 2-5:

- dynamic warm up followed by 1 set of as many repetitions as possible (AMRAP) at 85% 1RM on SQ and BP, with 10 min rest between exercises.
- Intrasession RPE was recorded immediately after AMRAP set completion for SQ and BP.
- To simulate a typical resistance training routine, 4 sets of accessory lifts were performed following BP AMRAP sets.
- Session RPE was recorded 30 min after completion of each session. Between sessions rest incrementally declined (72, 48, 24, and 6 h) to elicit fatigue

A 2 (sex) x 2 (exercise) x 4 (session) Mixed Factorial ANOVA was employed to examine sex-specific responses to upper and lower body fatigue induced resistance training. A 2 (sex) x 4 (session) factorial ANOVA was used to assess sRPE sex differences. Alpha level set at $p < .05$.

Results

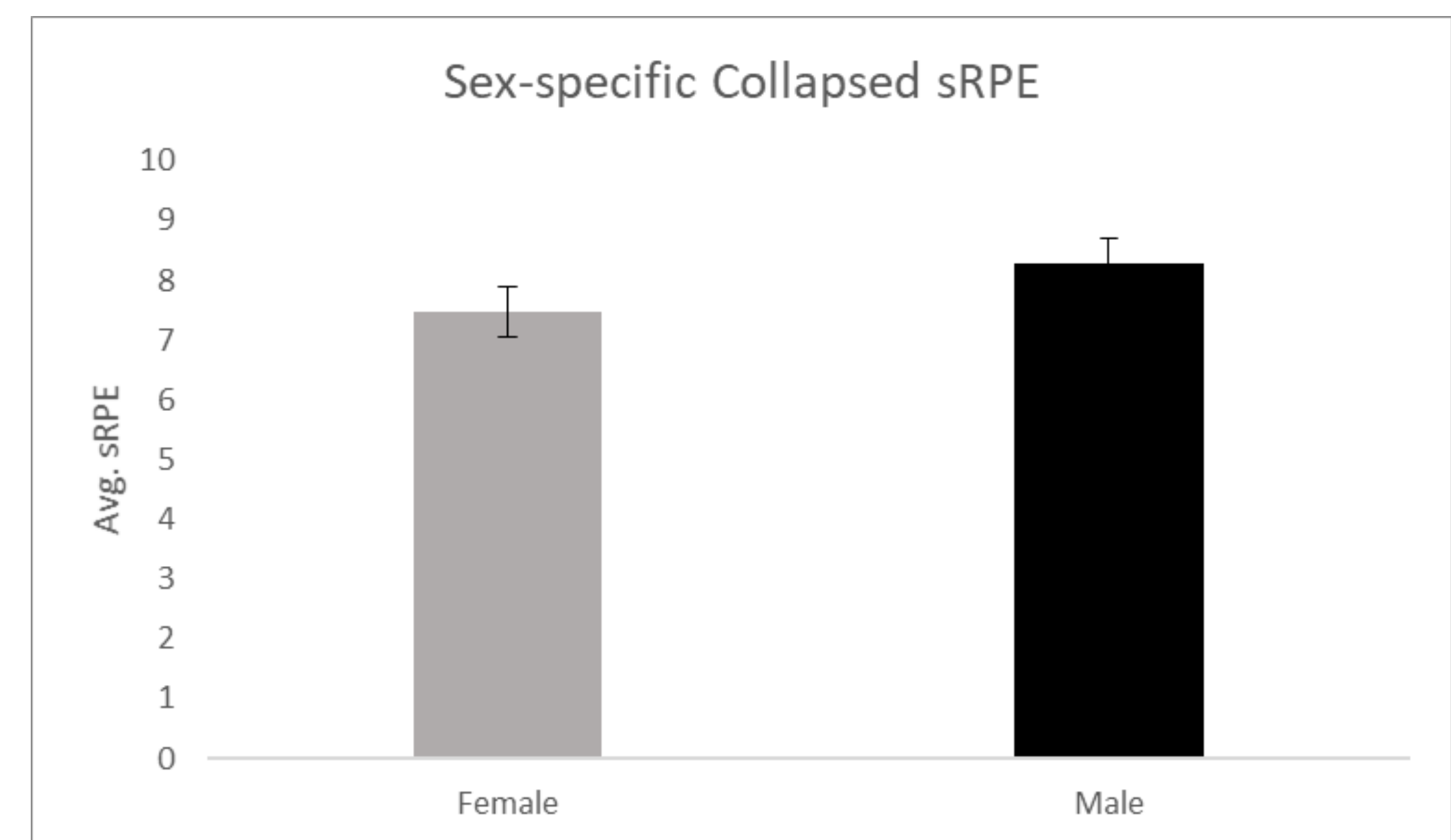
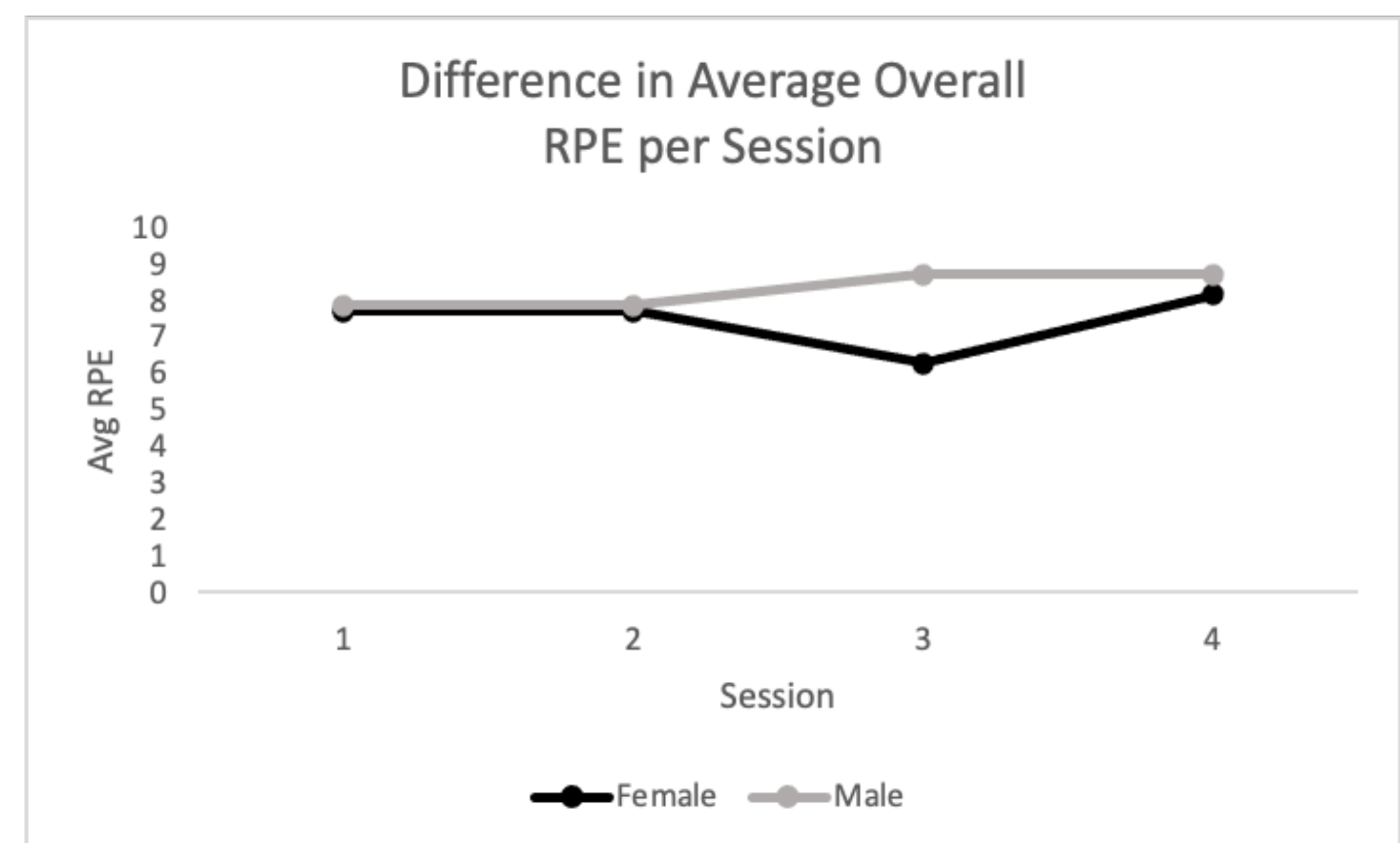
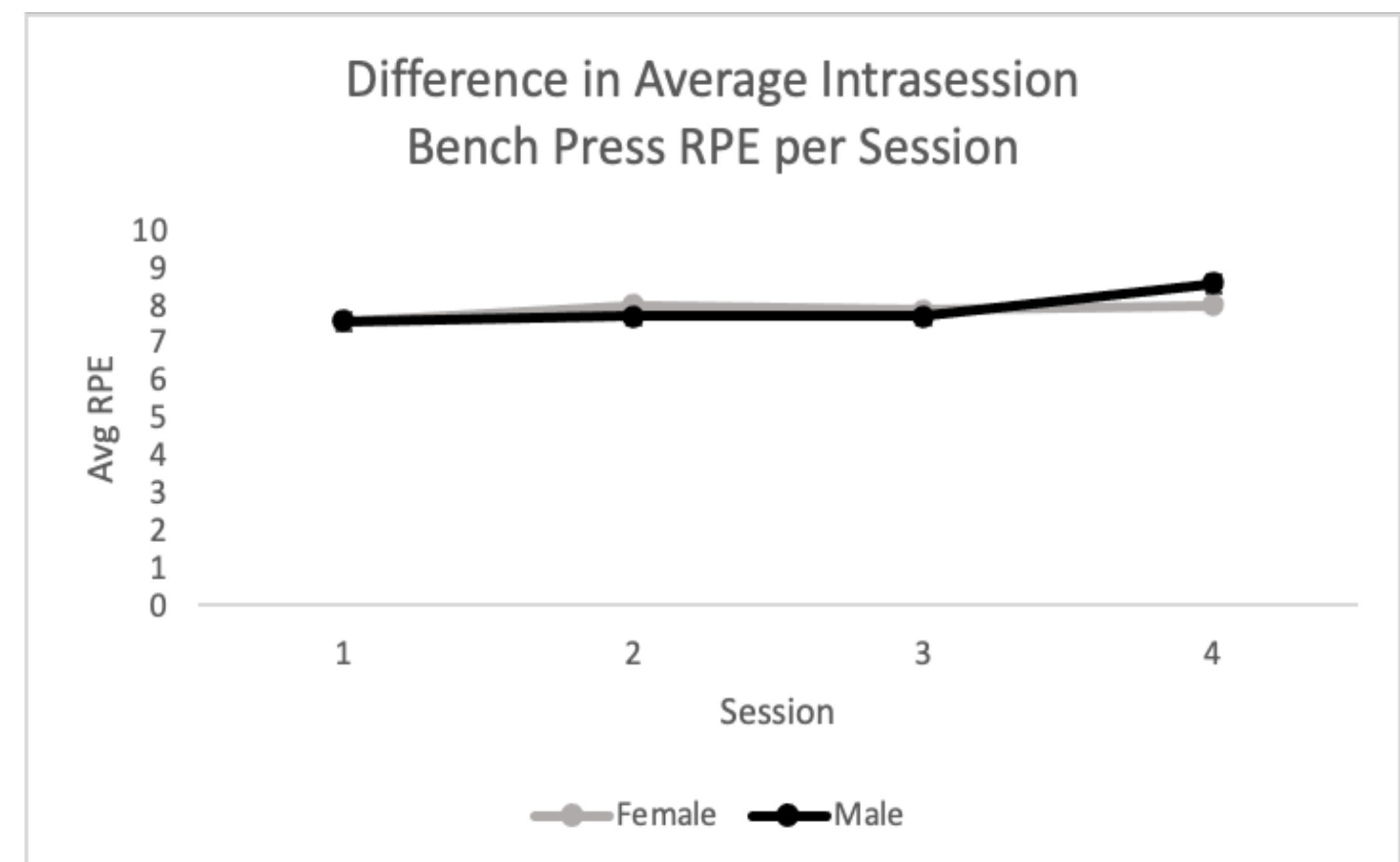
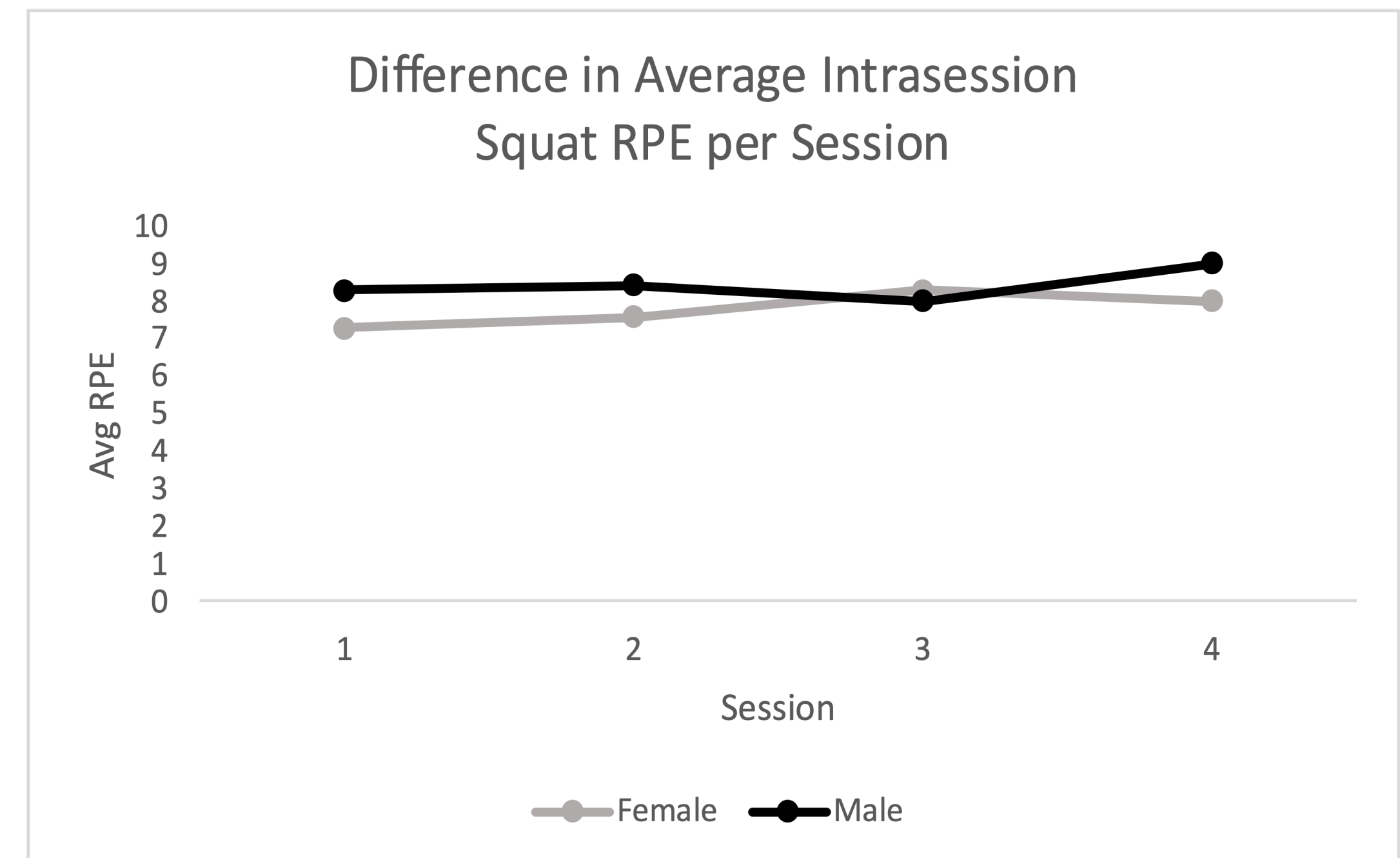
There was no significant main effect or interaction revealed ($F(2,27) = 4.467, p = .021$). However, a medium effect size was established between sexes during session 1 squat average intrasession RPE ($d = -0.33$) and session 4 sRPE ($d = -0.32$).

A large effect size was found between males and females in session 3 sRPE ($d = -3.31$). Intrasession RPE and sRPE were collapsed and female reported substantially lower sRPE than males ($d = .49$); however, a small magnitude ($d = -.18$) of difference or no difference was identified between sexes for intrasession RPE



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Discussion

Males and females differ in their perception of exertion as intersession recovery periods decline, illustrated by decreased sRPE reported by females upon completion of sessions 3 and 4 compared to men.

This data also indicated intrasession RPE does not markedly vary between sexes; however, retrospectively (sRPE), females appear to be less effected by fatigue induced exercise or females' recollection of difficulty diminished post exercise.

In conclusion, RPE should be interpreted and utilized differently for males and females.

References

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