

Muscular Fatigue Following Resistance Exercise to Failure at High Loads in Oral Contraceptive Pill Users

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INTRODUCTION

- Neuromuscular fatigue is characterized by reduced force production, increased effort, and heightened muscle excitation during exercise (1).
- Most fatigue studies focus on male participants, limiting their applicability to female populations.
- Research on the effects of OCP use in exercise performance in females is limited

PURPOSE

To examine changes in performance fatigability and neuromuscular responses across three weeks of a 28-day OCP cycle during fatiguing resistance exercise

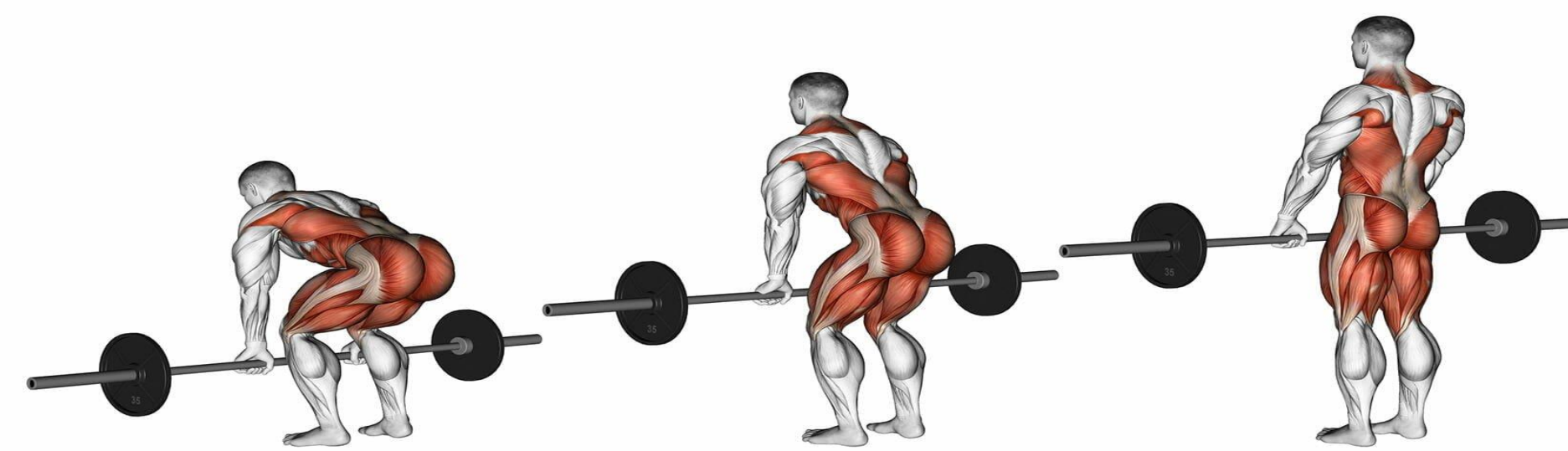
METHODS

Participants

- Eight college-aged females using OCPs
- Age = 23 ± 5 years
 - Body mass = 68.0 ± 17.2 kg
 - Height = 163.7 ± 8.4 cm

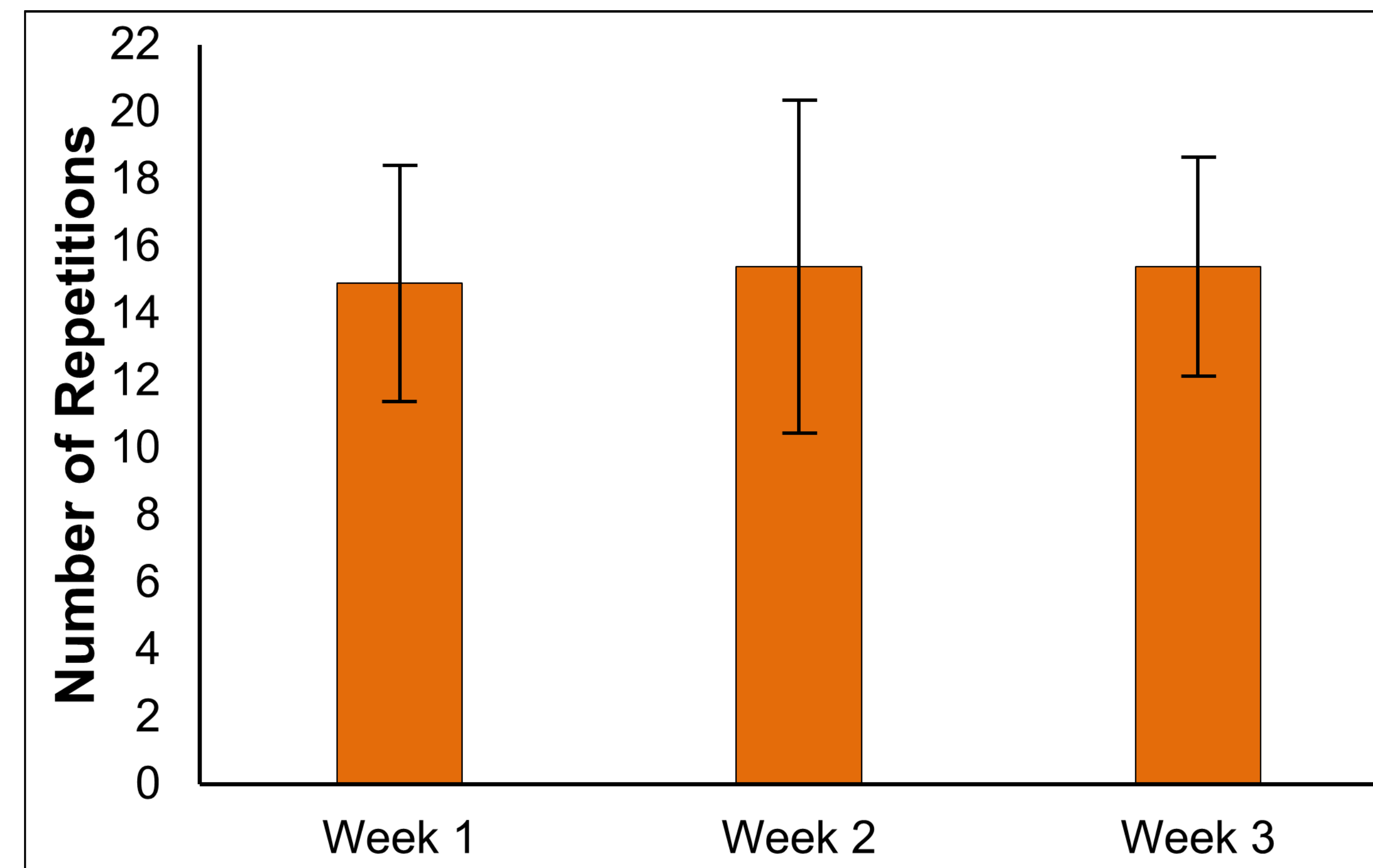
4 visits to the Human Performance Laboratory

- **Visit 1**
 - One-repetition maximum (1RM) for the conventional deadlift (197 ± 47.14 kg)



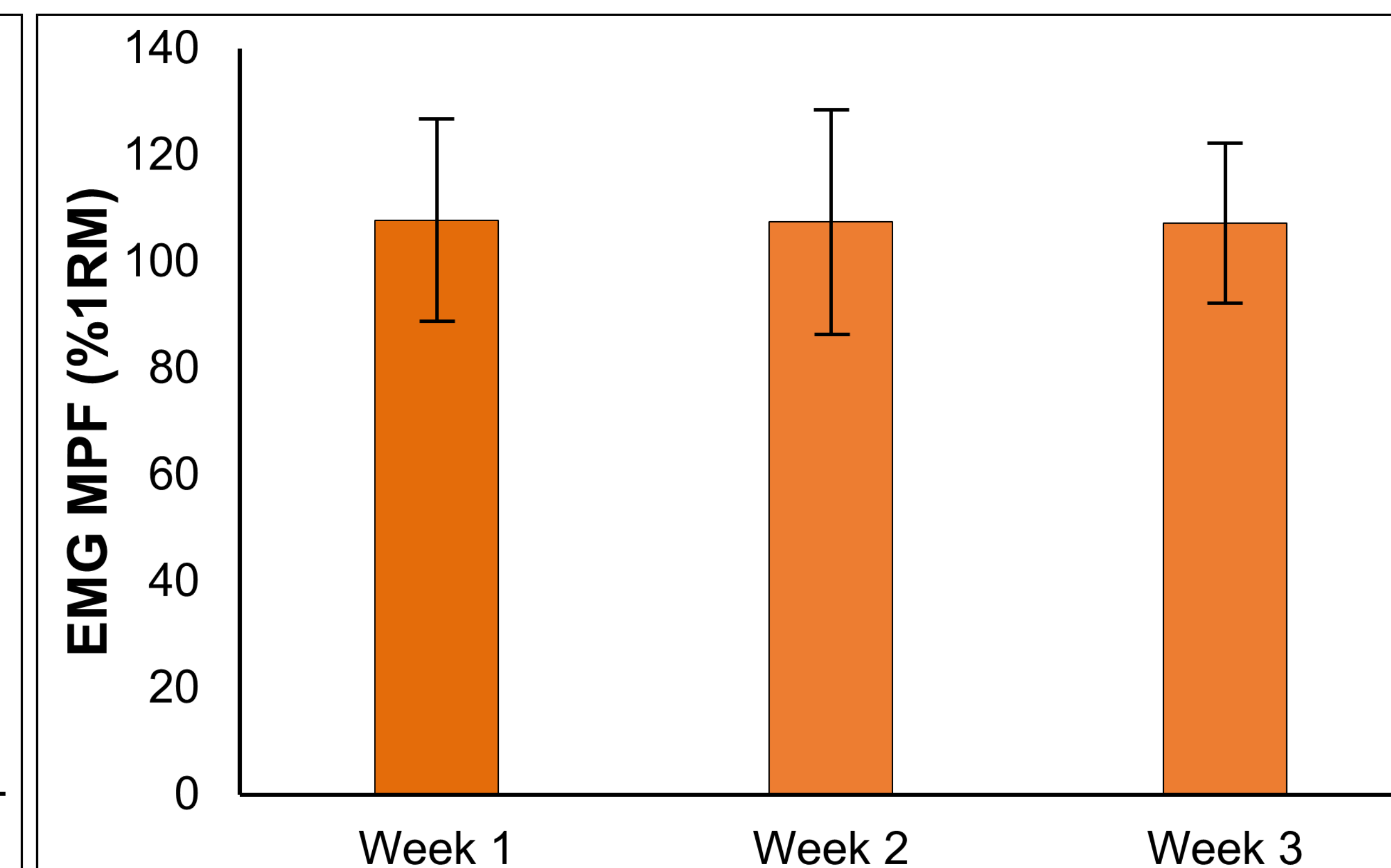
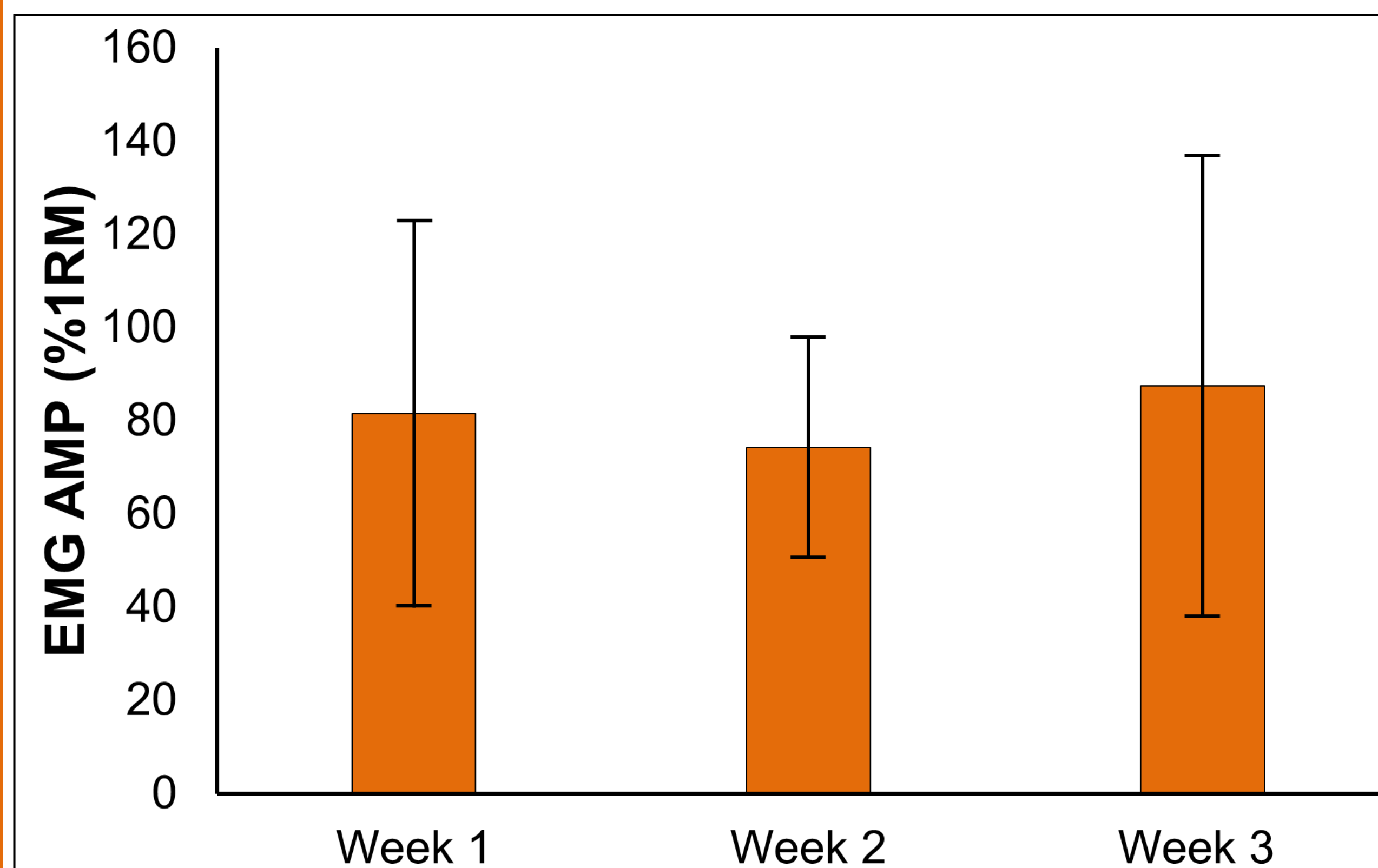
- **Visits 2, 3, and 4**
 - Pre-exercise MVC → Repetitions to Failure (70% 1RM) → Post-exercise MVC
 - Week 1: Placebo Pill Week
 - Week 2: Week 1 or 2 of Active Pills
 - Week 3: Week 3 of Active Pills
- **Assessments**
 - Absolute Strength (Pre-MVC)
 - Performance Fatigability (%Δ Pre- to Post-MVC)
 - EMG amplitude (AMP) and mean power frequency (MPF)

	Absolute Strength (kg)	Performance Fatigability (%Δ)
Week 1	125 ± 32	30 ± 17
Week 2	126 ± 25	34 ± 15
Week 3	119 ± 34	31 ± 23

$$*\%Δ = \left(\frac{Pre-Exercise MVC - Post-Exercise MVC}{Pre-Exercise MVC} \right) * 100$$


OCPs do not appear to affect exercise performance

Program resistance exercise based on athletes' and clients' goals and needs



RESULTS

Absolute Strength & Performance Fatigability

No differences across OCP cycle weeks
 Absolute Strength (p = 0.196)
 Performance Fatigability (p = 0.708)

Repetitions Completed

No differences across OCP cycle weeks (p = 0.845)

EMG Amplitude

Main effect of Time
 First 10% < Last 10% (p < 0.001)

EMG Mean Power Frequency

No differences across OCP cycle weeks or time (p = 0.857)

CONCLUSIONS

- Absolute strength, repetitions to failure, and performance fatigability are unaffected by the week of the OCP cycle.
- EMG AMP increased over time during the deadlift exercise, indicating increased muscle excitation.
- Both EMG AMP and MPF were unaffected by the OCP cycle week during the deadlift at 70% 1RM.
- Hormonal stability during the pill cycle does not affect muscular performance or neuromuscular responses.

References

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