Differences in Perceived Recovery Status among Different Training Adaptations

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Abstract

Analogous to OMNI Rate of Perceived Exertion scale, the validated Perceived Recovery Status (PRS) scale is utilized to holistically assess sessions and between sets (intrasession) recovery during resistance training. Differing modes of resistance exercise elicit variance in fatigue response, and inadvertently, affect subsequent measures of readiness. However, no previous investigations have examined the difference in intrasession PRS across different modes of resistant training. **PURPOSE**: Therefore, the purpose of this study was to examine the difference in intrasession PRS scores during 4 resistance training sessions targeting endurance, hypertrophy, strength, and power. **METHODS**: Trained male (n=7) and female (n=7) participants (age 20.00 ± 1.47yrs; ht 168.37 ± 6.41cm; wt 82.92 ± 10.21kg) attended 5 total resistance training sessions. Familiarization of PRS, anthropometrics, skinfold, and 1-repetition maximum (1RM) test (used to establish load for subsequent sessions) were administered during session 1. Randomly selected, participants completed a standard warm up and barbell back squat (SQ) and barbell bench press (BP) during session 2-4. Sets, repetitions, and intensities for sessions 2-4 SQ were based on four distinct training adaptation goals: endurance (3x15 @ 55% 1RM, 30s intrasession rest), hypertrophy (4x8 @ 70% 1RM, 90s intrasession rest), strength (6x2 @ 90% 1RM, 3-mins intrasession rest) and power (6x3 @ 80% 1RM, 3-mins intrasession rest). Intrasession PRS was collected 15s before set initiation. Individual differences in PRS across sets per training session were calculated and recorded as PRS slope. Difference in training mode mean PRS slope were analyzed using a one-way ANOVA ($p < .05$). **RESULTS**: A statistically significant difference (p= 0.001) between training modes was identified. A Bonferroni post hoc test revealed significant difference in SQ PRS slopes between endurance and strength (M ± SD; -1.36 ± 1.02; -0.47 ± 0.54, p = .020), as well as endurance and power (-1.36 ± 1.02; -.19 ± .38; p = .010). A significant difference in SQ PRS slopes between endurance and strength (M ± SD; -1.64 ± 1.15; -0.29 ± 0.38, p = .003), endurance and power (-1.64 ± 1.15; -.26 ± .26; p = .003). **CONCLUSION**: These results suggest endurance training elicits a decrease recovery capacity compared to power and strength training, yet a similar decrease in perceived recovery slope was identified between endurance and hypertrophy training. Acute tissue damage and accumulation of metabolic byproduct via high-volume protocol of endurance and hypertrophy training, may activate a greater pain receptor response and attributed to the decline in perceived recovery. Intrasession rest prescriptions remains critical to evoke the required stress for specific adaption goals; therefore, according to these data, utilizing a fixed PRS measure to identify between-set readiness may extend rest periods beyond the optimal recovery window. Furthermore, subsequent set initiation should be governed by an individualized slope aligning PRS score.

Introduction

Analogous to OMNI Rate of Perceived Exertion scale, the validated Perceived Recovery Status (PRS) scale is utilized to holistically assess sessions and between sets (intrasession) recovery during resistance training.

Differing modes of resistance exercise elicit variance in fatigue response, and inadvertently, affect subsequent measures of readiness. However, no previous investigations have examined the difference in intrasession PRS across different modes of resistant training.

PURPOSE: Therefore, the purpose of this study was to examine the difference in intrasession PRS scores during 4 resistance training sessions targeting endurance, hypertrophy, strength, and power.

Methods

Participants:
Trained male (n=7) and female (n=7) participants

Descriptive Statistics	
Variable	*m* ± *sd*
Age	20.00 ± 1.47
Height (cm)	168.37 ± 6.41
Weight (kg)	82.92 ± 10.21
Body Fat Percentage	19.79 ± 4.99

Experimental Approach:
Session 1:

- Familiarization of PRS
- Anthropometrics
- Skinfold
- 1- Repetition Maximum Test Sq

Session 2-4 (Randomly Selected)

- Standard warm up
- Barbell Back Squat
  1. Endurance (3x15 @ 55% 1RM, 30s rest)
  2. Hypertrophy (4x8 @ 70% 1RM, 90s rest)
  3. Strength (6x2 @ 90% 1RM, 3-mins rest)
  4. Power (6x3 @ 80% 1RM, 3-mins rest)
- Intrasession PRS was collected 15s before set initiation.
- Barbell Bench Press
  1. Endurance (3x15 @ 55% 1RM, 30s rest)
  2. Hypertrophy (4x8 @ 70% 1RM, 90s rest)
  3. Strength (6x2 @ 90% 1RM, 3-mins rest)
  4. Power (6x3 @ 80% 1RM, 3-mins rest)
- Intrasession PRS was collected 15s before set initiation.
- 48 h Rest between Session

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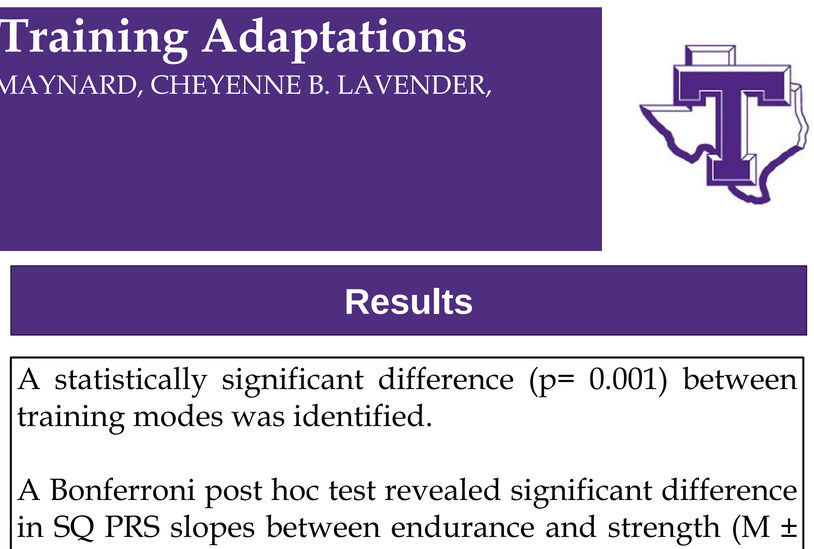
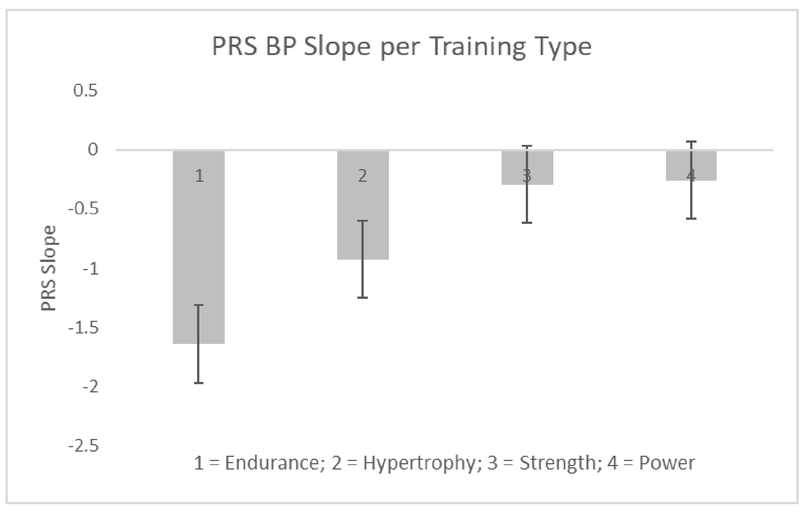
Results

A statistically significant difference (p= 0.001) between training modes was identified.

A Bonferroni post hoc test revealed significant difference in SQ PRS slopes between endurance and strength (M ± SD; -1.36 ± 1.02; -0.47 ± 0.54, p = .020), as well as endurance and power (-1.36 ± 1.02; -.19 ± .38; p = .010).

A significant difference in SQ PRS slopes between endurance and strength (M ± SD; -1.64 ± 1.15; -0.29 ± 0.38, p = .003), endurance and power (-1.64 ± 1.15; -.26 ± .26; p = .003).





Conclusion

These results suggest endurance training elicits a decrease recovery capacity compared to power and strength training, yet a similar decrease in perceived recovery slope was identified between endurance and hypertrophy training.

Acute tissue damage and accumulation of metabolic byproduct via high-volume protocol of endurance and hypertrophy training, may activate a greater pain receptor response and attributed to the decline in perceived recovery.

Intrasession rest prescriptions remains critical to evoke the required stress for specific adaption goals; therefore, according to these data, utilizing a fixed PRS measure to identify between-set readiness may extend rest periods beyond the optimal recovery window.

Furthermore, subsequent set initiation should be governed by an individualized slope aligning PRS score.

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