



# Assessing Fatigue Perceptions In Middle School Cross Country Athletes

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## ABSTRACT

Young runners experience varying levels of training stress based on their race and training schedule making assessment of fatigue an important consideration for coaches and runners to avoid overtraining. However, due to their lack of experience, young athletes may have difficulty communicating this with coaches. **PURPOSE:** This study assessed perceived fatigue in middle school cross country runners before and after various types of sessions using two different tools: the Borg CR-10 Scale (RPE) and Swedish Occupational Fatigue Inventory (SOFI). **METHODS:** 6 male (age 12.6±0.52y) and 5 female (age 12.4±0.55y) middle school cross-country runners were evaluated during four practice sessions and one race. Sessions were categorized based on distance and intensity: short-high (SH), short-low (SL), long-high (LH), long-low (LL). Fatigue was quantified using RPE and SOFI before and after each session and change scores were calculated. The SOFI was analyzed as a composite score and as five sub-scales: Lack of Energy, Physical Exertion, Physical Discomfort, Lack of Motivation, and Sleepiness. A univariate ANOVA was used to examine the differences across session categories for both measures. **RESULTS:** No differences in RPE were observed between categories (>0.05). Significant differences were seen in Composite SOFI scores where SH was higher than SL and LL (1.74 ±1.01 vs. 0.25 ± 0.32 and 0.67 ±0.79, respectively). LH (0.65 ± 0.44) was not different from any of the other categories. The only differences observed in the SOFI sub-scales Lack of Energy increased more in SH than in LL (3.27 ± 1.78 vs. 1.39 ± 1.54, respectively, p<0.05), SH increased more than SL for Physical Discomfort (2.23 ± 1.49 vs. 0.45 ± 0.60, respectively, p<0.05), and Sleepiness increased in SH more than in SL (2.23 ± 1.49 vs. 0.45 ± 0.60, respectively, p<0.05). No differences were observed in Physical Exertion or Lack of Motivation between any categories. **CONCLUSION:** This study demonstrates the SOFI may provide more sensitive feedback with regards to fatigue in young athletes as compared to RPE. The SOFI quantification of fatigue may be a valuable tool for the coach as young athletes gain a better understanding of their fatigue status and how to verbalize it.

## BACKGROUND AND PURPOSE

- Young runners experience varying levels of training stress across a season and effective management is necessary to avoid overtraining across the season.
- Physiological differences and lack of experience of children make determining a subjective make determining subjective indices of fatigue in a useful way difficult.
- This study assessed perceived fatigue in middle school cross country runners before and after various types of sessions using two different tools: the Borg CR-10 Scale (RPE) and the Swedish Occupational Fatigue Inventory (SOFI).

## METHODS

- 6 male (age 12.6 ± 0.52y) and 5 female (age 12.4±0.55y) middle school XC runners.
- Evaluated during 4 practices and 1 race.
  - Categorized based on distance and intensity:
    - Short-High (SH)
    - Short-Low (SL)
    - Long-High (LH)
    - Long-Low (LL)

- Fatigue is difficult to measure in children.
- Tools that have multiple dimensions (e.g., SOFI)
  - May help teach young athletes how to conceptualize sensations of fatigue
  - Allow coaches and researchers to better qualify young athlete's sensations of fatigue

## METHODS (CONT.)

- Fatigue was quantified using RPE and SOFI.
  - SOFI Composite
  - SOFI: Lack of Energy
  - SOFI: Physical Exertion
  - SOFI: Physical Discomfort
  - SOFI: Lack of Motivation
  - SOFI: Sleepiness
- A univariate ANOVA was used to examine differences in change scores across across session categories.

## RESULTS

- No differences in RPE between category of training session.
- Composite SOFI was higher for SH compared to SL and LL.
- LH did not differ from other training categories for the Composite SOFI or subscales.
- SOFI subscale results varied between training sessions for some, but not all subscales.

## CONCLUSION

- SOFI may provide more sensitive feedback compared to RPE about fatigue in youth.
- SOFI may be a valuable tool for coaches as young athletes gain a better understanding of personal their fatigue and how to verbalize it.
- Additional research is needed with a larger sample with a more diverse range range.

