

Do Division III Cross Country Runners Experience The Intended Coach Prescribed Training Impulse (TRIMP)?

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Introduction

Coaches have the responsibility of creating training plans that facilitate desired physiological adaptations.¹ These training plans often prescribe both the intensity and duration of the activity, which may be quantified as the training impulse.² Non-compliance with training programs may result in sub optimal gains and increased risk of injury.³ Therefore, it is important for athletes to consistently experience the coach prescribed training impulse in order to see ideal gains in performance and to avoid overtraining.

Purpose

The purpose of this study was to examine the relationship between coach intended (CI), athlete-perceived (AP), and physiological (Phys) training impulses (TRIMPs).

Methods

- 14 Division III female cross country runners participated in the study. All athletes finished in the top half of a 4.0 km time trial.

- The subjects performed a progressive treadmill test at a 1% incline at 2.24 m/s and increased by 0.224 m/s every two minutes.

- Blood lactate concentration and rate of perceived exertion (RPE) were recorded prior to, concurrent with, and immediately after testing.

- A TRIMP weighting scale was created for each athlete based on the subject's blood lactate curve.

- Polar Team System heart rate monitors were worn for all training sessions [recovery (R), slow long distance (SLD), tempo (T), and interval (I)] during a two week period.

- Session RPE was recorded after each training session.

- The Physiological TRIMPs = time spent in each heart rate zone X weighting factor.

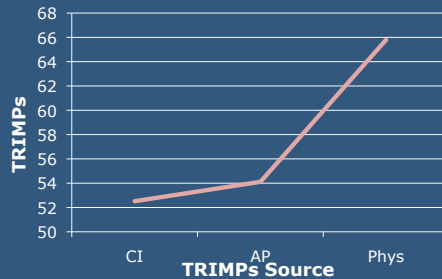
- The Coach Intended TRIMPs = prescribed running intensity based on RPE X duration.

- The Athlete Perceived TRIMPs= session RPE X duration.

Results

A repeated measures ANOVA compared CI, AP, and Phys TRIMPs for each of the four training conditions:
 $R = [(F(2, 204) = 3.359, p = .037)]$
 $T = [(F(2, 75) = 19.034, p < .001)]$
 $SLD = [(F(2, 60) = 1.089, p = .343)]$
 $I = [(F(2, 55) = 4.161, p = .021)]$

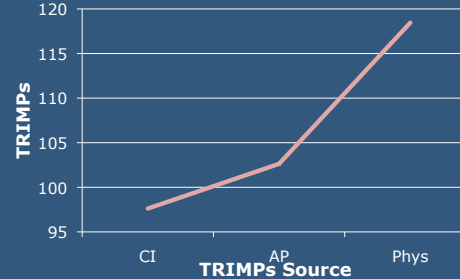
Recovery



LSD Post hoc Comparison of CI, AP, and Phys TRIMPs

CI TRIMPs		AP TRIMPs		Phys TRIMPs		p value	ES (d =)
M	SD	M	SD	M	SD		
52.52	29.73	54.11	36.12			.777	0.05
52.52	29.73			65.80	32.50	.019	0.43
		54.11	36.12	65.80	32.50	.038	0.34

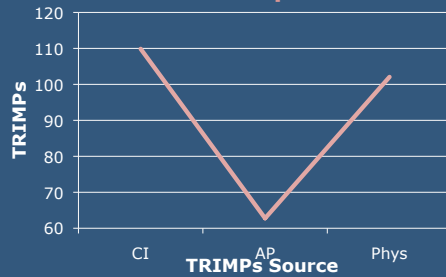
Slow Long Distance



LSD Post hoc Comparison of CI, AP, and Phys TRIMPs

CI TRIMPs		AP TRIMPs		Phys TRIMPs		p value	ES (d =)
M	SD	M	SD	M	SD		
97.61	36.14	102.63	54.01			.735	0.11
97.61	36.14			118.46	51.26	.163	0.47
		102.63	54.01	118.46	51.26	.287	0.30

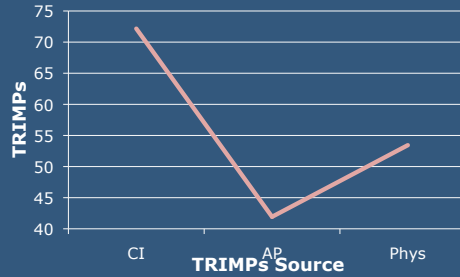
Tempo



LSD Post hoc Comparison of CI, AP, and Phys TRIMPs

CI TRIMPs		AP TRIMPs		Phys TRIMPs		p value	ES (d =)
M	SD	M	SD	M	SD		
109.86	26.54	62.77	30.37			<.001	1.65
109.86	26.54			102.07	31.38	.344	0.27
		62.77	30.37	102.07	31.38	<.001	1.27

Interval



LSD Post hoc Comparison of CI, AP, and Phys TRIMPs

CI TRIMPs		AP TRIMPs		Phys TRIMPs		p value	ES (d =)
M	SD	M	SD	M	SD		
72.17	38.16	41.93	26.21			.006	0.92
72.17	38.16			53.44	30.17	.069	0.54
		41.93	26.21	53.44	30.17	.259	0.41

Discussion

- Division III cross country runners trained at intensities higher than coach prescribed during R training, consistent with previous research.⁴ Insufficient recovery has been associated with non-optimal performance and increased risk of overtraining.⁵

- During T and I training, athletes ran at the CI intensity, but perceived themselves to be training at lower intensity. These findings are consistent with previous research that found that athletes had difficulty in correctly quantifying training during high intensity sessions.⁴ It is important to note that the coach specified the training pace for T and I training.

- Future research should examine whether athletes attain the CI TRIMPs when T and I pace are not prescribed.

- Future research should examine the relationship of concurrent RPE and session RPE during T and I training.

Conclusion

- The results indicate a need to more closely monitor training intensity, particularly during R training, to promote desired recovery adaptations.

References

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