



Mid Atlantic Regional Chapter of the American College of Sports Medicine

Annual Scientific Meeting, November 4th- 5th, 2017
Conference Proceedings

International Journal of Exercise Science, Issue 9, Volume 6



Maturity-Related Differences in the Adaptations to Anaerobic Capacity Following Sprint Interval Training Amongst Boys

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PURPOSE: To assess the maturity-related differences in the adaptations to anaerobic capacity following a 4-week sprint interval training (SIT) program amongst adolescent boys. **METHODS:** Twenty-seven adolescent boys were assessed for their years from peak height velocity (PHV), an estimation of somatic maturity status, and grouped into PRE (<-1.5yr), PERI (-1.5 to +1.5yr) and POST (>+1.5yr) PHV. During the eight SIT sessions, participants completed 4-7 repeated 20-second “all-out” sprints on a cycle ergometer against a load of 7.5% of body mass with 4-minute rest periods. During the first (SIT1) and last (SIT8) sessions, peak (PP) and mean power (MP), relative to body mass, were recorded for each sprint and averaged for each session. Individual sprint data were assessed via 3-way (group×training×sprint) ANOVA, while session averages were assessed via 2-way (training×group) ANOVA. Level of significance was set at $p<0.05$ and trends were determined at $p<0.10$. **RESULTS:** No significant 3-way interactions existed for PP or MP. Average PP and MP are presented in Table 1. For average PP, there was a trend ($p=0.095$) for a 2-way interaction with significant main effects of group ($p=0.030$) and training ($p<0.001$). For average MP, there was a significant 2-way interaction ($p=0.044$), with PRE significantly less than PERI and POST at SIT1 and SIT8. Furthermore, average MP significantly increased from SIT1 to SIT8 in PERI ($p=0.016$) and POST ($p=0.007$), with no change in PRE. In addition, POST had significantly ($p=0.016$) greater changes in average MP than PRE, while a trend ($p=0.053$) for a difference existed between PERI and PRE. **CONCLUSION:** SIT may not be the most appropriate training modality prior to puberty as adaptations to anaerobic capacity may not occur.

Table 1: Average peak (PP) and mean power (MP) during the first (SIT1) and last (SIT8) training sessions (mean±standard deviation)

Variable	Group	SIT1	SIT8	Change
Average PP (W/kg)	PRE	9.09±1.80	9.71±2.20	0.62±0.97
	PERI	11.76±2.01	13.83±3.07	2.07±1.82
	POST	12.08±3.51	13.43±3.12	1.35±0.74
	Overall	11.18±2.83	12.61±3.29*	1.43±1.38
Average MP (W/kg)	PRE	6.66±1.45	6.47±1.80	-0.19±0.80
	PERI	8.25±0.75 [†]	8.61±0.69 ^{*†}	0.36±0.39
	POST	8.18±1.14 [†]	8.69±0.87 ^{*†}	0.51±0.46 [†]
	Overall	7.81±1.27	8.09±1.46	0.27±0.59

*significantly greater than SIT1 [†]significantly greater than PRE