SAFT^{90} SIMULATES THE INTERNAL AND EXTERNAL LOADS OF COMPETITIVE SOCCER MATCH-PLAY

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Introduction

Attempts to simulate the locomotor profile and/or the physical intensity of soccer match play in the laboratory environment have often failed to concurrently elicit both the internal and external load of the player. The aim of the current study was to create and validate population-specific simulations to replicate the physiological and accelerometer profiles observed during match play.

Method

9 male elite youth soccer players (Age: 17 ± 1 years; VO_{2max}: 61 ± 4 ml.kg^{-1}.min^{-1}) and 6 University men's football team 1st XI players (21 ± 1 years; VO_{2max}: 57 ± 5 ml.kg^{-1}.min^{-1}) wore heart rate monitors (HR; Team System, Polar, Finland) and 5 Hz GPS (MinimaxX, Catapult, Australia) units during competitive league fixtures. The squad mean distance and time spent in each velocity category were aligned to a previous intermittent and multi-directional model (SAFT^{90}) which incorporates utility movements to create an elite youth- (Y-SAFT^{90}) and University- (U-SAFT^{90}) squad specific match-play simulation. After familiarisation, the players were again fitted with a HR and GPS system and performed their respective squad-specific version of SAFT^{90} on an indoor 3G surface whilst wearing typical playing attire. Tri-axial accelerometer data (Player Load-PL) was collected from the GPS system during both games and the squad-specific soccer simulation as a measure of external load. The mean cardiovascular responses and PL elicited in match-play and the squad-specific version of SAFT^{90} were compared via paired-samples t-tests.

Results

The mean (SD) activity profile, HR response and accelerometer data for the competitive league match play and the squad-specific simulation are provided in the table below. There were no between trial differences observed.

	Elite Youth Players		University Players	
	Match-play	Y-SAFT^{90}	Match-play	U-SAFT^{90}
Total distance covered (km)	9.6 (1.2)	9.75	9.4 (1.1)	9.4
High-Speed running (≥15 km·h^{-1}) distance (m)	1.9 (0.5)	1.9	1.6 (0.4)	1.7
Mean HR (beats·min^{-1})	165 (4)	163 (9)	164 (8)	162 (6)
%HR maximum	83.4 (2.4)	82.5 (5.4)	87.8 (4.8)	85.9 (3.7)
PL (AU)	1281 (304)	1231 (227)	1142 (382)	1156 (200)

Conclusion

These results suggest SAFT^{90} accurately simulates both the activity profile and physiological response of soccer match-play, when derived from squad specific match-play data.