EFFECT OF POSITION AND SESSION TYPE ON EXTERNAL LOAD IN ELITE YOUTH SOCCER

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BACKGROUND

Load monitoring using wearable devices has become a key part of understanding adaptation to training stimuli, assessing recovery, and reducing potential injury risk for elite level soccer players. The intensity of training sessions (TS) are intentionally manipulated to ensure players are at peak performance for competitive matches (CM). Prior literature has found that players' external load (EL) will vary depending on position. However, much of the current literature focuses on collegiate and professional soccer players with limited research on elite youth soccer. Given the emphasis of developing elite youth soccer players, it is imperative to gain understanding of factors influencing EL to enhance performance and reduce overtraining.

METHODS

A global positioning system (GPS) captured 7 metrics assessing EL to be analyzed across both session types:

Population:
- 24 elite youth soccer players
- Fall 2022 season
- 57 TS
- 19 CM

Positions observed:
- 4 attackers
- 8 midfielders
- 5 wingers
- 6 center backs
- 2 fullbacks

EL variables observed:
- Total Player Load (TPL, au)
- Total distance (TD, m)
- High speed running (HSR, m)
- Maximum velocity (MVel, m/s)
- # accelerations (ACC)
- # decelerations (DEC)
- # sprints (SPR)

Statistical analysis: A 2-way analysis of variance (ANOVA) was conducted to assess the effect of session type and player position on EL metrics.

PURPOSE

To investigate the effect of training session versus competitive match and player position on external load in elite level youth soccer players

RESULTS

Table 1: Statistical results of external load variables

Measure	Descriptive (M±SD)			Inferential (p-values)		
	Overall (n=1004)	Practice (n=701)	Game (n=303)	Session	Position	Session x Position
Total Player Load	773.76 ± 279.32	679.81 ± 185.50	991.09 ± 333.89	<0.001	0.383	0.386
Total Distance (m)	6737.92 ± 2787.91	5718.34 ± 1744.36	9096.77 ± 3281.06	<0.001	0.811	0.097
High Speed Running (m)	222.02 ± 193.55	174.55 ± 175.89	331.86 ± 188.07	<0.001	0.232	0.045
Number of Sprints (#)	3.00 ± 3.32	2.31 ± 3.32	4.60 ± 3.94	<0.001	0.049	<0.001
Accelerations (#)	26.29 ± 10.73	26.37 ± 10.46	26.10 ± 11.32	0.605	0.896	0.064
Decelerations (#)	24.54 ± 10.87	24.83 ± 10.82	23.87 ± 10.97	0.303	0.629	0.639
Maximum Velocity (m/s)	7.19 ± 0.94	6.98 ± 0.94	7.69 ± 0.71	<0.001	0.041	0.311

MAIN FINDINGS

1. **Elite youth soccer players experienced more overall external load during competitive matches compared to trainings sessions.**
2. **The lack of difference in EL between positions may be due to the formation used by the team. The 4-3-3 formation used throughout much of the season requires a more balanced distribution of EL between positions.**

PRACTICAL APPLICATION

- Long term athletic developmental (LTAD) models are increasingly emphasized to support the growth of youth soccer players.
- EL data in elite youth soccer provides useful information for practitioners to understand EL and plan TS accordingly for CM readiness and injury prevention.
- Future research should explore the effect of formation on EL in elite youth soccer.