

A COMPARISON OF EXTERNAL LOADS BETWEEN TRAINING SESSIONS AND MATCHES IN ELITE FEMALE SOCCER PLAYERS

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Introduction

Few studies have investigated the external load (EL) derived from official matches (M) and training sessions (TS) in female soccer [1]. Therefore, the aim of this study was to compare various parameters reflecting EL during TS and M in elite female soccer players.

Methods

EL of different TS were obtained during frequently held training camps of the Austrian female soccer national team and compared to M data. Seven days prior each match (i.e.: final day) a daily single TS was analyzed (M-1 to M-7). All parameters (total distance, distance in speedzone 1-5, number of medium intensity/high intensity/sprints, number of acceleration and decelerations, and distance during maximum intensity intervals (MII) MII-1, -3, -5 min; identified based on distance and player load) were assessed with a global positioning system and calculated per min for statistical analyzes. One-way repeated measure was used to detect differences and effect sizes were calculated using partial eta². Statistical significance was accepted at $p \leq 0.05$.

Results

Generally, data showed that EL measures are higher in M compared to all TS ($p < 0.001$, $0.088 \leq \eta^2 \leq 0.799$). In detail, lower intensity values were found in M-7 and M-6 compared to M whereas higher intensities occurred in M-4 and M-3 compared to all other TS, however, still lower than in M. Notably smaller effect sizes were found in EL values for speedzone-5 and sprints in M-4 and M-3 vs. M in comparison to all other TS vs. M. MII were higher in M compared to other TS (MII-1min: $p < 0.001$, $\eta^2 = 0.347$; MII-3min: $p < 0.001$, $\eta^2 = 0.447$; MII-5min: $p < 0.001$, $\eta^2 = 0.537$). These results suggest that significant differences in EL parameters exist between M and TS during a training camp prior a match, which are attributed to different intensities of TS.

Tab. I: Comparison of physiological parameters between Training Sessions and Match.
*Significant difference ($p < 0.05$)

Parameter	Training Sessions		Match		p*	ES (η^2)
	Mean	SD	Mean	SD		
Total Distance [m/min]	51,23 ± 10,98		107,09 ± 10,07		0,000	0,799
Speedzone-1 0-6km/h [m/min]	29,77 ± 4,67		36,23 ± 4,54		0,000	0,272
Speedzone-2 6-13km/h [m/min]	15,53 ± 6,46		46,93 ± 8,57		0,000	0,778
Speedzone-3 13-19km/h [m/min]	4,74 ± 3,00		19,87 ± 5,02		0,000	0,741
Speedzone-4 19-23km/h [m/min]	0,93 ± 0,85		3,31 ± 1,45		0,000	0,417
Speedzone-5 >23km/h [m/min]	0,24 ± 0,80		0,75 ± 0,62		0,000	0,088
MID [number/min]	0,45 ± 0,25		1,41 ± 0,29		0,000	0,681
HID [number/min]	0,08 ± 0,08		0,25 ± 0,11		0,000	0,331
Sprints [number/min]	0,34 ± 0,13		0,05 ± 0,04		0,000	0,137
Accelerations [number/min]	0,15 ± 0,08		0,52 ± 0,12		0,000	0,177
Decelerations [number/min]	0,01 ± 0,03		0,34 ± 0,11		0,000	0,358
MII-1min [m/min]	138,60 ± 29,47		183,41 ± 14,89		0,000	0,347
MII-3min [m/min]	99,90 ± 26,03		145,54 ± 11,65		0,000	0,447
MII-5min [m/min]	83,71 ± 25,44		134,59 ± 10,82		0,000	0,537

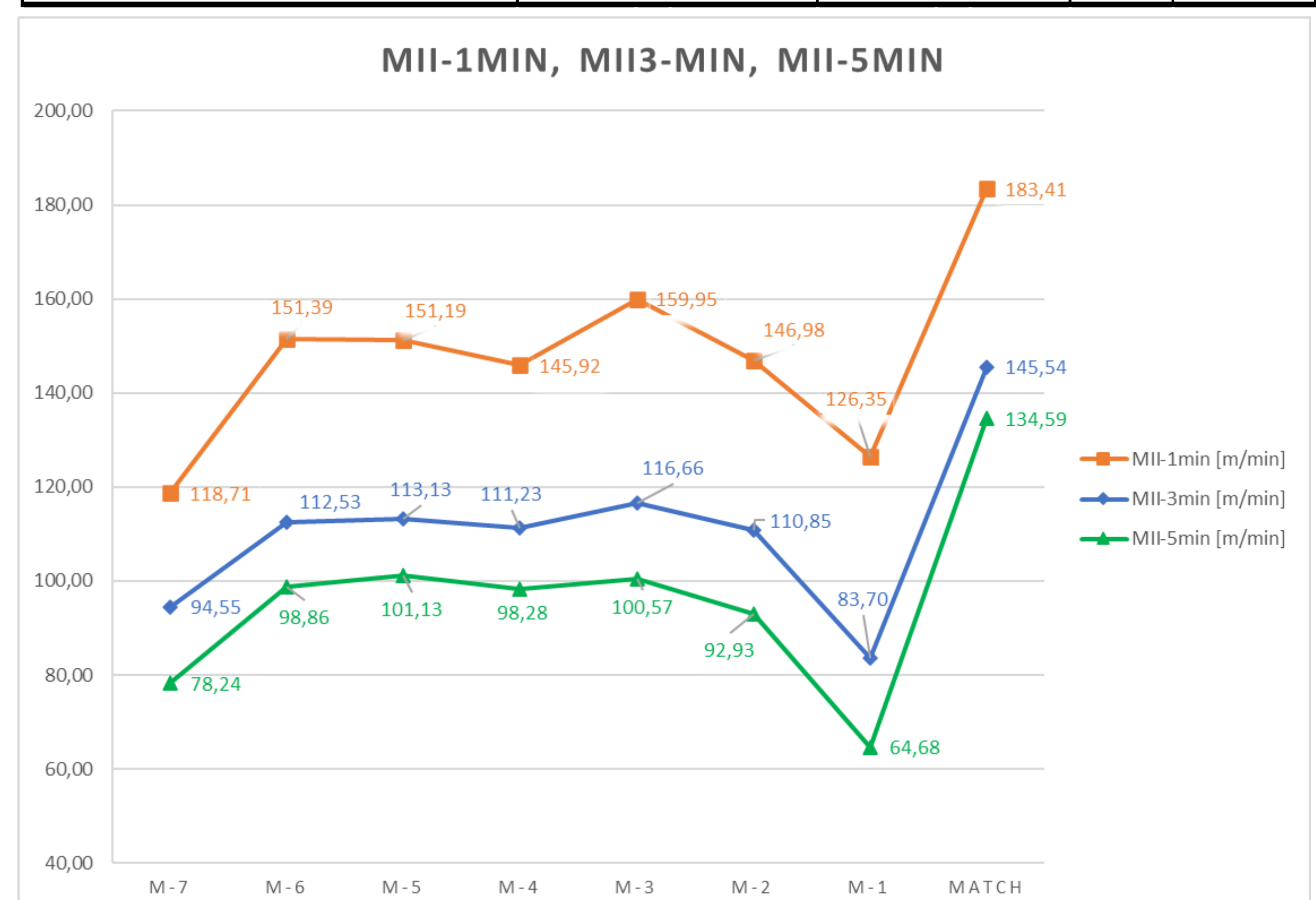


Fig. 2: Comparison of MII-1min, MII-3min, MII-5min between Training Sessions and Match. *Significance $p < 0.05$.

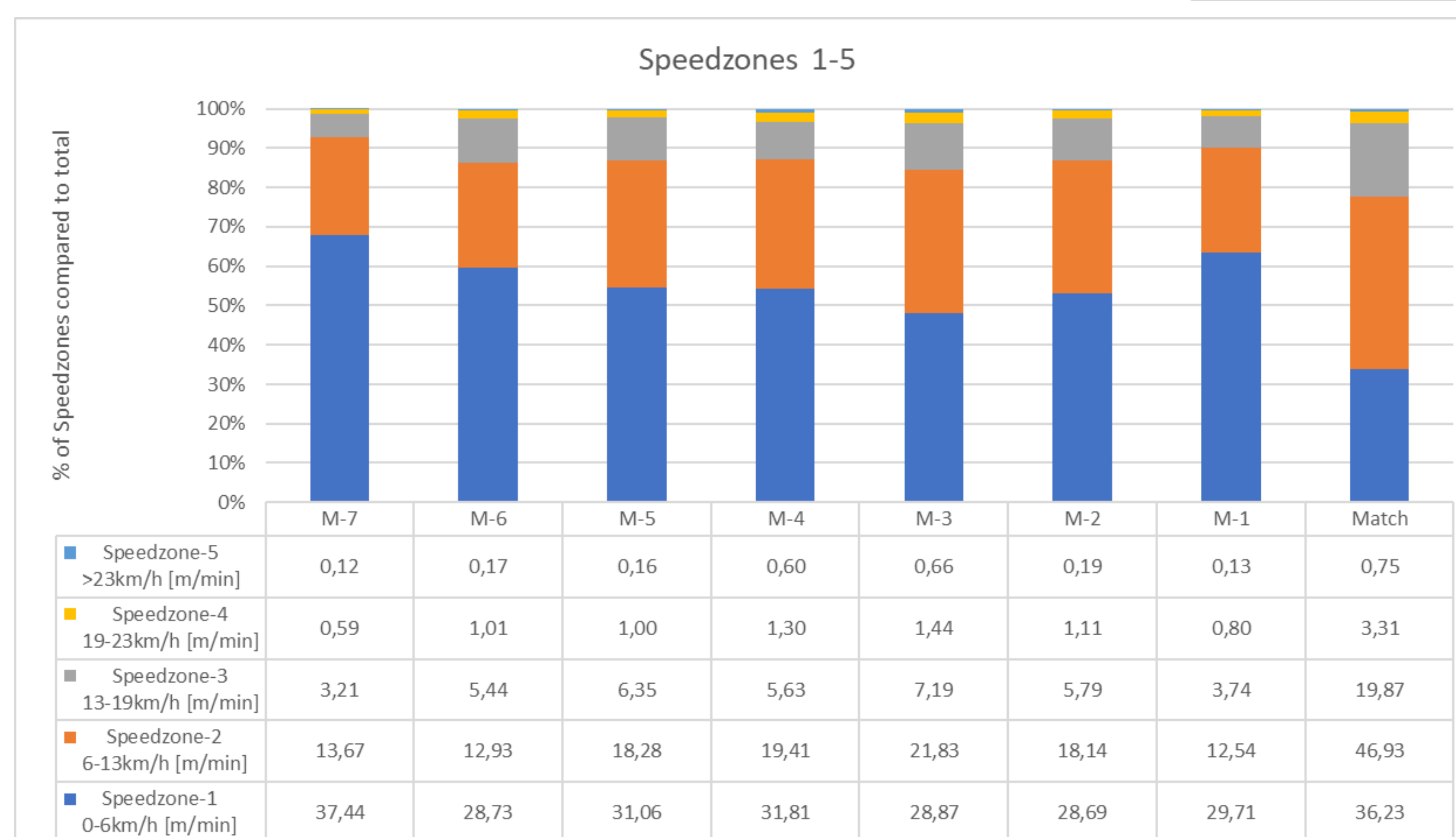


Fig. 1: Percentage subdivision of speedzones in Training Sessions and Match.

Conclusion

Results of this study may lead to a better understanding of EL in elite female soccer during high load training periods and a subsequent match. This knowledge could help coaches and practitioners to modulate TS in order to improve performance and to monitor EL in female soccer players.

References:

[1] Romero-Moraleda et al. (2021). External and internal loads during the competitive season in professional female soccer players according to their playing position: differences between training and competition. Research in Sports Medicine, 29(5), 449-461.