

# Training Monotony in Women's Collegiate Football: Descriptive Analysis of Starters and Reserves Over a Three Week Microcycle

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## INTRODUCTION

Football is a high intensity sport with various periods of acceleration (ACC) and deceleration (DEC) throughout a game. To maintain player resilience and health it is important for coaches and practitioners to explore training monotony throughout the season. Training Monotony (TM) is the value of having the same training sessions throughout the season which can lead to overtraining, boredom, and risk of injury.<sup>1</sup> TM can be defined as the weekly mean load divided by the standard deviation of weekly load. Furthermore, training load can be defined by internal measures (i.e., session RPE, heart rate) and external measures (i.e., distance, player load).<sup>1</sup> By assessing TM, coaches and practitioners may improve performance while also reducing fatigue or injury and maximizing the player's availability.<sup>2</sup> While past investigations have assessed TM through GPS derived measures such as distance and ACC between starters and reserves in professional football, we are unaware of any investigations on TM between starters and reserves using inertial movement analysis (IMA) in collegiate women's football.

## PURPOSE

The aim of this study was to describe TM between starters and reserves over a 3-week microcycle in women's collegiate football.

## METHODS

Twenty outfield players (age 19.9±1.5; height 65.6±2.0 cm) were monitored to examine TM over a 3-week microcycle. Starters (n=6) played in ≥60 minutes of a game and in 60% of matches while reserves (n=14) were those who did not meet these criteria. Minutes played in each match were identified using the box score for each match included in the microcycle. Players were excluded (n=5) due to injury and academic requirements. Catapult S7 sensors were used to collect IMA ACC, DEC, and changes of direction (COD) total counts during live tracked activities using Openfield Console 3.13.0. The data was then transferred to Openfield Cloud 4.0 for visualization. Data was then exported to Microsoft Excel for data quality and descriptive analysis. We identified 3 players with missing data points from training sessions. To address the issue, the previous week's average IMA count was used to calculate missing count. Calculating weekly averages of IMA ACC, DEC, and COD counts divided by the standard deviation of the same factors determined TM.

## RESULTS

Table. Weekly or Daily Average±SD for IMA Variables and Training Monotony

Measurement	Group	Week 1	Week 2	Week 3
Weekly Average ACC	Starters	17±20	11±17	10±16
	Reserves	16±20	11±17	10±17
Weekly Average DEC	Starters	12±15	10±18	8±12
	Reserves	8±11	6±11	6±11
Weekly Average COD L+R	Starters	53±95	35±67	36±79
	Reserves	36±62	26±56	24±50
Weekly Average IMA High + Medium Count	Starters	30±31	21±28	26±30
	Reserves	23±22	18±24	20±24
Weekly Average IMA Count*	Starters	402±319	268±263	343±316
	Reserves	288±189	217±223	247±223
TM	Starters	1.26	1.02	1.09
	Reserves	1.53	0.97	1.11

\*Composed of the sum of ACC, DEC, and COD counts

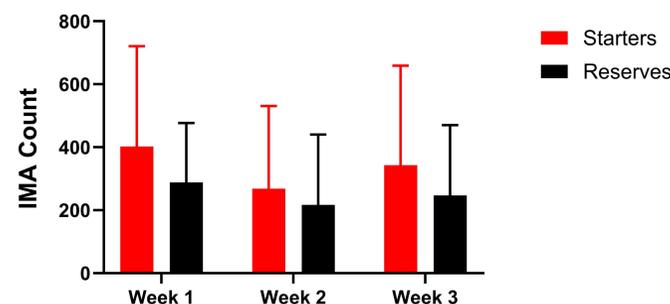


Figure 1: Weekly IMA Count (Average±SD) among Starters and Reserves in a 3 Week Microcycle

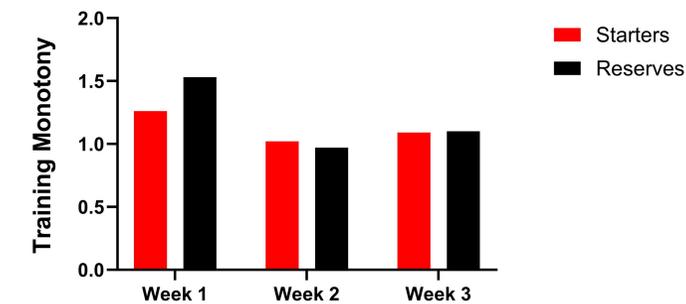


Figure 2: TM among Starters and Reserves in a 3 Week Microcycle

## CONCLUSION

Based on these results, we identified that TM for starters was greatest in week 1 and lowest in week 2, meaning players had the lowest variation in week 1 and the highest variation in week 2. In week 3, TM increased from week 2, indicating greater variation than week 2 and lesser variation than week 1. Reserves followed the same pattern across the microcycle. The differences between week 1 and week 2 could be due to other contextual factors such as changes in training plans between starters and reserves.

## PRACTICAL APPLICATIONS

Assessing TM can help periodize, analyze performance, optimize physical fitness, and minimize the risk of overtraining and injuries. Coaches and all other staff must maintain a balance between workload and recovery to maximize an athlete's performance throughout the season. By quantifying and analyzing TM, coaches and staff can adjust training sessions based on external load (acceleration, deceleration, and total distance) on the players from matches or training sessions to prevent the factors stated above. Also, by looking at TM between starters and reserves, coaches can facilitate physical and technical development while also informing the reserves of overtraining or injury during a match. Unequal match playing time may be reduced with an adjusted training program for reserves.

## CONTACT

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## REFERENCES

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