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# RELATIONSHIP BETWEEN INTERNAL AND EXTERNAL LOAD IN YOUNG ITALIAN HIGH-LEVEL SOCCER PLAYERS

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**INTRODUCTION:**
**In top-level soccer, monitoring training loads has become a fundamental method for achieving top performance (1). In the present study, the relationships between external and internal training loads variables were investigated in high-level Italian youth soccer.**
**METHODS:**
**25 players from a soccer team participating in the Primavera 1 league, the most important youth soccer competition in Italy, were monitored via GPS during all training sessions held between November 2021 and May 2022 of the 2021/2022 competitive season. Total distance, distance at different speed, number of accelerations and decelerations, distance traveled in acceleration and in deceleration, distance at high metabolic effort, average metabolic power, energy cost, and session duration were collected as external load variables, while the perception of effort assessed by Fosters RPE scale method was used as internal load variable (2). For each repeated measure, a linear regression analysis was performed using the within-subjects correlation method (3). The statistical significance was set at an alpha level of 0.05.**
**RESULTS:**
**Positive correlations were found for all the variables included, in a range between rho = 0,112 and rho =0,822. There were close to strong correlations for total distance and energy cost (rho = 0.691, rho = 0.698, respectively). There were moderate to strong correlation for distance traveled in acceleration and deceleration and distance at high metabolic effort (rho = 0.621, rho = 0.611, rho = 0.599, respectively), and moderate correlations for number of accelerations and decelerations, high speed distance and very high speed distance (rho = 0.437, rho = 0.505, rho = 0.426, rho = 0.300, respectively). Weak correlations were found for average metabolic power and distance covered in sprint (rho = 0.112, rho = 0.180, respectively).**

**CONCLUSION:**
**According to the model presented by Jeffries et al. in 2021 (4), the manipulation of the training prescription based on the modulation of the external load variables is an effective method to obtain different responses in the internal load perceived by the athletes. Internal load can be better controlled by focusing on the training variables most correlated with the perception of effort. The results of this study show that total distance, energy cost, acceleration and deceleration distance, and high metabolic effort distance have the greatest effect on changing the perception of effort in high-level young Italian soccer players.**

**1) Martin M. et al., Res Q Exerc Sport, 2022; 2) Foster C. et al., J Strength Cond Res, 2001; 3) Bland J.M. and Altman D.G., BMJ, 1995; 4) Jeffries A.C. et al., Sports Med, 2021.**

**Topic:** **Statistics and Analyses**

**Presentation** **Oral**