SCIENTIFIC JOURNAL OF SPORT AND PERFORMANCE

ORIGINAL ARTICLE

Dynamics of training loads in soccer players during a preseason

Julio Cesar Barbosa de Lima Pinto ✉ . *Physical Education Department. Federal University of Rio Grande do Norte. Natal, Brazil.*
Jaime Nunes Alves Rafael. *Ceará Sporting Club. Brazil.*
André Igor Fonteles. *Federal Institute of Science and Technology Education. Brazil.*
Arnaldo Luis Mortatti. *Physical Education Department. Federal University of Rio Grande do Norte. Natal, Brazil.*

ABSTRACT

The Brazilian soccer season is structured throughout the year and is characterized by well-defined periods, such as the preseason and in-season periods. This study analyzes the dynamics of internal training load in professional soccer players during preseason. Twenty-three male professional soccer athletes participated and were monitored over 4 weeks of training. During this period, perceived recovery status (PRS) was assessed using the perceived recovery status scale, while internal training load was determined using the session rating of perceived exertion (session-RPE) method. During preseason, PRS ranged between 4 and 7 arbitrary units (AU), while intensity across weeks remained at moderate levels (4–6 AU). Mean PRS, session-RPE, and training volume differed across weeks (p < .05), with lower values in weeks 3 and 4. Internal training load decreased in week 4 compared to previous weeks (p < .05), while monotony and strain were highest in week 3 and differed from other training weeks (p < .05). Professional soccer players are exposed to moderate training intensities and recovery perception during preseason, with sessions mostly lasting less than 90 minutes. Regarding internal training load dynamics, monotony, and strain, athletes reported an increase over the first three weeks, followed by a reduction in the final week.
Keywords: Performance analysis, Soccer, Intensity, Rating of perceived exertion, Sport.

Cite this article as:
Pinto, J. C. B. L., Rafael, J. N. A., Fonteles, A. I., & Mortatti, A. L. (2026). Dynamics of training loads in soccer players during a preseason. *Scientific Journal of Sport and Performance*, *5*(1), 131-140. https://doi.org/10.55860/JXXO1585

✉ **Corresponding author.** *Physical Education Department. Federal University of Rio Grande do Norte. Av. Senador Salgado Filho, 3000 – Lagoa Nova, Natal - RN, 59090-315, Brazil.*
E-mail: julioduibmx@gmail.com
Submitted for publication August 14, 2025.
Accepted for publication October 07, 2025.
Published October 24, 2025.
Scientific Journal of Sport and Performance. ISSN 2794-0586.

doi: https://doi.org/10.55860/JXXO1585

INTRODUCTION

Modern soccer exhibits more variable and complex characteristics and greater demand than individual sports. Factors such as player position, team playing style, and opposing level may generate distinct physiological demands (Williams, Ford, and Drust, 2023). Consequently, contemporary players must not only execute high-intensity actions but also repeat them throughout training sessions and competitive matches while maintaining low fatigue levels (Williams, Ford, and Drust, 2023).

The soccer season runs from January to December and features well-defined periods: a preseason lasting approximately 15–30 days, followed by an eight-month competitive phase (Gomes and Souza, 2008). During the regular season, matches typically occur weekly, though congested calendars, with multiple simultaneous competitions, may require up to three matches per week (Carling et al., 2018; Gomes and Souza, 2008; Grammenou and Nulty, 2025; Turner, 2011). Preseason, which generally excludes official matches, aims to maximize sport-specific physical capacities for upcoming competitions (Figueiredo et al., 2020; Grammenou and Nulty, 2025). Moreira et al. (2015) demonstrated that conditioning-focused training (e.g., varied drills) reaches higher intensities during preseason, though official in-season matches still exceed the intensity of preseason friendlies. Given its role in fitness acquisition (Coppalle et al., 2019; Eliakim et al., 2018; Figueiredo et al., 2020), preseason not only enhances players' physical conditioning but also reduces injury risk, as documented by Eliakim et al. (2018).

A fundamental challenge in soccer lies in structuring training loads to maintain athletic performance throughout a competitive season comprising 70-80 matches (Gomes and Souza, 2008; Williams, Ford, and Drust, 2023). Typically, preseason training features high workloads with low variability, leading to increased psychophysiological stress in athletes (Haddad et al., 2017). Consequently, athletes require continuous monitoring and periodized training loads tailored to each phase of the sporting calendar (preseason or competitive period). Valid monitoring tools, particularly self-report scales (e.g., pain perception, exertion ratings), enable athletes to report their status and provide data correlated with objective biomarkers (Haddad et al., 2017; Saw, Main, and Gastin, 2016).

The session rating of perceived exertion (session-RPE) method represents a viable monitoring alternative due to its low cost, ease of application, and reproducibility (Haddad et al., 2017; Nakamura, Moreira, and Aoki, 2010). This subjective measure proves particularly valuable for tracking training loads in soccer players during preseason (Haddad et al., 2017), a critical period for enhancing and adapting athletes' physical capacities (Coppalle et al., 2019; Figueiredo, Matta, and Figueiredo, 2020). Effective monitoring and control of training loads directly influence the attainment of desired physiological adaptations (Gabbett et al., 2017; Impellizzeri, Marcora, and Coutts, 2019). Furthermore, session-RPE data assists strength coaches, physiologists, and technical staff in precisely planning preseason training loads to optimize performance for subsequent competitive demands. Despite the importance of preseason, more studies are needed to longitudinally examine the dynamics of internal load in Brazilian professional soccer players. Therefore, this study aimed to analyse internal training load dynamics during preseason in professional soccer players.

METHOD

This study represents a quantitative longitudinal investigation conducted during the 2020 preseason. All research information was detailed in the informed consent forms, which were voluntarily and spontaneously signed by all participants. The study complies with Resolution 466/12 of the National Health Council and the Helsinki Declaration for research involving human subjects, having received approval from the Ethics

Committee (No. 3,836,031). During the 4-week training period, participants were monitored across 33 training sessions (Figure 1). Of these sessions, 21.2% (n = 7) focused on physical conditioning (resistance training), 39.4% (n = 13) combined physical and technical components (field conditioning exercises with technical execution), 30.3% (n = 10) integrated physical and tactical elements (conditioning exercises with tactical movements), while 9.1% (n = 3) involved physical conditioning with collective match play. Throughout this period, researchers collected data on session duration, perceived recovery status, and session rating of perceived exertion (session-RPE) and conducted physical performance assessments before and after the training period. This study was conducted at a Brazilian football club that competes in the C series of the national championship. During the period, the average temperature was around 27.4°C (max 31.2°C and min 24.5°C), and the average humidity was 78.4%.

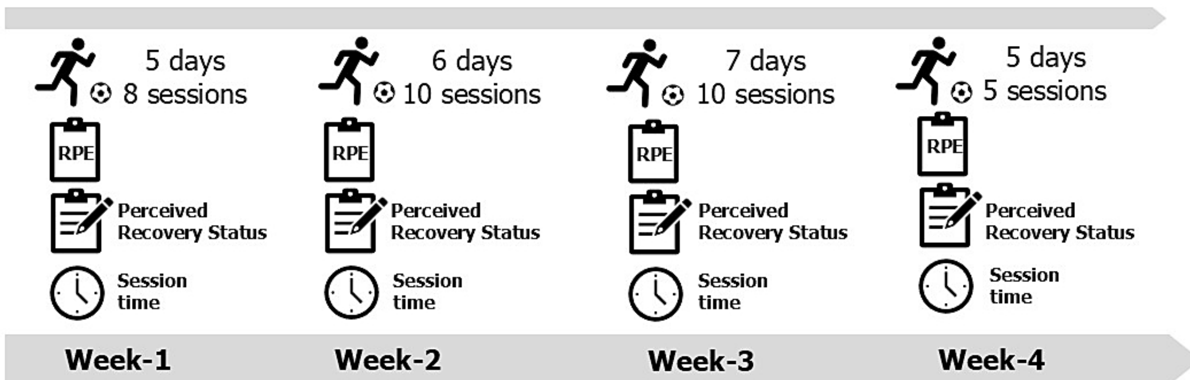

Figure 1. Distribution of training sessions over the weeks.

Participants

The initial squad consisted of 32 professionals' soccer players regularly completing 7-10 weekly training sessions, all members of the club's first team. These athletes participated in at least two state championships and one national competition, classifying them as tier 3 according to training volume and sport performance metrics (McKay et al., 2022). The study included 23 players (78.5 ± 1.7 kg; 1.7 ± 0.1 m; 26.1 ± 5.4 years; 9.4 ± 1.2% body fat) who met the inclusion criteria of minimum 70% training session attendance and consistent compliance with the physiological monitoring protocols administered by the club's physiology staff.

Instruments and procedures

The Perceived Recovery Status (PRS) was measured each morning using the perceived recovery status scale, translated and validated for Portuguese by Costa et al. (2023). The scale ranges from "*0 - extremely low recovery/extremely tired*" to "*10 - fully recovered/high energy*." PRS values ≤3 expect declined performance, values between 4 and 7 expect similar performance, and values >7 expect improved performance (Costa et al., 2023; Laurent et al., 2011).

Training volume (session duration) during preseason was determined by timing each session, with weekly averages calculated. Considering official match volumes, training sessions >90 minutes were classified as high volume and <90 minutes as low volume.

Session intensities were individually measured using the session-RPE scale (Foster et al., 2001). The Borg CR-10 scale adapted by Foster et al. (2001) ranges from "*0 - no effort*" to "*10 - maximal effort*" and was administered approximately 30 minutes post-session. Cut-off points followed by Moreira et al. (2015): values

<4 "*Light*," 5-7 "*Moderate*," and >7 "*Intense*." Internal training load was calculated using Foster et al.'s (2001) method, multiplying individual athletes' session-RPE scores by total session duration. Additional internal load variables included monotony (weekly training load divided by its standard deviation; Foster, 1998) and strain (weekly internal load multiplied by monotony value; Foster, 1998).

Statistical analysis

Data normality was verified using the Shapiro-Wilk test. Descriptive statistics (percentages, means, and standard deviations) were used to present variables in graphs, while mean differences (MD) with 95% confidence intervals (95% CI) were calculated for comparisons. Repeated-measures ANOVA with Tukey's post-hoc test was employed to analyse differences across weeks for PRS (recovery perception), session-RPE, weekly training volume, internal training load, monotony, and strain. A *p*-value <. 05 was adopted for all analyses.

RESULTS

Figure 2 presents the percentage classification of recovery, volume, and intensity throughout the training weeks. In Figure 1A, the mean PRS (recovery status) during Week-1 showed 86% of values between 4 and 6 AU (expect similar performance) and 14% below 4 AU (expect declined performance). Week-2 demonstrated 100% of values within the 4 and 6 AU range (expect similar performance). During Week-3, 90% of PRS values fell within 4 and 6 AU (expect similar performance), while 10% showed mean values below 4 AU (expect declined performance). In the final week, 59% remained in the 4 and 6 AU range (expect similar performance), with 41% below 4 AU (expect declined performance).

Athletes accumulated 399.08 minutes of physical conditioning training, 725.26 minutes of physical-technical sessions, 617.12 minutes of physical-tactical drills, and 186. 43 minutes of physical/collective match play. Regarding mean weekly training volume (Figure 2B), Week-1 showed 61% of sessions exceeding 90 minutes. Week-2 averaged 95% high-volume sessions (>90 min), while Weeks-3 and 4 predominantly featured sessions under 90 minutes (95% and 100% respectively).

Intensity zones analysis revealed moderate intensity predominance across weeks (Week-1: 95%, Week-2: 100%, Week-3: 95%, Week-4: 83%), with increasing proportions of light intensity during Weeks-3 and 4.

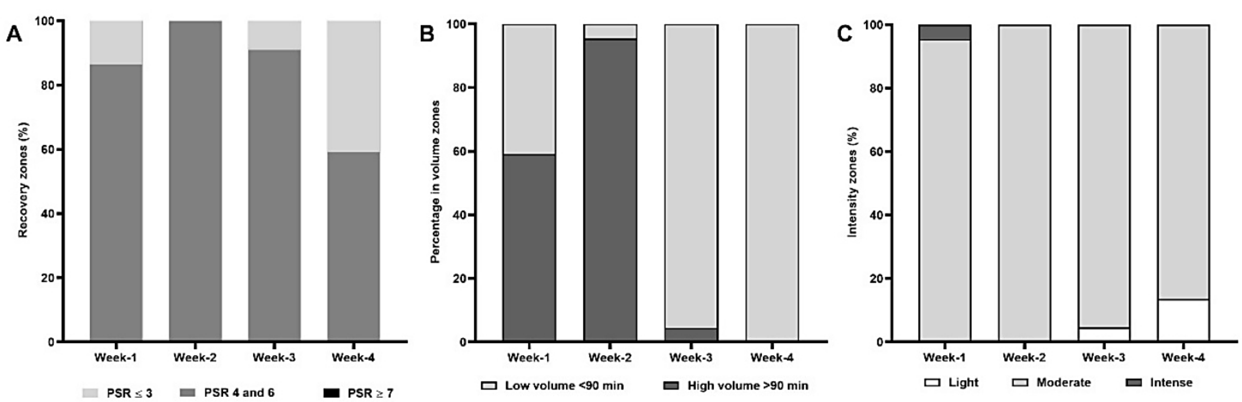

Figure 2. Percentage classification of recovery, volume, and intensity over the training weeks, A: Perceived Recovery status, B: Weekly volume, C: Session rating of perceived exertion.

Figure 3 presents the weekly variation in mean PRS, training volume, and intensity. For PRS (Figure 3A), significant differences were observed between weeks (F (2.4, 51.1) = 7.90, p < .001, η² = 0.27), with the lowest values in Week-4. Post-hoc analysis revealed significant differences between Week-2 vs. Week-3 (MD: 0.37, 95% CI: 0.03 to 0.71; p = .02) and between Week-2 vs. Week-4 (MD: 0.77, 95% CI: 0.37 to 1.16; p < .001).

Session-RPE (Figure 3B) also showed significant differences between weeks (F (2.3, 49.3) = 6.61, p = .001, η² = 0.23), with post-hoc tests identifying significant between Week-1 vs. Week-4 (MD: 0.52, 95% CI: 0.04 to 1.0; p = .03), Week-2 vs. Week-3 (MD: 0.62, 95% CI: 0.21 to 1.03; p = . 001), and Week-2 vs. Week-4 (MD: 0. 64, 95% CI: 0.23 to 1.05; p = .001, η² = 0.89).

Training volume significantly differed across weeks (F (2.3, 49.1) = 184. 8, p < .001), with post-hoc comparisons showing Week-1 vs. Week-2 (MD: -10.32, 95% CI: -15.28 to -5. 6; p < .001), Week-1 vs. Week-3 (MD: 7.48, 95% CI: 1.72 to 13.25; p = .008), Week-1 vs. Week-4 (MD: 33.49, 95% CI: 26.92 to 40.05; p < .001), Week-2 vs. Week-3 (MD: 17.81, 95% CI: 13.90 to 21.72; p < .001), Week-2 vs. Week-4 (MD: 43.81, 95% CI: 37.58 to 50.03; p < .001), and Week-3 vs. Week-4 (MD: 26.00, 95% CI: 21.35 to 30.64; p < .001).

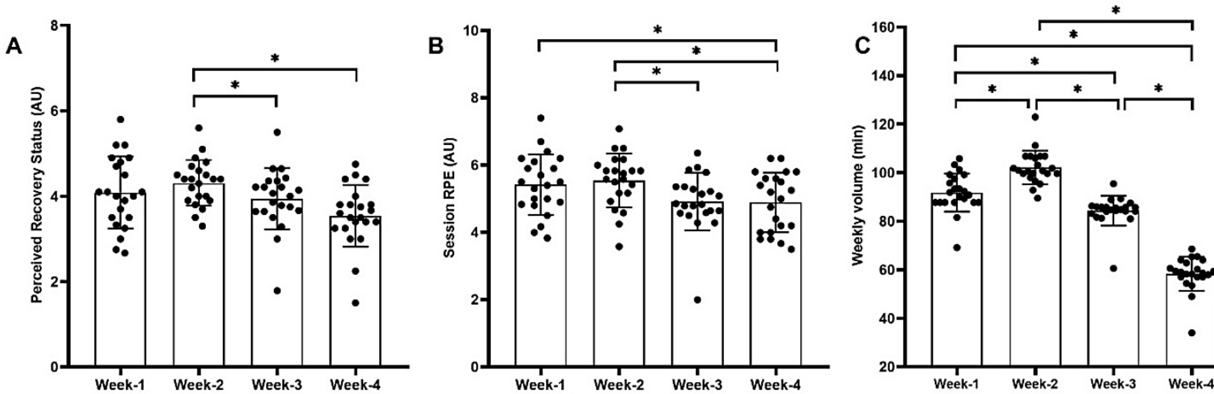

Figure 3. Weekly average PSR, volume and intensity over the training weeks. A: Perceived recovery status; B: Session rating of perceived exertion; C: Weekly volume.

Figure 4 presents the weekly means of internal training load, monotony, and strain across training weeks. The internal training load varied significantly between weeks (F (2.6, 55.3) = 70.93, p < .001, η² = 0.77), with the highest mean in Week-2. Post-hoc analysis revealed differences between Week-1 vs. Week-3 (MD: 98.04, 95% CI: 40. 15 to 155.9, p = .0006), Week-1 vs. Week-4 (MD: 235.8, 95% CI: 175.1 to 296.5, p < .001), Week-2 vs. Week-3 (MD: 123.2, 95% CI: 76.89 to 169.5, p < .001), Week-2 vs. Week-4 (MD: 261.0, 95% CI: 202.2 to 319.7, p < .001), and Week-3 vs. Week-4 (MD: 137.8, 95% CI: 94.4 to 181.1, p < .001).

Monotony (Figure 4B) also varied between weeks (F (1.4, 30.4) = 71.79, p < .001, η² = 0.77), peaking in Week-3. Significant differences were found between Week-1 vs. Week-2 (MD: -0.55, 95% CI: -0.74 to -0.35, p < .001), Week-1 vs. Week-3 (MD: -1. 55, 95% CI: -1.99 to -1. 11, p < 0 001), Week-2 vs. Week-3 (MD: -1.02, 95% CI: -1.37 to -0.62, p < .001), Week-2 vs. Week-4 (MD: 0.62, 95% CI: 0.41 to 0.84, p < .001), and Week-3 vs. Week-4 (MD: 1.63, 95% CI: 1.11 to 2.14, p < .001).

For strain (Figure 4C), significant weekly variations were observed (F (1.4, 30.7) = 81.05, p < .001, η² = 0.79), with the highest value in Week-3. Post-hoc tests showed differences between Week-1 vs. Week-2 (MD: -

2695, 95% CI: -3583 to -1808, *p* < .001), Week-1 vs. Week-3 (MD: -5524, 95% CI: -7237 to -3811, *p* < .001), Week-1 vs. Week-4 (MD: 1206, 95% CI: 480.7 to 1931, *p* < .001), Week-2 vs. Week-3 (MD: -2828, 95% CI: -4229 to -1427, *p* < .001), Week-2 vs. Week-4 (MD: 3901, 95% CI: 3144 to 4658, *p* < .001), and Week-3 vs. Week-4 (MD: 6729, 95% CI: 4847 to 8612, *p* < .001).

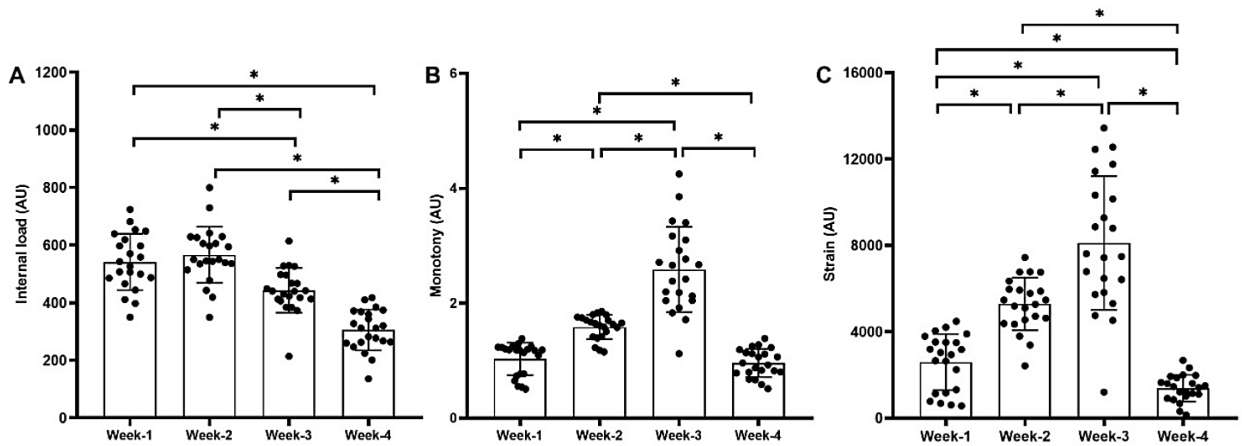

Figure 4. Values of the weekly average of internal training load, Monotony and Strain throughout the training weeks. A: Internal load; B: Monotony; C: Strain.

DISCUSSION

The present study aimed to analyse the dynamics of internal training load during the preseason in professional soccer athletes. Among the main findings, it was observed that the perception of recovery tends to worsen after weeks of higher volumes with moderate intensities. A reduction in internal training load was noted from week-1 to week-4, with a progressive increase until week-3, followed by a decrease in monotony and strain in week-4. The declining dynamics of internal training load have been previously reported in earlier studies (Borges et al., 2019; Fields et al., 2021; Rodrigues et al., 2021) and confirm that during the preseason, higher training loads are experienced compared to the competitive season (Jeong et al., 2011). Furthermore, it highlights that well-structured training involves manipulation of training load, aiming to design a program with distinct phases targeting specific objectives to ensure athletes remain fit throughout the competitive calendar (Gomes and Souza, 2008; Grammenou and Nulty, 2025; Williams, Ford, and Drust, 2023).

Our findings revealed a higher predominance (>60%) of moderate-intensity zones. This finding indicates that athletes trained predominantly at intensities between the first and second ventilatory thresholds, suggesting a predominance of anaerobic metabolism during the preseason (Algrøy et al., 2011; Borges et al., 2019). Our results align closely with those of Algrøy et al. (2011), who, albeit in a more laboratory-based setting, found that during the preseason, 35% of training sessions were performed at an intensity ≤4, 38% at an intensity between 4. 5 and 6. 5, and 27% at an intensity ≥7. On the other hand, Borges et al. (2019), investigating young athletes (under-20), observed a predominance of light intensities, a response likely influenced by the structure of their training routines, which included structured recovery periods.

The dynamics of internal training loads during different microcycles are manipulated to avoid excessive internal training load (Figueiredo and Matta, 2020; Grammenou and Nulty, 2025; Turner, 2011). Typically, three microcycles of higher overload are suggested for every one of lower overload (Turner, 2011). This pattern was observed in our results for both training volume and internal training load. The training load behaviour seen in our findings addresses the specific demands of team sports, especially soccer, as this modality involves a high annual volume of training and matches, making it difficult to increase volumes and intensities during the training process (Gomes and Souza, 2008; Moreira, 2010). There is a pursuit of the 'optimal point' in training load to prevent the accumulation of high and constant loads, thereby reducing the risk of injury or performance decline (Foster, 1998; Gabbett, 2020; Halson, 2014; Impellizzeri, Marcora, and Coutts, 2019).

Perceived recovery is a measure for observing an athlete's subjective well-being, which in turn reflects their readiness to perform. This measure serves as a guide for determining future training loads (Gabbett, 2020; Halson, 2014; Williams, Ford, and Drust, 2023). In our findings, we observed that athletes' perceived recovery levels remained within a performance maintenance zone but declined to a performance reduction zone by the end of preseason. Considering this response and building upon the framework suggested by Gabbett et al. (2017), through the combination of subjective well-being with other field-based measures, we can assess whether athletes are prepared to train/compete, whether greater physical or mental demands can be placed on them, or whether to recommend additional recovery before exposing them to another training stimulus. Furthermore, this highlights the utility of simple measurements as part of a comprehensive athlete monitoring program, as, according to Selmi et al. (2022), negative subjective well-being and poor recovery states have an unfavourable impact on player performance.

The session-RPE method has proven to be a viable option for quantifying training load due to its practicality, efficiency, and reliability when applied correctly (Haddad et al., 2017; Impellizzeri, Marcora, and Coutts, 2019). Our findings showed that during preseason, the first three weeks had an internal training load ranging from 400 to 600 AU (arbitrary units), similar to results reported by Borges et al. (2019) in U20 athletes and comparable to those found by Pereira et al. (2022) in professional athletes. In the latter study, internal training load measures were associated with reductions in neuromuscular performance, highlighting the importance of using these metrics to guide training intensities. Additionally, session-RPE provides information about the weekly dynamics of training loads, referred to as monotony and accumulated stress (strain) (Foster, 1998). In this study, week-3 showed a substantial increase in both monotony and strain, indicating an inappropriate balance between stimulus and recovery (Borges et al., 2019; Foster, 1998). This scenario suggests an elevated injury risk (Foster, 1998; Gabbett, 2020). Consequently, these exposure conditions were subsequently adjusted (week-4) to mitigate the risk of injury among athletes and ensure their readiness for the official competition period (Figueiredo and Matta, 2020).

In view of the results presented here, it is possible to verify the consistency of this study with what has already been shown in the literature, adding insights into the predominance of specific intensity zones and recovery patterns. However, some limitations can be considered, primarily the absence of external training load monitoring, and additionally the non-use of tests to measure physical performance to measure changes in performance between periods. Nevertheless, the present investigation provides practical information with significant ecological validity that can be used in audiences with similar characteristics. In addition, all the instruments used here are validated and provide reliable information that can help physical trainers, physiologists, and other members of the technical committee to better periodize and structure the preseason, which is important for the success of the rest of the season. However, further longitudinal research with control of more variables is needed to gain a deeper understanding of the training loads imposed on athletes during the preseason as well as the entire competitive period.

CONCLUSION

In conclusion, preseason training in professional soccer is characterized by moderate intensities and recovery perceptions, with internal load dynamics peaking in week-3 and declining in week-4. These findings highlight the importance of structured load management to optimize performance and minimize injury risk.

AUTHOR CONTRIBUTIONS

The study was conceived and designed by J.C.B.L.P. and J.N.A.R., who also performed data collection. The authors, J.C.B.L.P., J.N.A.R., A.L.M., and A.I.F., analysed and interpreted the data, composed the manuscript, and made crucial edits. All authors have read and agreed to the published version of the manuscript.

SUPPORTING AGENCIES

No funding agencies were reported by the authors.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

REFERENCES

Algrøy, E. A., Hetlelid, K. J., Seiler, S., & Pedersen, J. I. S. (2011). Quantifying Training Intensity Distribution in a Group of Norwegian Professional Soccer Players. International Journal of Sports Physiology and Performance, 6(1), 70-81. https://doi.org/10.1123/ijspp.6.1.70

Borges, T. O., Moreira, A., Thiengo, C. R., Medrado, R. G. S. D., Titton, A., Lima, M. R., Marins, A. N., & Aoki, M. S. (2019). Training intensity distribution of young elite soccer players. Revista Brasileira de Cineantropometria & Desempenho Humano, 21, e56955.

Carling, C., Lacome, M., McCall, A., Dupont, G., Gall, F. Le, Simpson, B., & Buchheit, M. (2018). Monitoring of Post-match Fatigue in Professional Soccer: Welcome to the Real World. Sports Medicine, 48, 2695-2702. https://doi.org/10.1007/s40279-018-0935-z

Coppalle, S., Rave, G., Ben Abderrahman, A., Ali, A., Salhi, I., Zouita, S., Zouita, A., Brughelli, M., Granacher, U., & Zouhal, H. (2019). Relationship of pre-season training load with in-season biochemical markers, injuries and performance in professional soccer players. Frontiers in Physiology, 10(APR), 426414. https://doi.org/10.3389/fphys.2019.00409

Costa, R. R. G., Laurent, M., Neto, F. R., de Campos, L. F. C. C., & Winckler, C. (2023). Cross-Cultural Translation and Adaptation of the Perceived Recovery Status Scale to Brazilian Portuguese. Journal of Sport Rehabilitation, 32(3), 346-351. https://doi.org/10.1123/jsr.2022-0099

Eliakim, E., Doron, O., Meckel, Y., Nemet, D., & Eliakim, A. (2018). Pre-season Fitness Level and Injury Rate in Professional Soccer - A Prospective Study. Sports medicine international open, 2(3), E84-E90. https://doi.org/10.1055/a-0631-9346

Fields, J. B., Merigan, J. M., Gallo, S., White, J. B., & Jones, M. T. (2021). External and internal load measures during preseason training in men collegiate soccer athletes. Journal of Strength and Conditioning Research, 35(9), 2572-2578. https://doi.org/10.1519/JSC.0000000000004092

Figueiredo, D. H., Matta, M. O., & Figueiredo, D. H. (2020). Impacto da distribuição das cargas de treinamento no desempenho físico de jogadores de futebol durante a pré-temporada. Revista

Brasileira de Educação Física e Esporte, 34(4), 685-697. https://doi.org/10.11606/1807-5509202000040685

Foster, C. (1998). Monitoring training in athletes with reference to overtraining syndrome. Medicine and Science in Sports and Exercise, 30(7), 1164- 1168. https://doi.org/10.1097/00005768-199807000-00023

Foster, C., Florhaug, J. A., Franklin, J., Gottschall, L., Hrovatin, L. A., Parker, S., Doleshal, P., & Dodge, C. (2001). A new approach to monitoring exercise training. Journal of Strength and Conditioning Research, 15(1), 109-115. https://doi.org/10.1519/1533-4287(2001)015<0109:ANATME>2.0.CO;2

Gabbett, T. J. (2020). Debunking the myths about training load, injury and performance: empirical evidence, hot topics and recommendations for practitioners. British Journal of Sports Medicine, 54(1), 58-66. https://doi.org/10.1136/bjsports-2018-099784

Gabbett, T. J., Nassis, G. P., Oetter, E., Pretorius, J., Johnston, N., Medina, D., Rodas, G., Myslinski, T., Howells, D., Beard, A., & Ryan, A. (2017). The athlete monitoring cycle: a practical guide to interpreting and applying training monitoring data. British Journal of Sports Medicine, 51(20), 1451-1452. https://doi.org/10.1136/bjsports-2016-097298

Gomes, A. Carlos., & Souza, J. de. (2008). Futebol: treinamento desportivo de alto rendimento. 254.

Grammenou, M., & Nulty, C. D. (2025). Managing Fatigue in Team Sports: A Brief Review of Concurrent Training Effects Within the Microcycle. Strength and Conditioning Journal. https://doi.org/10.1519/SSC.0000000000000903

Haddad, M., Stylianides, G., Djaoui, L., Dellal, A., & Chamari, K. (2017). Session-RPE Method for Training Load Monitoring: Validity, Ecological Usefulness, and Influencing Factors. Frontiers in Neuroscience, 11. https://doi.org/10.3389/fnins.2017.00612

Halson, S. L. (2014). Monitoring Training Load to Understand Fatigue in Athletes. Sports Medicine, 44(S2), 139-147. https://doi.org/10.1007/s40279-014-0253-z

Impellizzeri, F. M., Marcora, S. M., & Coutts, A. J. (2019). Internal and external training load: 15 years on. International Journal of Sports Physiology and Performance, 14(2), 270-273. https://doi.org/10.1123/ijspp.2018-0935

Jeong, T. S., Reilly, T., Morton, J., Bae, S. W., & Drust, B. (2011). Quantification of the physiological loading of one week of "pre-season" and one week of "in-season" training in professional soccer players. Journal of Sports Sciences, 29(11), 1161-1166. https://doi.org/10.1080/02640414.2011.583671

Laurent, C. M., Green, J. M., Bishop, P. A., Sjökvist, J., Schumacker, R. E., Richardson, M. T., & Curtner-Smith, M. (2011). A practical approach to monitoring recovery: development of a perceived recovery status scale. Journal of Strength and Conditioning Research, 25(3), 620-628. https://doi.org/10.1519/JSC.0b013e3181c69ec6

McKay, A. K. A., Stellingwerff, T., Smith, E. S., Martin, D. T., Mujika, I., Goosey-Tolfrey, V. L., Sheppard, J., & Burke, L. M. (2022). Defining Training and Performance Caliber: A Participant Classification Framework. International journal of sports physiology and performance, 17(2), 317-331. https://doi.org/10.1123/ijspp.2021-0451

Moreira, A. (2010). La periodización del entrenamiento y las cuestiones emergentes: el caso de los deportes de equipo. Revista Andaluza de medicina del Deporte, 3(4), 170-178.

Moreira, A., Bilsborough, J. C., Sullivan, C. J., Cianciosi, M., Saldanha Aoki, M., & Coutts, A. J. (2015). Training periodization of professional Australian football players during an entire Australian football league season. International Journal of Sports Physiology and Performance, 10(5), 566-571. https://doi.org/10.1123/ijspp.2014-0326

Nakamura, F. Y., Moreira, A., & Aoki, M. S. (2010). Monitoramento da carga de treinamento: a percepção subjetiva do esforço da sessão é um método confiável? Revista da Educação Física/UEM, 21(1), 1-11. https://doi.org/10.4025/reveducfis.v21i1.6713

Pereira, L. A., Freitas, T. T., Zanetti, V., & Loturco, I. (2022). Variations in Internal and External Training Load Measures and Neuromuscular Performance of Professional Soccer Players During a Preseason Training Period. Journal of Human Kinetics, 81(1), 149. https://doi.org/10.2478/hukin-2022-0012

Rodrigues, J. F. C., Dias-Filho, C. A. A., De Oliveira, M. S., Da Silva Sena, C., Ferreira, A. C., Mendes, T. T., Costa1, H. A., De Jesus Silva Soares, N., Marques, R. F., Mostarda, C. T., & Dias, C. J. (2021). Effects of soccer training during preseason on physical and physiological variables in youth soccer players. Motriz: Revista de Educação Física, 27, e1021000921. https://doi.org/10.1590/s1980-65742021000921

Saw, A. E., Main, L. C., & Gastin, P. B. (2016). Monitoring the athlete training response: Subjective self-reported measures trump commonly used objective measures: A systematic review. British Journal of Sports Medicine, 50(5), 281-291. https://doi.org/10.1136/bjsports-2015-094758

Selmi, O., Ouergui, I., Muscella, A., My, G., Marsigliante, S., Nobari, H., Suzuki, K., & Bouassida, A. (2022). Monitoring Psychometric States of Recovery to Improve Performance in Soccer Players: A Brief Review. International Journal of Environmental Research and Public Health, 19(15). https://doi.org/10.3389/fpsyg.2023.1095238

Turner, A. (2011). The science and practice of periodization: A brief review. Strength and Conditioning Journal, 33(1), 34-46. https://doi.org/10.1519/SSC.0b013e3182079cdf

Williams, A. M., Ford, P., & Drust, B. (Eds.). (2023). Science and soccer: Developing elite performers (4th ed.). Routledge. https://doi.org/10.4324/9781003148418