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Is it possible to propose a periodization strategy different from the inverted U in preseason? A comparison between two professional football teams

¿Es posible proponer una estrategia de periodización diferente de la U invertida en pretemporada? Una comparación entre dos equipos de fútbol profesional

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Abstract. Purpose: the main aim of this study was to quantify and compare the weekly external loads of pre-season in two professional football teams. Methods: GPS devices monitored forty-five players in two teams daily in a five-week pre-season period. The external load measures were: number of sessions, total duration, acceleration load (aLoad), total distance (TD), distance at >21 km·h^{-1} (TD21), distance at >24 km·h^{-1} (TD24) and Player-Load® (PL). Results: there were differences in the weekly external load between both teams. Team1 trained 30% more time and training sessions than Team2, so the weekly load for all external load variables was higher except for aLoad and TD21 for W1 (Team2>Team1, $p<0.05$). These differences between teams were not similar for all weeks, with higher differences in weeks 2, 3, and 4. While Team2 proposed a distribution more stable and progressive in high-speed distances (TD21 and TD24) among weeks, Team1 used the inverted U model. In this line, variations between weeks were lower for Team2 (from -4% to 38%) than for Team1 (from -26% to 1,653%). Conclusions: The study's main conclusion was that in addition to a load management with an inverted U model, more widespread in professional football, a more stable and progressive distribution strategy can be proposed in pre-season in a professional setting.
Keywords: GPS, training load, team sports, periodization, monitoring.

Resumen. Objetivo: el objetivo principal de este estudio fue cuantificar y comparar las cargas externas semanales de pretemporada en dos equipos de fútbol profesional. Métodos: Los dispositivos GPS monitorearon diariamente a cuarenta y cinco jugadores de dos equipos durante un período de pretemporada de cinco semanas. Las medidas de carga externa fueron: número de sesiones, duración total, carga de aceleración (aLoad), distancia total (TD), distancia a >21 km·h^{-1} (TD21), distancia a >24 km·h^{-1} (TD24) y Player-Load® (PL). Resultados: hubo diferencias en la carga externa semanal entre ambos equipos. El Equipo1 entrenó un 30% más de tiempo y sesiones de entrenamiento que el Equipo2, por lo que la carga semanal para todas las variables de carga externa fue mayor excepto para aLoad y TD21 para W1 (Equipo2>Equipo1, $p<0,05$). Estas diferencias entre equipos no fueron similares para todas las semanas, con mayores diferencias en las semanas 2, 3 y 4. Mientras que el Equipo2 propuso una distribución más estable y progresiva en distancias de alta velocidad (TD21 y TD24) entre semanas, el Equipo1 utilizó la U invertida. modelo. En esta línea, las variaciones entre semanas fueron menores para el Equipo2 (del -4% al 38%) que para el Equipo1 (del -26% al 1.653%). Conclusiones: La principal conclusión del estudio fue que además de una gestión de la carga con modelo de U invertida, más extendida en el fútbol profesional, se puede proponer una estrategia de distribución más estable y progresiva en la pretemporada en el ámbito profesional.
Palabras clave: GPS, carga de entrenamiento, deportes de equipo, periodización, seguimiento.

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Introduction

Due to its implications for performance and injuries, the load management of the training and match process has received particular attention in recent years (Soligard et al., 2016). The academic literature agrees on the importance of adequately planning and controlling the training and match load and properly managing the demands and adaptations generated by the players (Gabbett et al., 2017). This laborious process aims to optimize the team's performance while reducing the likelihood of injury in the player (Buchheit & Simpson, 2017).

Some years ago, it described the usual training load for professional football players (Gaudino et al., 2015). Later, the need to know this daily load was suggested. However, it is associated with the session's location in the weekly training microcycle (Owen et al., 2017a), referencing the distance between matches (match day approach). This type of study, where training load and intensity indicators are combined in a manner that is absolute and relative to the demands of the match, allows profiling of a usual week in an in-season period (Martín-García et al., 2018; Owen et al., 2017b; Zurutuza et al., 2017). Currently, and applied in the field of football, the proposals for periodizing the weekly load in in-season period and with a single match per week tend to support the inverted U model (Martín-García et al., 2018), which would allow adjusting to the fitness-fatigue model proposed by Banister, Calvert, Savage, & Bach (1975). The central days of the week have longer duration and intensity, so there is a higher workload for the sessions (Owen et al., 2017b; Fessi et al., 2016). Following the principle of horizontal alternation (Buchheit et al., 2018; Delgado-Bordonau & Mendez-Villanueva, 2012), reducing the training load as we approach the match (Castillo et al., 2019).

Workload management has also been described for congested periods of competition (e.g. two matches per week) or to compare workloads in starting versus non-starting professional players (Anderson et al., 2016; Stevens et al., 2017). Both study themes conclude the need to monitor the training and match load to compensate or regulate the demands of the players to allow a chronic load high enough to maintain or improve the performance of the players, moving them away from a greater probability of suffering an injury and arriving with the freshness necessary to compete in the best possible condition. However, most research studies focus on analyzing workloads during the in-season period.

The preseason has been considered a critical period in preparing football players (Campos-Vazquez et al., 2017). Although football is a period that includes between four and eight weeks, it has traditionally been of paramount importance in preparing football players. The emphasis during the preseason is to rebuild physical performance after a period without collective training that occurs between seasons or off-season (Malone et al., 2015). The more classic view of this period indicates that it should have a more significant workload to quickly achieve an adequate level of fitness that can be managed during the in-season period (Jeong et al., 2011). Research studies in this regard indicate that the internal workload of weekly preseason exceeds the weekly load of the in-season period using the RPE-session and heart rate (Algrøy et al., 2011; Jeong et al., 2011; Owen et al., 2015). In addition, recent studies describe a pattern of an inverted U model in managing workload during the preseason, presenting the highest values in W2 and W3 of the preseason (Clemente et al., 2019; Coppalle et al., 2019). This workload planning strategy seems to be sustained by the need to accumulate as much workload as possible to 'build a conditional reserve' for the rest of the season. However, this could imply an increase in the chances of being injured due to sudden changes in the training load (Soligard et al., 2016). In addition, there seems to be some controversy as to whether it exists (Campos-Vazquez et al., 2017) or does not exist (Cetolin et al., 2018; Gabbett, 2004) of an association between training more and improving the physical condition of the players. It is important to note that there is evidence that postulates that any increase in burden in this period brings with it an increase in the risk of injury (Malone et al., 2017), with the consequences that this entails since there is a positive correlation between preseason training time and participation in official matches during the in-season period (Windt et al., 2017a).

Therefore, more information is needed regarding the workload patterns (quantity, quality and distribution) used by professional football teams during the preseason. For all those mentioned above, the main purpose of this study was to compare the weekly external load during the first five weeks of the preseason in two professional football teams from the same league.

Materials and methods

Study design

An observational study (i.e., no intervention during training) was designed, and data was collected during the preseason of two professional football teams. During the 5-week of preseason external training loads (via GPS devices) were recorded in each training session (TS) and friendly matches (FMs). Players who did not participate in 100% of the TS and FMs during the week were excluded from the analysis. Only the session that were done in the field were included for analysis, neither individual training sessions or extra TS were included in the study. Moreover, players in retraining periods were not included in the study. In FMs, regardless of the distribution of minutes (e.g., players who participated 45-45 min, 60-30 min, and 75-15 min) was considered as a completed session. Goalkeepers' data were not included in this study. Therefore, the players that made the team dynamic during the whole week were included.

Participants

This study involved two professional football teams competing in the Spanish first division (La Liga) and a period comprising the first five weeks of pre-season in the 2019-20 season. A total of 51 football players participated in both teams (Team1 = 29 players and Team2 = 22 players). The number of players who completed the five weeks were 25 (Team1= 16 players and Team2= 9 players). The initial level of 30/15 intermittent fitness test was 21.0 ±0.9 km·h^{-1} and 20.4 ±1.0 km·h^{-1} in Team1 and Team2 respectively. In addition, 13 players on both teams could not complete 100% of any of the weeks. The total number of sessions (training sessions [TS] + friendly matches [FM]) carried out in the field by Team1 were 43 of which seven were FM, distributed as follows: week 1 (W1) = 6 + 0, W2 = 8 + 1, W3 = 9 + 2, W4 = 7 + 2, and W5 = 6 + 2 (TS and FM, respectively). The total number of sessions by Team2 were 30 (23 TS and 7 FM) distributed as follows: W1 = 6 (5 + 1); W2 = 6 (5 + 1); W3 = 6 (4 + 2); W4 = 6 (4 + 2) and W5 = 6 (5 + 1) TS and FM, respectively. The ethics committee of the institution approved the protocol.

Procedures

The external load was collected using GPS devices (S5 and V7 by Catapult, Australia). Players wore the same GPS device for all the training sessions to minimize inter-device variability (Hoppe et al., 2018). The players were familiarized with GPS devices since it is part of the training monitoring system used by the professional teams. Total duration, acceleration load (aLoad), total distance (TD), distance covered at >21 km·h^{-1} (TD21), distance covered at >24 km·h^{-1} (TD24) and Player Load® (PL) were registered every TS and FM. Investigations have shown an inter-unit reliability of 2-3% (Delaney et al., 2018) when assessing average acceleration values and these are lower than typically seen between devices using the traditional effort detection based approach to acceleration assessment. PL is an indicator based on the combined accelerations made in three planes of movement. Previous research on this indicator had reported high intra and inter-device reliability (Boyd et al., 2011), and it had been shown to be a valid way of monitoring a training load in football players (Casamichana et al., 2013). Furthermore, acute:chronic workload ratio (ACWR) was calculate for all external load variables. The uncoupled ACWR (where the acute load is not part of the chronic load) was used (Windt & Gabbett, 2018). The chronic value was the average of the first four

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weeks while the acute load was the load of the fifth week. In addition, the relative weekly change (%) in external workload of one week compared to the previous one has been calculated (Gabbett, 2016) through the following formula:

% Change = ((actual week workload - past week workload) / past week workload)*100

The number of satellites used to infer GPS signal quality, horizontal dilution of precision (HDOP) and the average of the Global Navigation Satellite System (GNSS) quality were for the Team1: 11.8 ±0.2 satellites, 0.8 ±0.1 and 82.7 ±3.6%, and for the Team2: 11.7 ±0.2 satellites, 0.9 ±0.1 and 64.2 ±2.7%, respectively.

Statistical Analysis

Descriptive statistics included mean and standard deviation (±SD). A post hoc Tukey's test was conducted, and *Cohen's d* was calculated for pairwise comparisons. The following classifications to measure the magnitude of Cohen's d was used (Hopkins et al., 2009): trivial ($d < 0.2$), small ($0.2 < d < 0.6$), moderate ($0.6 < d < 1.2$), large ($1.2 < d < 2.0$) and very large ($d > 2.0$). All statistical analyses were done using JASP statistical analysis software version 0.10.2 (University of Amsterdam, https://jasp-stats.org/). The level of statistical significance was set at $p \leq 0.05$.

Results

The total duration of the TS and FMs in the five weeks of preseason was 43 hours and 5 min for Team1, while Team2 accumulated 33 hours and 28 min. The teams accumulated per week an average (±SD) of 9 hours and 1 min (±2 hours and 31 min) and 6 hours and 41 min (±18 min), Team1 and Team2, respectively (Table 1).

Table 1.
Preseason accumulated load of the two teams during the five first weeks of preseason. Note: total time in hours:minutes:seconds (h:min:sec), acceleration load (aLoad) in arbitrary units (AU), Total Distance (TD) in meters (m).

variables	Team1	Team2
Number of sessions	43	30
(training session+friendly matches)	(36+7)	(23+7)
Total duration (h:min:sec)	45:05:11	33:27:47
aLoad (AU)	57,861.4	54,593.3
Total distance (m)	207,603.4	173,748.2
TD at >21 $km \cdot h^{-1}$ (m)	5,875.9	4,900.9
TD at >24 $km \cdot h^{-1}$ (m)	1,730.0	1,383.8
Player Load (AU)	22,803.0	18,772.8

In the Figure 1 can see the distribution of the aLoad in the five first weeks of the preseason. There were significant differences between Team1 and Team2 in the W1 (Team2 > Team1, ES= 1.6) and W3 (Team1 > Team2, ES= 2.5). For the Team1 the magnitude of the effect among weeks were: W2 > W1 (ES= 2.7), W3 > W1 (ES= 5.9), W2 (ES= 1.6) and W5 (ES= 1.9), and W4 > W1 (ES= 3.1). For the Team2 there not were differences among weeks. The percentage of change between consecutive weeks for each Team ranged from -17% to 79% for the Team1 and from -1% to 5% for the Team2.

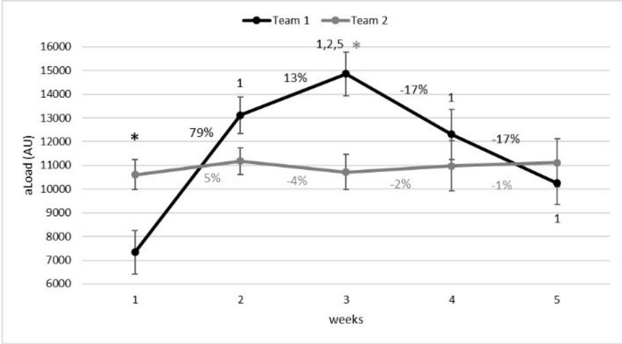

Figure 1. Mean and standard deviation of weekly total acceleration load (aLoad in arbitrary units, AU) of the two teams during the five first weeks of preseason. In the X axis are the weeks (from the 1st to the 5th). In percentage (%) the change between consecutive week for the same Team. * in grey is > Team2 and * in black > Team1. The numbers (in black for Team1 and in grey for Team2) means higher than this week for each Team.

In the Figure 2 can see the distribution of the TD in the five first weeks of the preseason. There were significant differences between Team1 > Team2 in the W2 (ES= 5.2), W3 (ES= 4.7) and W4 (ES= 2.1). For the Team1 the magnitude of the differences among weeks were: W2 > W1 (ES= 4.6), W4 (ES= 2.9) and W5 (ES= 5.1), W3 > W1 (ES= 3.9), W4 (ES= 2.4) and W5 (ES= 4.3), and W4 > W1 (ES= 1.6) and W5 (ES=2.2). For the Team2 there not were differences among weeks. The percentage of change between consecutive weeks for each Team ranged from -18% to 38% for the Team1 and from -3% to 3% for the Team2.

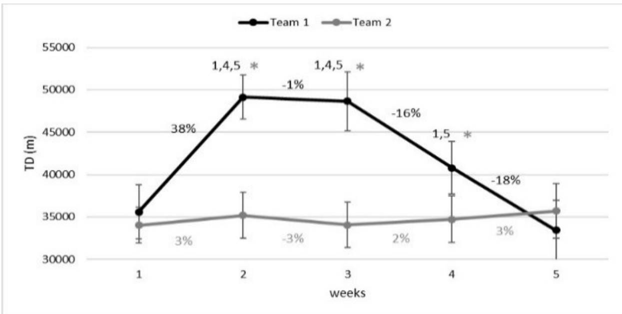

Figure 2. Mean and standard deviation of weekly total distance covered (TD in m) of the two teams during the five first weeks of preseason. In the X axis are the weeks (from the 1st to the 5th). In percentage (%) the change between consecutive week for the same Team. * in grey is > Team2 and * in black > Team1. The numbers (in black for Team1 and in grey for Team2) means higher than this week for each Team.

In the Figure 3 can see the distribution of the TD21 in the five first weeks of the preseason. There were significant differences between Team1 and Team2 in the W1 (Team2 > Team1, ES= 1.6) and W3 (Team1 > Team2, ES= 2.5). For the Team1 the magnitude of the differences among weeks were: W2 > W1 (ES= 2.7), W3 > W1 (ES= 5.9), W2 (ES= 1.6) and W5 (ES= 1.9), W4 > W1 (ES= 3.1), and W5 > W1 (ES= 3.1). For the Team2 there not were differences among weeks. The percentage of change between consecutive weeks for each Team ranged from -26% to 340% for the Team1 and from -2% to 21% for the Team2.

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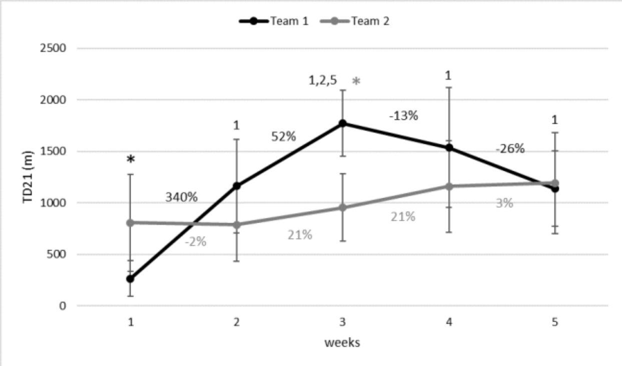

Figure 3. Mean and standard deviation of weekly total distance covered above 21 Km/h (TD21 in m) of the two teams during the five first weeks of preseason. In the X axis are the weeks (from the 1st to the 5th). In percentage (%) the change between consecutive week for the same Team. * in grey is > Team2 and * in black > Team1. The numbers (in black for Team1 and in grey for Team2) means higher than this week for each Team.

In the Figure 4 can see the distribution of the TD24 in the five first weeks of the preseason. There were significant differences between Team1 > Team2 only in the W3 (ES= 1.6). For the Team1 the magnitude of the differences among weeks were only for the W1 with the rest: W1 < W2 (ES= 2.4), W3 (ES= 4.4), W4 (ES= 2.7) and W5 (ES=2.8). For the Team2 there not were differences among weeks. The percentage of change between consecutive weeks for each Team ranged from -15% to 1,653% for the Team1 and from 20% to 38% for the Team2.

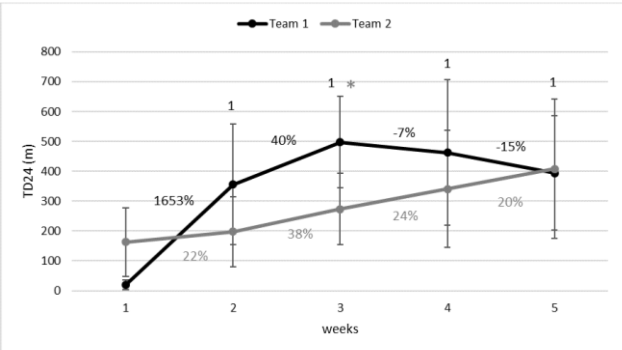

Figure 4. Mean and standard deviation of weekly total distance covered above 24 Km/h (TD24 in m) of the two teams during the five first weeks of preseason. In the X axis are the weeks (from the 1st to the 5th). In percentage (%) the change between consecutive week for the same Team. * in grey is > Team2 and * in black > Team1. The numbers (in black for Team1 and in grey for Team2) means higher than this week for each Team.

In the Figure 5 can see the distribution of the PL in the five first weeks of the preseason. There were significant differences between Team1 > Team2 in the W2 (ES= 3.3), W3 (ES= 3.4) and W4 (ES= 4.4). For the Team1 the magnitude of the differences among weeks were: W2 > W1 (ES= 3.2), W4 (ES= 2.0) and W5 (ES= 3.3), W3 > W1 (ES= 2.9), W4 (ES= 1.9) and W5 (ES= 3.1), and W4 > W1 (ES= 1.4) and W5 (ES= 0.7). For the Team2 there not were differences among weeks. The percentage of change between consecutive weeks for each Team ranged from -19% to 35% for the Team1 and from -4% to 4% for the Team2.

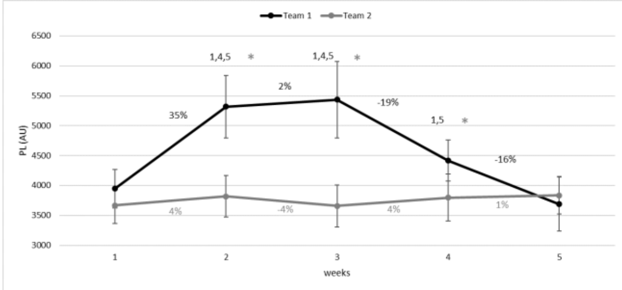

Figure 5. Mean and standard deviation of weekly total player load (PL in arbitrary units, AU) of the two Teams during the five first weeks of preseason. In the X axis are the weeks (from the 1st to the 5th). In percentage (%) the change between consecutive week for the same Team. * in grey is > Team2 and * in black > Team1. The numbers (in black for Team1 and in grey for Team2) means higher than this week for each Team.

Finally, with regard to ACWR, the values for each team for all external load variables were as follows: 1) for Team1, aLoad= 0.86, TD= 0.77, TD21= 0.96 and TD24= 1.18, and PL= 0.77; 2) for Team2, aLoad= 1.02, TD= 1.03, TD21= 1.29 and TD24= 1.67, and PL= 1.03.

Discussion

The main aim of this study was to compare the weekly external load of the first five weeks of preseason in two professional football teams of the Spanish league. The main results were that the total workload and the distribution of the loads in the preseason weeks of the two teams studied were different. Secondly, it should be noted that both teams coincided in the workload in all external load variables during the last preseason week (the 5th). This seems to indicate that regardless of the periodization of workloads designed for the preseason, the technical staff are aware of the need to implement a similar final approach in the fifth week of the preseason period in the teams in order to have sufficient freshness with which to compete at the start of the season.

Some studies find that doing a more significant workload during this period does not translate into a more remarkable conditional improvement (Cetolin et al., 2018; Gabbett, 2004). Thus, Cetolin et al. (2018) found that the group of young football players (under-19) who presented a greater amount of training load (RPE-session) and intensity (RPE) presented a minor improvement compared to the group with lower values (under-15) in intermittent endurance and repeated sprints. However, this may be due to a much lower initial physical condition of the U15. On the other hand, some studies seem to find a relationship between the load, volume and intensity (obtained through RPE) accumulated in the preseason and the improvement in 30-15 intermittent fitness test (Campos-Vazquez et al., 2017).

The intervention strategy of the coaching staff is particular (Morera Carbonell et al., 2023) and, especially in the preparatory period, where there is a high availability for training and the teams accumulate a large amount of training load. The first of the differences in workload management proposed by the teams was the total workload accumulated in the five weeks (Table 1), both in training time, number of sessions, and for the total external load variables studied (TD, aLoad, TD21, TD24, and PL) studied. Despite presenting a similar level of initial cardiovascular intermittent fitness of the football players, the results showed that Team1 accumulated a volume of approximately 45 hours while Team2 accumulated less than 34 hours of TS and FMs on-field. In addition, there was a clear difference in the number of sessions conducted by both teams; Team1 trained 40% more than Team2 (43 and 30 sessions, respectively), including here both TS and FMs disputed by the teams, seven in both cases. In the case of TD24 variable, the distances accumulated by Team1 were 20% higher than Team2, which cannot be justified by the FMs played in this period (Toscano Bendala et al., 2018) because both teams played the same number of FM. For the rest of the variables, the strategy of Team1 was also to accumulate more total load, with a range of 6-20% more than Team2 (6%, 16%, 17%, and 18% for aLoad, TD, TD21, and PL, respectively). Unlike a previous study (Clemente et al., 2019) that used as an inclusion criterion to have fulfilled >80% of the weekly sessions, in this study, only the data of the players who completed 100% of the sessions of each week (excluding the players who perform retraining, who were absent in any of the sessions or who did not complete the training session made by the team in the field). This favored that the deviation of the load measurement did not impede the intervention strategy proposed by both teams.

In the present study, more than half of the team's players could not complete all the sessions in the five weeks of the preseason, although it is true that only some of the absences were due to injury. In some cases, late incorporation of the players (e.g., having played an international championship in June or a new signing with the preseason started) was the cause. In the literature, it has been described that there is a relationship between sessions completed by preseason players and the likelihood of injury. In rugby players during an 18-week preseason, Windt et al. (2017b) found a significant inverse relationship ($r = -0.40$) between the number of training sessions completed and the percentage of games lost due to injury during the competitive season. Based on these results, there is a relationship between the athlete's participation during the preseason and the decrease in chances of sports injury during the in-season. The greater the number of preseason sessions completed, the fewer matches lost due to injury during the in-season period. The authors justify this protective effect that happens when completing the preseason in two non-exclusive hypotheses. On the one hand, athletes who complete the preseason may acquire a higher level of preparation, and this higher level of fitness has already been described as a modulator of the effects of the training load, causing more robust athletes to injury (Windt et al., 2017b). In addition, they accumulate higher values of chronic load, an aspect linked to the increase in fitness and which has also been shown as a modulator of the effect of the load, allowing athletes to withstand higher load levels without significantly increasing the likelihood of injury (Malone et al., 2017) and probably, players with good fitness (e.g. high level of chronic load) show better travel wellness (Rabbani & Buchheit, 2016). On the other hand, it could be that the athletes who completed the preseason are, *per se*, the most robust athletes and, therefore, those with the least predisposition to injure themselves during the preseason. Murray, Gabbett, and Townshend (2017) found similar results in Australian football. The athletes were categorized into high, medium and low participation groups according to the percentage of preseason sessions completed (>85%, 50-85% and <50%). The authors find that the high and medium participation groups completed more sessions during the in-season period and were available for the season's matches at a significantly higher percentage than the low participation group. The burden imposed during the in-season period on the low participation group was significantly lower than the high and moderate participation groups. In addition, there is a significant relationship between the percentage of sessions completed in preseason and the availability of matches during the in-season period (Murray, Gabbett & Townshend, 2017).

Notably, the two teams adopted distinct approaches to workload management. Team1 followed an inverted U model, with higher workload values in W2, W3 and W4. In contrast, Team2 maintained a more stable model throughout the five weeks of preseason, with a gradual increase of the variables TD21 and TD24. These differences in workload management strategies are crucial for coaches and physical trainers to consider, as they can significantly influence the risk of injury and player performance. Previous research has shown that high loads increase the risk of injury (Gabbett, 2016) and that substantial modifications in the doses of microcycle to microcycle training are also a factor to take into account (Malone et al., 2017; Cross et al., 2016; Rogalski et al., 2013; Piggott et al., 2009). The management of this change (%) throughout the preseason by the two teams has also been remarkably different, with changes below 10% by Team2 for most of the variables. However, the weekly load changes (%) of Team1, especially from W1 to W2, exceeded those values.

The ACWR has been studied and applied in recent years for different purposes to optimize the management of training and match load (Soligard et al., 2016; Gabbett, 2016). Differences were observed in this ratio due to the teams' load management. Team1 presented at the end of the period studied (chronic: average of the first four weeks, acute: fifth week), for all the training load variables, values lower than those of Team2. In the case of Team1, for all variables except for the variable TD24, the values were clearly lower than 1 (<0.8 in aLoad and TD) and lower in PL (0.96), as the values of the last week (acute load) were largely lower than the mean of the previous weeks (chronic load), which, in the medium term, could reduce the player's fitness (Gabbett, 2016). In contrast, Team2 described values close to 1 for aLoad, TD and PL, while TD21 and TD24 reached values close to 1.5. Interestingly, both teams accumulated virtually the same distance in TD21 and TD24 at W5 (1200 and 400 m, respectively), achieved more progressively in Team2, and supported by evidence that peaks in ACWR may not be related to later injury occurrence in professional footballers (Impellizzeri et al., 2020). Perhaps by W5 players may be ready to increase their training load, following a 4-week workload progression. More research is needed to answer the question of how much training is enough to get the player fit, keep him away from the risk of injury, have him available to compete for as long as possible and not compromise his freshness to perform in competition.

Limitations

One of the limitations of the research study is that no conditional performance measures have been included after the preseason, nor have the initial performance of the team been assessed in the first official matches (Coppalle et al., 2019). It would have been very interesting to have also had information regarding the response to training or internal load variables and wellness of the players, suggesting the need to incorporate a holistic view in total load monitoring (Losada-Benitez et al., 2023). Nor has it been possible to have the information referring to the injuries suffered by the players, which would have allowed for a reference framework to support a proposal of minimum and maximum (range) of training load accumulated and distributed during the five weeks that lasted the preseason period. Finally, we must be careful when comparing the load accumulated by the teams in the five weeks because it is the sum of the average value of each week the players accumulate.

Practical applications

This study shows different strategies in the management of weekly external load adopted by two professional football teams during the preseason. While one team adopted an inverted U-shaped periodization, the other team adopted a stable and progressive in high-speed training load periodization throughout the preseason. In addition, both teams propose very similar external load values in the last week of the preseason, so two different 'paths' to arrive to the same place. This study describes the values of external load by professional teams during the preseason, which allows coaches/trainers to compare both the values of weekly external load and the strategy adopted regarding the management of training loads in the preseason.

Conclusion

The study's main conclusion refers to what professional football teams use different strategies in managing external weekly load during the preseason to reach the last week of the preseason, where the weekly external load in the last week of the preseason was very similar in both teams. The stable and increasing load model can be another strategy to the usual inverted U-shaped periodization that could serve as a reference for professional football teams.

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