

Post-match rest day placement and the shape of the week: external load distribution and injury occurrence in two elite football teams

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Headline

Elite clubs often disagree on when to schedule post-match active recovery: some use MD+1 for recovery and rest on MD+2, others do the reverse (1). This may shape weekly external-load distribution, with possible implications for freshness and injury risk, yet professional football evidence is scarce. Importantly, coaches do not programme distances or accelerations: they programme football (e.g., game formats, pitch sizes, player numbers, tactical themes), and the running and mechanical loads measured by GPS are the consequence of these choices. How much work a team should do across a 7-day microcycle is now reasonably well described, both from the loading patterns reported by elite practitioners (1) and from the principles most clubs follow (2). Where that work sits within the week has received far less attention and so has the cost of placing too much of it late: work kept on MD-2 and MD-1 may compromise the taper and match-day freshness (2). The day off is the single decision that sets the start of the working week, so it may shape the whole distribution. Resting on MD+2 rather than MD+1 has been associated with lower non-contact injury rates in a large multi-club dataset (3) and with better freshness across the microcycle (4), yet how the two options shape external load across the week has rarely been described in professional football.

Aim

This prospective observational study compared two professional football teams with opposite post-match rest day placement (rest on MD+1 vs. rest on MD+2), to help practitioners decide where to place the day off within the weekly microcycle. We examined whether rest day placement was associated with differences in weekly external-load distribution and, secondarily, with time-loss injury occurrence. We also examined whether each team's weekly profile simply tracked its own match demands.

Methods

Study Design and Setting

This study was conducted as a prospective observational cohort over one full competitive season (August to May) in two professional male football teams competing in the Greek First Division. The aim of the study was to examine post-match rest day placement as implemented in real-world professional football environments.

No experimental intervention was applied. Each team consistently followed its own recovery strategy throughout the observation period. One team performed active recovery on MD+1 (with MD+2 designated as a rest day, i.e., Rest MD+2 team), whereas the other scheduled recovery on MD+2 (with MD+1 designated as a rest day, i.e., Rest MD+1 team). Throughout this paper, the recovery session refers to the supervised post-match session, performed on MD+1 in the Rest MD+2 team and on MD+2 in the Rest MD+1 team. The rest day is the other of these two days, with no club-organised session at all. Every comparison labelled recovery session therefore compares MD+1 in one team with MD+2 in the other.

Only standard seven-day microcycles between consecutive matches were included. Weeks with irregular scheduling or deviations from the standard weekly structure were excluded. A total of seven eligible microcycles per team were included in the final analysis. The seven selected microcycles corresponded to the same calendar weeks for both teams.

All procedures were conducted in accordance with the Declaration of Helsinki and were approved by the Local Ethics Research Committee of the School of Physical Education and Sport Science at Serres, Aristotle University of Thessaloniki (approval code: ERC-134/2026). Written informed consent was obtained from all participants.

Participants

Thirty-eight professional male outfield players from the two participating teams were available for analysis (13 in the Rest MD+2 team, 25 in the Rest MD+1 team; age range: 18–35 years). Goalkeepers were excluded due to their distinct positional and locomotor demands.

Players were included in a given microcycle if they met all criteria: (i) ≥ 70 minutes in the weekly match; (ii) full participation in all scheduled training sessions; (iii) valid GNSS data during the recovery session; and (iv) complete injury surveillance information. Six Rest MD+1 players had no valid recovery-day GNSS data across the observation period and were excluded; the final analytical cohort comprised 32 players (Rest MD+2 = 13, Rest MD+1 = 19).

Sample size was determined by team availability rather than a priori power calculation, consistent with similar applied studies in elite sport.

Weekly Microcycle Structure and Recovery Strategy

A microcycle was defined as the seven-day period between two consecutive matches, with match day (MD) as the reference point (1,2). Days before the next match are labelled MD-4 to MD-1 throughout this paper; in a seven-day microcycle, MD-4 is the third day after the match.

Both teams followed a consistent weekly structure that included post-match recovery, progressive loading, and tapering prior to the subsequent match. Each team completed five training sessions per week in addition to one competitive match. On the rest day, players did not report to the training ground and undertook no club-organised or individually prescribed training. Recovery sessions lasted on average

32 minutes in the Rest MD+2 team and 44 minutes in the Rest MD+1 team, and included low-intensity running, mobility exercises, and light technical activities. Loading sessions (MD-4 and MD-3) lasted approximately 78–88 minutes and included small-sided games, tactical drills, transition exercises, and position-specific activities. Tapering sessions (MD-2 and MD-1) lasted approximately 46–65 minutes and focused on tactical preparation and reduced physical load prior to match play (durations per day and team are given in Results). A detailed representation of the weekly training structure for both recovery strategies is provided in Table 1. A total of seven recovery sessions per team were analysed across the study period (66 and 39 player-sessions, respectively, Table 2).

Table 1. Weekly microcycle structure

Group	MD (Match)	MD+1	MD+2	MD-4	MD-3	MD-2	MD-1	MD (Next match)
Rest MD+2	Match	Recovery (Low)	Rest (Passive)	Training 1 (High)	Training 2 (High)	Training 3 (Moderate)	Training 4 (Low)	Match
Rest MD+1	Match	Rest (Passive)	Recovery (Low)	Training 1 (High)	Training 2 (High)	Training 3 (Moderate)	Training 4 (Low)	Match

All sessions listed were held in the morning; no additional session was scheduled in the afternoon on any day, except for an additional match-day afternoon slot when fixtures required it. MD = match day; Rest MD+2 = active recovery performed on MD+1 (rest on MD+2); Rest MD+1 = active recovery performed on MD+2 (rest on MD+1).

Table 2. Players eligible for analysis per week

Week	Rest MD+2: players analysed (n)	Rest MD+1: players analysed (n)
W1	10	5
W2	9	5
W3	7	5
W4	10	5
W5	10	5
W6	10	5
W7	10	9

Values represent the number of eligible players contributing data in each week (66 and 39 player-weeks in total for Rest MD+2 and Rest MD+1, respectively).

External Load Monitoring

External load was monitored using 10 Hz GNSS devices, a widely used approach for quantifying external load in team sports (5,6) (STATSports Apex, Northern Ireland; validity and reliability of this system previously established (7,8)). Both teams used identical hardware, firmware, and detection thresholds throughout, so between-team differences cannot reflect monitoring equipment. Each player wore the same device throughout, positioned between the scapulae. Sessions with missing or poor-quality GNSS data were excluded. External-load variables analyzed included: total distance (m), high-speed running distance ($19.8\text{--}25.2\text{ km}\cdot\text{h}^{-1}$), sprint distance ($\geq 25.2\text{ km}\cdot\text{h}^{-1}$), accelerations ($> 3\text{ m}\cdot\text{s}^{-2}$), and decelerations ($< -3\text{ m}\cdot\text{s}^{-2}$), using fixed thresholds consistent with common applied practice. The unit of analysis was the player-week.

Injury Definition and Surveillance

Time-loss injuries were defined as any physical complaint sustained during training or match play that resulted in the player being unable to fully participate in football activities for at least 24 hours following the incident, in accordance with established consensus guidelines (9).

Injuries were recorded prospectively by club medical staff following a structured surveillance process. For each injury, the following information was recorded: injury date, anatomical location, injury type, injury mechanism, and return-to-play date. Weekly training and match exposure was calculated for each player to contextualise injury occurrence, using the recorded duration of each session (see Statistical Analysis).

For analytical purposes, injury occurrence was coded at the player-week level, restricted to the standard seven-day microcycles meeting the eligibility criteria described above; injuries occurring during excluded or irregular weeks were not included in the analysis. A week was classified as an injury week if at least one time-loss injury occurred during that microcycle. Weeks without time-loss injury were classified as non-injured weeks.

Match load was not used as a covariate. Each team's match-day load is reported in Figure 1 and serves as the reference for the normalized analysis presented in Figure 2.

Statistical Analysis

The unit of analysis was the player-week. Linear mixed-effects models compared recovery-session external load be-

tween strategies, with strategy as a fixed effect, week as a covariate, and player ID as a random intercept. Adjusted mean differences (95% CI) and standardized mean differences (SMD) quantified effect sizes. Weekly load distribution across the microcycle is presented descriptively, without formal statistical testing. Because recovery-session duration differed between teams, the models were repeated on load per minute of session as a sensitivity analysis. Session durations are reported descriptively. Each pre-match training day was expressed as a percentage of the team's own mean match-day value, and 95% CIs for these percentages were obtained by resampling players with replacement (10,000 bootstrap samples), so they reflect between-player variability only.

Individual GPS-monitored exposure for the injury analyses was calculated per international consensus recommendations (9) from recorded session durations for every eligible player-week. Injury incidence (per 1000 player-hours) and 95% CIs were derived from the Poisson distribution. Because all injuries occurred during matches, incidence was also expressed per 1000 match hours (from recorded match minutes), with sensitivity analyses restricted to injuries with at least 3 days of time loss and to non-contact injuries. Given the small number of injury events ($n = 11$), formal regression modelling of injury risk was not considered reliable; each injury is instead reported descriptively alongside exposure-adjusted incidence rates. Effect sizes were interpreted as trivial (<0.2), small (0.2 – 0.6), moderate (0.6 – 1.2), large (1.2 – 2.0), and very large (>2.0). Analyses used Python (pandas, NumPy, SciPy, statsmodels, Matplotlib, Seaborn).

Results

Sample characteristics and injury occurrence

The final analytical sample comprised 32 professional football players (Rest MD+2 = 13, Rest MD+1 = 19), contributing a total of 105 complete player-weeks with valid recovery-session GNSS data (Rest MD+2 = 66, Rest MD+1 = 39; Table 2). Across the selected observation period, 11 time-loss injuries were recorded. Injury incidence was subsequently expressed relative to individual GPS-monitored football exposure (injuries per 1000 player-hours). Descriptive external-load data for each recovery strategy and microcycle day are summarized below.

Descriptive external-load profile across the microcycle

The descriptive analysis demonstrated distinct external-load profiles between the two recovery strategies (Figure 1). Match day represented the highest-load session in both groups, while the distribution of external load across the remaining microcycle differed between strategies. Compared with the Rest MD+2 strategy, the Rest MD+1 strategy was characterized by a greater external load during the supervised recovery session, particularly for total distance, accelerations, and decelerations, whereas the Rest MD+2 strategy showed greater high-speed running during the recovery session. Descriptive values for all external-load variables across the weekly microcycle are summarized below. Mean (SD) session durations in the Rest MD+2 and Rest MD+1 teams were, respectively, 32.5 (2.8) and 44.2 (3.2) min for the recovery session, 78.0 (2.7) and 79.6 (4.6) min for MD-4, 84.1 (4.3) and 87.7 (3.8) min for MD-3, 58.9 (5.7) and 65.4 (5.1) min for MD-2, 47.7 (3.9) and 46.3 (4.7) min for MD-1, and 90.6 (7.3) and 85.6 (8.0) min for the match.

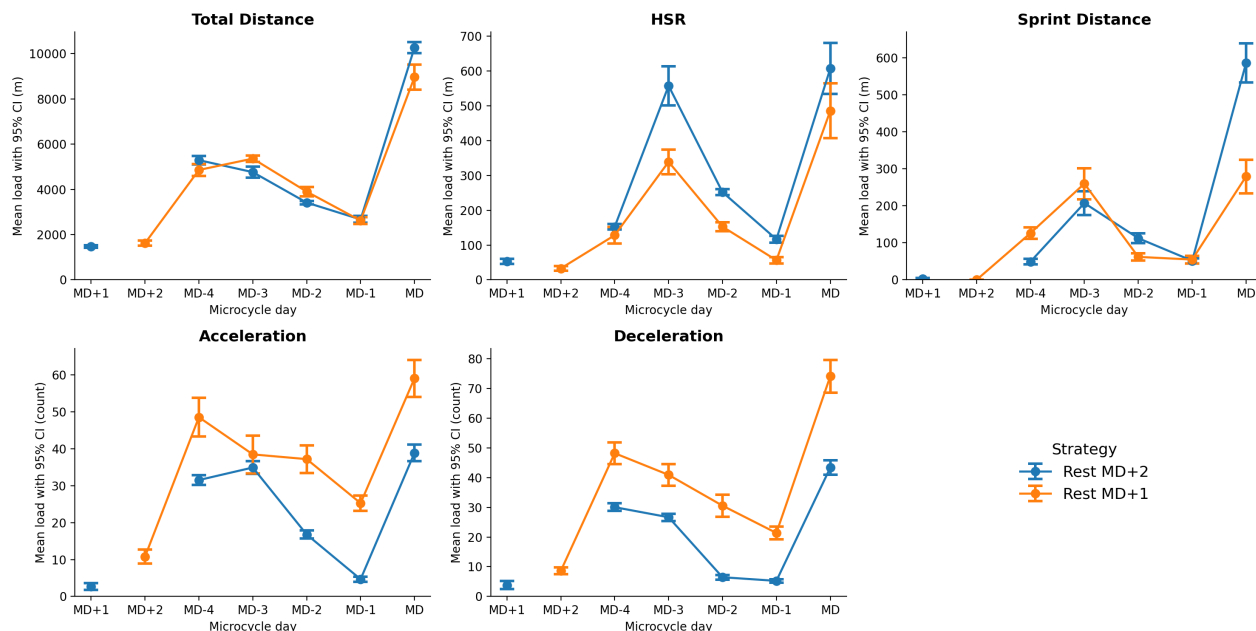


Fig. 1. Weekly external-load profiles across the microcycle according to the Rest MD+2 and Rest MD+1 strategies. Values represent mean external load with 95% confidence intervals for each microcycle day. Blue represents the Rest MD+2 strategy and orange the Rest MD+1 strategy. Because the recovery session was scheduled on MD+1 for the Rest MD+2 strategy and on MD+2 for the Rest MD+1 strategy, each strategy contributes a data point only at its own active-recovery day, with the other strategy resting (no GNSS session) on that day.

Main comparison of recovery-session load between Rest MD+2 and Rest MD+1

Linear mixed-effects models were used to compare recovery-session external load between the two strategies. Recovery strategy was included as the fixed effect, week as a covariate, and player ID as a random intercept. The model results are summarized below. Recovery-session external load differed between strategies for four of the five variables (Table 3): Rest MD+1 sessions included more accelerations and decelerations and covered more total distance, while Rest MD+2 sessions included more high-speed running, and sprint distance did not differ clearly. The Rest MD+1 recovery session was also longer (44.2 vs. 32.5 min). Expressed per minute of session, accelerations remained higher in Rest MD+1 (+0.16 per min, 95% CI

0.10 to 0.23), decelerations remained higher by a smaller and borderline margin (+0.08 per min, 95% CI 0.00 to 0.15), and high-speed running remained lower (-0.88 m·min⁻¹, 95% CI -1.21 to -0.56), whereas total distance per minute was lower (-9.0 m·min⁻¹, 95% CI -12.1 to -5.8). The greater total distance in Rest MD+1 therefore reflected longer sessions rather than a higher running intensity. In absolute terms, the differences in mechanical load are modest relative to typical session loads (for example, 8 additional accelerations in Rest MD+1 and 20 m more high-speed running in Rest MD+2, within recovery sessions of 32 to 44 min), and their practical relevance for training prescription is uncertain.

Table 3. Recovery-session external load by strategy (recovery session only, not weekly total; linear mixed-effects models; Rest MD+1 minus Rest MD+2, adjusted for week, player as random intercept). SMD = standardized mean difference (adjusted difference divided by the pooled within-group SD); thresholds as defined in Statistical Analysis.

Recovery-session variable	Adjusted difference	95% CI	SMD
Total distance (m)	+145.7	33.4 to 257.9	0.52 (small)
HSR (m)	-20.1	-31.0 to -9.1	-0.74 (moderate)
Sprint distance (m)	-2.9	-6.0 to 0.2	-0.44 (small)
Accelerations (n)	+8.2	5.4 to 11.0	1.77 (large)
Decelerations (n)	+4.8	2.3 to 7.4	1.01 (moderate)

Weekly load-distribution across all external-load variables

The weekly distribution of load across all external-load variables was analysed in player-weeks with complete GNSS data on every microcycle day (n = 66 Rest MD+2 and n = 38 Rest MD+1 for total distance, HSR, accelerations and decelerations; n = 34 Rest MD+1 for sprint distance). For Total Distance, HSR, Accelerations, and Decelerations, between-strategy differences in the share of weekly load were modest and did not follow a consistent direction across days (all differences ≤ 9.6 percentage points). Sprint Distance showed the clearest pattern: the Rest MD+1 strategy accumulated a greater share of weekly sprint distance earlier in the microcycle (MD-4: +10.9; MD-3: +14.0 percentage points), with a correspondingly lower share on match day (-22.8 percentage points) compared with Rest MD+2. This match-day difference largely mirrors each team's own match sprint output (586 m for Rest MD+2 vs. 280 m for Rest MD+1) rather than an effect of rest day placement, since match sprint distance is unrelated to which day the rest day falls on.

Training load relative to each team's own match demands

Because each strategy was followed by a single team throughout, part of the between-strategy training-load difference could reflect habitual playing style rather than rest day placement itself. To evaluate this, each pre-match training day (MD-4 to MD-1) was expressed as a percentage of that team's own match-day value, and profiles were compared between strategies (Figure 2).

Expressed relative to each team's match demands, the ratio of weekly training load between strategies (Rest MD+1 : Rest MD+2) moved closer to 1 for accelerations (from 1.70 to 1.12), decelerations (from 2.06 to 1.21) and, to a lesser extent, high-speed running (from 0.63 to 0.78), whereas it widened for sprint distance (from 1.20 to 2.51) and total distance (from 1.04 to 1.19). Raw ratios were computed from the sum of the MD-4 to MD-1 mean values, and normalized ratios from

the sum of the same days expressed as a percentage of each team's own match-day value. These patterns suggest weekly training content largely tracked each team's own match profile for accelerations, decelerations, and high-speed running, whereas sprint distance followed a distinct, team-specific pattern. The two profiles were similar on MD-4 for all variables except sprint distance (8% vs. 45% of match sprint distance), differed on MD-3, and separated most clearly on the taper days. On MD-2 and MD-1, the Rest MD+1 team retained about 63% and 43% of its own match accelerations and about 41% and 29% of its match decelerations, against about 43% and 12%, and 15% and 12%, in the Rest MD+2 team (Figure 2).

Injury incidence

Football exposure was calculated from recorded session durations (see Statistical Analysis). Players in the Rest MD+2 group accumulated 431.0 player-hours of monitored exposure (99.6 match hours) and sustained 6 time-loss injuries, corresponding to an incidence of 13.9 injuries per 1000 player-hours (95% CI 5.1–30.3). Players in the Rest MD+1 group accumulated 265.8 player-hours of monitored exposure (55.6 match hours) and sustained 5 time-loss injuries, corresponding to an incidence of 18.8 injuries per 1000 player-hours (95% CI 6.1–43.9). Overall injury incidence was 15.8 per 1000 player-hours (95% CI 7.9–28.2). The 95% confidence intervals overlapped substantially between the two strategies, indicating no clear difference in injury incidence associated with rest day placement.

As all 11 injuries occurred during matches, incidence was also expressed per 1000 match hours (155.3 h in total): 60.2 (95% CI 22.1–131.1) in Rest MD+2, 89.9 (29.2–209.7) in Rest MD+1, and 70.9 (35.4–126.8) overall. When only injuries with at least 3 days of time loss were considered, 6 events remained (4 in Rest MD+2 and 2 in Rest MD+1; 40.2 and 35.9 per 1000 match hours, respectively; 38.6 overall, 95% CI 14.2–84.1), and the direction of the between-strategy difference reversed (9.3 vs. 7.5 per 1000 player-hours in Rest MD+2 and Rest

MD+1). Seven injuries were non-contact (4 in Rest MD+2 and 3 in Rest MD+1; 45.1 per 1000 match hours overall, 95% CI 18.1–92.9).

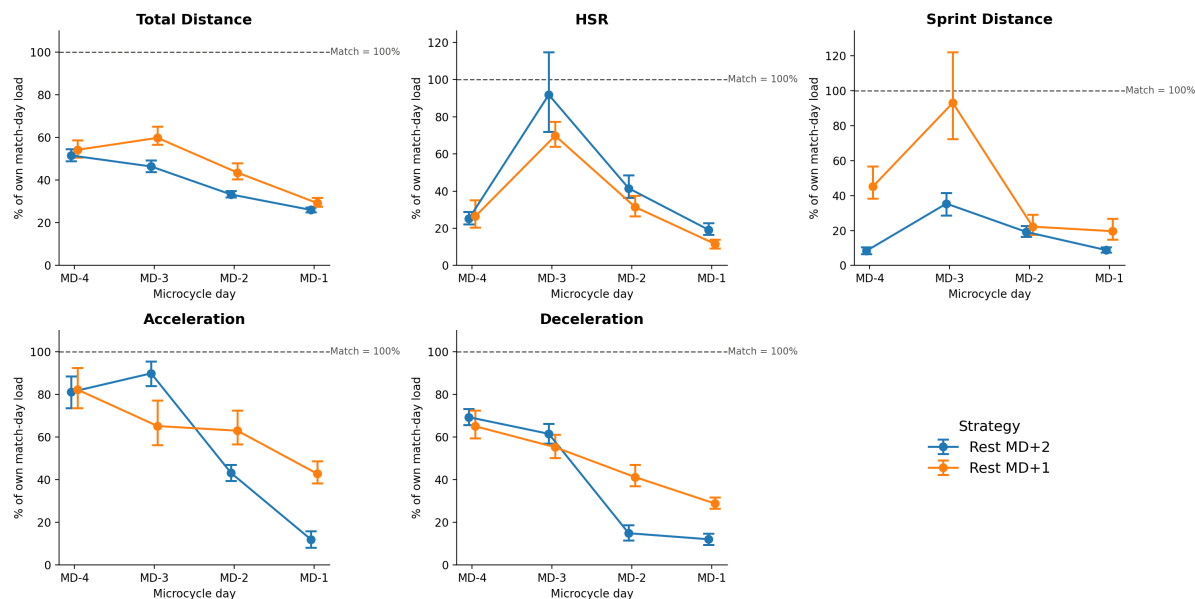


Fig. 2. Weekly training load expressed as a percentage of each team's own match-day load, by recovery strategy. Values represent mean external load on each pre-match microcycle day (MD-4 to MD-1) as a percentage of that team's own mean match-day value for the same variable (dashed line = 100%, i.e. match-day load). Blue represents the Rest MD+2 strategy and orange the Rest MD+1 strategy. Values are ratios of team-level means; error bars are 95% confidence intervals from a player-level bootstrap (10,000 resamples) and reflect between-player variability only. No formal statistical comparison between strategies was performed.

Table 4. Individual time-loss injuries recorded during the study period, by recovery strategy. Location refers to the injured anatomical structure; days lost refers to training days missed. All events occurred during match play. Exposure: Rest MD+2, 431.0 player-hours (99.6 match hours); Rest MD+1, 265.8 player-hours (55.6 match hours).

Recovery strategy	Player (anonymised ID)	Microcycle week	Training or match	Contact	Location (type)	Days lost
Rest MD+2	P4	Week 4	Match	Non-contact	Adductor (oedema)	3
Rest MD+2	P6	Week 3	Match	Contact	Quadriceps (haematoma)	3
Rest MD+2	P10	Week 1	Match	Non-contact	Ankle (strain)	2
Rest MD+2	P12	Week 5	Match	Contact	Gluteal (haematoma)	2
Rest MD+2	P1	Week 7	Match	Non-contact	Calf (strain)	20
Rest MD+2	P5	Week 7	Match	Non-contact	Adductor (strain)	14
Rest MD+1	P8	Week 2	Match	Contact	Quadriceps (haematoma)	2
Rest MD+1	P21	Week 1	Match	Non-contact	Soleus (oedema)	2
Rest MD+1	P22	Week 4	Match	Contact	Ankle (strain)	2
Rest MD+1	P3	Week 6	Match	Non-contact	Hamstring (strain)	24
Rest MD+1	P18	Week 5	Match	Non-contact	Quadriceps (strain)	24

Injury-risk analysis

As described in Statistical Analysis, formal modelling of injury risk was not attempted given the small number of events; injury occurrence is instead reported descriptively, using the exposure-adjusted incidence rates reported above.

Across the selected microcycles, 6 time-loss injuries occurred in the Rest MD+2 group and 5 in the Rest MD+1 group, corresponding to overlapping incidence rates per 1000 GPS-monitored exposure hours. Given the small number of events, these data do not support conclusions about whether rest day placement or recovery-session load is associated with injury risk; larger, multi-season datasets are needed to address this question.

Individual time-loss injuries recorded during the study period are presented in Table 4, including recovery strategy, contact mechanism, injury location, and training days lost. Cross-referencing against GPS training-attendance records confirmed that all 11 injuries occurred during match play, with no missed training sessions in the week of injury itself. Consequently, every injured player-week satisfied the full eligibility criteria described above (complete training participation, valid recovery-session GNSS data, and match participation) and is included among the 105 eligible player-weeks underlying the exposure estimates above; injury counts and exposure hours are therefore drawn from the same set of player-weeks, with no numerator–denominator mismatch.

Discussion

Because each strategy was used by only one team throughout the study, every between-strategy difference reported here reflects team-level confounding factors (coaching, tactics, playing style) and not rest day placement in isolation. With that caveat, recovery-session load and its distribution across the microcycle differed between strategies, without a clear association with injury occurrence: Rest MD+1 produced slightly more mechanical load (accelerations, decelerations) during the recovery session, partly because this session was longer (44 vs. 32 min), whereas Rest MD+2 showed greater high-speed-running exposure; weekly load distribution differed most clearly for sprint distance, with Rest MD+1 accumulating a greater share earlier in the microcycle (MD-4, MD-3) and a lower share on match day.

An alternative, and arguably more likely, explanation is that these weekly training-load differences largely reflect each team's own playing style rather than rest day placement itself. In fact, external load is the footprint of the football each team plays and trains, so it is not surprising that training profiles followed match profiles. The team with more recovery-session and weekly accelerations and decelerations (Rest MD+1) also produced far more of these actions during match play (59 vs. 39 accelerations, 74 vs. 43 decelerations), while the team with greater high-speed-running exposure during training (Rest MD+2) also covered more high-speed-running distance during the match (607 vs. 486 m). Expressing each pre-match training day as a percentage of that team's own match-day load supported this interpretation, narrowing the between-strategy gap for accelerations and decelerations, and to a lesser extent high-speed running (Figure 2). Sprint distance was an exception, with the team showing the lower match sprint output nonetheless covering more sprint distance across the training week (503 vs. 421 m), possibly reflecting compensatory training emphasis.

The normalized profiles also show where the remaining difference sits. On MD-4, both teams trained at a similar fraction of their own match demands for all variables except sprint distance. They differed on MD-3 and separated most clearly on MD-2 and MD-1, where the Rest MD+1 team kept much more

of its match mechanical load, i.e. it tapered less (Figure 2). Both teams trained on the same four days before the match (MD-4 to MD-1), so this is not a delayed start to the working week but a different ramp. How much work a team does across the week is only half of the question. Where that work sits, and what is left for the last two days, may matter more for match-day freshness (2,4).

The only day whose history genuinely differed between the two teams was MD-4, which followed a full day off in the Rest MD+2 team and the recovery session in the Rest MD+1 team. A cautious re-entry would be expected after a day without running, and this is what happened, but for one variable only. Relative to their own match, the two teams were similar on MD-4 for total distance (52 vs. 54%), high-speed running (25 vs. 26%), accelerations (81 vs. 82%) and decelerations (69 vs. 65%), whereas sprint distance reached 8% of match demands after the day off against 45% after the recovery session (approximately 50 vs. 125 m). Sprinting, i.e. the quality most dependent on neuromuscular readiness, is what the staff protected when players came back from a day off, which is logical and in line with the microcycle principles proposed for elite football (2).

What followed is less intuitive. If a cautious MD-4 pushed work later in the week, the taper should suffer, and here the opposite occurred. The team returning from the day off concentrated its high-speed running into a single peak at MD-3 (92% of match high-speed running), with accelerations already high on MD-4 (81%) and MD-3 (90% of match accelerations), and then dropped sharply, to 43% and 12% of match accelerations on MD-2 and MD-1. The team that had already trained on MD+2 started sprinting at MD-4, peaked its sprint exposure at MD-3 (93% of match sprint distance) and then descended slowly, still covering 63% and 43% of its match accelerations on the last two days. The week that started more conservatively therefore ended with the cleaner taper. Session duration did not explain this pattern on MD-1 (46 min in the Rest MD+1 team vs. 48 min in the Rest MD+2 team) and could account for only part of it on MD-2 (65 vs. 59 min, respectively), so whether the pattern reflects a deliberate choice or the habits of each club cannot be settled with these data. Since the football content of each session (i.e., drill types, pitch sizes, player numbers) was not recorded, we cannot tell which coaching choices produced these two shapes, and this is likely where the answer sits.

A total of 11 time-loss injuries occurred at broadly similar rates between strategies; with so few events these data do not support formal statistical modelling and are reported descriptively only, consistent with cautions against overinterpreting injury-risk estimates from small samples (10,11). All 11 injuries occurred during match play (Table 4), so the relevant benchmark is the match injury rate rather than the overall rate. Our match incidence, 70.9 per 1000 match hours (95% CI 35.4–126.8), is about 2.6 times the 27.5 reported in the UEFA study (12) and 2.9 times the 24.3 reported in English professional football (13), both of which used time-loss definitions consistent with ours (9), so the definition does not explain the gap. The overall incidence of 15.8 per 1000 player-hours likewise exceeds published overall rates of 8.0–9.1 per 1000 hours (12–14). Applying the ≥ 3 -day threshold used by some surveillance studies, including Buchheit et al. (3), retained only 6 of the 11 events (38.6 per 1000 match hours, 95% CI 14.2–84.1), a rate compatible with those benchmarks, and reversed the direction of the between-strategy difference. In addition, 5 of the 11 injuries caused only 2 days of absence and 4 were contact injuries, which cannot be related to training load; the 7 non-contact injuries corresponded to 45.1 per 1000 match

hours (95% CI 18.1–92.9). With so few events, none of these differences should be interpreted.

These findings also raise a broader applied question: whether concentrating more mechanical load later in the microcycle, as observed under Rest MD+1, represents an additional injury cost or a resilience-building stimulus. Weekly total distance was almost identical between strategies (27.9 km in Rest MD+2 vs. 27.3 km in Rest MD+1), yet Rest MD+1 accumulated considerably more accelerations and decelerations overall, with a greater share placed on MD-2 and MD-1, without a clearly higher injury rate (rate ratio 1.35, 95% CI 0.41–4.43). With only 11 events, the present data can raise this question but not answer it; doing so would require integrating player-freshness monitoring and match-performance outcomes, neither of which were measured here. Çiçek et al. (4) proposed one such freshness framework, whose rest-at-MD+2 condition corresponds to the Rest MD+2 strategy examined here.

In the meantime, practitioners should consider not only where the rest day is placed, but also how it shapes the mechanical load profile within the microcycle.

Practical Applications

- Start with the football, then look at the GPS. The external loads described here are the consequence of what coaches chose to play each day (game formats, pitch sizes, player numbers, tactical content). When discussing where the rest day sits and how the week is shaped, plan the football content first and use GPS to check the load it creates.
- The differences in external load between the two recovery sessions were statistically clear but non-substantial in practice (about 8 accelerations and 20 m of high-speed running within recovery sessions of 32 to 44 minutes). This is not, on its own, a reason to move a club's rest day.
- Each team's training profile tracked its own match profile more closely than it tracked the placement of the rest day: normalizing pre-match training load to each team's own match-day load reduced the between-team gap in accelerations and decelerations by roughly 80% (ratios from 1.70 to 1.12 and from 2.06 to 1.21), indicating that weekly training content follows match demands more than it follows where the day off sits.
- What changed with the rest day was the taper, not the weekly dose. The team resting on MD+1 arrived at MD-2 and MD-1 still doing roughly 1.5 to 3.6 times more mechanical work relative to its own match demands. If you rest straight after the match, plan what is left for the last two days.
- A day off costs you something the next day, and it is mostly sprinting. At MD-4, the team coming back from a full day off covered 8% of its match sprint distance against 45% for the team that had trained the day before, while total distance, accelerations and decelerations were similar. If your day off sits at MD+2, do not expect much sprinting at MD-4, and decide where that exposure goes instead.
- Easing in at MD-4 did not push work later in the week. The team that eased in put its high-speed running into one big day at MD-3 and then tapered sharply, while the team that started earlier spread the work across the four days and still did 43% of its match accelerations on MD-1. Both shapes are defensible, so choose the football content and the shape of the week you want rather than the day off on its own.
- The team doing much more accelerating and decelerating work across the week, including on the last two days before the match (which could limit tapering), did not

show a clearly higher injury rate (rate ratio 1.35, 95% CI 0.41–4.43). More work later in the microcycle is not automatically a training cost, but with only 11 injuries this study cannot settle the question. Weekly total distance was almost identical between the two teams, so the question is less how much work is done than where it sits.

- To choose between the two options in your own club, look at player freshness and match performance, not injury counts alone; these were not assessed here and remain the outcomes needed to close the loop.

Limitations

- Recovery strategy was assigned at the team level rather than randomized within a crossover design, so team-level differences in coaching, tactics, and squad characteristics cannot be fully separated from rest day placement itself.
- Sample size was small and specific to one professional context.
- The number of injury events was low ($n = 11$), so injury findings are hypothesis-generating only.
- Player freshness and match-performance outcomes were not assessed. The football content of each session (drill types, pitch sizes, player numbers, tactical themes) was not recorded, so the coaching choices that generated the external loads could not be described.
- Normalizing training load to match-day load uses team-level means and is descriptive, so it reduces but does not remove team-level confounding.
- Longitudinal or crossover designs incorporating internal load, freshness, and match-performance measures are needed to determine whether rest day placement and mechanical load placement causally affect injury risk.

Data Availability Statement

The datasets analyzed in this study are not publicly available because they remain the property of the two participating clubs, who consented to publication of the anonymized findings reported here under confidentiality agreements, but de-identified data may be made available by the corresponding author upon reasonable request and with their permission.

Conflict of Interest

The authors declare no conflict of interest.

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AI Use Statement

AI-based tools (Claude, Anthropic) were used for language editing and phrasing refinement throughout manuscript preparation, and to assist with writing the Python code for the additional analyses and for regenerating the figures. The authors specified the analyses, checked the outputs against the source data, and take full responsibility for the content of the manuscript.

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