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Knowing isn't enough: Menstrual symptoms drive perceived performance impacts in women's football

Chelsea Oester [a,*], Ric Lovell [a,b], Charles Pedlar [c,d,e], Georgie Bruinvels [c,d,e], Belinda Wilson [f], Dean Norris [a]

[a] Western Sydney University, School of Health Sciences, Australia
[b] University of Wollongong, Faculty of Science, Medicine and Health, Australia
[c] St Mary's University, Faculty of Sport, Health and Applied Science, United Kingdom
[d] Orreco, Business Innovation Unit, National University of Ireland, Ireland
[e] Institute of Sport, Exercise and Health, University College London, United Kingdom
[f] Fédération Internationale de Football Association, Switzerland

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ABSTRACT

Objectives: To examine whether menstrual health literacy (MHL) is associated with Australian female footballers' negative perceptions of the menstrual cycle and contraceptive use on athletic performance and availability, and to assess the influence of symptom count on these perceptions.
Design: Cross sectional survey.
Methods: Australian football players (n = 147) completed a survey assessing menstrual cycle characteristics, contraceptive use, perceived impacts on training and competition, and MHL. Associations between MHL and perceived impacts of the menstrual cycle or contraceptive use were analysed. The relationship between symptom count and these perceptions was also examined.
Results: Whilst MHL scores were not significantly associated with perceived impacts of the menstrual cycle on training performance ($\beta = 0.29$, 95 % CI [−0.37, 0.97]), a higher number of symptoms were linked to more frequent reports of negative training impacts ($\beta = 0.09$, 95 % CI [0.05, 0.14]). Amongst non-contraceptive users, a substantial proportion reported that the menstrual cycle negatively affected their training (67 % 'sometimes'; 21 % 'often') and competition (62 % 'sometimes'; 18 % 'often') performance, as well as training availability (60 % 'sometimes'; 14 % 'often').
Conclusions: No significant association was found between MHL and perceived menstrual cycle impacts in this cohort. However, symptom count emerged as a key factor, with athletes experiencing five or more symptoms more likely to report frequent negative effects on training performance. These findings suggest that addressing symptom recognition and management may be more critical than MHL alone in supporting athlete well-being and performance.

Practical implications

- Although MHL scores did not predict perceived impacts in this cohort, MHL remains a modifiable construct that may still support positive behaviours, symptom recognition, and open communication, particularly when paired with practical education that addresses stigma and broader psychosocial influences.
- The positive association between symptom count and perceived performance impact highlights the value of helping athletes monitor and recognise their individual symptom patterns.
- Given the sensitivity of outcomes to scoring approach and the absence of validated cut-offs, further refinement and validation of MHL questionnaires are needed to support consistent research and practice.
- Athletes reported greater perceived impact of menstrual symptoms on training performance than on competition availability, suggesting that day-to-day training environments may permit more open acknowledgement of symptoms. This highlights the role of coaches and support staff in fostering supportive, flexible, and responsive training contexts.

1. Introduction

A growing body of research suggests that many athletes perceive their menstrual cycle to negatively affect performance at certain points

* Corresponding author.
E-mail address: 22047111@student.westernsydney.edu.au (C. Oester).
Social media: @ChelseaOester (C. Oester) @Ric_Lovell (R. Lovell) @PedlarCR (C. Pedlar) @GBruinvels (G. Bruinvels) @Bilby55Wilson (B. Wilson) @DNorrisSC (D. Norris).

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during the cycle.[1–3] Specifically, athletes most commonly report being less inclined to compete during the late luteal phase (immediately before menstruation) or the early follicular phase (during menstruation).[4] However, a recent scoping review and meta-analysis highlighted substantial variability in negative perceptions, with reported rates ranging from 2.8 to 100 %.[5] This considerable inconsistency suggests that additional factors may shape individual experiences and perceptions. Although contextual factors such as contraceptive use, sport type, performance standard, age, geographical location, and study design were examined, they did not fully account for the observed high inter-study variability in perceptions.

Whilst emerging evidence suggests that the menstrual cycle may not uniformly impair physiological performance,[6] perceived impact can shape athlete behaviour, affecting confidence, willingness to compete, and communication with support staff.[7,8] These perceptions may reflect more than symptom severity alone and instead be influenced by how athletes understand, interpret, and respond to their menstrual experience. Given the theoretical importance of menstrual health literacy (MHL) in shaping an individual's menstrual experience,[9] it is plausible that MHL is a key determinant of menstrual perceptions.

One proposed mechanism suggests that greater MHL fosters more positive perceptions of how the menstrual cycle impacts athletic performance and participation. MHL is defined as the ability to access, understand, and apply information to promote and maintain menstrual health.[9] Educational interventions and open communication are thought to enhance MHL, thereby improving menstrual experiences and associated perceptions.[9,10] This is consistent with evidence that negative attitudes towards the menstrual cycle can inhibit knowledge acquisition due to stigma and embarrassment.[11] Whilst one study found that prior menstrual cycle education did not increase MHL,[10] another reported that an educational programme can positively influence athletes' menstrual management behaviours.[12] Therefore, enhancing MHL may support athletes in developing more informed and constructive perceptions of their menstrual cycle, particularly through improved understanding of symptom management and coping strategies.

Conversely, it is also possible that greater MHL may have unintended negative consequences for how athletes perceive their menstrual cycle. Whilst general theoretical frameworks such as the Cognitive Dissonance Theory,[13] and Social Cognitive Theory[14] explain how knowledge influences perceptions, the specific relationship between MHL and athletes' perceptions of their menstrual cycle remains underexplored. Applying the Social Cognitive Theory[14] to menstrual health suggests that menstrual health knowledge, often sourced from the internet and social media,[15] interacts with social norms, stigma, and individual self-efficacy (belief in one's capability) to shape attitudes and behaviours. In this context, increased awareness may contribute to viewing the menstrual cycle as something that should be managed or optimised. Supporting this notion, a Delphi study of elite athletes identified the impact of menstrual symptoms on training and performance as a key area of concern requiring further guidance.[16] This concern, combined with the increasing visibility of menstrual health topics on social media and growing interest in phase-based training approaches[17] and targeted nutritional interventions,[18] raises the possibility that heightened attention may inadvertently amplify athletes' perceptions of the menstrual cycle as a performance barrier.

Despite growing interest in menstrual health, few studies have examined the relationship between MHL and athlete perceptions in team sports like football. Given the increasing attention to athlete wellbeing, education, and self-management, a better understanding of how MHL influences perceived performance impact is warranted to guide effective and targeted support strategies. Therefore, the primary aim of this study was to examine the relationship between two constructs: MHL and female footballers' perceptions of the impact of the menstrual cycle and contraceptive use on athletic performance and availability. Predicated on the high variability in athlete perceptions observed in our meta-analysis,[5] we propose a non-directional hypothesis, that MHL is either positively or negatively associated with these perceptions. A secondary aim was to explore whether symptom count is also associated with these perceptions, given previous findings highlighting menstrual symptoms as a key contributor to negative perceptions amongst athletes.[5]

2. Methods

Participants self-identified as female, aged 16 years and older, who play football at any level and were either Australian citizens or residents, were invited to complete an online questionnaire (Qualtrics Ltd). Football players were chosen since previous research showed that team-sport athletes scored lower on a MHL questionnaire compared to individual athletes.[19] Additionally, female football participation in Australia has increased by 16 % in a single year since hosting the FIFA Women's World Cup Australia & New Zealand 2003™, making football players a relevant group to study.[20] Recruitment was facilitated through FIFA, Football Australia and state federation competition managers, who sent the survey link to all their registered clubs. This approach aimed to gain insights from a broad representative sample of football players across Australia. Alongside the survey link, an information sheet was included to explain the purpose of the study. Data were collected between July and September 2024, with no follow-ups sent. Ethical approval was obtained from the Western Sydney University Human Research Ethics Committee (H15308). All participants provided informed consent prior to completing the questionnaire.

The survey was piloted with a convenience sample of 27 players (mean age 21 $\pm$ 3.4 years; playing at regional level) to assess completion time, ensure question comprehension, and identify potential technical issues in the online platform. No issues were encountered, and the completion time was subsequently used to inform participants when recruiting for the study. The questionnaire was divided into three distinct sections, where each question required a response (Supplemental file 1). Except for age and country of residence, all items were multiple-choice questions. Section one collected non-identifiable demographic data, including age, country of residence, and playing level.

Section two assessed menstrual cycle characteristics, including contraceptive use, prevalence (present or absent) and frequency of menstrual cycle symptoms adapted from the Menstrual Symptoms Index,[1] side effects associated with contraceptive use, and perceptions regarding the negative impact of the menstrual cycle or contraceptive use on (i) performance during training, (ii) performance during competition, (iii) availability to train, and (iv) availability to compete. Responses were measured using a 4-point Likert scale: 'often (every month)', 'sometimes (every few months)', 'rarely (once or twice a year)' and 'never'. This four-choice scale was selected to encourage participants to take a definitive stance on whether they perceived negative impacts from their menstrual cycle or contraceptive use.[21] The decision to separate questions into training vs. competition performance, and availability to train vs. availability to compete was informed by previous research indicating that athletes perceive impacts differently across these contexts.[2] Additionally, differentiating between availability and performance addressed previous findings suggesting that athletes rarely refrain from participating in their sport despite potential impacts.[22] By incorporating these distinctions, the survey aimed to determine whether athletes perceive these constructs as separate, emphasising the importance of precise question formulation,[5] as well as to identify which construct warranted more detailed analysis.

In addition to the 147 participants who completed all three sections of the survey, an additional 86 players completed only Sections one and two as part of an accompanying study conducted under the same ethics approval (H15308). These participants were not assessed for menstrual health literacy and were not included in the primary analyses. However, given that their responses to the perception and symptom-related items were identical in structure and phrasing, their data were pooled with the main sample solely to enhance the statistical power of exploratory

analyses aimed at identifying which of the four perception constructs (training performance, competition performance, availability to train, availability to compete) showed the clearest response patterns.

Section three assessed functional MHL using 27 multiple choice questions from a previously validated questionnaire.[23] This questionnaire was selected considering its rigorous peer-review validation process and emphasis on health impacts, rather than solely focusing on knowledge of medical definitions. MHL scores were calculated by awarding one point for each correct response, with some questions allowing multiple correct responses, yielding a total possible score of 44. Given the lack of established guidelines for categorising MHL levels in athletes, players were not categorised as having high or low literacy, as setting an arbitrary threshold would be inappropriate.

2.1. Statistical analysis

The R statistical software was used to conduct the statistical analysis. Response patterns across the four constructs (performance during training, performance during competition, availability to train, availability to compete) were first analysed using polychoric correlations (hetcor function, polycor package[24]) to assess relationships separately for contraceptive users and non-users. Based on preliminary analyses and response distributions (Fig. 1), which indicated that performance during training was the most affected measure, it was selected as the primary outcome measure to assess the influence of MHL (points %) and symptom count on the Likert response distribution (never, rarely, sometimes, often). Only the 147 participants who completed all sections of the survey, including the menstrual health literacy questionnaire, were included in the regression analysis.

A Bayesian adjacent category probit multiple regression model was fitted using the BRMS package[25] to assess the independent effects of menstrual health literacy percentage (MHL%), symptom count, and age on perceived training performance impacts. Age was included as a covariate due to its significant positive association with menstrual health literacy, consistent with previous research,[10] to better isolate the effects of menstrual health literacy on athletes' perceptions. The adjacent category model was chosen as it estimates the log-odds of choosing each response category relative to the adjacent lower category. Four Markov chains were run for 2000 iterations each, with 1000 iterations of warmup. Model convergence was assessed using R-hat statistics and effective sample size estimates. 95 % credible intervals (CIs) were reported for all parameter effects. Posterior predictions were generated using the tidybayes package[26] to visualise response probabilities across the observed range of covariates. All analyses were conducted in R (version 4.3.1).

3. Results

A total of 152 responses were received, with two excluded for not playing football and three more excluded due to incomplete questionnaires. This resulted in a final sample of 147 participants (mean age 27.4 ± 7.6 years). Due to the distribution method, it was not possible to determine the exact number of players who received the invitation, and thus a response rate could not be calculated. Additionally, 86 players (mean age 22.3 ± 4.6) from a separate study conducted by the authors were included in exploratory analyses to evaluate response patterns across the four perceived impact constructs (performance during training, performance during competition, availability to train, availability to compete). As noted in the Methods, these participants completed only Sections one and two and were included solely to inform the selection of a single construct for further analysis.

Demographic characteristics, contraceptive use, and average MHL scores are presented in Table 1. Due to the small sample size n = 3, non-hormonal copper intrauterine device (IUD) users were grouped with hormonal contraceptive users, based on the hypothesis that the decision to start taking a contraceptive method may influence an individual's MHL.

Analysis of menstrual cycle impact ratings revealed distinct response patterns between contraceptive and non-contraceptive users, with non-contraceptive users reporting higher frequencies of 'sometimes' and 'often' responses across all impact questions (Fig. 1A). Both contraceptive and non-contraceptive users reported lower perceived impacts of the menstrual cycle on their availability to compete compared to other impact measures (performance during training, performance during competition, availability to train).

Polychoric correlations (Fig. 1B) revealed large to nearly perfect relationships between all perceived impact measures, with generally weaker associations observed in non-contraceptive users (r = 0.56 to 0.87) vs. contraceptive users (r = 0.84 to 0.97). For non-contraceptive users, performance during training was strongly correlated with performance during competition (r = 0.88), whilst correlations with availability measures were more moderate (r = 0.57–0.62). In contrast, contraceptive users demonstrated uniformly high correlations across all measures (r = 0.84–0.96), suggesting less differentiation between perceived impacts on performance and availability. Given the strong relation between the four measures, only data related to performance during training was selected as the primary outcome for subsequent modelling, as it was the most affected measure.

Bayesian adjacent category probit modelling examining performance during training in non-contraceptive users (who completed all 3 survey sections; n = 103) showed good model convergence (all $\hat{R} = 1.00$, bulk and tail ESS > 2800). MHL ($\beta = 0.29$, 95 % CI [−0.37, 0.97]) and age ($\beta = -0.01$, 95 % CI [−0.03, 0.02]) showed no clear relationship with perceived impacts on training performance (Figs. 2A and S1 in Supplemental file 2). However, the number of symptoms experienced was positively associated with more frequent reports of performance impacts ($\beta = 0.09$, 95 % CI [0.05, 0.14]) (Fig. 2B). Posterior predictions demonstrated that as symptom count increased, the probability of reporting a higher impact category (e.g., from 'rarely' to 'sometimes') increased systematically by approximately 9 %, with the probability of 'often' responses increasing sharply after experiencing more than five symptoms simultaneously. This pattern was not observed amongst contraceptive users, who reported fewer side effects overall. Finally, contraceptive users had non-significant higher MHL scores than non-contraceptive users (Table 1).

4. Discussion

The aim of this study was to examine whether menstrual health literacy was associated with Australian female footballers' perceptions of the impact of the menstrual cycle or contraceptive use on training and competition performance and availability. No significant relationship was found, suggesting that in this cohort, higher MHL does not appear to amplify or reduce the likelihood of perceiving negative impacts. However, we identified a clear association between the number of symptoms experienced and the frequency of reported performance impacts, with the likelihood of reporting cyclical disruption increasing notably in athletes experiencing five or more symptoms. This finding suggests that symptom count, rather than menstrual health literacy, may be a more immediate driver of athletes' perceptions.

With average MHL scores of 66 % (±25) for non-contraceptive users and 72 % (±24) for contraceptive users, it remains unclear whether higher MHL leads athletes to attribute a broader range of symptoms to their menstrual cycle (potentially amplifying negative perception) or whether it supports more effective symptom management and fosters a more constructive understanding of the menstrual cycle. Theoretically, improved MHL could help normalise conversations and empower athletes with strategies to interpret and manage symptoms more positively, but the absence of a clear association in this study suggests that this relationship may be more complex and influenced by additional contextual factors.

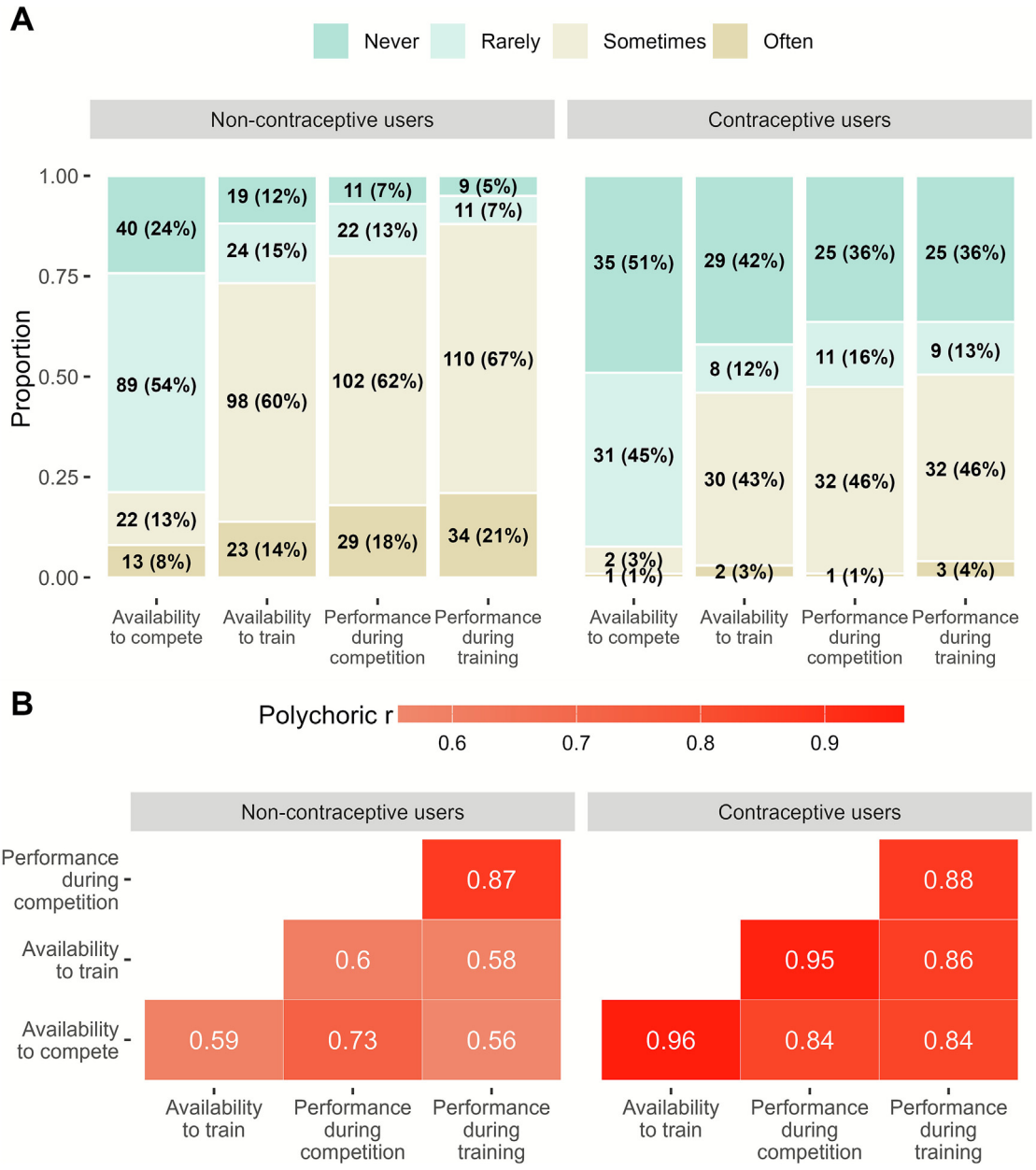

Fig. 1. Likert response proportions for each question categorised by use of contraception, including participants who did not complete the MHL component (non-contraceptive users n = 164; contraceptive users n = 69) (A). Ordinal (polychoric) correlations between key questions amongst non-contraceptive and contraceptive users (B).

In this study, the average percentage of correct answers was 68 % (±25), which was higher than the 51.8 % reported in a previous study using the same questionnaire amongst active females across various sports.[23] The questionnaire included 20 single-response items (1 point each) and 5 multi-response items that allowed multiple correct answers and contributed more than 1 point in total. Correct responses received 1 point and incorrect answers received 0; however, no penalties were applied for incorrect selections in multi-response questions, potentially inflating overall scores. When an alternative scoring method was applied, where incorrect selections reduced the item's score, the average dropped to 51 % (±20). Although this alternative scoring method has not been validated for this tool, and questionnaire scoring is inherently complex,[21] these results demonstrate how scoring methods can substantially influence interpretation and classification of MHL. Studies using different questionnaires to assess MHL have reported correct answer rates of 35.9 %,[19] 41 % in professional players, and 28 % in development players.[10] Whilst no validated cut-offs currently exist to define 'low' MHL, existing literature suggests that low health literacy is linked to poorer health outcomes and lower engagement with preventive care.[15] Further research is needed to establish standardised scoring criteria to interpreting MHL. To facilitate between study comparisons, a summary of scoring approaches used in prior MHL studies is provided in Supplemental file 2 (Table S1).

Current evidence suggests that MHL equips athletes with the knowledge and skills to understand, monitor, and manage their menstrual cycle to support training, performance, and well-being.[9] However, there is limited evidence investigating whether increased awareness of the menstrual cycle might inadvertently exacerbate negative perceptions of its impact on performance and participation. Given the current research landscape, which tends to emphasise negative menstrual symptoms whilst disregarding positive experiences,[27] alongside cultural narratives that often portray menstruation as a 'curse',[28,29] it is plausible that heightened attention to the menstrual cycle may, in some cases, reinforce negative perceptions. This aligns with findings

Table 1
Players' characteristics and MHL scores.

	Naturally cycling		Contraceptive users		Total
	FQ	PQ	FQ	PQ	
Players	103	61	44	25	233
Average age	27.4 ± 7.6	22.2 ± 4.6	27.4 ± 7.6	22.3 ± 4.7	
MHL score (%)	66 ± 25		72 ± 24 (p = 0.24)*		
International level	1	0	0	0	1
National level	2	0	1	0	3
State level	18	0	6	0	24
Regional level	10	61	4	25	100
Local level	70	0	31	0	101
Recreationally	2	0	2	0	4

COC FQ (n)	COC PQ (n)	IUS FQ (n)	IUS PQ (n)	Implant FQ (n)	Implant PQ (n)	Inj. FQ (n)	Inj. PQ (n)	Copper IUD FQ (n)	Copper IUD PQ (n)	POP FQ (n)	POP PQ (n)	Total
16	14	11	6	7	1	1	0	1	2	8	2	69

FQ: full questionnaire; PQ: partial questionnaire; MHL: menstrual health literacy; COC: combined oral contraceptive pill; IUS: hormonal intrauterine system; Inj.: injection; Copper IUD: copper intrauterine device; POP: progestin-only pill.
* p-Value from Welch *t*-test see Fig. S2 in Supplemental file 2.

that women commonly report concerns such as the fear of leakage[30] and rarely express positive experiences with menstruation.[27] Thus, negative perceptions may not stem solely from limited MHL, but also from deeply embedded cultural narratives that depict menstruation as unclean or problematic.[31] The increased visibility of menstrual health in research and media attention, whilst important to progress, may inadvertently risk reinforcing these narratives rather than providing athletes with constructive, pragmatic, and evidence-informed strategies. This dynamic aligns with Social Cognitive Theory, which proposes that knowledge, environmental influences, and an individual's self-efficacy collectively shape their attitudes and behaviours, in this case, towards the menstrual cycle.

Experiencing menstrual symptoms is a key driver of the perceived negative impacts of the menstrual cycle on performance.[32] Previous research has shown that athletes reporting three or more symptoms are more likely to perceive their performance as negatively affected by their cycle.[4] Although this trend was weakly evident in the present study, a higher threshold of 5 or more symptoms was required before the probability of reporting that the menstrual cycle 'often' impacted training performance increased sharply. This discrepancy may reflect differences in the study populations. McNamara et al's[4] cohort comprised elite Olympic athletes, who may have heightened symptom awareness due to access to medical staff, individualised performance tracking, and a structured training environment with fewer external demands (e.g., work, studies). In contrast, most athletes in the current study competed at local or regional levels, with only four players representing national or international levels. This may indicate that although symptoms are experienced, athletes may lack awareness of their

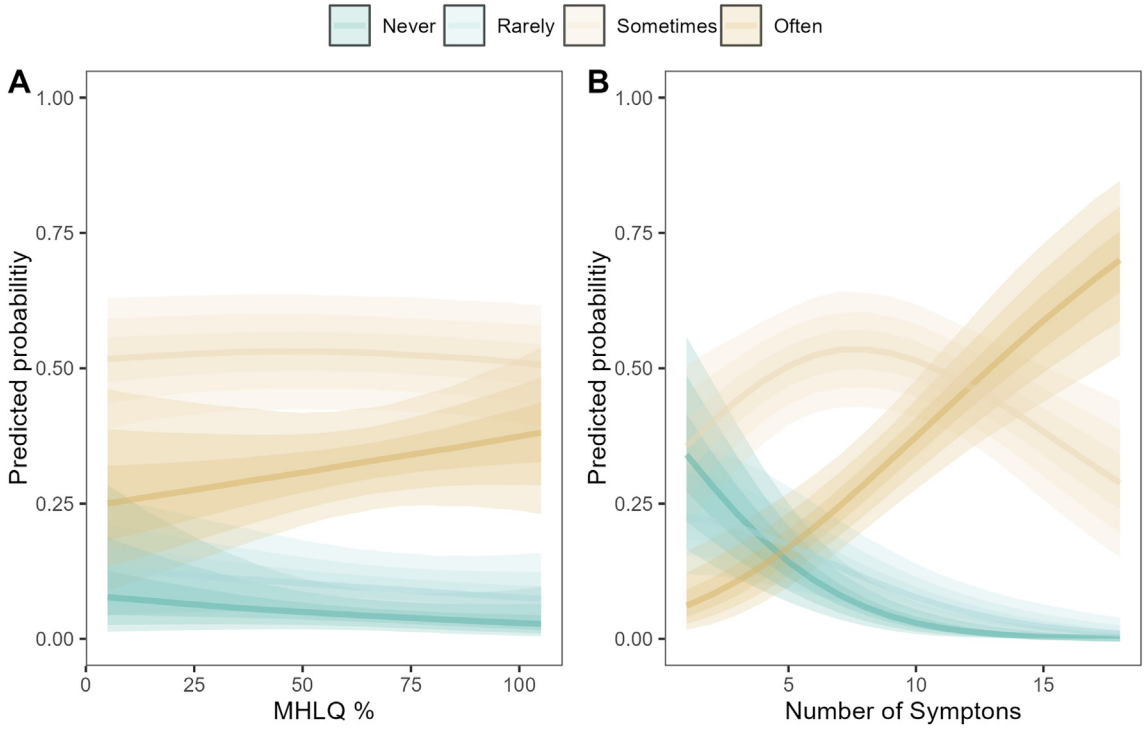

Fig. 2. Predicted probabilities of response categories (never, rarely, sometimes, often) for perceived performance during training across MHL scores for non-contraceptive users (n = 103) (A) and across symptom counts in non-contraceptive users (n = 103) (B) who completed the full questionnaire. Lines show the mean predicted probability for each response category, whilst shaded regions represent the 95 % credible intervals of these predictions derived from the posterior distribution of the Bayesian cumulative probit model.

connection to the menstrual cycle, thereby underreporting perceived impact. Despite differences in study design and participant characteristics, the finding that menstrual symptoms influence training availability, competition participation, and performance aligns with previous findings.[1,3] This emphasises the need for educational interventions to not only improve MHL but also address symptom recognition and management as key components in reducing negative perceptions. However, research on symptom frequency and severity remains limited, and the absence of standardised, validated tools[33] contributes to high variability in symptom reporting across studies.[5]

Interestingly, although the same biological mechanisms are involved, players reported that their menstrual cycle or contraceptive use affected their performance during training and competition, as well as their training availability, to a greater extent than their availability to compete. This aligns with previous findings suggesting that the pressures of competition may override perceived negative symptoms, whereas training environments, being more routine and familiar, may encourage greater symptom recognition and disclosure.[2,4] Comparable trends were observed amongst contraceptive users, although they were significantly less likely to report a negative impact from contraceptive use. One potential explanation is that certain contraceptive methods reduce bleeding and associated symptoms, which has been cited as a positive outcome by athletes.[22] However, previous studies have reported mixed findings regarding the proportion of athletes who perceive a negative impact on training and competition from contraceptive use.[5] This highlights the importance of distinguishing between users and non-users, and of disaggregating data by contraceptive type in future research.

The slightly higher, though non-significant, MHL scores amongst contraceptive users in this study may suggest that women who chose to use contraceptives engage more actively with their menstrual health and may have received some education during consultations with healthcare providers, as recommended in the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) guidelines.[34] This interpretation is supported by previous studies reporting higher contraceptive-related knowledge amongst users compared to non-users,[10,19,35] although one study found no difference.[36] However, these studies assessed contraceptive-specific knowledge, often based on the method currently used, and the observed differences were generally small. Additionally, one study found that 37 % of athletes reported initiating contraceptive use primarily to manage menstrual symptoms,[37] which may reflect greater engagement with symptom monitoring and management, potentially contributing to higher MHL scores in this sub-group.

This study has several limitations that should be acknowledged. First, although participants reported the presence of menstrual symptoms, the severity of these symptoms was not assessed. The absence of a validated tool to quantify symptom severity may partly explain the higher symptom threshold observed before athletes reported performance impacts. Second, whilst MHL scores were based on independent survey responses, we cannot exclude the possibility of participants using external sources (e.g., internet searches or discussions with others) to inform their responses. Third, the menstrual cycle phase at the time of survey completion was not recorded, which may have influenced perceived symptom count and recall. Research suggests participants often recall their worst or most recent symptoms,[21,38] introducing potential bias. However, the broad distribution of survey completions across the cycle likely minimised systematic bias at the group level.

Fourth, although participants were categorised as contraceptive users or non-users, the low number of respondents per contraceptive type (e.g., n = 3 copper IUD users) prevented stratified analyses. This limits our ability to evaluate whether perceptions and symptom experiences differ between hormonal contraceptive types. Fifth, the survey did not include questions about participants' prior menstrual education, which may be a key factor influencing both MHL and perceptions. Whilst education is likely an important driver of MHL, prior research has shown mixed findings, with some studies reporting higher MHL amongst those with menstrual education,[19,35] whilst others found no such association.[10] The effectiveness of menstrual education may therefore depend on the content, quality, timing, and source of delivery, factors not captured in this study.

Sixth, the use of a convenience sample may introduce participation bias, as players with a greater interest in or experience of menstrual health may have been more likely to respond.[39] Whilst data on performance level were collected, the sample was underpowered to assess how competition level influenced MHL or perceptions, particularly at the elite level. Seventh, although the MHL questionnaire followed established scoring procedures, some items permitted multiple correct responses without penalising incorrect selections. This may have inflated total MHL scores compared to more conservative scoring methods, as highlighted in our analysis. Finally, the study was conducted within the Australian sporting and healthcare context and focused specifically on a relatively modest sample of footballers. This should be considered when interpreting the findings, and they may not be directly transferrable to athletes in other sports, countries, or cultural contexts. Future research should consider incorporating validated tools for symptom severity, stratifying contraceptive types, assessing prior menstrual education in more depth, and exploring contextual influences across sporting systems. Additionally, researchers should consider capturing positive perceptions and experiences related to the menstrual cycle to avoid reinforcing a predominantly negative narrative.

5. Conclusion

This study investigated whether MHL and symptom count were associated with Australian female footballers' perceptions of menstrual cycle impacts on training performance. Whilst MHL showed no clear relationship with perceived impacts, athletes reporting a higher number of symptoms were more likely to report frequent negative effects on performance. Additionally, athletes perceived less impact on their availability to compete compared to training-related outcomes, and contraceptive users were less likely to report negative impacts than non-users. These findings highlight the complexity of menstrual experiences in sport and suggest that symptom count, rather than literacy alone, may play a more prominent role in shaping athletes' perceptions of menstrual-related performance disruption.

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CRediT authorship contribution statement

DN and CO: developed the project. DN: data analysis. RL and CO wrote the first draft of the manuscript. RL, DN, CP, GB, and BW: revision of the final manuscript. All authors read and approved the final manuscript.

Confirmation of ethical compliance

Approved by the Western Sydney University Ethics Committee.

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Declaration of interest statement

None declared.

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