

CyMe: Connecting Menstrual Cycles and Sports Tracking for Everyday Athletes

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Abstract

This short paper presents a menstrual cycle tracking app, referred to as *CyMe*, that was extended to support cycle-aware sports tracking for recreational athletes. Building on prior user research, we implemented features such as personalized sports logging, an integrated calendar view combining menstrual and physical activity data, and cycle-phase-based workout recommendations. The app also includes an insights dashboard and a multimedia knowledge base with science-based resources. Development followed three design sprints with cooperative evaluations and a final showcase event. For the demo, we provide a working iOS app pre-populated with representative data, enabling conference attendees to explore its functionality and interaction design. We discuss design principles, inclusivity considerations, and lessons learned from iterative testing. Finally, we outline recommendations for future work, including HealthKit integration, machine learning-based personalization, and broader evaluations with diverse user groups to ensure accessibility and usability.

CCS Concepts

• **Social and professional topics** → **Women**; • **Human-centered computing** → **Human computer interaction (HCI)**; **User centered design**; **Participatory design**; *User interface design*; • **Applied computing** → *Health informatics*.

Keywords

Menstrual Cycle Tracking, Menstrual Health Technology, User Needs, Digital Female Health, Feminist HCI, Feminist Intersectionality in Digital Health, Women’s Health, Health Literacy, Women-centered Design, Human-centered Design, Menstrual Health Technology Design Principles, Menstrual Health Literacy, Sports Tracking, Physical Activity, Cycle-Sensitive Training, Inclusive Design, Personalization, Data Privacy, Wearable Integration, Recreational Athletes

1 Introduction

Menstrual cycles influence a range of physiological and psychological processes, including energy metabolism [12], thermoregulation [6], muscle function [4], and sleep quality [3]. However,

their impact on physical performance—especially in recreational athletes—remains underexplored [11]. This gap stems in part from the historical underrepresentation of women in sports science [15], with only 14% of studies accounting for menstrual phases [13].

Meanwhile, self-tracking technologies have enabled individuals to collect longitudinal health data via smartphones and wearables [14]. Menstrual tracking apps like Clue and Flo [9], and fitness platforms such as Strava or Garmin Connect [7], have popularized digital health engagement. Yet, these applications remain largely disconnected, limiting users’ ability to understand how hormonal fluctuations affect training outcomes [5, 8, 10].

To address this gap, we extended the privacy-aware, user-centered menstrual cycle tracking app, in the following referred to as *CyMe*, with an integrated sports tracking module. Developed through participatory design and grounded in scientific evidence, *CyMe* supports personalized tracking, cycle-aware training recommendations, and inclusive interaction design. This demo paper presents the implementation and evaluation of the extended app, showcasing how menstrual and physical activity data can be meaningfully connected to support adaptive training and self-awareness.

2 Design Rationale and Process

This project combined qualitative research, iterative design, and cooperative evaluation to explore and implement features that support the interplay between menstrual health and recreational sports performance in a privacy-aware menstrual tracking app, *CyMe*. The methodology consisted of two main phases: (1) a survey-based needs assessment and (2) a multi-sprint design and development process with embedded user evaluations.

2.1 Survey Design and Analysis

To identify user needs, we conducted a bilingual online survey (German/English) with Microsoft Forms targeting menstruating individuals aged 18 and above who do or would like to engage in recreational physical activity. The survey was distributed via Prolific [2] and personal networks in Switzerland and the UK. Screening questions ensured that only relevant participants—those assigned female at birth (AFAB), currently menstruating, and non-professional athletes—could proceed.

The survey included both closed and open-ended questions, designed iteratively by the research team after reviewing existing

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instruments such as the PhenX Toolkit [1], which lacked coverage of menstrual health, privacy, and sports engagement. Participants provided informed consent before beginning the survey.

Open-text responses were analyzed using an adapted affinity diagramming method in Miro. Each response was anonymized and converted into a post-it note (e.g. P110: "My previous app for mensural tracking had a complex interface. I want a user-friendly interface."). Post-its were color-coded by question and clustered in two levels: first within each question, then across questions to identify higher-order themes. This process was conducted collaboratively by multiple members of the project team to ensure reliability. The resulting clusters informed the derivation of ten design principles and associated feature suggestions, which we used to inform the limited set of design principles and features we decided to implement. A detailed visualization of this process and the derived findings can be found on our Miro board in the Appendix Section A.

2.2 Design and Development Process

Following the survey analysis we collaboratively decided to focus on four of the ten identified design principles:

- **Scientific and Research-Based**
- **Personalization**
- **Easy, Intuitive Navigation**
- **Data Privacy**

We also selected a subset of features to implement into the existing application, which we will go into more detail about in section 3. Subsequently, we entered a development phase consisting of three design sprints, each lasting two weeks, followed by a final shortened sprint (one week) to incorporate last-minute user feedback. Each sprint began with a prioritization of issues and feature ideas, documented in our private GitHub repository. These issues were derived from the survey findings, team testing and discussions, and user feedback.

2.3 Cooperative User Evaluations

After each sprint, we conducted cooperative evaluations with a consistent group of users. Four users participated in the first and third sprint evaluations, while three participated in the second. All users were briefed and signed informed consent forms prior to each participation.

Each evaluation session involved two team members: one facilitator and one note-taker. The first session was longer to allow users to explore the app and familiarize themselves with its interface before completing structured tasks. Tasks were designed to test newly implemented features and gather feedback on usability, clarity, and relevance. The sessions included:

- (1) A short onboarding phase
- (2) An exploration phase during the first session for every user
- (3) Task-based interaction with the app
- (4) Open-ended discussion and follow-up questions

Notes were compiled into a shared Excel file. The structured approach allowed us to systematically track feedback across sprints and identify recurring patterns, usability issues, and opportunities for improvement.

3 App Description

3.1 Overview

CyMe is a cycle-aware health tracking app designed to support menstruating individuals in understanding and managing their menstrual health and physical activity. The app builds on the original *CyMe* menstruation tracker and its core functionalities already included:

- **Cycle Tracking:** Users can log menstruation and a wide range of symptoms such as headaches, mood changes, energy levels, and more.
- **Integrated Calendar:** A visual timeline that displays menstrual data, enabling users to identify patterns and correlations.
- **Insights Tab:** Offers trend visualizations over time, including aspects such as cycle lengths and regularity, or symptom frequency.
- **Challenges:** Gamified challenges encourage users to track consistently and explore new aspects of their health.
- **Prediction Engine:** Estimates upcoming periods based on logged data.
- **Knowledge Base:** Curated, science-based articles, and papers on menstruation.

After iterative development, *CyMe* introduces a suite of features tailored to recreational athletes:

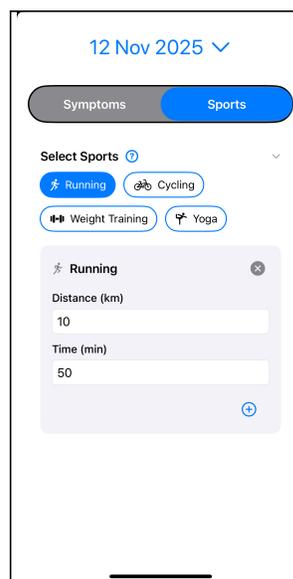


Figure 1: Sports activity log screen in *CyMe*

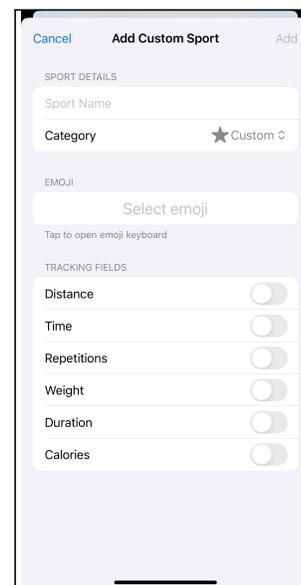


Figure 2: Creation of a custom sport to track in *CyMe*

- The **sports tracking module** in Figure 1 allows users to log one or more specific sports activities per day, including optional details such as distance or duration depending on the type of sport. The sports to track are based on the user's preferences and can be edited at any point in time.
- The possibility in the settings to add **custom sports** to track in the sports tracking, including the selection of optional

metrics to log for said sport, can be seen in Figure 2. The specific sports are also adjustable in the settings, which can be seen in more detail in the Demo video.

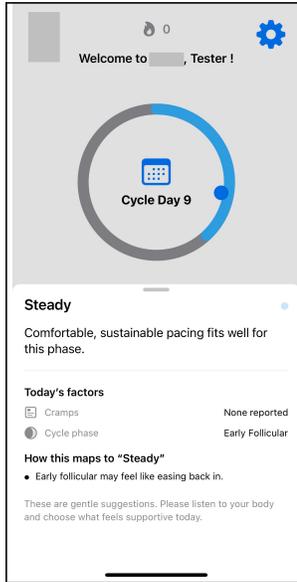


Figure 3: Personalized workout recommendation in CyMe

- With the **sport intensity home screen widget** on the home screen as seen in Figure 3, users get personalized workout recommendations tailored to their conjuncture and cycle phase.

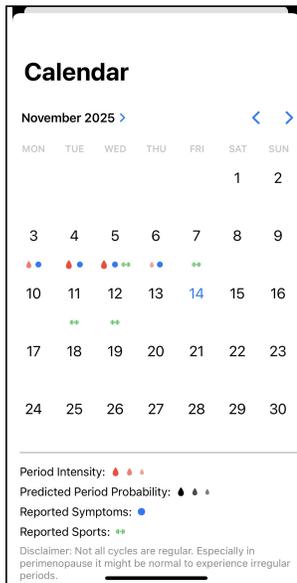


Figure 4: Calendar visualization of menstrual and sports data in CyMe

- The **integrated calendar** in Figure 4 now overlays menstrual data with the user's logged sports activities.

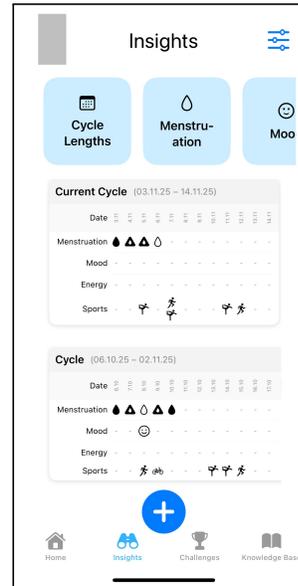


Figure 5: Insights tab of CyMe

- The **insights tab** shown in Figure 5 now also offers additional information on the user's sports activity, enabling users to identify patterns and correlations.

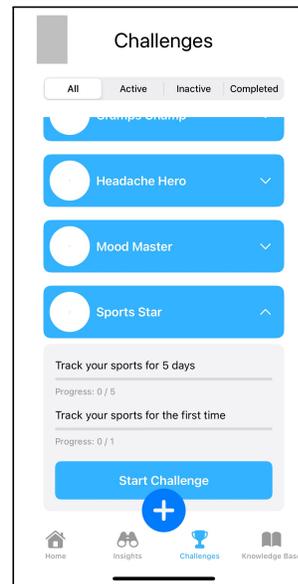


Figure 6: Challenges tab of CyMe

- The **challenges tab** displayed in Figure 6 was supplemented by a sports specific tracking challenge to encourage users to log their sports activities consistently.

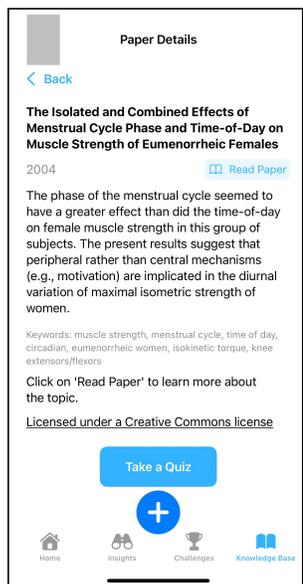


Figure 7: Knowledge Base tab of *CyMe*

- The new **knowledge base** contains an extensive collection of science-based educational material on menstruation, sports, and the interplay between them and other factors such as sleep. An exemplary article is shown in Figure 7.

3.2 Architecture and Technologies

CyMe is developed in Swift for iOS and integrates with Apple Health and Apple Watch to synchronize health metrics if enabled by the user. Data is stored locally only on each users phone, further ensuring data privacy. The app architecture supports modular feature development with a Model-View-ViewModel (MVVM) design pattern, enabling future extensions such as wearable integrations and real-time analytics.

3.3 Interaction Design and Visuals

The app prioritizes minimal interaction effort, employing modern UI paradigms such as:

- **Low-tap workflows** for logging and navigation with integrated auto-save features.
- **Clear, uncluttered graphs** and visualizations.
- **Intuitive interface metaphors** that guide users through tracking and insights.
- **Accessibility-aware design**, including high-contrast visuals and color-blind-friendly palettes or information display decisions.

User feedback was continuously integrated throughout development. For example, early testers highlighted issues with contrast and navigation, which were addressed in subsequent sprints. The onboarding flow was redesigned to allow personalization of sports tracking from the start, and the insights tab was expanded to include the visualization of sports data along with the logged symptoms throughout each cycle.

4 Demo Setup & Interaction

CyMe will be presented on two to three fully functional iOS devices, pre-populated with representative data to showcase key features such as cycle tracking, sports logging, insights visualization, and personalized recommendations. The demo will be exploratory, allowing attendees to experience the app's interface and interaction flow.

Participants will be invited to:

- Explore the app on our demo device.
- Interact with core features, including logging activities, viewing cycle-aware insights, and accessing the knowledge base.
- Discuss design decisions and provide feedback on usability and inclusivity.

Attendees will have the option to install *CyMe* on their own iOS devices via TestFlight during the session. We will encourage informal feedback on the experience and collect impressions and perceived value of integrated menstrual and sports tracking.

5 Limitations

While the current implementation provides a solid foundation, the project faced limitations. The available timeline restricted the scope of implemented features, and some technical debt inherited from earlier development phases constrained architectural flexibility. For example, full integration with Apple HealthKit and Apple Watch remains incomplete, and advanced functionalities such as a machine learning-based recommendation engine could not be realized within this phase. Additionally, our evaluation involved a relatively small and homogeneous group of testers, limiting insights into usability across diverse backgrounds and levels of digital literacy.

6 Conclusion and Future Work

This demo presented *CyMe*, an extended menstrual tracking app integrating cycle-aware sports tracking for recreational athletes. Through three design sprints and iterative evaluations, we implemented features such as personalized sports logging, integrated calendar views, and cycle-phase-based recommendations. These additions show how menstrual health and physical activity can be meaningfully connected to foster self-awareness and adaptive training.

Looking ahead, we recommend completing HealthKit integration, leveraging wearable data for richer insights, and keeping the multimedia knowledge base up-to-date with current research. Another valuable addition would be exploring machine learning approaches for personalized recommendations once large-scale opt-in data collection becomes feasible. Broader evaluations with more diverse user groups are also essential to ensure inclusivity and accessibility. Pursuing these directions aligns with *CyMe*'s ambition to evolve into a comprehensive, privacy-conscious app that empowers users to understand and adapt their training in relation to menstrual health.

Acknowledgments

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A Qualitative Analysis Miro Board

A view-only version of the Miro board (Fig. 8) we used for each step and iteration of our qualitative analysis can be found at the following link: https://miro.com/app/board/uXjVJ4Yqzt8=?share_link_id=290525332006.

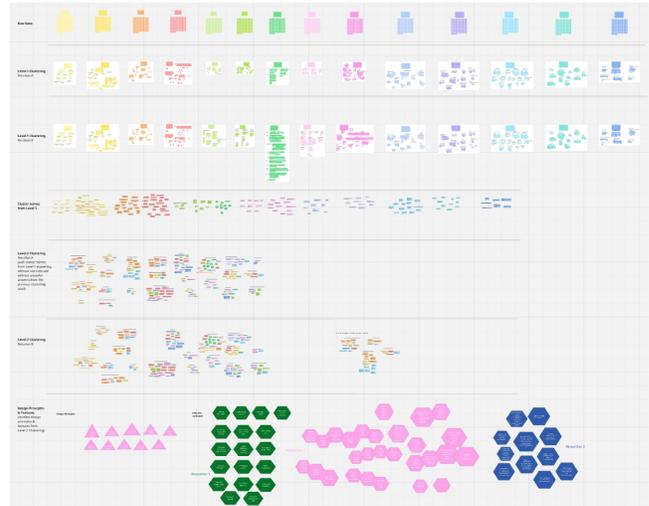


Figure 8: Overview of the Miro board used for the qualitative analysis of the survey responses, as described in Section 2.

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