

IMPACT OF MENSTRUAL CYCLE ON ATHLETIC TRAINING

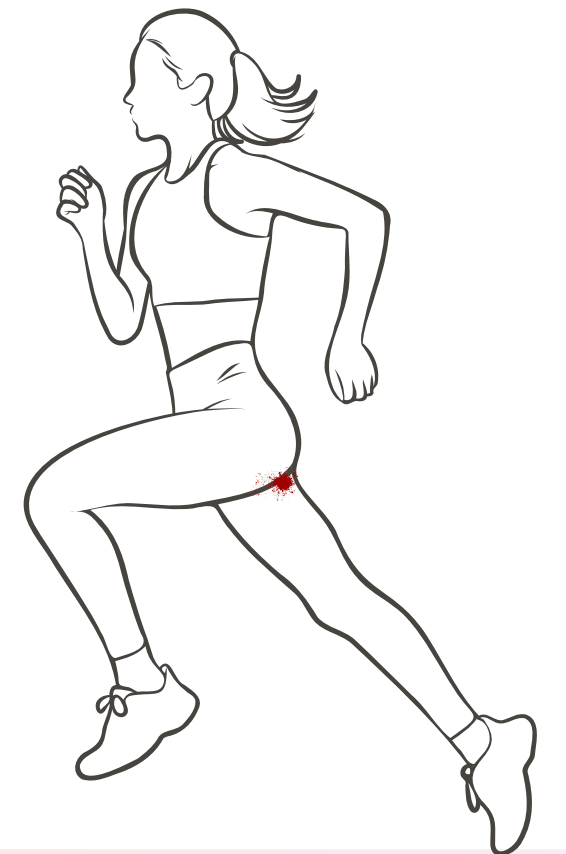
A pilot study with 20 menstruating athletes,
measured over 3 cycles.

A joint report by



and

Cranberry



In this report

- 1 Summary of the pilot
- 2 Science of the study
- 3 About the athletes
- 4 Symptoms experienced by the athletes
- 5 Impact on athletic training
- 6 Way forward for research

Summary of the pilot

Methodology and Findings

- **Methodology**

- Study Design: This was a descriptive study conducted over a duration of 90 days.
- Sample Size: The study included 20 athletes as participants.
- Data Collection: Daily logs of performance and weekly logs of period & symptoms were maintained by athletes throughout the study duration. The data was recorded through a WhatsApp chatbot.



- **Findings**

- Menstrual cycles lead to symptoms and symptoms impact training. Performance and symptom trends varied significantly across athletes, with some athletes reporting higher severity than others.
- Symptoms are not limited to period days; they are reported throughout the cycle, occurring on average **23%** of the month
- Periods were identified as a reason for missing out on training by **68%** of the athletes
- Data reveals noticeable decline in performance on days when symptoms were reported compared to days without symptoms.
- No systematic correlation was seen between cycle phases and performance.

Science of the study

What is the menstrual cycle and how it works

The menstrual cycle is a process in the female reproductive system that prepares the uterus for potential pregnancy. It typically lasts from 21 to 45 days and varies between individuals.

- Hormonal changes

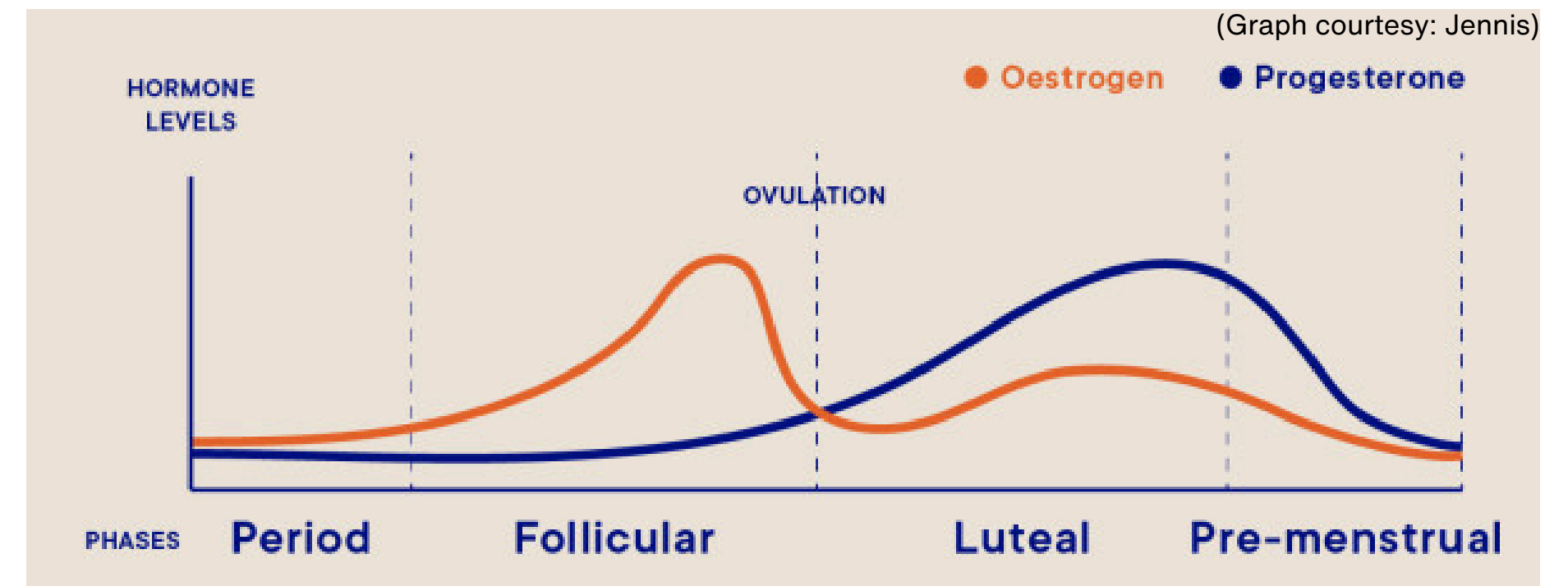
Throughout the cycle, the levels of two main hormones, Oestrogen and Progesterone change.

- Phases

Based on the level of these hormones, the cycle is divided into 4 phases. Period is when the bleeding occurs. But it is not the only days menstruators are impacted by the cycle!

- Menstrual Symptoms

These changing hormone levels cause various symptoms. Over 150 symptoms have been documented that vary from woman to woman and differ in severity.



Migraine

Abdominal Cramps

Pelvic pain

Mood swings

PMS

Fatigue

Indigestion

Breast pain

Bloating

Appetite changes

Our research questions based on this science:

1. What severity and duration of menstrual symptoms do athletes experience?
2. Do menstrual symptoms impact athletic training?
3. Do menstrual phases impact athletic training?

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About the athletes

A brief about participants and methodology

This study involved 20 athletes engaged in the intense field sport of ultimate frisbee.

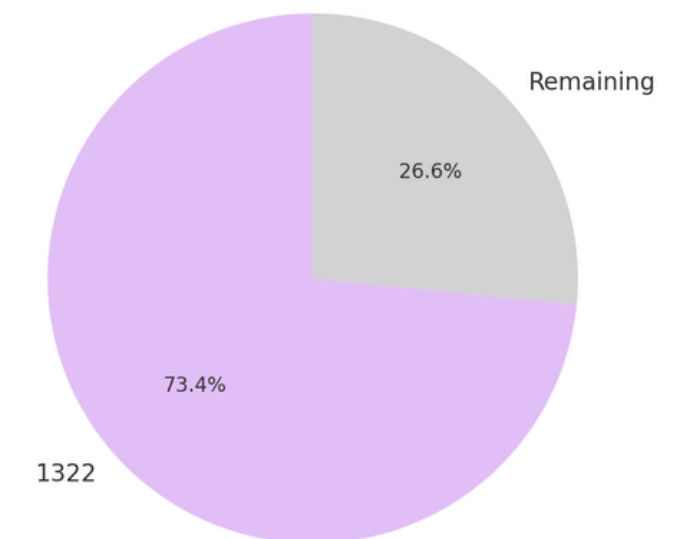
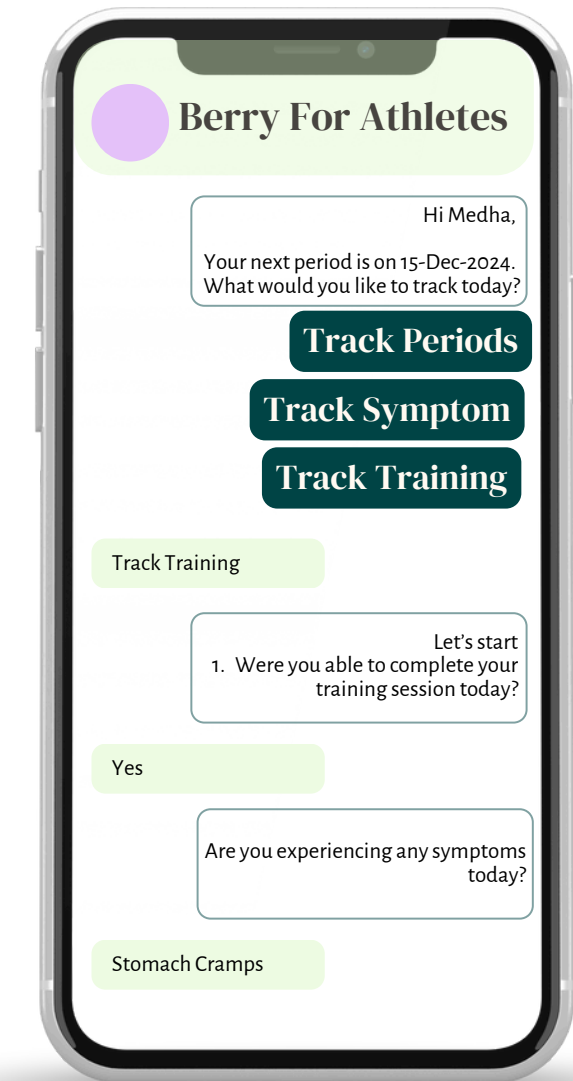
- Players aged from 16-24 yrs
- Each participant had access to a mobile device and WhatsApp, which served as the primary platform for tracking and communication.
- Duration of tracking - 90 days which include 3 periods for most athletes

The athletes used a WhatsApp chatbot to track:

- Period start dates
- Training completion and injuries
- Symptoms experienced and their severity

The dataset provides a comprehensive foundation for analyzing the interplay between menstrual health and athletic performance.

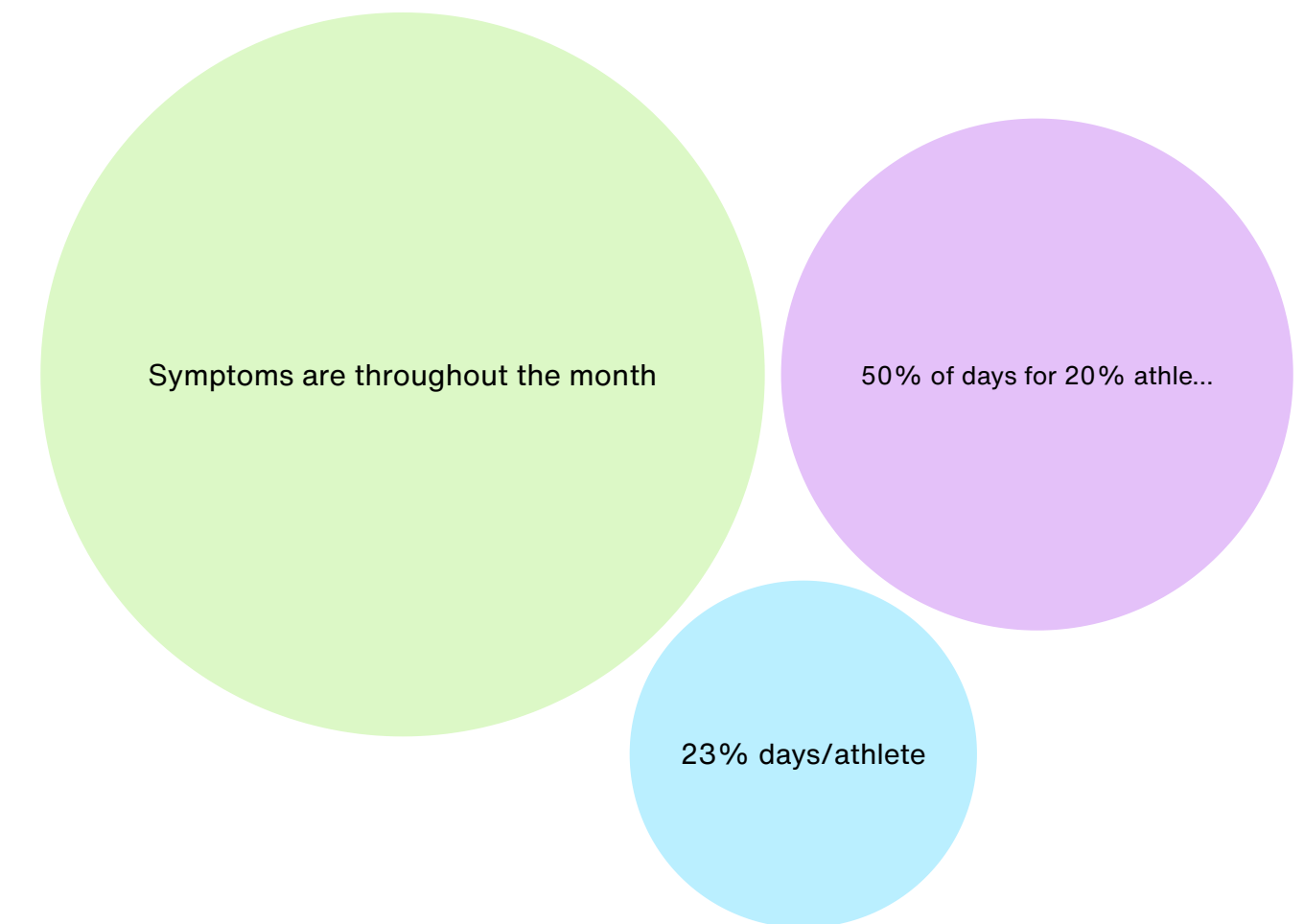
- A total of **1,322 data points** were collected, achieving a robust **73.4%** data completion rate.
- This consistent data collection highlights the feasibility of using digital tools like WhatsApp chatbots for real-time tracking.



Symptoms experienced by the athletes- each month

Athletes experienced symptoms throughout the cycle, not just the day of period

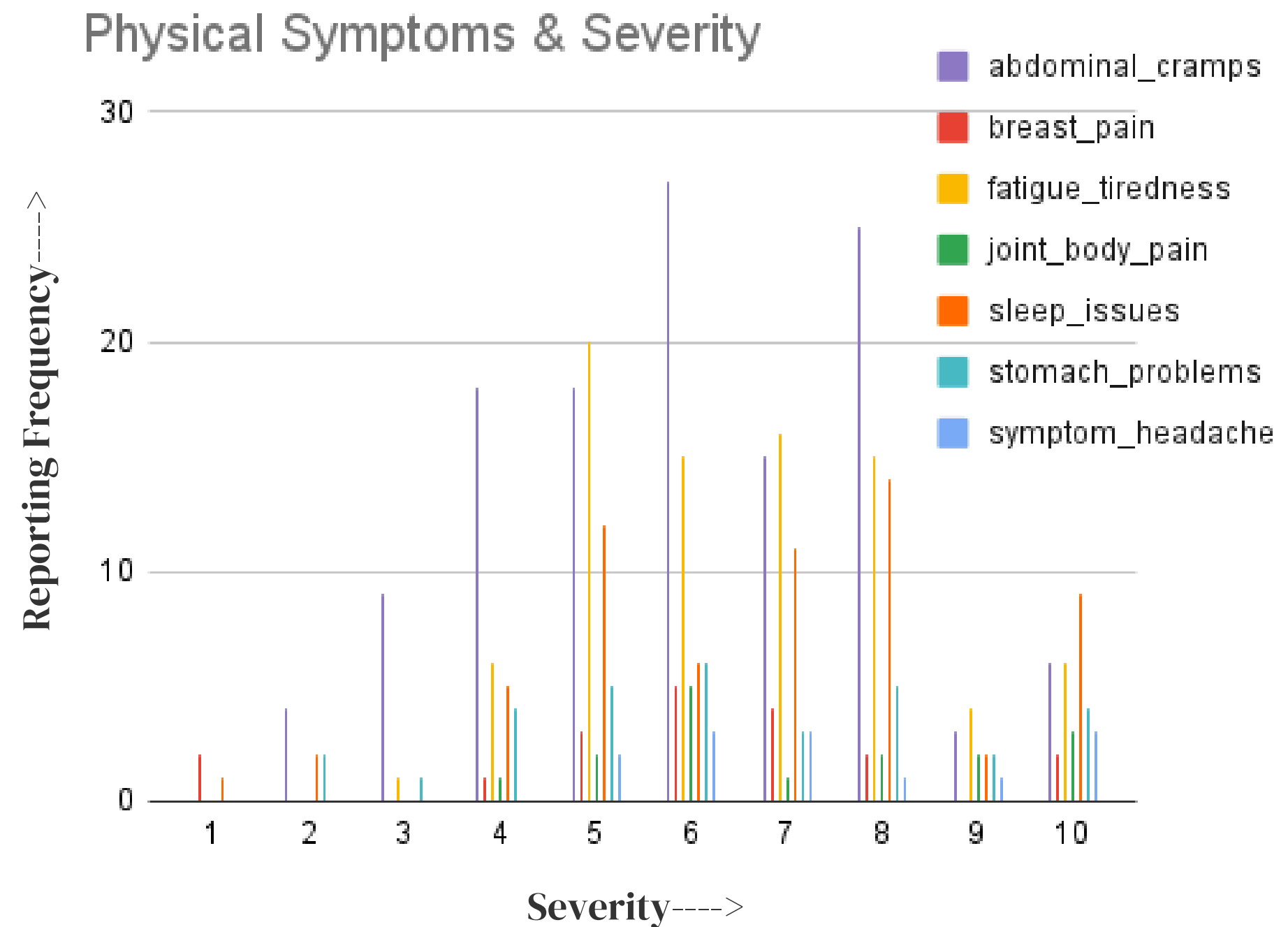
- Different phases of the menstrual cycle bring about varying symptoms for each athlete, impacting them both physically and emotionally. The data reveals a consistently high frequency of symptom reporting throughout the month, highlighting the prevalence.
- Monthly Symptom Prevalence: On average, symptoms are reported on 23% of the days in a month.
- Athletes affected severely: 20% of athletes reported symptoms for at least half of the days in a month. Often with higher severity.
- Universal Experience: Symptoms were reported by all athletes, highlighting their widespread occurrence.



Symptoms experienced by the athletes- Physical Symptoms

Abdominal Cramps, Fatigue-Tiredness - reported over 100 times

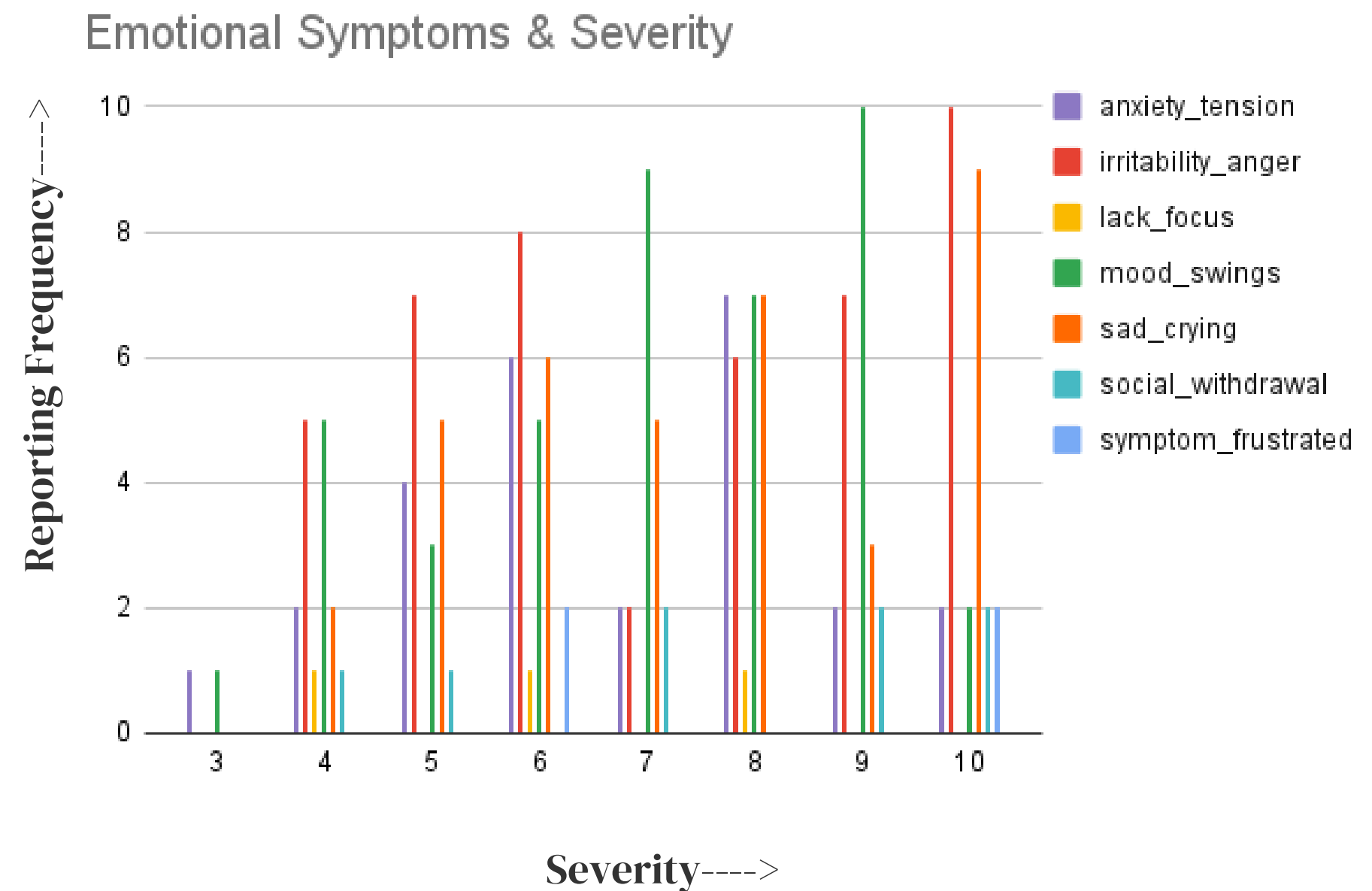
- Abdominal cramps are the most frequently reported symptom, with many athletes experiencing high severity levels of 6 and above.
- Following closely behind, fatigue and tiredness are persistent symptoms that drain energy. Sleep disruptions, in particular, highlight how menstrual symptoms extend beyond daytime challenges, directly affecting rest and recovery.
- Severity levels vary across athletes, with **15 athletes reporting symptoms at severity 8 or higher**. At this level, symptoms disrupt the ability to carry out even day-to-day activities.



Symptoms experienced by the athletes- Mental and Emotional Symptoms

Irritability, Mood Swings - reported with high severity consistently

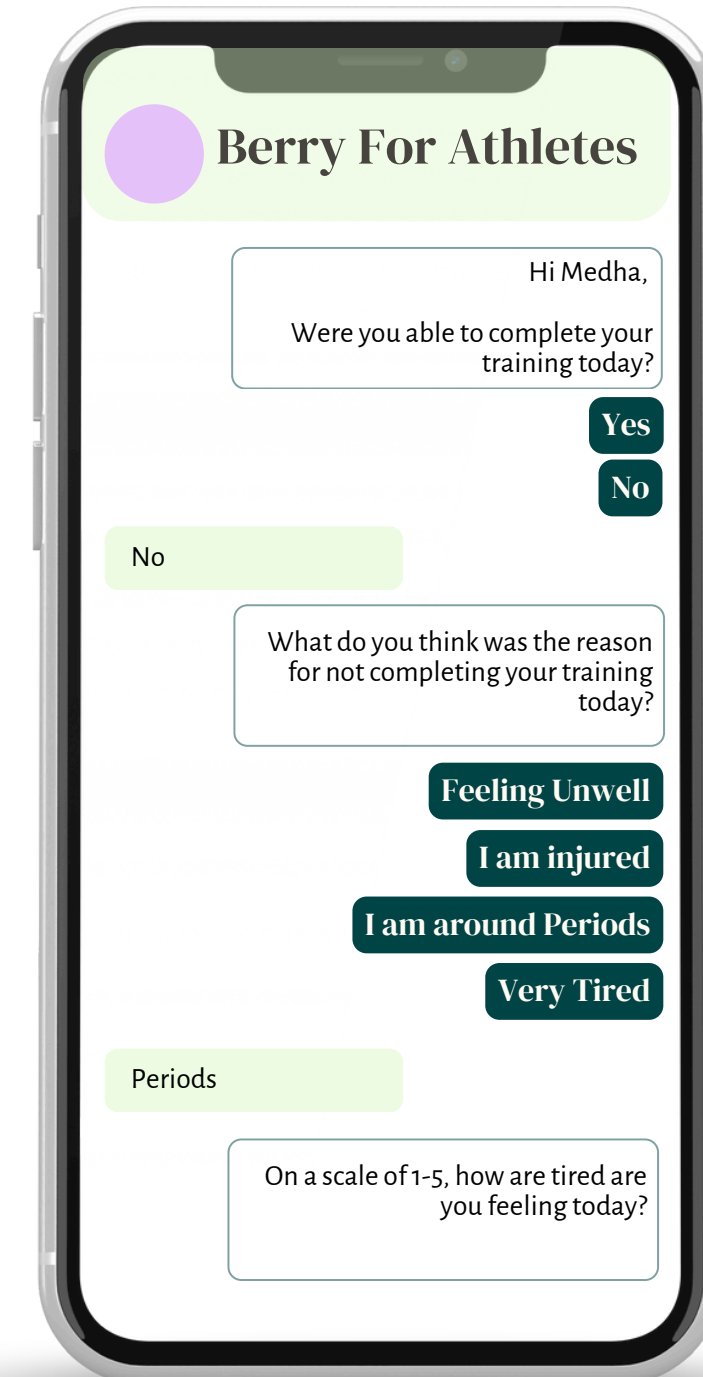
- This data highlights the breadth and depth of emotional symptoms faced by athletes, demonstrating the complex interplay of mental and physical health during the menstrual cycle
- Irritability and anger stands out as frequently reported, peaking at severity levels of 10. Similarly, mood swings display a wide distribution across severity levels, with the most frequent reports between 8 to 10.
- Sadness and anxiety follow closely, with severity levels clustering between 6 and 9 for many athletes.
- These intense emotional fluctuations can affect interpersonal relationships and focus during training.



Impact on athletic training

68% Athletes reported that periods lead to non-completion of training

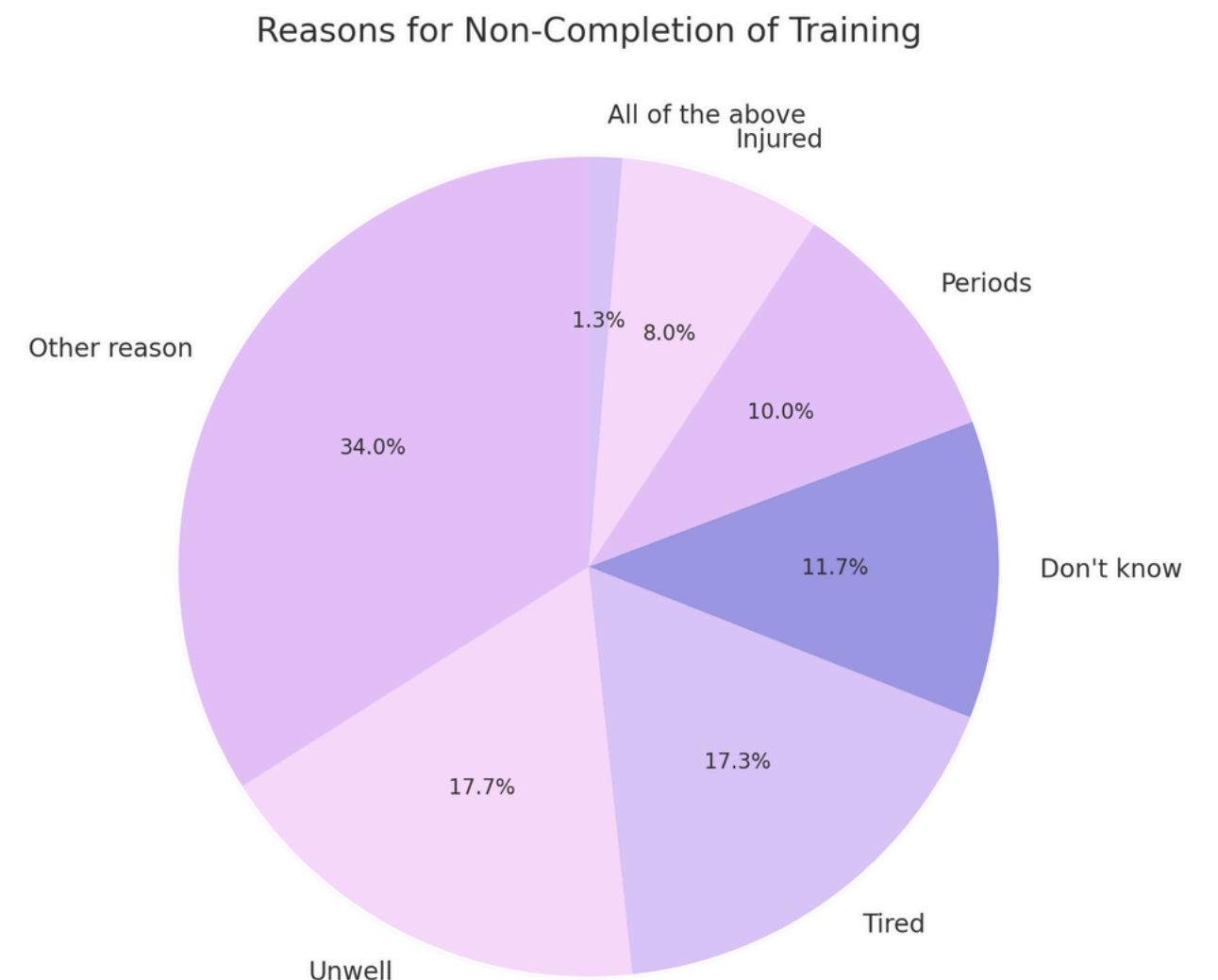
- As part of daily tracking, athletes are prompted with the question: Did you complete your training session today?
- If the answer is no, they are further asked to specify the reason for non-completion. This approach helps identify barriers from an athletes perspective
- While many factors influence training non-completion, 13 athletes identified their periods as a reason for missing out on training sessions.



Impact on athletic training

Periods account for 10% of all reported reasons for non-completion of training

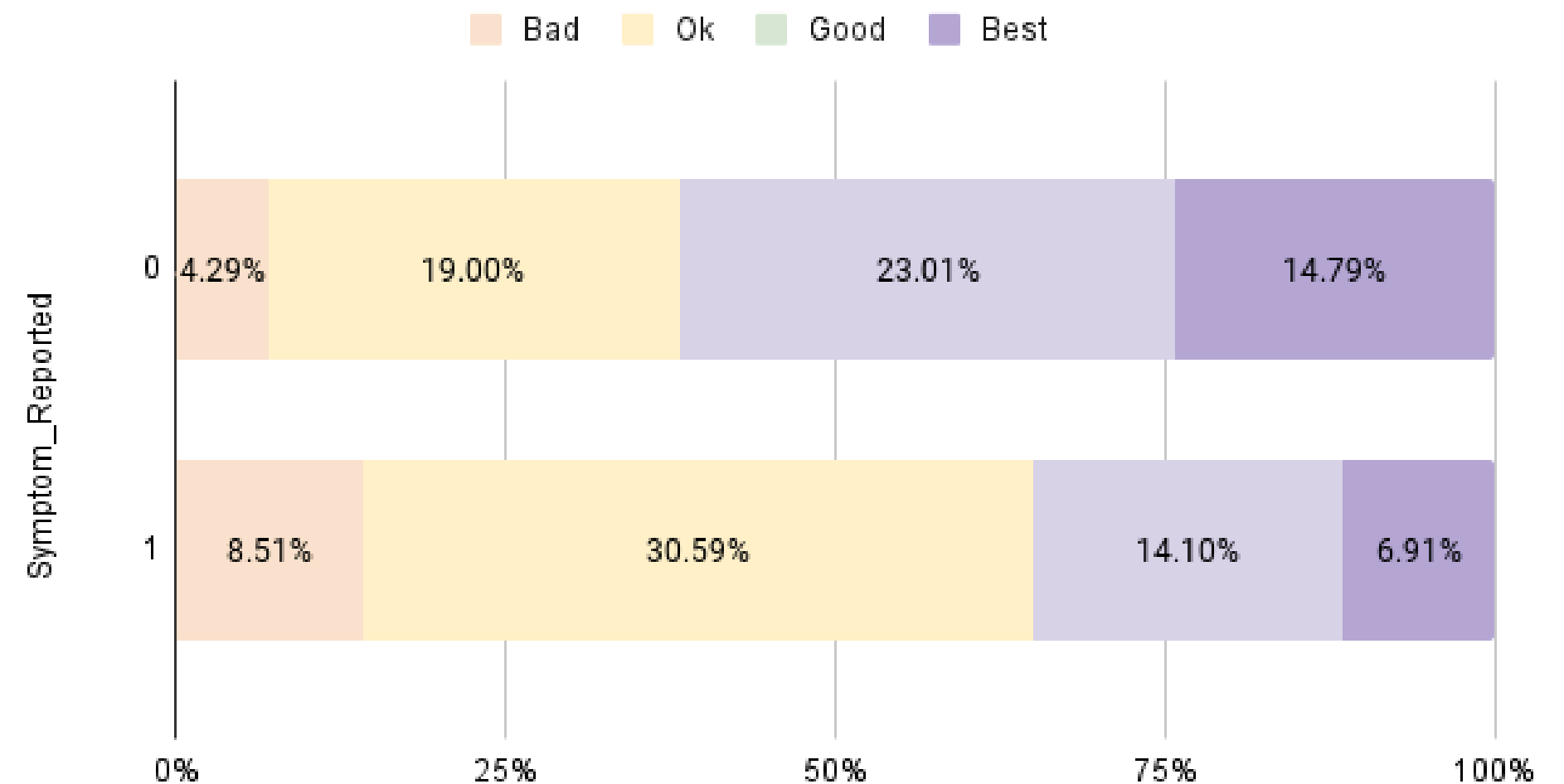
- Menstrual symptoms clearly play a role in influencing performance, contributing to **10% of all reported reasons** for non-completion of training.
- It's also important to note that - Unwell, Don't Know & Tired - which constitute >45% of the reasons. Data reveals 40% of these times, the athlete was in their period or pre-menstrual phase —known for heightened physical and emotional symptoms.
- These findings highlight a critical area for further investigation - understanding how specific phases of the menstrual cycle impact training.



Impact on athletic training

Data reveals noticeable decline in performance on days when symptoms were reported compared to days without symptoms.

- On non-symptom days (Symptom_Reported = 0), athletes predominantly rated their performance as good or ok with Best ratings reaching 14.79%. Negative ratings were less frequent.
- Conversely, on symptom-report days (Symptom_Reported = 1), the proportion of Best and Good ratings decreased, while ratings such as Okay and Bad (8.51%) significantly increased.
- This highlights the impact of symptoms on performance consistency, with athletes more likely to skip training or rate their performance poorly on these days.



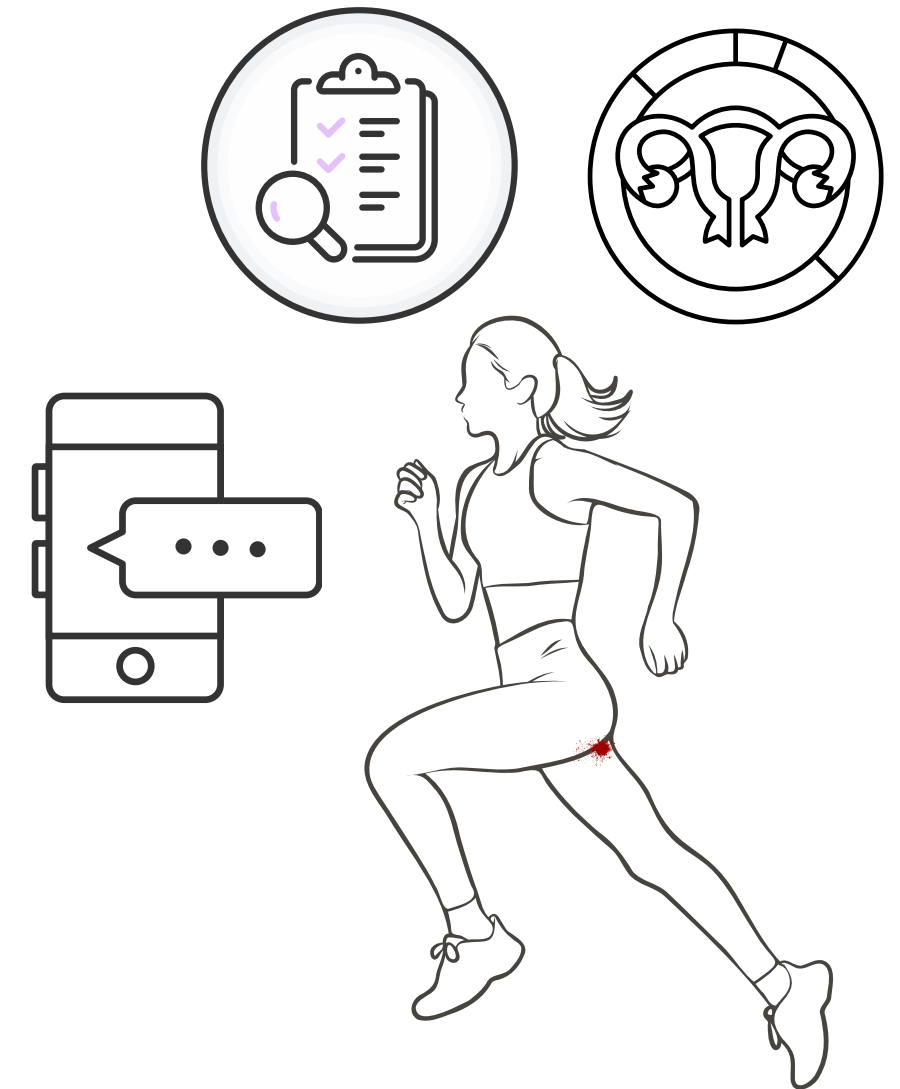
Next Steps

Continue to create impact

- This pilot study provides initial evidence of the impact of menstrual cycle on athletic training.
- The WhatsApp Chatbot tracking has high compliance. This allows us to now take this approach to the next 100s of athletes.

The next areas to explore are:

- Replicating this study for a larger sample size
- Improving the measurement of training and performance
- Adding interventions to improve menstrual symptoms - these should be both digital like information and physical like access to products.
- This will allow us to create causal evidence using a pre-post study design.



Questions?

Thank You

**We are excited
to close the
gender data gap
for
women in sports
in India.**

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ADDITIONAL INFORMATION

A pilot study with 20 menstruating athletes,
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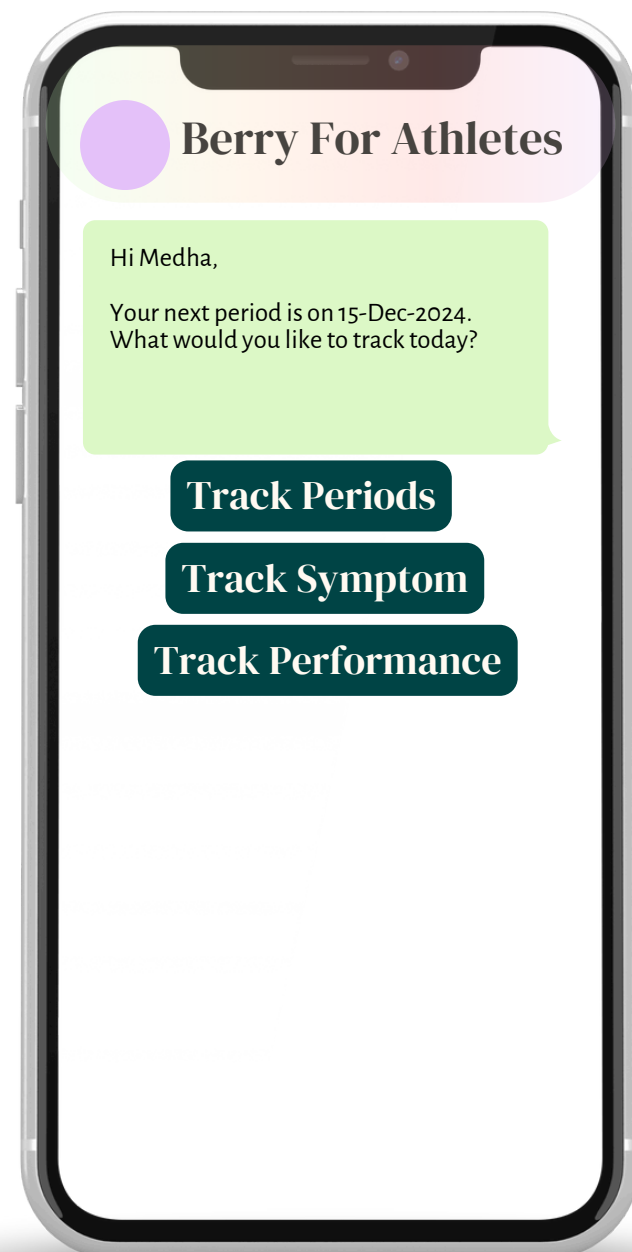
Additional

Chatbot measured the following variables, throughout

- Variables Measured:
 - Training Completion: Whether the athlete completed their planned training session.
 - Self-Rating of Performance: Athletes' subjective assessment of their daily performance.
 - Tiredness: Self-reported levels of fatigue experienced each day.
 - Injury and Severity: Documentation of any injuries sustained, including severity levels.
 - Symptoms and Severity: Recording of symptoms experienced daily, along with their severity.
 - Period Dates: Log of period start dates over 3 periods

Additional

We worked with Coaches & Athletes to have participatory input

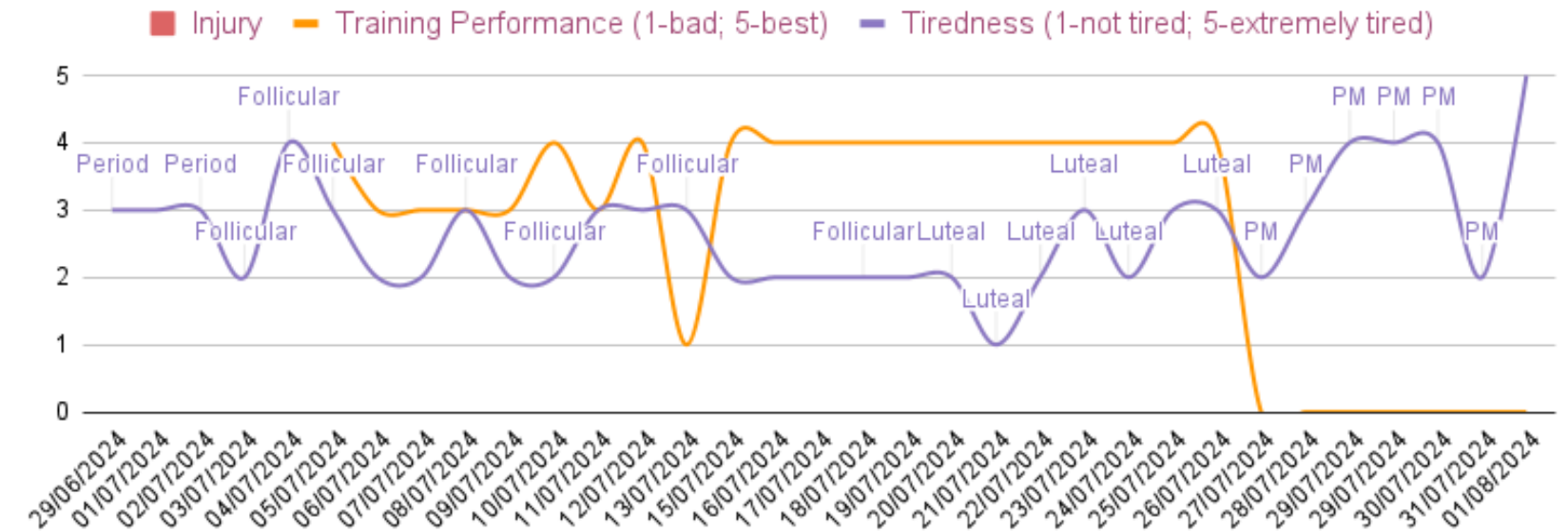


Berry is a chatbot on WhatsApp.

Every day, athlete can track the data on the chatbot.

Key Insight:

Training performance was good in follicular and luteal phase
Tiredness increased in PM (Premenstrual) phase
No injury reported in any phase



Engage the athletes in gentle stretching exercises and yoga poses focusing on the lower back, hips, and pelvic region.

- Child's pose (Balasana)
- Happy Baby Pose (Ananda Balasana)
- Pigeon Stretch (Eka Pada Rajakapotasana variation)
- Seated forward stretch (Paschimottanasana)
- Thread the needle pose
- Cat Cow Pose (Marjaryasana-Bitilasana)
- Reclined Bound Angle Pose (Supta Baddha Konasana)
- Low Lunge (Anjaneyasana)

Athlete 1
Athlete 2
Athlete 3
Athlete 4
Athlete 5
Athlete 6

Coach Sign

Additional

We gave recommendations to athletes and coaches to improve symptoms

Abdominal Cramps

Action #1 (The most common symptom in August)

Engage the athletes in gentle stretching exercises and yoga poses focusing on the lower back, hips, and pelvic region.

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- Low Lunge (Anjaneyasana)

 These exercises can improve blood circulation and reduce muscle tension.


Irritability/Anger/Mood Swings

(The most common symptom in August)

Action #1

Incorporate 2 minutes of relaxation exercise after cool down.

- Box breathing
- 4:7:8 breathing
- Anulom Vilom Pranayama

 These exercises help calm the mind and increase mindfulness.

Action #2

Encourage a visit to the physiotherapist or a sports doctor.

 Certain injuries need to be looked at by a professional.