The State of Meditation 2026

Heart-Rate Response During Qualified Dojo Meditation Sessions

Dojo Research
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Manuscript type: Retrospective observational product research.
Data source: Anonymized aggregate Dojo meditation-session telemetry from H1 2026.
Primary endpoint: Start-to-end heart-rate change among sessions meeting predefined heart-rate coverage criteria.
Source format: This article is authored in LaTeX and compiled to PDF for public distribution.

Important interpretation note. This document is an observational descriptive analysis, not a clinical trial. It does not establish causality, diagnose or treat disease, or claim clinical efficacy for meditation. Heart rate is interpreted here as one accessible physiological signal within qualified session windows.

Abstract

Background. Meditation is commonly evaluated through subjective report, while physiological response during app-guided practice remains less consistently characterized. Heart rate is a scalable autonomic proxy that can be summarized during naturalistic meditation sessions when sufficient signal coverage is available.

Objective. To describe aggregate heart-rate response during qualified Dojo meditation sessions and quantify direction, magnitude, and timing of heart-rate change.

Methods. We conducted a retrospective observational analysis of anonymized aggregate session data from H1 2026. Sessions were included when they met predefined data-quality criteria for sufficient heart-rate coverage. Primary and secondary endpoints were computed from cleaned session-level heart-rate metrics.

Results. Among qualified meditation sessions, 76.8% showed a start-to-end heart-rate decrease. The mean heart-rate decrease was 6.5 beats per minute (bpm) and the median decrease was 5.11 bpm. The median time to first heart-rate decrease was 1.0 minute, while the mean time to minimum heart rate was 7.63 minutes. Where user-shared resting-heart-rate baselines were available, 27.0% of sessions fell below that baseline.

Conclusions. Qualified Dojo meditation sessions frequently exhibited measurable heart-rate reduction. The separation between first decrease and minimum heart rate suggests that early autonomic response and deeper session-level settling are distinct descriptive features. Findings should be interpreted as observational product research rather than clinical evidence.

Keywords: meditation; heart rate; wearable signals; digital health; physiological response; observational study; AI-guided meditation.

1 Introduction

Meditation practice is often discussed in terms of attention, subjective calm, emotional regulation, and stress reduction. These outcomes are important, but they are not always directly observable during a session. Heart rate provides one accessible physiological signal that can help evaluate whether the body is moving toward a lower-arousal state during practice. Prior work has examined mindfulness and meditation in relation to cognition, stress, and self-regulation [Kabat-Zinn, 1990, Tang et al., 2015, Zeidan et al., 2010]. Heart-rate-derived metrics are also widely used as accessible markers of autonomic activity, although interpretation requires caution [Shaffer and Ginsberg, 2017].

The aim of this report is narrow: to describe aggregate heart-rate response in qualified Dojo meditation sessions. It does not attempt to rank all meditation techniques, infer clinical outcomes, or claim that lower heart rate is universally desirable. Instead, it asks whether sessions with sufficient usable heart-rate data show measurable start-to-end change and how quickly that change appears.

This topic is relevant to measured meditation, heart-rate meditation, and AI-guided meditation, but the emphasis here is methodological rather than promotional. The central object of analysis is the cleaned session-level physiological signal.

2 Background

Dojo is an AI-guided meditation application that can incorporate physiological feedback into the practice experience. The product can capture heart-rate observations during meditation and summarize them into session-level metrics. These metrics can be used descriptively to examine whether a meditation session was associated with a measurable physiological shift.

Heart rate is not a complete measure of meditation quality. It is affected by posture, breathing, stress, hydration, sleep, caffeine, sensor behavior, and other contextual factors. Nevertheless, within a qualified session window, heart-rate landmarks such as starting HR, ending HR, minimum HR, and time to minimum HR provide interpretable descriptive signals. The present report focuses on these signals at the aggregate level.

3 Methods

3.1 Study Design

This study is a retrospective observational analysis of anonymized aggregate Dojo meditation-session telemetry. The analysis is descriptive and exploratory. It was designed to characterize heart-rate response during qualified sessions, not to estimate clinical efficacy or infer causality.

3.2 Cohort Construction and Eligibility

The analytic cohort was restricted to completed meditation sessions with sufficient usable heart-rate coverage. Sessions with inadequate physiological signal coverage were excluded rather than imputed. This eligibility rule prioritizes endpoint reliability over maximal session inclusion.

3.3 Signal Processing and Feature Extraction

Dojo captures heart-rate response during meditation and stores cleaned, session-level physiological features. For this report, each qualified session was summarized by operational landmarks: starting HR, ending HR, minimum HR, mean HR, start-to-end change, largest drop from start, time to first decrease, and time to minimum HR.

The primary endpoint was start-to-end heart-rate change:

$$\Delta HR = HR_{\text{start}} - HR_{\text{end}}. \tag{1}$$

Positive values denote a start-to-end heart-rate decrease.

3.4 Resting Heart Rate Baseline

Resting heart rate in this report refers to an average resting-heart-rate baseline shared by users through connected health data. Dojo did not calculate each user's average resting heart rate for this analysis. Therefore, below-resting-heart-rate findings apply only to sessions where that user-shared baseline was available. Connected-health data is conceptually similar to baseline information made available through systems such as HealthKit [Apple Inc., 2026], but device-specific claims are not made in this report.

3.5 Privacy and Governance

The analysis was conducted on anonymized aggregate data and designed to protect user data privacy rights. Results are reported as aggregate statistics rather than individual-level records.

3.6 Statistical Analysis

All statistics are descriptive. Continuous variables are summarized using means and medians where appropriate. Binary outcomes are summarized as percentages of qualified sessions or, for resting-heart-rate endpoints, percentages among sessions with available user-shared resting-heart-rate baselines. No inferential hypothesis tests, confidence intervals, or causal estimates are reported.

Table 1: Operational definitions for primary variables.

Variable	Operational definition
Starting HR	Heart-rate value at the beginning of the qualified meditation session.
Ending HR	Heart-rate value at the end of the qualified meditation session.
HR drop	Starting HR minus ending HR; positive values denote start-to-end decrease.
Minimum HR	Lowest observed heart-rate value in the qualified session window.
Largest drop from start	Starting HR minus minimum HR.
Time to first HR decrease	First observed point when HR fell below starting HR.
Time to minimum HR	Observed point in the session when minimum HR was reached.
Resting HR baseline	Average resting-heart-rate baseline shared by users through connected health data; not calculated by Dojo for this analysis.
Below resting HR	Whether HR fell below the user's shared resting-heart-rate baseline where available.

4 Results

4.1 Direction of Heart-Rate Change

Among qualified meditation sessions, 76.8% showed a start-to-end heart-rate decrease. A smaller subset, 22.7%, showed a start-to-end increase. The remaining sessions were approximately flat by residual calculation (Figure 1).

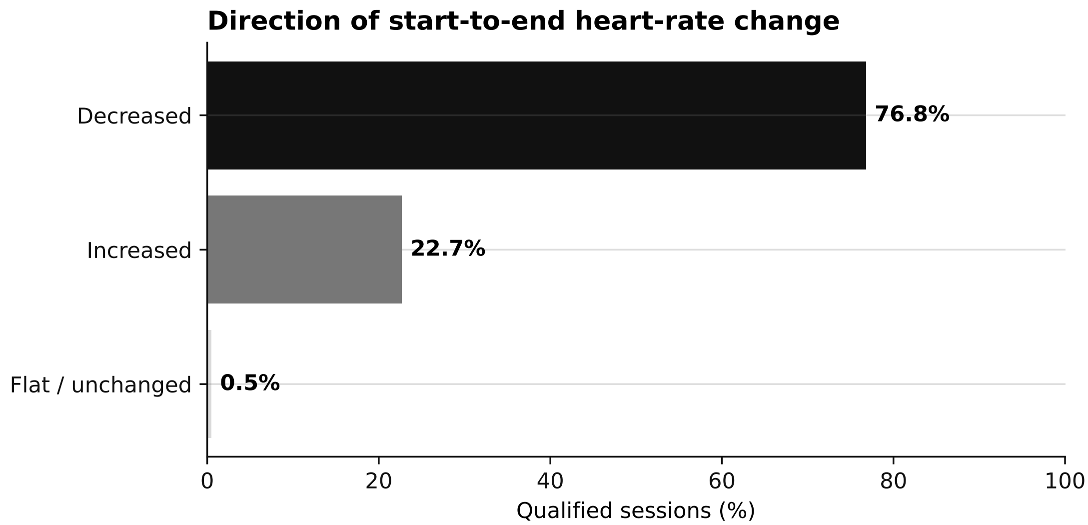

Figure 1: Direction of start-to-end heart-rate change among qualified meditation sessions. Flat or unchanged sessions are calculated as the residual after decreased and increased sessions.

4.2 Magnitude of Response

The average start-to-end decrease was 6.5 bpm, and the median decrease was 5.11 bpm. The average absolute start-to-end movement was 8.96 bpm, indicating that qualified sessions involved measurable physiological movement even when direction varied. Aggregate landmarks are summarized in Table 2.

Table 2: Descriptive aggregate heart-rate endpoints.

Endpoint	Estimate	Interpretation
Sessions with HR decrease	76.8%	Most qualified sessions showed a start-to-end decrease.
Sessions with HR increase	22.7%	Some sessions increased, reflecting heterogeneous session contexts.
Average HR drop	6.5 bpm	Mean start-to-end decrease.
Median HR drop	5.11 bpm	Typical start-to-end decrease.
Average absolute HR change	8.96 bpm	Total start-to-end movement regardless of direction.
Largest drop from start	11.37 bpm	Average difference between session start and minimum HR.
Average session HR	69.36 bpm	Mean HR across the qualified session window.

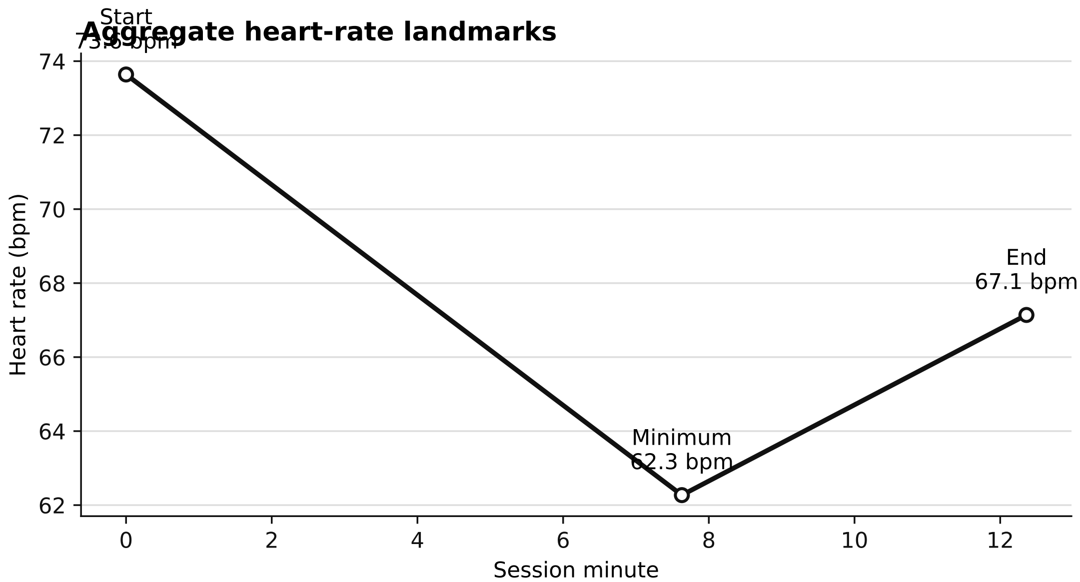

Figure 2: Aggregate heart-rate landmarks. The figure shows mean starting HR, mean minimum HR, and mean ending HR across qualified sessions. This is an aggregate landmark chart, not an individual session trace.

4.3 Timing of Response

The median first heart-rate decrease occurred after 1.0 minute. The minimum heart rate occurred later: qualified sessions reached minimum heart rate after 7.63 minutes on average, with a median time to minimum heart rate of 6.0 minutes (Figure 3).

This creates a two-stage descriptive interpretation. First, the initial downward movement often appears early. Second, the deepest observed heart-rate point tends to occur later, after additional settling time.

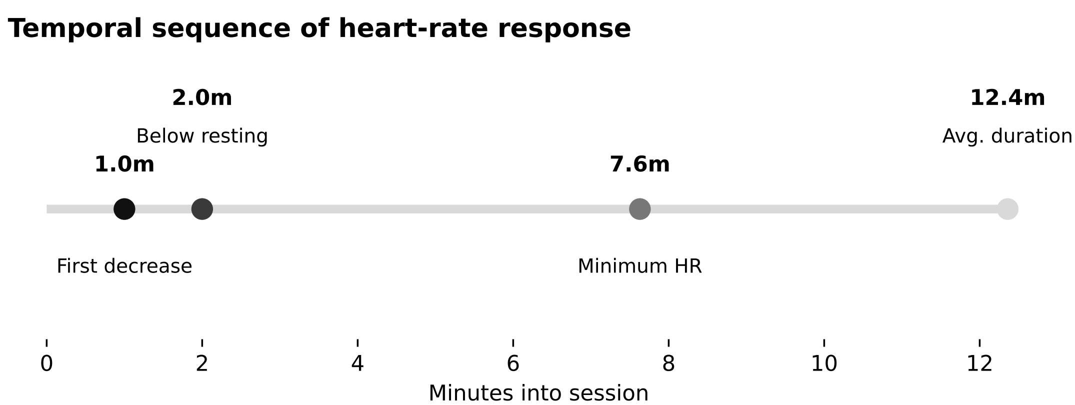

Figure 3: Temporal sequence of heart-rate response. The first decrease and minimum HR are distinct timing endpoints.

4.4 Below Resting Heart Rate

Where a user-shared resting-heart-rate baseline was available, 27.0% of qualified sessions fell below that baseline. The median time to first point below resting heart rate was 2.0 minutes, and the average time spent below resting heart rate was 1.3 minutes (Figure 4).

This endpoint should be interpreted cautiously. Resting heart rate was not calculated by Dojo for this analysis; it was a baseline shared through connected health data. The finding is therefore conditional on baseline availability.

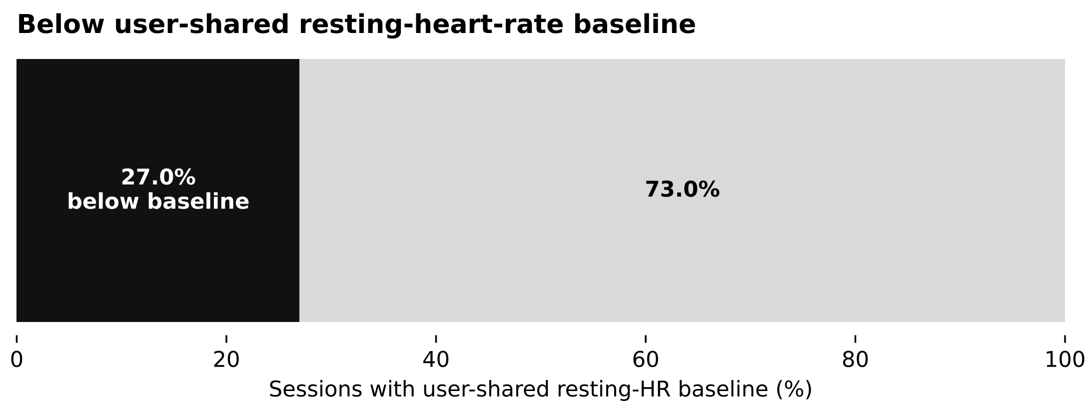

Figure 4: Below user-shared resting-heart-rate baseline. The denominator is sessions where a user-shared resting-heart-rate baseline was available.

4.5 Qualified Content Groupings

Some content-level groupings met the reporting threshold and appeared in the aggregate output (Table 3). These results should not be interpreted as a universal ranking of meditation techniques. Content groupings can reflect session context, user state, ordering effects, and availability of qualified data.

Table 3: Qualified content groupings that met aggregate reporting thresholds.

Grouping	Sessions	Users	Avg. HR drop	HR decrease
Intro module family	132	33	9.12 bpm	87.1%
Body scan module family	117	30	8.93 bpm	84.6%
AI-generated sessions	116	31	7.41 bpm	85.3%

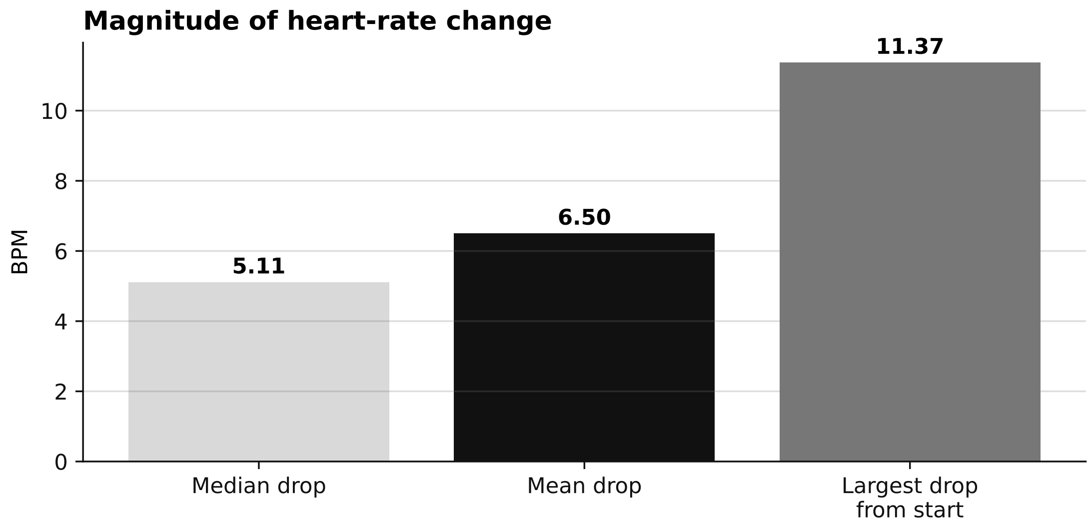

Figure 5: Comparison of median start-to-end drop, mean start-to-end drop, and mean largest drop from session start.

5 Discussion

The primary result is that qualified Dojo meditation sessions often show measurable heart-rate reduction. The median first decrease occurred quickly, while the minimum heart-rate point occurred later. This distinction matters because a single end-of-session value can miss the deepest physiological point reached during the session.

The findings support a practical research direction: meditation systems can be evaluated not only by completion, subjective preference, or content category, but also by physiological response over the course of a session. For a personalized meditation system, this creates a feedback loop: user intention, session design, physiological response, and future adaptation.

AI is relevant only insofar as it can help adapt practice to observed response. The useful question is not whether an AI can generate meditation content, but whether a system can learn which meditation exercise or technique appears to support a given user's desired state.

6 Limitations

This analysis is observational, retrospective, and descriptive. It does not establish causality, clinical efficacy, or comparative superiority of any meditation technique.

Heart rate is only one physiological signal. It can be influenced by posture, stress, breathing, hydration, caffeine, sleep, device behavior, and other contextual factors.

The report focuses on qualified sessions with sufficient heart-rate coverage. This improves signal quality but limits generalization to all app usage.

Resting-heart-rate analysis depends on user-shared baseline availability. Dojo did not calculate average resting heart rate for this analysis.

Content-level findings are early and aggregate. They should inform future study design rather than stand alone as claims that one technique is categorically superior.

7 Conclusion

Among qualified Dojo meditation sessions, heart rate decreased in 76.8% of sessions. The median first decrease occurred after 1.0 minute, while the average minimum heart rate occurred after 7.63 minutes. These results suggest that meditation can produce measurable physiological change during practice and that timing metrics add important context beyond start-to-end comparison.

The broader implication is methodological: measured meditation can help users and researchers evaluate how the body responds to practice without reducing meditation to a single metric. The objective is not to chase the lowest possible heart rate, but to make the relationship between practice and physiological response more observable.

Data Availability

The analysis used anonymized aggregate product telemetry. Individual-level data, direct identifiers, and row-level exports are not included in this report. Aggregate CSV outputs and derived report artifacts are maintained internally by Dojo.

Ethics and Privacy Statement

This report analyzes anonymized aggregate product data and was prepared to protect user data privacy rights. It is not a human-subjects clinical trial and does not report individual participant records.

Ownership and Competing Interests

This research is the property of Medidojo Inc., the company that develops and operates Dojo. The results should be interpreted as company-authored observational product research.

A Public Assets

The public blog post for this report is available at:

`https://www.medidojo.com/blog/state-of-meditation-2026/`

The compiled PDF is published at:

`https://www.medidojo.com/assets/reports/state_of_meditation_2026_research_report.pdf`

The accompanying PR visual report is published at:

`https://www.medidojo.com/assets/reports/state_of_meditation_2026_pr_report.pdf`

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