Redpanda

F45 Training boosts member satisfaction by 70% with real-time fitness analytics

10x
faster development velocity, features that took months now take days

70%
increase in member satisfaction, after moving to Lionheart 2.0

50%+
infrastructure cost reduction, and six-figure annual savings

> " If I had to come up with an analogy, I would say that Fiveonefour is like a commercial airliner that takes you from legacy data to modern analytics very quickly, and Redpanda is like the jet engine that helps you take off and attain cruising altitude, getting you to your destination faster."
>
> — Greg Solak, Head of Engineering, F45 Training

Fiveonefour

F45 Training is a global fitness franchisor offering high-intensity group workouts in over 1,500 studios across 55 countries, with more than 250,000 members attending classes daily. F45 Training uses Fiveonefour as their agent harness for shipping and managing real time analytical workloads.

Industry
Wellness/Fitness

⊕ Company Size
51–200

Highlights
Challenges
- Legacy stack created data silos and made analytics impossible
- Long development cycles stretched from days to weeks or months
- Extremely delayed member feedback and business insights frustrated customers
- Rising infrastructure costs

Why Redpanda
- Sub-200ms latency for real-time data ingestion and consumption
- Built-in buffering enables significantly faster writes vs. direct database ingestion
- 99.99% uptime ensures zero-data-loss reliability

Results
- Migrated 50 million historical records in 30 days
- Improved member experience increases long-term revenue potential
- Enhanced competitive edge through a more tech-forward environment
- Improved morale and achieved frictionless developer experience

Challenges

Legacy systems couldn't keep pace with real-time streaming demands

Every heartbeat counts when pushing your limits in a high-intensity workout, and F45 Training exists to bring the thrill of that experience to more people. F45 Training is a leading boutique fitness franchise platform whose model centers around fast, fun, innovative, and results-driven group workouts. They operate more than 1,500 studios in more than 55 countries across six continents.

At the heart of their efforts is Lionheart, an optimized ecosystem that uses advanced biometric monitoring to capture and analyze members' heart rates in real time, turning billions of data points into detailed performance reports delivered via email and the F45 app after each session. The biometric data powers in-studio leaderboards, in-app rankings, and post-workout analytics, creating a fun, safe, and competitive experience that drives engagement and attracts new members.

F45 eventually scaled to 250,000+ members coming through studio doors every day. Of those, 50,000 members track their heart rates daily through the Lionheart app and generate over a billion biometric data points weekly. Their legacy stack—MongoDB, Redis, and PHP—wasn't designed for large-scale aggregation and real-time data processing. It began to buckle under the strain, struggling to process data quickly and deliver instant feedback.

MongoDB's document-based structure proved particularly problematic. With more than 50 million historical workout reports stored as individual documents rather than in tabular format, extracting meaningful analytics was nearly impossible.

"Our biggest challenge with the legacy system is that it took us weeks, sometimes months, to pull analytics from our database," says Greg Solak, Head of Engineering at F45. "Without those analytics, we couldn't develop a roadmap."

Beyond performance issues, infrastructure costs amounted to thousands of dollars, while development cycles were painfully long.

F45 needed a modern, cost-effective event streaming platform to handle billions of biometric data points without breaking a sweat.

> **66** We were looking for improved latency, quick
> response times, and faster development
> and feature creation. We also wanted a
> system that was easy to get up and running,
> preferably fully managed."
>
> — Greg Solak, Head of Engineering at F45

Speed, scale, and zero-data-loss reliability

To solve these issues, F45 reached for Fiveonefour as their agent harness to unlock rapid development of their new, real-time platform. Open source MooseStack by Fiveonefour offers the tools, skills, and context needed for coding agents to effectively develop analytical workloads on top of ClickHouse, Redpanda, and other high performance analytical infrastructure.

"Fiveonefour uses Redpanda because it is a fast-performing streaming module," Greg says.

Redpanda offered several capabilities missing from F45's legacy system:

- **Blazing-fast streaming.** Redpanda's architecture enables sub-200ms latency for data ingestion and consumption, turning workout data into instant feedback.

- **Built-in buffering for optimized writes.** Redpanda's buffering capabilities allow significantly faster writes into the analytics database compared to direct ingestion, ensuring smooth data flow even during peak usage.

- **Zero-data-loss reliability.** With 99.99% uptime, Redpanda ensures that every data point is captured and available for analysis.

- **Effortless scalability.** Redpanda seamlessly handles billions of weekly data points, facilitating easy scalability.

Redpanda became the jet engine powering F45's transformation from legacy to modern analytics. With it, they were able to migrate 50 million historical records in just 30 days—well ahead of their desired timeline.

> "The future looks very bright with the help of Fiveonefour and Redpanda. We have
> been so impressed with the tech stack and the platform."

Low latency enables real-time reporting and 10x development velocity

Since migrating to Redpanda-powered infrastructure, F45 has upgraded to Lionheart 2.0, dramatically improving their engineering capabilities and member experience.

High latency is a thing of the past. The platform now experiences sub-200ms latency for both data ingestion and consumption, with 99.99% uptime ensuring the system rarely goes down. This increase in reliability has led to a 70% increase in member satisfaction—a big deal since Lionheart members have 2.5x more lifetime value (LTV) compared to non-members.

Before Fiveonefour and Redpanda, members waited minutes for workout reports. Since launching Lionheart 2.0, they receive results almost instantly. "The moment someone finishes their workout, they typically receive the report in the app within seconds," Greg says. "This is an incredibly huge win for our members."

On the backend, the outcomes are just as impressive.

- F45 Training's engineering team has achieved a **10x acceleration in development velocity**, enabling them to build features that were previously impossible. For instance, the team launched an Apple Health integration in just three months.
- The F45 team has access to **data-driven insights that inform Lionheart's roadmap and guide business decisions. Using these insights**, F45 has built custom workout targets that adjust workout difficulty based on class type.
- F45 **cut infrastructure costs by over 50%—saving six figures annually**—while dramatically improving performance.

With a modern event streaming platform that can handle their data loads, F45 continues to expand globally. They're leveraging the same Redpanda-powered stack for marketing attribution and AI-powered personalization, proof that the right streaming foundation enables limitless innovation—innovation that empowers the team to help people become their fittest, strongest and healthiest selves.

> **"** Of all the benefits we're seeing from Fiveonefour and Redpanda, the developer velocity acceleration has been, by far, the biggest win for us."
>
> — Greg Solak, Head of Engineering at F45

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