



Cutting Through the Hype: Does Digital Health Actually Work?

Large-scale research on solving
back & joint pain with digital care



New Digital Musculoskeletal Research Reveals

With all the hype around digital health, many employers and health plans might be wondering: Do digital health solutions actually solve chronic back or joint pain and reduce medical spend? Musculoskeletal (MSK) issues are the number one cost driver for medical spend — outpacing other conditions such as diabetes and cancer.¹ However, new research has proven digital health solutions offer better outcomes at lower costs.

This white paper highlights the results of the world's first large-scale digital MSK study conducted by researchers at Stanford University, University of California San Francisco, and Vanderbilt University.²

Better outcomes, lower costs²



69%

Reduction in pain



58%

Reduction in depression & anxiety



62%

Improvement in work productivity



\$5012.52

Saved per participant/year

The Rise of Digital Health

The convergence of new technologies like wearables, sensors, and AI combined with smartphones and tablets are rapidly redefining the healthcare landscape. Moreover, these consumer-friendly digital health apps result in better patient outcomes at a fraction of the cost.

As patients avoid doctor and hospital visits during COVID-19, digital health is currently experiencing a sharp uptick in demand.



Part 1: The Rise of Digital Health

Moreover, the new remote workplace is also creating new workforce health issues. With employees working in makeshift home offices and enduring long hours of videoconferencing with minimal physical activity, musculoskeletal (MSK) issues like back and neck pain are exacerbated. Post-COVID-19, remote healthcare is likely here to stay. Businesses and governments will continue to shift to innovative, remote models of delivering health care to offer better care at lower spend.

Employer benefit leaders play an important role in redefining healthcare benefits to support employee well-being at home during COVID-19 and beyond.

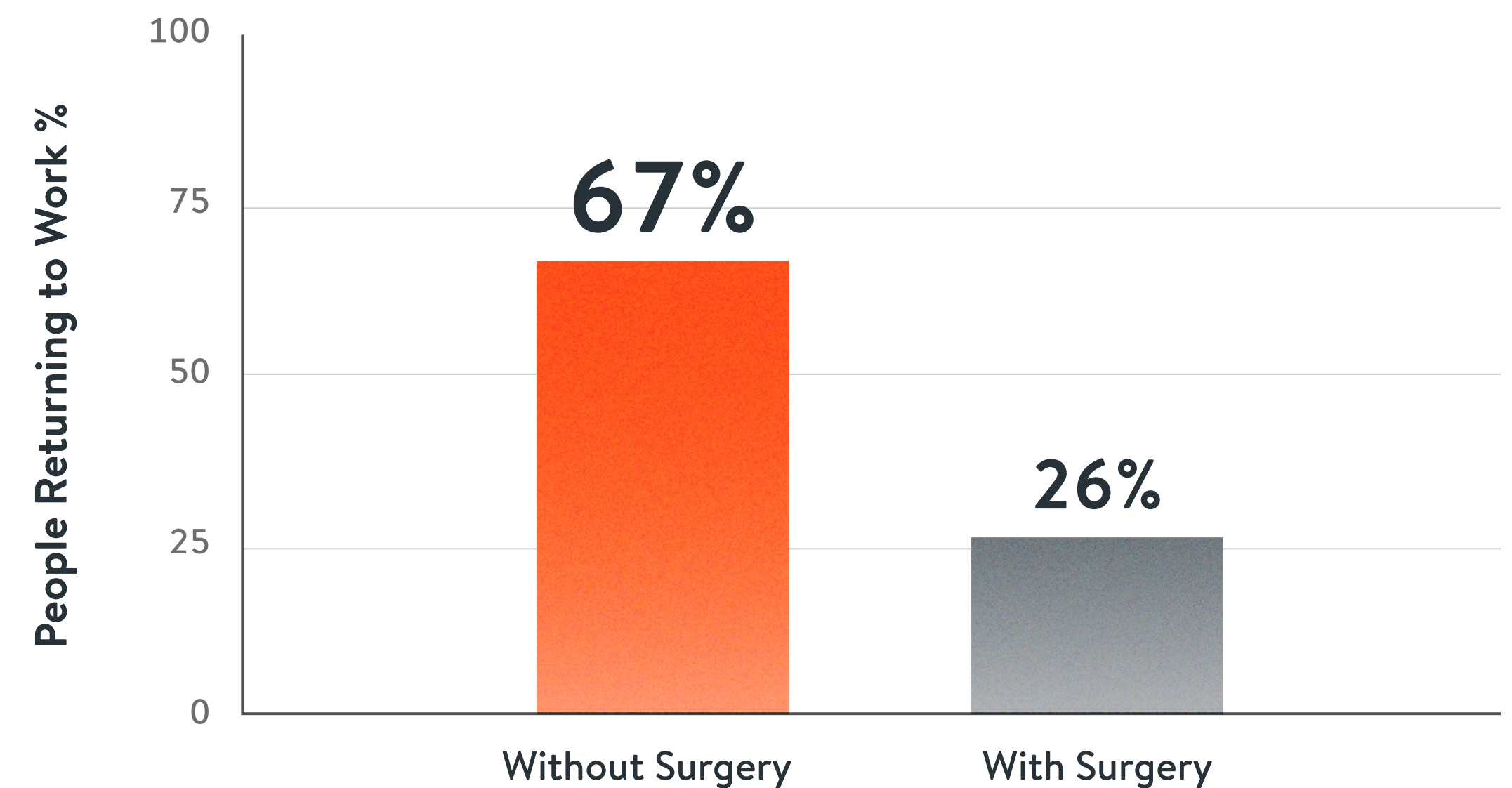


MSK surgery is costly & ineffective

For chronic or long-term musculoskeletal issues like back or joint pain, surgery and opioids are not recommended as initial treatment options and are often unsuccessful.

Research has shown back and joint surgeries can be unnecessary and ineffective, despite the hefty price tag of up to \$100,000 per patient. A randomized control trial published in the New England Journal of Medicine showed that real and placebo knee surgeries showed no difference in clinical outcomes.³ In fact, a peer-reviewed study in Spine demonstrated patients who did not have back surgery had better outcomes than those who did have back surgery.⁴

**Patients who don't have surgery
are 2.5x more likely to return to work⁴**



In-person physical therapy has low adherence rates

In short, exercise therapy generally can be more effective and less costly than surgery at reducing joint pain. However, in-person physical therapy (PT) has low adherence rates as patients fail to do their exercises or find time in their busy lives for PT appointments. The therapy route requires a more concerted effort to ensure patients stay on track and achieve positive outcomes.

7 out of 10 patients can't adhere to physical therapy regimens.⁵



At-home digital health solution can reduce pain & medical spend

Helping people achieve significant behavior change requires sustained coaching at a time and place that conveniently fits into their daily lives. Remote coaching with emotional support via phone and frequent text reminders plays an important role in achieving positive outcomes for patients.

In fact, new research demonstrates sensor-guided exercise therapy paired with remote 1-on-1 health coaching and personalized education results in significant chronic pain reduction. With chronic pain resolved, expensive surgery is avoided — cutting medical spend for employers and health plans.



World's First Large-Scale Digital MSK Study:

A higher bar for clinical effectiveness

How effective are digital MSK solutions? The majority of previous digital MSK clinical studies involved 500–1000 participants and lacked significant scale to assess real-world effectiveness.

Small clinical trials demonstrated the positive impact of a digital MSK solution like Hinge Health versus a control group,⁶ which is the highest form of proof in the research world. But are digital MSK solutions effective at a larger sample size?



Are digital MSK solutions effective on a large scale?

The world's first large-scale digital MSK study set out to answer this question. Researchers at Stanford University, the University of California San Francisco, and Vanderbilt University evaluated the implementation of Hinge Health's digital MSK solution with 10,000+ participants.

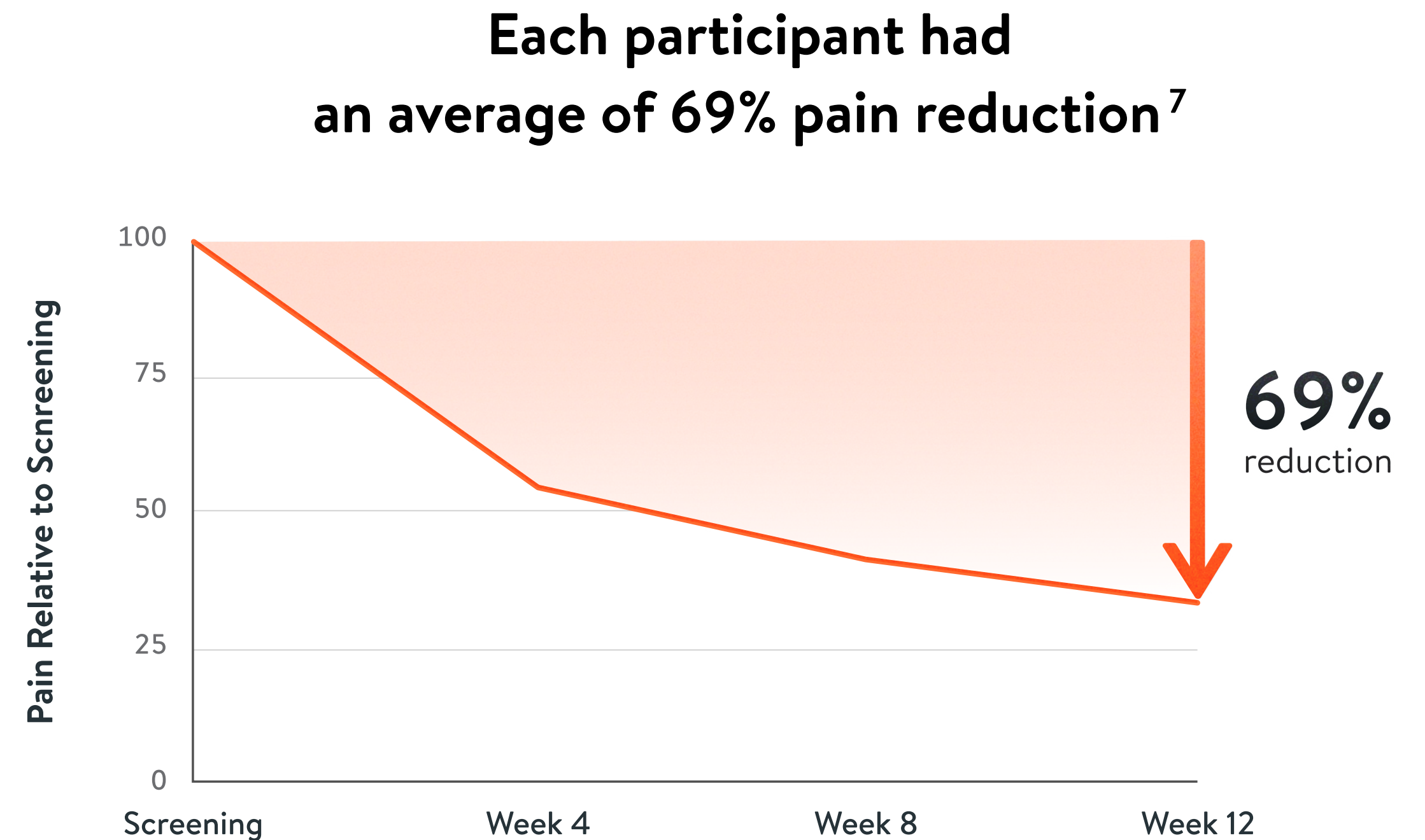
Study Demographics

- Number of participants: 10,264
- Average age: 43.6
- Gender distribution: 50/50
- Avg BMI: 30.3 (obese)
- Avg baseline pain: 45.1 out of 100



The results? A positive correlation

[Published in the peer-reviewed journal JMIR in May 2020](#), researchers discovered a direct correlation between the use of Hinge Health's digital MSK solution and significant reduction in back and knee pain. This is the world's first large-scale digital MSK study to demonstrate consistent improvements in pain, surgery intent, employee productivity, and mental health. Hinge Health participants experienced an average 69% reduction in pain and a 58% reduction in depression and anxiety.⁷



Validated MSK outcomes & medical savings for 10,000+ Hinge Health participants⁸

| Clinical Outcomes | Financial Outcomes |
|---|---|
| <div>↓ 69%</div> <div>Reduction in chronic MSK pain</div> | <div>\$5012.52</div> <div>Savings per participant/year</div> |
| <div>↓ 58%</div> <div>Reduction in depression & anxiety</div> | <div>\$73.23</div> <div>Savings per participant per 1% of pain reduction/year</div> |
| <div>↑ 62%</div> <div>Improvement in work productivity</div> | <div>2 out of 3</div> <div>Surgeries avoided</div> |



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I'm not going to have surgery because of what I learned through Hinge Health.

Garry
Hinge Health participant

Higher engagement, greater pain reduction

Participants in the Hinge Health digital MSK program also demonstrated high completion and engagement rates.

|| Hinge Health has the industry's
highest completion rate at 73%⁹

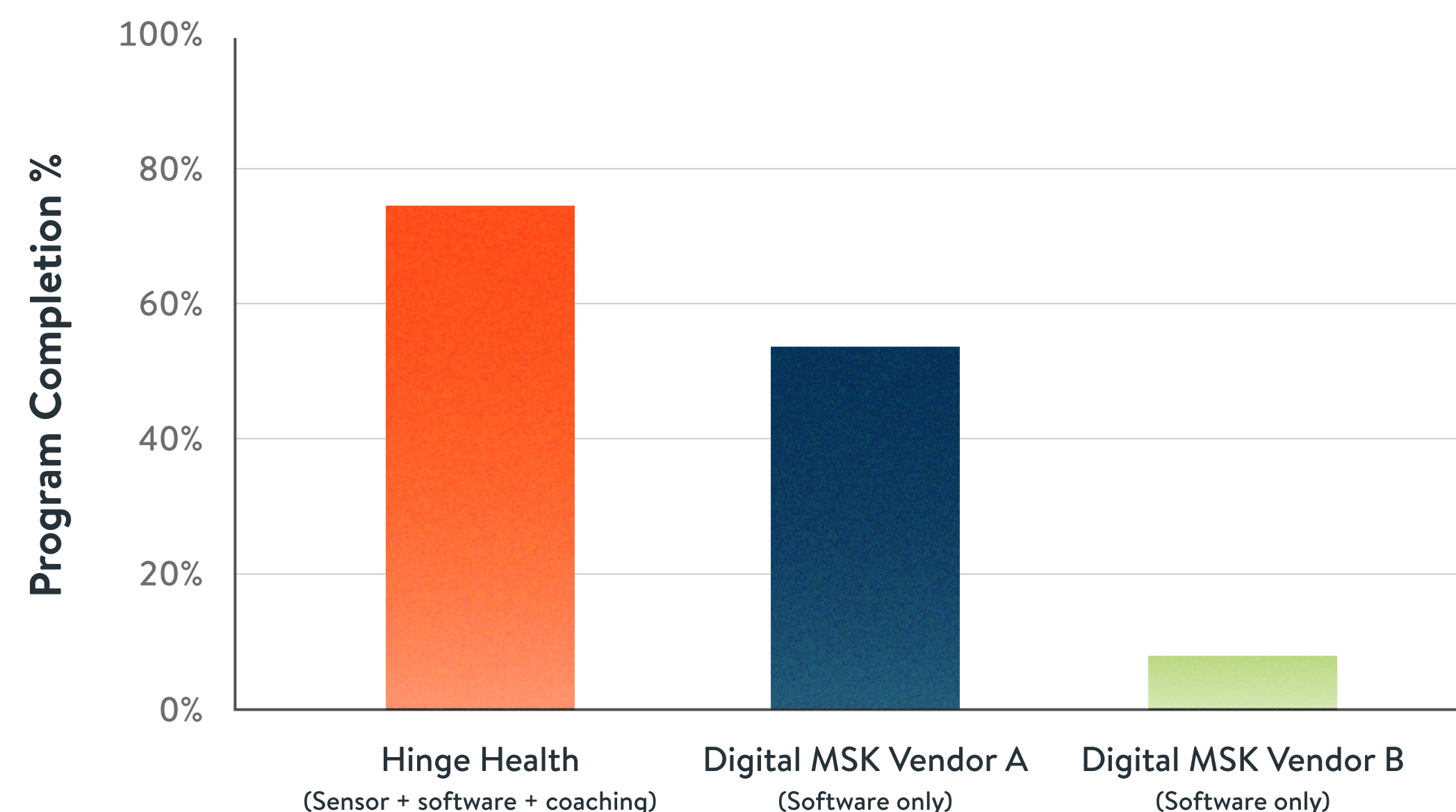


Why coaching matters

When comparing Hinge Health's unique combination of sensors, software, and coaching to other vendors with software-only solutions, the study found Hinge Health's participant completion rate was double the industry average. This high completion rate underscores the importance of a dedicated health coach working with participants 1-on-1 throughout the Hinge Health program.

3 out of 4 participants completed the Hinge Health program —
2x the industry average

**High treatment completion rates,
double the industry average¹⁰**

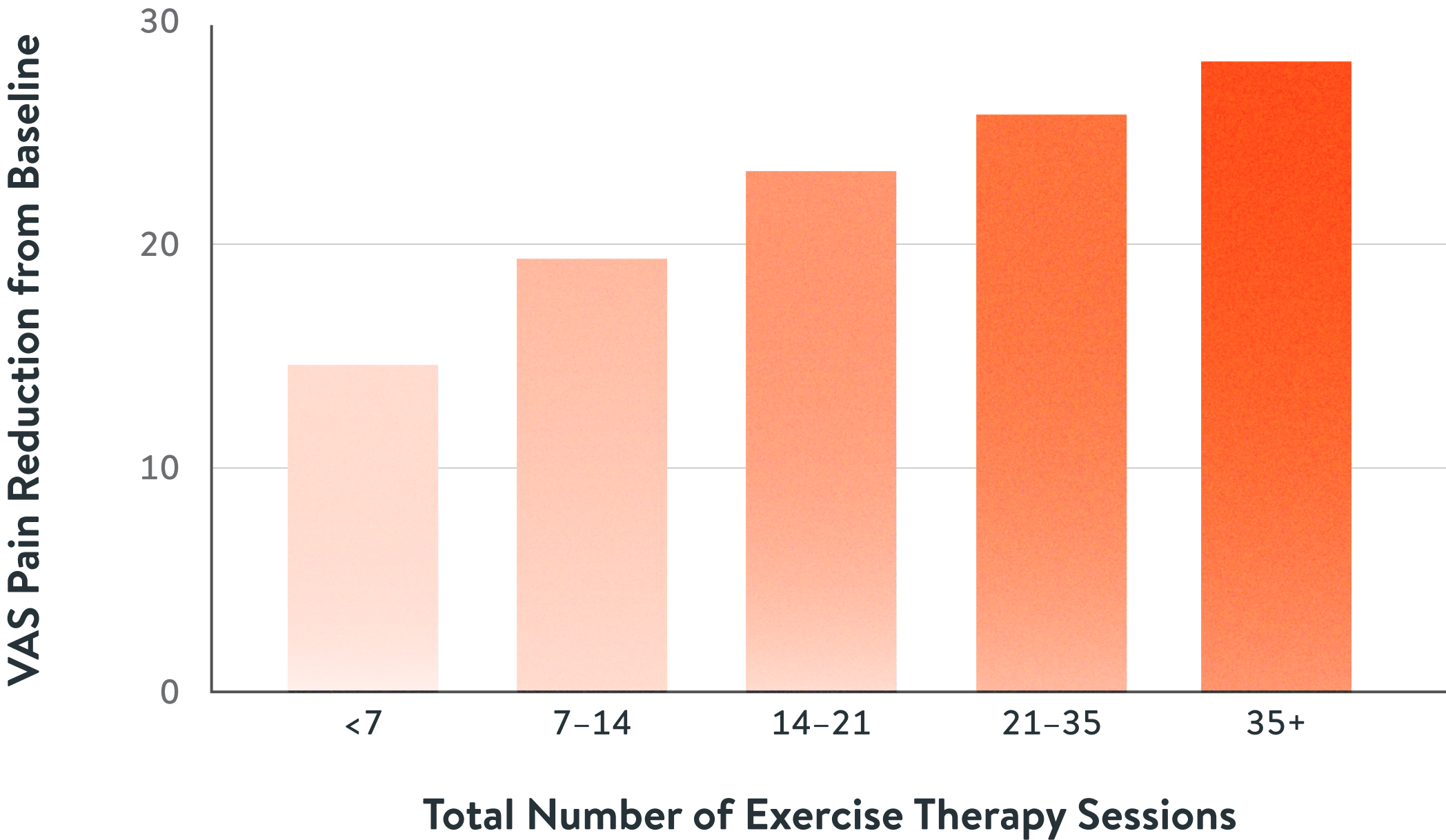


More exercise therapy, lower pain

Hinge Health is the only digital MSK solution to clinically demonstrate that its sensor-guided exercise therapy sessions and health coach sessions each incrementally contributed greater pain reduction.

The unique combination of real-time sensor feedback and personalized human support enabled participants to complete the Hinge Health program and see improved clinical outcomes. Health coaches help participants with behavioral change by setting personal goals, tapping into their inner motivations, offering emotional support, and creating accountability.

More exercise therapy leads to greater pain reduction ¹¹





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I stopped taking my pain medication entirely after 10 years. I’m much more confident that I can avoid surgery.

Margaret
Hinge Health participant



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**I’m now waking up
without pain. My social
life is back. I feel more
alive and energetic.**

VP

Hinge Health participant

Achieve Better Outcomes & Lower Spend with Hinge Health

Only Hinge Health has clinically validated sensor-guided exercise therapy and health coaching to reduce pain and medical spend. That is why 4 out of 5 employers with a digital MSK solution partner with Hinge Health.

Are you looking for a clinically validated digital MSK solution?

[SCHEDULE A DEMO](#)



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7. Bailey JF, Agarwal V, Zheng P, Smuck M, Fredericson M, Kennedy DJ, and Krauss J. “Digital care for chronic musculoskeletal pain: 10,000 participant longitudinal cohort study.” *JMIR*, 2020.
8. Ibid.
9. Ibid
10. Ibid
11. Ibid.
12. Ibid.



Hinge Health is pioneering the world's most patient-centered digital hospital, starting with musculoskeletal health. Hinge Health's back and joint pain care pathways combine wearable sensor-guided exercise therapy with behavioral change through 1-on-1 health coaching and education. Hinge Health is the #1 musculoskeletal solution for employers and health plans. Available to millions of members, Hinge Health empowers people to reduce chronic pain, opioids, and surgeries.

To learn more, visit us at:
www.hingehealth.com

