



# State of MSK

Trends impacting  
musculoskeletal care  
in America



# 2022

# Executive Summary

Each year, Hinge Health analyzes Centers for Disease Control and Prevention's most recent National Health Interview Survey data encompassing trends across 252 million Americans to identify gaps and challenges that members, employers, and health plans face related to the management of musculoskeletal (MSK) conditions. The results of this work are published in Hinge Health's annual State of MSK Report, the year's most comprehensive review of musculoskeletal trends.

## The State of MSK Report 2022 revealed five key insights:

- MSK pain is disproportionately affecting Americans: one in two Americans suffer from an MSK condition.<sup>1</sup>
- Health inequities are highly correlated to poor outcomes among those with chronic MSK pain.
- Chronic pain and mental health are inextricably linked, so holistic treatment approaches are critical.
- MSK costs \$600b to the US economy. 90% of employers report MSK as their top medical claims spend. Over the last decade, MSK claims have doubled in the US, even though the number of people with MSK conditions has remained the same.<sup>2</sup>
- MSK surgery rates and costs vary widely by state.

The current in-person approaches to MSK treatment create gaps in care. They are expensive and time-consuming. Here are five recommendations that benefits leaders and health plans should adopt to provide accessible and scalable MSK care for their members:



MSK impacts different member populations differently: Analyze the impact to launch targeted care strategies.



MSK pain and mental health needs are interrelated: Provide holistic care that goes beyond physical therapy



Use digital technology to break down barriers and provide consistent care to all individuals regardless of income, race, ethnicity, and geography.



Utilize electronic medical record integration across in-person and digital care providers and help care teams intervene in real time.



Deliver clinically validated MSK care that is based on recognized best practices with proven ROI.

Please continue reading to learn about trends shaping the MSK landscape and practical recommendations for improving health outcomes and reducing care costs.

# Introduction

One in two Americans experience back, neck, shoulder, or other musculoskeletal (MSK) pain in any given year. In addition, every year, one in five Americans have mental health needs that require treatment.<sup>3</sup> These two health conditions are closely related, and they require a coordinated response from benefits leaders and health plans to ensure members' health and well-being.

Each year, Hinge Health publishes its State of MSK Report to explore issues facing members, employers, and health plans. Persistent challenges include the following:

## Rising MSK medical costs

According to the State of MSK Report 2021, MSK medical costs have doubled over the last decade.

## Increasing health inequity

MSK pain disproportionately affects certain populations. Yet, the individuals with the greatest needs often don't have access to best-practice MSK care.

## Growing evidence of the chronic pain and mental health connection

Benefits leaders and health plans must understand their members' care gaps and unique needs, such as the undeniable connection between chronic pain and mental health.

In this report, we will explore five key findings from our research and offer four recommendations for creating targeted, inclusive, and cost-effective MSK strategies that can lead to better patient outcomes.

## State of MSK 2022 key topics

- How chronic MSK pain and mental health conditions are distributed across key sociodemographic factors, including income, race, and geography
- How chronic MSK pain and mental health are closely related and together lead to worse health outcomes
- The economic impact and costs to employers and health plans
- Critical gaps in the use of best-practice MSK care across income, race, ethnicity, and geographic location
- Strategies for how benefits leaders and health plans can address these MSK care gaps and costs

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STATE OF MSK 2022

# Key findings

## KEY FINDING 1:

# MSK pain affects millions of Americans



of Americans experience MSK pain in any given year, and employees in certain industries are disproportionately affected.



## Every major sector is reporting high MSK prevalence

### Prolonged standing at work contributes to MSK conditions

Sectors that are particularly prone to MSK claims are those where employees stand all day. These include mining, retail stores, healthcare, food services, and schools and universities.

### Sedentary workers aren't spared from MSK issues

Although professional services and administration jobs aren't the most physically strenuous, sitting all day at a computer is a common cause of back and joint pain

### Repetitive tasks and manual labor can exacerbate MSK problems

For example, many employees engaged in manufacturing, warehousing, waste management, and construction are required to lift heavy items and perform repetitive work.



## Industries with a high prevalence of chronic MSK pain

Here are the industries in the United States with high prevalence of chronic MSK pain, as reported by working-age adults in the National Health Interview Survey (NHIS).



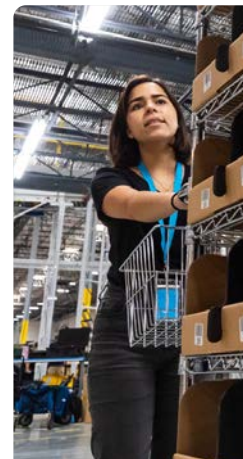
Professional,  
Software &  
Business Services



Mining, Utilities,  
Oil & Gas



Wholesale &  
Retail Trade



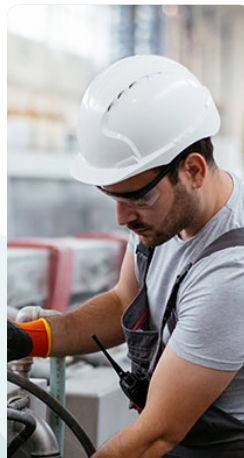
Transportation &  
Warehousing



Hospitality &  
Food Services



Construction &  
Real Estate



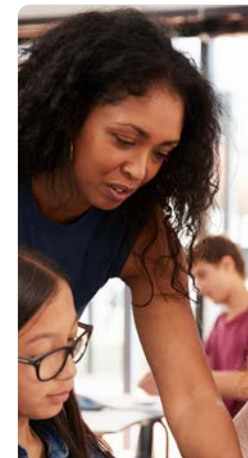
Manufacturing



Waste  
Management



Healthcare, Social  
Services & Public  
Administration



Education

## KEY FINDING 2:

# For individuals with chronic MSK pain, health inequity is correlated with poor outcomes

When people of color, lower-income populations, and residents of rural areas suffer from MSK conditions, they are less likely to have access to modern and clinically validated treatments and **more likely to receive opioids** for pain relief. These factors lead to negative health outcomes in terms of quality of life and treatment costs.





## Lack of access to best-practice exercise therapy care

Low-income populations utilize exercise therapy less often for MSK pain than their higher-income peers. In addition, many rural residents have limited access to physical therapy. Patients residing in rural areas commute seventeen minutes longer and ten-and-a-half miles longer than their urban and suburban counterparts do.<sup>4</sup>

**1 in 5**

Patients reside in rural areas

**17 minutes**

Extra commute time for rural patients

**10.5 miles**

Extra distance for rural patients



**3.6M**



Americans have transportation challenges preventing them from receiving medical care each year.<sup>5</sup> This lack of easy access to physical therapy and second opinions often leads to higher rates of invasive surgery.



## Limited access to social and behavioral support

Social and behavioral support, such as holistic lifestyle guidance from a comprehensive care team, is critically important for recovery from MSK conditions. **Low-income populations reported receiving 2x less social and behavioral support for their MSK pain than peers in high-income brackets.**

2x

Asians have the lowest levels of social and behavioral support for their MSK and mental health needs—2x less than their white counterparts.



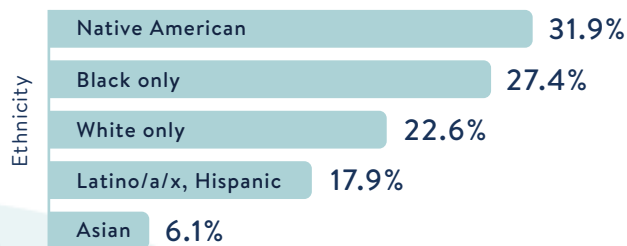
## Greater reliance on opioids for pain relief

Low-income populations are 40% more likely to use opioids for MSK pain relief than high-income groups.

5x

Native Americans and Blacks rely on opioids for pain relief 5x more than Asians do.

## % reporting opioid use for pain relief among persons with MSK pain and mental health needs



25% 

of people earning less than \$30,000 per year rely on opioids for pain relief compared to 17% of people earning more than \$90,000 per year.

KEY FINDING 3:

# Chronic pain and mental health are inextricably linked

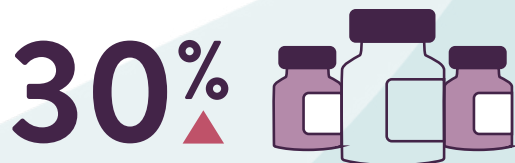
Pain can intensify mental health challenges. On the other hand, anxiety and depression can worsen chronic pain. This connection results in two in five people with chronic MSK pain also experiencing depression and anxiety.<sup>6</sup>



## People with chronic MSK conditions and mental health needs:

### Have poor health outcomes

This group is 2x more likely to report poorer health than individuals with only chronic MSK conditions. In fact, this population is 30% more likely to receive a prescription for opioids than peers suffering from only chronic MSK pain.



### Experience greater pain

This population is 40% more likely to report higher levels of pain than people with chronic MSK pain alone. Depression and pain share neural pathways in the brain. Since depression and anxiety can overexcite the nervous system, the brain may perceive a higher intensity of pain than would be expected solely from a physical condition.



### Struggle to maintain personal relationships

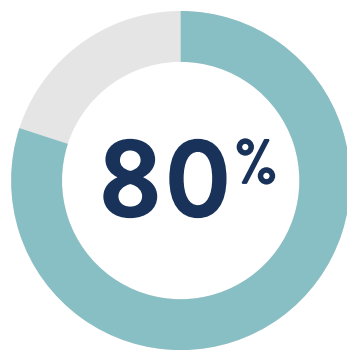
This population is 2x more likely to say that their chronic pain and mental health needs are negatively affecting their relationships than people with chronic MSK conditions alone.





## Gaps in care are the norm for individuals with chronic MSK pain and mental health conditions:

To improve health outcomes, these individuals require special attention and an integrated MSK care approach that combines education, exercise therapy, and social and behavioral health support. Although people with chronic MSK pain and mental health conditions have significant healthcare needs, many don't have a care plan based on best practices.

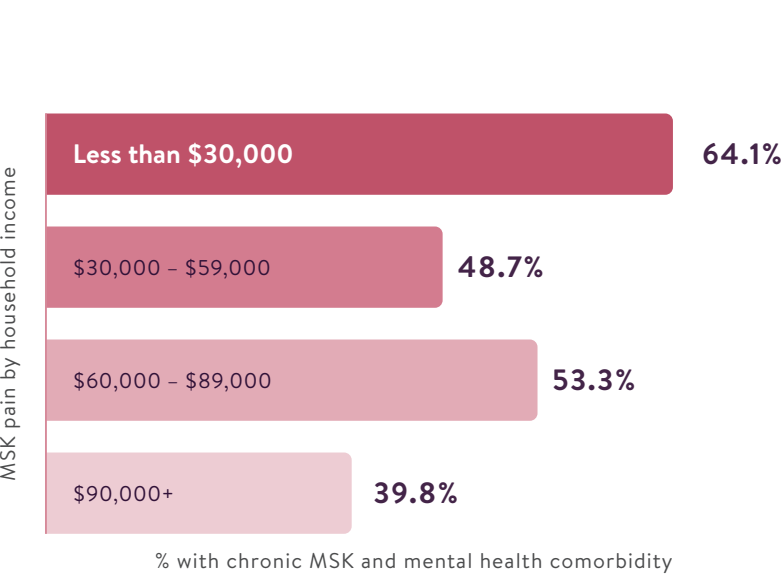


8 in 10 people with chronic MSK pain and mental health needs are NOT using exercise therapy to resolve their pain.



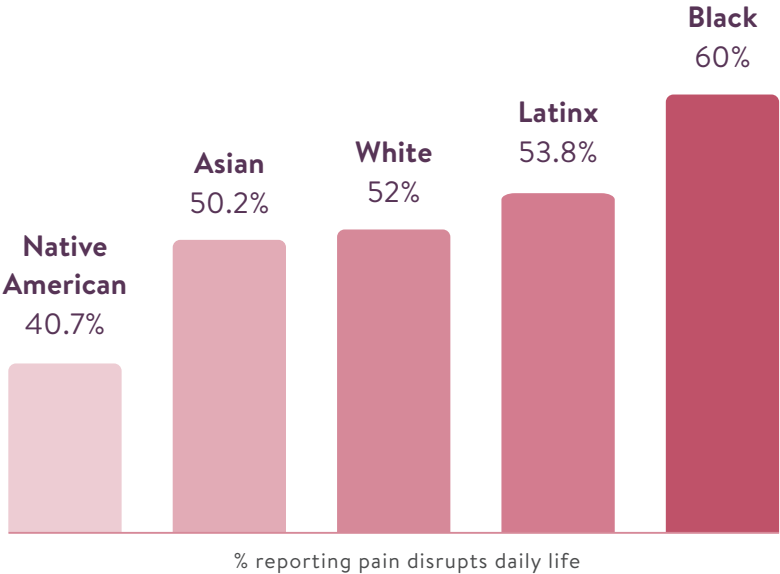
2 in 5 people aren't getting the necessary social and behavioral support needed to make lifestyle changes that are key to recovery.

For individuals with both chronic MSK and mental health issues, health inequities are particularly stark:



MSK pain has a greater impact on low-income households

Lower-income populations are the most affected by MSK pain and mental health comorbidities, but they have the least access to best-practice MSK care.



MSK pain disrupts daily life

The Black population with MSK pain and mental health conditions are more likely to say that pain disrupts their daily life.

#### KEY FINDING 4:

# MSK conditions are a growing economic burden

The economic impact of MSK conditions is twofold. Treatment costs have been skyrocketing for employers and health plans, while workplace productivity also takes a hit when employees are absent due to MSK pain.

### Over the last decade, MSK claims have doubled in the United States

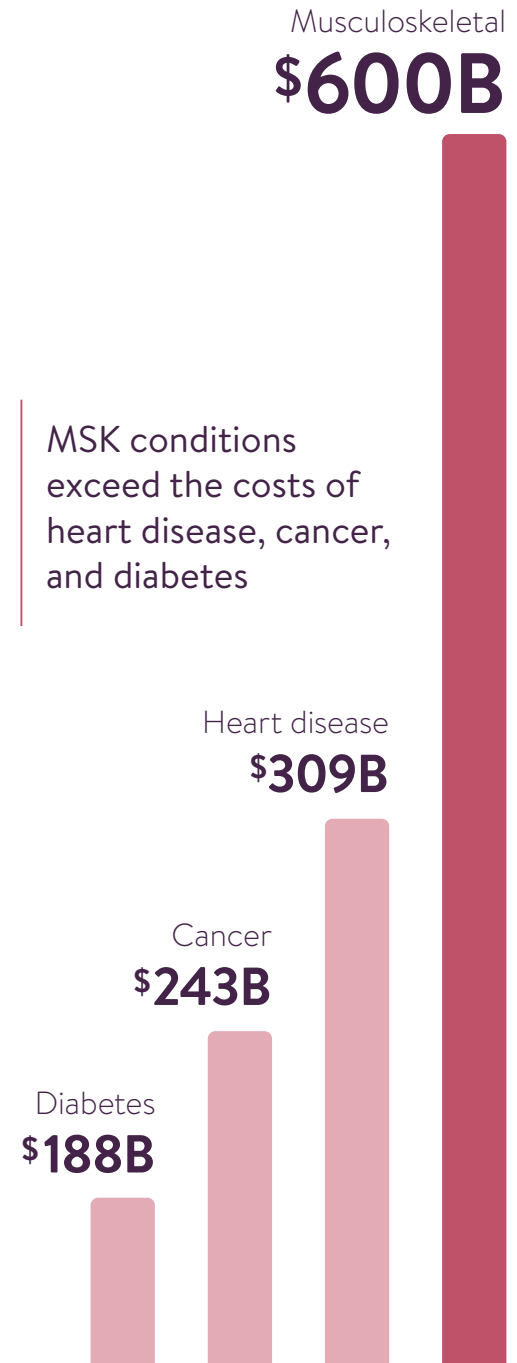
However, the number of people with MSK conditions has remained relatively constant. Rising claim costs have been driven by more expensive treatments, such as spinal fusions and expensive implants, overuse of MRIs, and the rise of outpatient “spine centers” that have become lucrative businesses for owners.<sup>7</sup>

### In the past year, individuals with MSK pain missed more workdays than the average employee

Employees with MSK pain missed 8.2 days of work compared to 3.9 days for the average employee. For people with both MSK and mental health needs, the number of workdays missed in the past year increases to 13.

### Employer costs for MSK conditions exceed the costs of heart disease, cancer, and diabetes

The annual employer cost of care for MSK conditions, such as back and joint pain, is estimated at \$600 billion. This includes both healthcare costs and lost worker productivity. This exceeds the annual costs of heart disease (\$309 billion), cancer (\$243 billion), and diabetes (\$188 billion).<sup>8</sup>





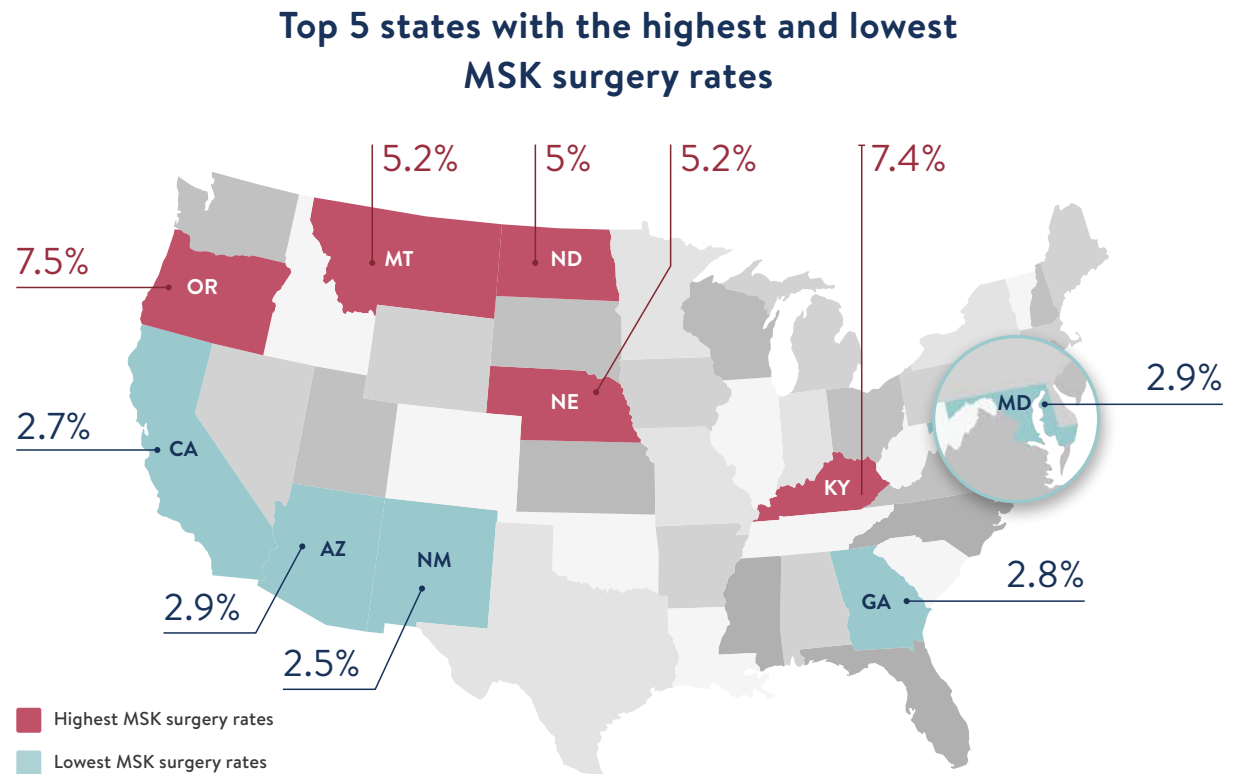
## KEY FINDING 5:

# MSK surgery rates and costs vary widely by state

Where patients live can significantly influence whether they are prescribed surgery for their MSK pain or directed to lifestyle medicine approaches. Both surgery rates and costs for MSK conditions vary considerably by state.

## Rural states have a higher incidence of surgery

Oregon, Kentucky, and Montana led the nation in MSK surgery rates, almost 3x higher than states with the lowest rates (New Mexico, California, and Georgia).

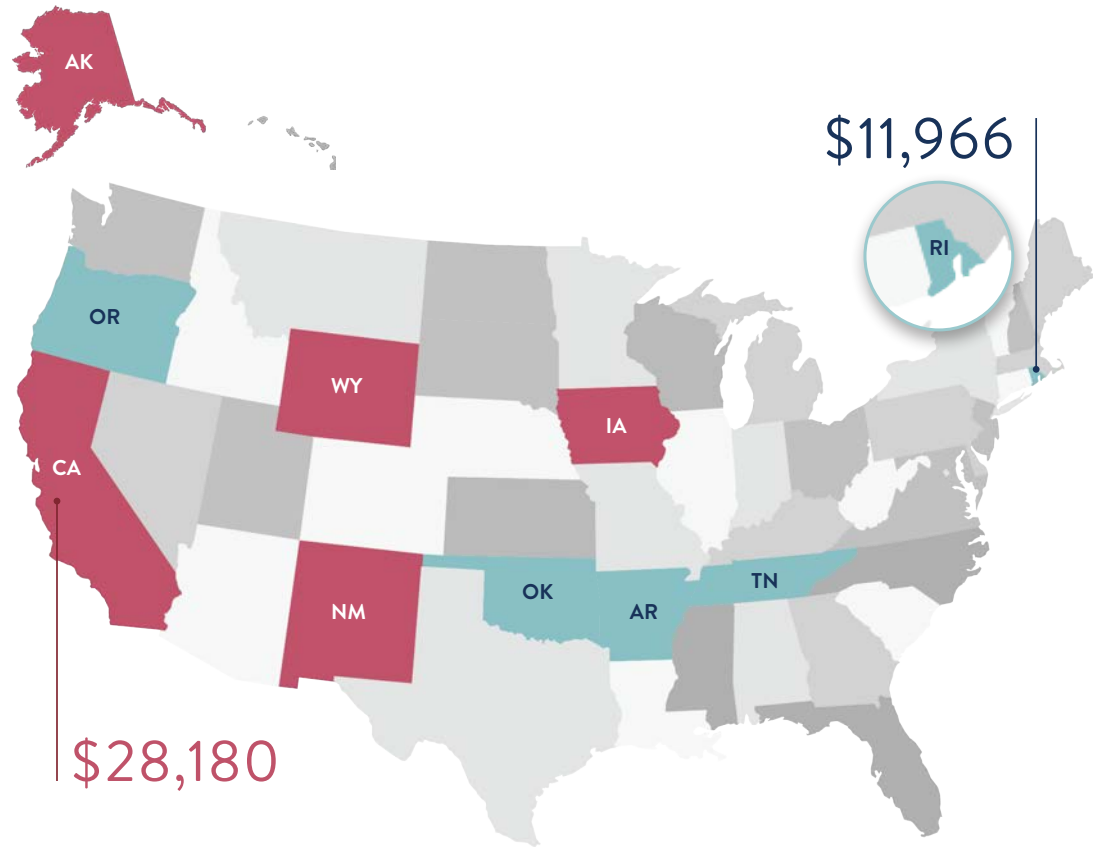


Western states had the highest costs for spinal surgeries

California (\$28,180), Alaska (\$25,294), and Wyoming (\$22,162) top the list in terms of costs. Surgery costs in those states are almost 2.3x higher than the lowest-cost states (Rhode Island, Tennessee, and Arkansas).

Rural doctors may prescribe surgery more often due to limited access to physical therapy and lifestyle medicine treatments

In rural areas, it's not uncommon for patients to drive an hour or more to see a physical therapist. In that environment, it may not be practical to recommend physical therapy three times a week. As a result, rural physicians may recommend surgery sooner for MSK conditions, even if that care plan doesn't conform to best-practice recommendations.



Highest average cost per hospital stay for spinal procedures			Lowest average cost per hospital stay for spinal procedures	
1	California	\$28,180	Rhode Island	\$11,966
2	Alaska	\$25,294	Tennessee	\$12,856
3	Wyoming	\$22,162	Arkansas	\$13,374
4	New Mexico	\$22,182	Oregon	\$13,464
5	Iowa	\$20,947	Oklahoma	\$13,540

STATE OF MSK 2022

# Recommendations

Based on our research and our work with clients across various industries, we have identified five recommendations that can help organizations solve the seemingly unmanageable problem of treating MSK pain.



## RECOMMENDATION 1:

# Understand and analyze the impact of MSK across your member population

A good first step is to identify the populations with the greatest need for MSK care. This analysis will enable you to create and deploy the right care strategies. Consider the following:

### Review MSK and mental health medical claims

With this information, you can determine which individuals could benefit from holistic care that addresses both chronic pain and mental health.

### Identify members with opioid prescriptions

This is another member segment that could benefit from alternative forms of care for their pain.

### Segment members by ZIP code

Identify populations with the highest prevalence of MSK pain, mental health needs, and opioid use.

Once the most vulnerable populations are identified, it's time to launch appropriate holistic-care strategies.



“I couldn’t afford in-person physical therapy, but after three months of the Hinge Health program at home, I was able to run my first 5K.”

Bob, Hinge Health participant and retail industry employee

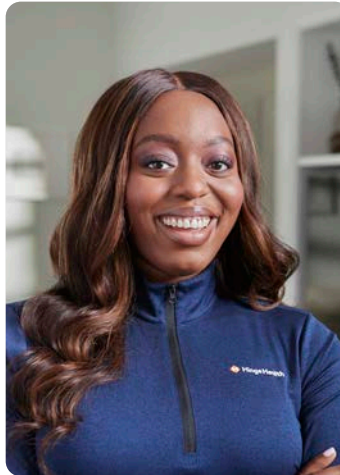
## RECOMMENDATION 2:

# MSK pain and mental health needs are interrelated: Provide holistic care that goes beyond physical therapy

A holistic approach to MSK care that goes beyond physical therapy is particularly important. Treatment should be provided by an integrated clinical care team that includes doctors of physical therapy, health coaches, physicians, and orthopedists.

A 2020 study of more than 10,000 Hinge Health participants demonstrated that each remote exercise therapy and coaching session completed had a direct correlation with pain reduction. The long-term impact of a clinical care team model was studied by researchers from the University of Rhode Island and University of California San Francisco with over 2,500 participants. The peer-reviewed published study showed **Hinge Health reduced pain by more than half and sustained that pain reduction over one year while also lowering rates of depression by 36% compared to nonparticipants.<sup>9</sup>**

## Your complete Hinge Health clinical care team



### Physical Therapist

Uju Onyilagha, PT, DPT

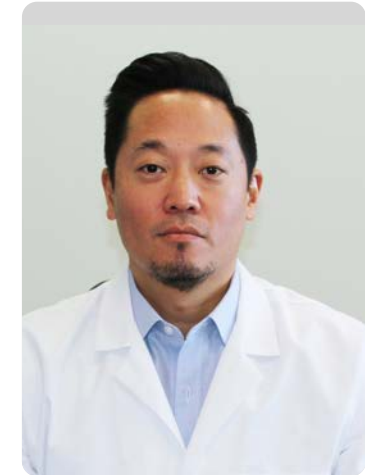
Focuses on physical recovery



### Health Coach

Justin Henry

Supports behavior change



### Orthopedic Surgeon

Raymond Hwang, MD

Provides expert medical opinion

## Integrated care teams drive adherence in several ways

- ✓ Members receive personalized exercise therapy plans, healthy lifestyle support, and expert second opinions.
- ✓ Individuals are paired with PTs who have designed each program and one-on-one health coaches who understand their needs and unique cultural beliefs. This helps members achieve their personal health goals within the context of their culture and ethnicity.
- ✓ Integrated MSK care is provided to members with both MSK and mental health medical claims. With education and support from health coaches, people can break the cycle of pain, anxiety, and depression.



## Questions to ask when evaluating an MSK vendor

- Does your solution go beyond PT to offer a full care team that includes doctors of physical therapy, board-certified health coaches, physicians, and orthopedic surgeons?
- Do members with chronic pain have a health coach for motivational support and lifestyle changes, in addition to a physical therapist?
- Does a physician oversee your physical therapy team?



### RECOMMENDATION 3:

## Use digital technology to break down barriers and provide consistent care to all individuals regardless of income, race, ethnicity, or geography

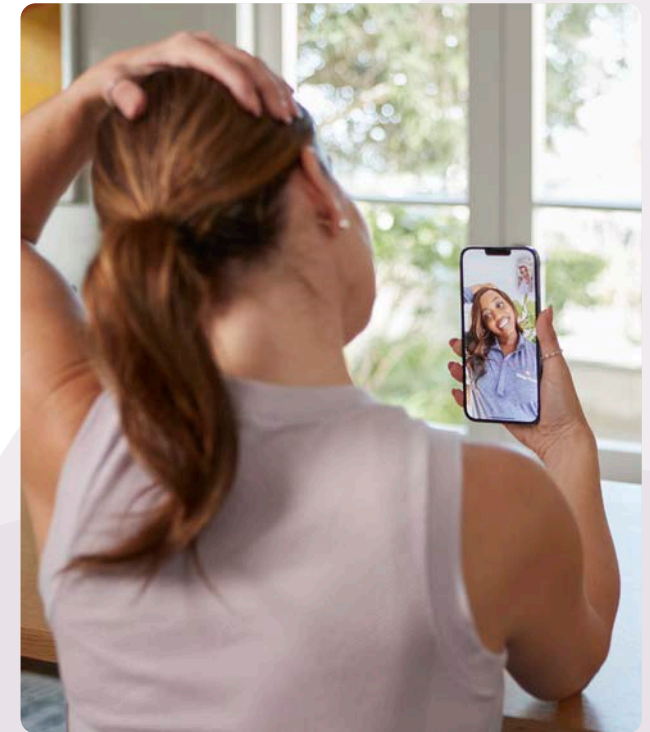
Digital access to care can improve health equity by bridging geographic and income divides. Access to digital, best-practice care eliminates out-of-pocket spending for members as well as the need to take unpaid time off from work. As you explore different options, keep the following in mind:

### Consider the member experience

Members need a seamless digital care experience to effectively perform exercise therapy remotely. This approach will allow care to be delivered on members' own time, reducing the need to travel to an in-person physical therapist. The solution should also offer free tablets and a WCAG-compliant<sup>10</sup> digital platform, making care accessible to older patients, lower-income populations, and members with disabilities.

### Personal interactions are important

Video appointments with a holistic clinical care team are essential for best-in-class remote care. This is particularly true for rural members. Digital MSK Clinics with an expert medical opinion service can help rural residents identify the right treatment option for their needs. In many cases, these second opinions identify alternative care plans that avoid surgery. In addition, it's crucial to have a care team that is diverse to reflect the patient population they're serving. Care team members trained in culturally relevant behavior change methodologies enable members to make lasting lifestyle changes.



### RECOMMENDATION 3: UTILIZE DIGITAL TECHNOLOGY

#### Explore innovative options for pain relief

The solution should offer wearable therapy devices to offer nonaddictive and noninvasive pain relief for MSK conditions. These next-generation devices are proven to be highly effective. For example, a randomized controlled clinical study found that Hinge Health's Enso delivers 2x more pain reduction and increases mobility 1.6x better than a control device.<sup>11</sup>

#### Enso peer-reviewed outcomes\* compared to control

2x

more pain reduction

1.6x

increases in mobility

\*In a randomized placebo-controlled clinical trial of 36 participants with long term chronic pain, after 4 weeks.





### RECOMMENDATION 3: UTILIZE DIGITAL TECHNOLOGY



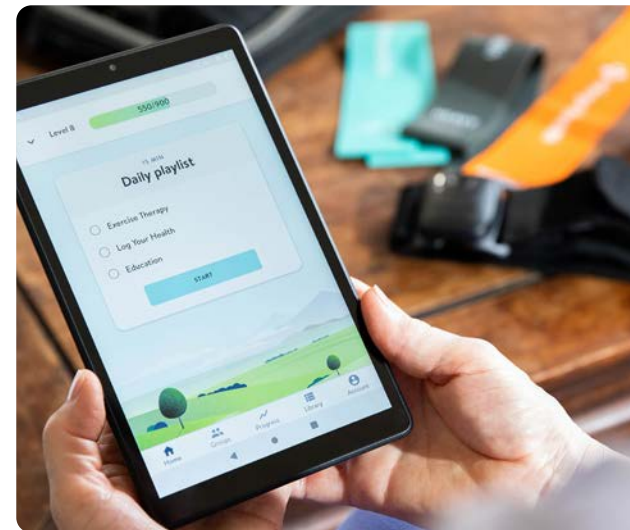
#### Advanced Motion Technology

Movement-tracking technologies, such as computer vision and motion sensors, enable Hinge Health's clinical care team to deliver the most responsive and personalized whole-body approach to MSK care, improving outcomes and member experience while reducing costs.



#### Wearable Pain-Relief Device: Enso

Enso, an FDA-cleared device, is an advanced wearable technology for electrical nerve stimulation and pain relief. The nonaddictive, noninvasive wearable device provides pain relief by utilizing High Frequency elements in a patented wave form.



#### One platform for the whole Digital MSK Clinic™

Hinge Health provides a single app to access all MSK care that can be used on any device. Some solutions require members to use a specific tablet for their exercises, laptops for video calls, and even a separate app for different programs. Hinge Health also reduces tech inequity by providing members with free tablets to easily access care.

### Questions to ask when evaluating an MSK vendor

- Can members access exercise therapy, education, video visits, and their care team from one app and one device?
- Can members use their own device?
- Does your solution include both computer vision and wearable sensors? For which body parts?
- How do you support people with pain levels so high they can't begin exercises?
- Do you have wearable tech to relieve pain without the use of opioids or surgery?

## RECOMMENDATION 4:

# Utilize electronic medical record integration across in-person and digital care providers to help care teams intervene in real time

Electronic medical record integration is the key to eliminating silos in care and providing a complete view of patient health. By integrating information across in-person and digital care providers, care teams can intervene in real time when a member with MSK pain receives a prescription for opioids or a recommendation for surgery.

HingeConnect links Hinge Health's Digital MSK Clinic with 1 million+ in-person providers. This integration facilitates real-time interventions and care plan coordination that improve member outcomes.



## Questions to ask when evaluating an MSK vendor

- Do you have U.S.-based physicians and surgeons on staff to provide in-house expert medical opinions?
- Do you have bidirectional EMR data integration to share outcomes and monitor for care in which intervention could be helpful, such as surgery or opioid prescriptions?
- Do you have coaches trained in motivational interviewing and member benefits to navigate a member to appropriate resources?

## RECOMMENDATION 5:

# Deliver clinically validated MSK care based on recognized best practices and proven ROI

Today's employers and health plans are tasked with creating a modern health and wellness experience for members while controlling healthcare claim costs. Employers and health plans need to carefully select partners that can help improve both economic and member health outcomes.

Evaluate solutions with a track record of proven engagement and impact. Ideally, the partner should have been vetted and selected by multiple health plans and PBMs and trusted by employers across many industries. Delivering comprehensive, clinically validated digital MSK care that demonstrates ROI is essential for health plan and employer benefits leaders.

## Hinge Health reduced MSK medical claims<sup>12</sup>

**\$2,244–\$3,523**

average medical claim savings per  
Hinge Health participant

**2.2x–3.5x**

average hard ROI delivered per  
Hinge Health participant

The MSK medical claims savings were primarily driven by **68.7% fewer Hinge Health participants undergoing invasive procedures** than in a similar control-matched group.<sup>13</sup>

## Questions to ask when evaluating an MSK vendor

- Who on your clinical care team addresses lifestyle modifications, medicine management, and surgery second opinion?
- What vetted and established relationships do you have with health plans and PBMs to simplify contracting and implementation?
- In my industry, how many active clients do you have and, what are your book-of-business outcomes?



# Conclusion

Treating chronic MSK pain is complex for a variety of reasons. Pain and mental health are closely linked, yet clinicians often overlook the importance of that relationship. At the same time, social determinants of health are clearly correlated with different health outcomes among individuals with MSK conditions. Inequity in healthcare access and delivery is a significant contributor to this issue.

MSK conditions alone are enormous cost drivers for employers and health plans and are detrimental to the quality of life of your members. When MSK conditions are coupled with mental health

conditions, the situation is exacerbated. Every year, healthcare costs and lost worker productivity associated with MSK conditions reach approximately \$600 billion.

While MSK challenges are complicated, the path forward for employers and health plans is becoming clearer. Leading organizations are adopting MSK solutions like Hinge Health that address disparities in care by providing a complete clinical care team, advanced technologies to personalize care at home, and connected care systems that bridge the gap between digital and in-person care.



Find out how Hinge Health's integrated approach to best-practice MSK care can help your organization close health equity gaps, improve health outcomes, and reduce costs.

[REQUEST DEMO](#)

## Hinge Health

Hinge Health is building the world's most patient-centered Digital Musculoskeletal (MSK) Clinic™. It is now the leading Digital MSK Clinic, used by four in five employers and 90% of health plans with a digital MSK solution. Available to millions of members, Hinge Health is widely trusted by leading organizations, including L.L. Bean, Salesforce, State of New Jersey, US Foods, and Verizon.

**Learn more at [hingehealth.com](https://hingehealth.com)**



# Resources

- 1 Bone and Joint Initiative, The Hidden Impact of Musculoskeletal Disorders, 2018.
- 2 Business Group on Health, Large Employers' Health Care Strategy and Plan Design Survey 2020.
- 3 Substance Abuse and Mental Health Services Administration, Key Substance Abuse and Mental Health Indicators in the US, 2020.
- 4 Lam O, Broderick B, Toor S. 2018. How far Americans live from the closest hospital differs by community type. Pew Research Center 2018. Accessed at: <https://pewresearch.org/fact-tank/2018/12/12/how-far-americans-live-from-the-closest-hospital-differs-by-community-type/>.
- 5 Health Research & Educational Trust. (2017, November). Social determinants of health series: Transportation and the role of hospitals. Chicago, IL: Health Research & Educational Trust. Accessed at [www.aha.org/transportation](http://www.aha.org/transportation).
- 6 Schmidt S, Louw A, Puenteadura E, Zimney K. Pain Neuroscience Education: Teaching People About Pain; 2nd ed.; 2018.
- 7 Hinge Health, State of MSK Report 2021.
- 8 Gaskin DJ et al. The Economic Costs of Pain in the United States. Relieving Pain in America: A Blueprint. National Academies Press. 2011.
- 9 <https://www.hingehealth.com/new-study-hinge-health-delivers-sustained-improvements-at-year>
- 10 Web Content Accessibility Guidelines: <https://www.w3.org/WAI/standards-guidelines/wcag/>
- 11 In a randomized placebo-controlled clinical trial of 36 participants with long term chronic pain, after 4 weeks. Amirdelfan K, Hong M, Tay B, Reddy S, Reddy V, Yang M, Khanna K, Shirvalkar P, Abrecht C, Gulati A. High-frequency impulse therapy for treatment of chronic back pain: a multicenter randomized controlled pilot study. J Pain Res. 2021;14:2991-2999. <https://doi.org/10.2147/JPR.S325230>
- 12 Validation Institute Analysis and Hinge Health Book of Business 2021-2022.
- 13 <https://www.hingehealth.com/validation-institute-proven-to-reduce-medical-claims/>