

Revolutionizing Pain Management

MASTERINGPAINMETHOD.COM WHITE PAPER

JILL FANCHER, PHD & LAURA SMITH, PSYD

EXECUTIVE SUMMARY

SITUATION

It is estimated that 100 million Americans suffer from some type of chronic pain equaling one third of Americans (IOM, 2011). The strain on individuals and the systems involved is overwhelming, costing society upwards of 635 billion dollars annually in lost wages and health care costs for adults alone (IOM, 2011).

PROBLEM

Even though the interdisciplinary approach has proven to be effective in addressing the problem of pain, access to care remains limited, resulting in growing costs and decreased functioning for millions.

SOLUTION

The Mastering Pain Method exists to translate the latest science into usable skills to reduce the intensity, impact, agony, and stigma of pain. The methods are rooted in biology and taught in an interactive, validating, and supportive online environment, reducing obstacles in access to care. It is massively scalable given its web-based environment and extremely cost-effective.

RESULT

Pilot data indicates increase in self-efficacy, significant decrease in pain interference, and significant reduction in pain intensity. One of the skills alone, provides an average of 50% reduction in pain intensity meeting criteria for “Substantial Improvement” according to the IMMPACT recommendations for chronic pain trials (Dworkin et al., 2008).

Chronic pain is epidemic. It is estimated that 100 million Americans suffer from some type of chronic pain equaling one third of Americans (IOM, 2011). In fact, the problem of chronic pain is so large that no one intervention or provider type is sufficient to meet the need. The strain on individuals and the systems involved is overwhelming, costing society upwards of 635 billion dollars annually in lost wages and health care costs for adults alone (IOM, 2011). Additionally, the use of opioid medication to treat chronic pain has compounded the problem by adding risks of misuse, addiction, increasing sensitivity to pain (opioid induced hyperalgesia), and overdose.

Current models of care emphasize an interdisciplinary approach focusing on utilization of the biopsychosocial model to improve function for the individual with pain. Even though the interdisciplinary approach has proven to be effective in addressing the problem of pain, access to care remains limited. Currently the obstacles to accessing care include: limited professionals with specialty training in pain; cost of treatments; location; difficulty with transportation; disability; and stigma attached to being referred to a pain psychologist.

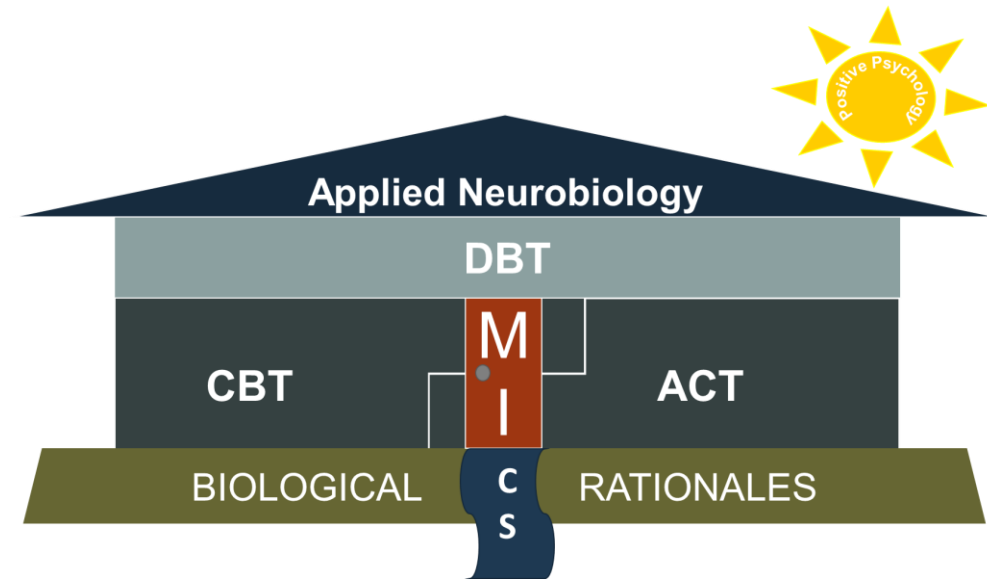
*The burden of pain is
overwhelming and the current
models of pain management are
insufficient.*

Thus, the problem is clear, the current models of pain management and their delivery are insufficient to meet the need. There needs to be a better way to reduce the individual and societal burden of pain. Answers do exist, however. They exist in the emerging science of neuroplasticity and the growing science of the biopsychosocial approach to self-management of chronic pain. Unfortunately, these answers remain elusive to the average individual with chronic pain and providers have limited options to offer their patients. To bring the latest advances in neuroplasticity to the population with pain, we developed the Mastering Pain Method. To eliminate access to care obstacles and make pain self-management available to everyone, we put our program online, creating an interactive learning and support environment.

The Mastering Pain Method

The Mastering Pain Method (MPM) is a comprehensive science-based method built to help individuals self-manage their chronic pain through neuroplasticity training. Rooted in the biopsychosocial model, MPM integrates the best of the evidence-based practices for chronic pain and is consistent with the recommendations of the Institute for Clinical Systems Improvement (ICSI) 2013 Health Care Guidelines for the Assessment and Management of Chronic Pain (Hooten et al., 2013).

Theoretical Model



- The MPM theoretical model begins with a firm foundation in Biological Rationales for all interventions, creating a framework for individuals with chronic pain to understand and prioritize pain self-management.
- Two evidence-based, mind-body interventions for chronic pain, Cognitive-Behavioral Therapy (CBT) skills and Acceptance and Commitment Therapy (ACT) skills, form the first floor of our theoretical structure. These core interventions have extensive literature support, with meta-analyses demonstrating that CBT has a robust impact on reduction of pain intensity with significant, but less robust, impact on the quality of life and depression associated with pain (Hoffman et al., 2007). ACT fills in the missing pieces of CBT, improving outcomes with quality of life and depression associated with pain, while still having a significant, but less robust impact on the intensity of pain (Veehof et al., 2011).
- We build upon these with the second floor of our structure focusing on the integration of evidenced-based interventions for mood regulation - Dialectical Behavioral Therapy (DBT) skills. DBT is utilized to enhance distress tolerance, interpersonal effectiveness, and mood regulation.
- Our theoretical structure is capped off with Applied Neurobiological Skills. These are the skills that are pulled straight from the methods sections of functional neuroimaging studies shown to change biological systems. These skills help with early motivation as many individuals find quick reprieve from intense levels of pain. As a result of reprieve, many individuals experience hope and are empowered to continue down the path of the MPM
- The whole structure is illuminated with Positive Psychology. As noted in the ICSI 2013 guidelines for chronic pain management (Page 23), “A clinician should choose positive language and imagery.” Positive psychology provides an opportunity to focus on where the individual is heading, the sources of hope, and attitudes of wellness. This naturally encourages thoughts to move away from the despair, helplessness, and hopelessness that are a common component of chronic pain.
- The road to our theoretical structure is Cultural Sensitivity. Again, paralleling the ICSI 2013 guidelines, the ideals of MPM and language used throughout the website are culturally sensitive and validating of the individual’s pain experience. Further, it reinforces that learning self-management does *not* invalidate the biological generators of the pain.
- Motivational Interviewing is the doorway into every MPM intervention. The MPM approach involves helping individuals develop confidence and recognize the importance of self-management, identify discrepancies between stated goals and current behaviors, and enhance personal commitment to self-care.

Mastering Pain Method Goals

PRIMARY GOALS	SECONDARY GOALS
Empowerment	Using Neuroplasticity to Improve Function
Internalized Locus of Control	Reducing pain
Self-efficacy	Reducing the Agony of Pain

Primary Goals:

- Empower individuals with the knowledge and tools for self-management of chronic pain
- Internalize locus of control helping the individual develop an understanding of their ability to have more control of their pain and rely less on other people or interventions
- Develop stronger self-efficacy, not only to understand that one can have more control, but to have the confidence in their ability to change their own experience of pain

Secondary Goals:

- Improve overall function in daily activities, decreasing disability and despair associated with chronic pain
- Reduction in overall pain intensity
- Reduction in the associated agony, suffering, and bothersomeness of chronic pain

Mastering Pain Method Website: Skills – Science – Support

Skills: Neuroplasticity Training

The MPM website currently includes 26 lessons providing psychoeducation on how pain is processed in the spinal cord and in the brain, the biological implications of thoughts, feelings, and behaviors on pain, and the biological rationale for each of the 33 skills. These skills target the four parts of pain that we identify as: Intensity, Agony, Impact, and Stigma. As the neuroplasticity literature continues to grow, our lessons will continue to expand in both breadth and depth.

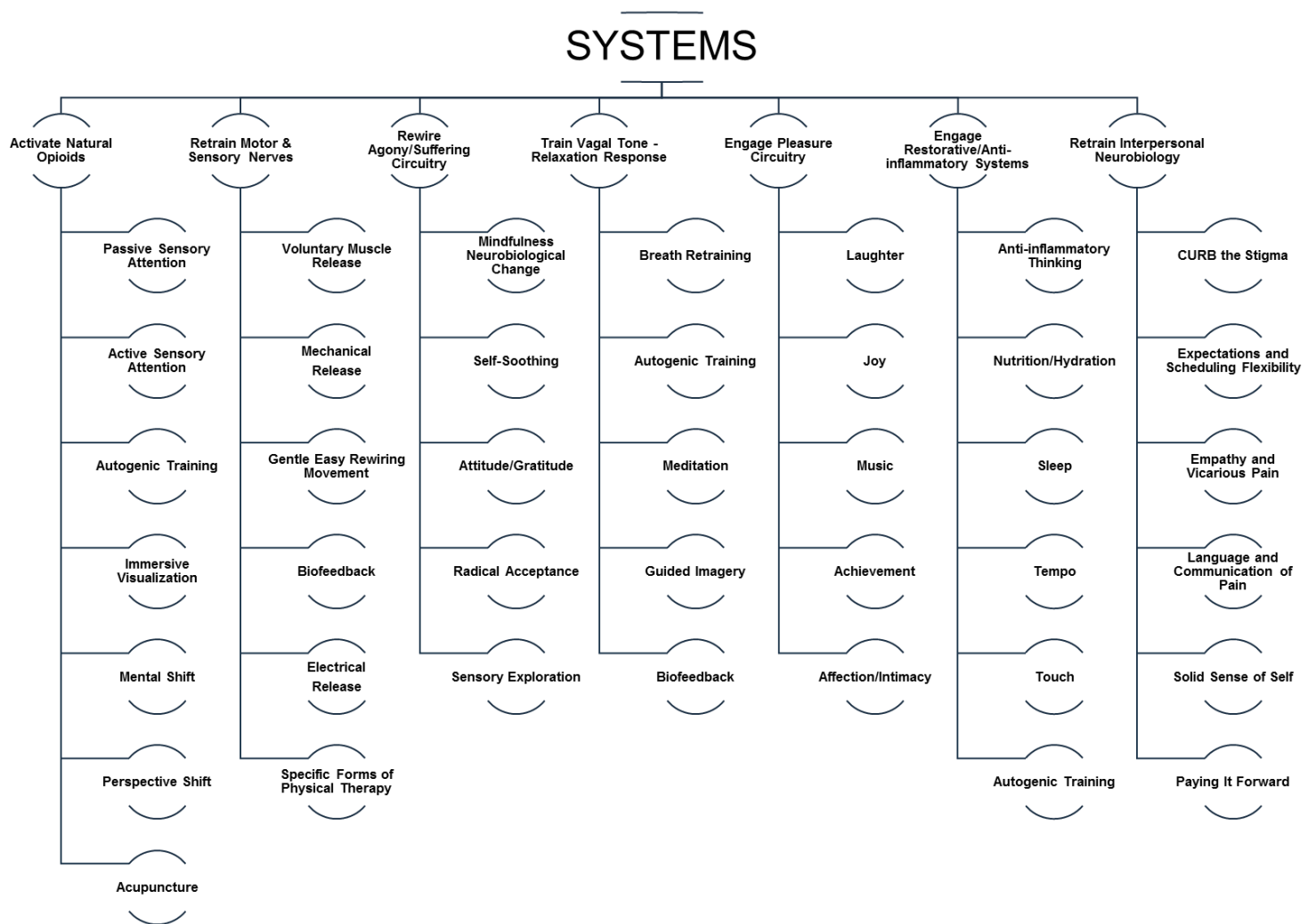
The skills are organized around 7 biological systems that affect pain. These 7 systems include:

1. Activation of the endogenous opioids (described to the person with pain as “Activating the runners high without running several miles.”)
2. Training motor and sensory nerves to relax and calm
3. Rewiring the agony circuitry associated with pain - allowing pain to be experienced simply as a sensation, decreasing the agony associated with it

4. Training the vagus nerve and toning the relaxation response
5. Enhancing the restorative/anti-inflammatory systems (sleep, movement, nutrition & cognitive restructuring)
6. Opposing pain with pleasure
7. Interpersonal Neurobiology integrating the works of Daniel Siegel and the biological processes of social interactions

Based on these skills and interventions, it is clear that MPM meets and exceeds the recommended five elements of the plan of care from the ICSI 2013 for chronic pain (see pages 23-24; set personal goals, improve sleep, increase physical activity, manage stress, and decrease pain).

This chart represents the skill sets and their organization according to the 7 biological systems.



Science: DATA Tracking

Because MPM teaches individuals to apply the scientific method to their own pain, the contents of the website also include a DATA tracking tool. DATA tracking makes what is invisible and hard to articulate, visible and clearly articulated.

DATA tracking invites the user to document the following information daily:

- Degree of pain, rating each on a 0-10 scale
 - Intensity of pain
 - Agony associated with the pain
 - Impact of pain on their ability to perform daily activities
 - Stigma or negative social impact of their pain
- **Activity** - what they did to live well despite the pain
- **Training** - what neuroplasticity skills they are using to manage their pain
- **Attitude** - what are their sources of hope, joy, and peace

Tracking data is essential in finding what skills the individual will want to

- Adopt into their Master Plan for pain management
- Adapt a skill in order to personalize it based their specific needs, or
- Abandon if a skill simply doesn't work based on the data collected

DATA helps the individual learn more about their own body, their own patterns, and their own pain. It helps to internalize the locus of control and empowers the individual to do what works for them.

Tracking DATA is also an effective tool for improving communication with medical providers and loved ones. Individuals are able to email or print off their DATA and bring it to their appointments, demonstrating their pain patterns and participation in self-management.

Once a person has completed all current lessons and has been tracking their DATA, they then can create an individualized self-care plan, called their Master Plan. The Master Plan includes:

- Pain Mastery Tools - all the skills and self-care behaviors that they can use anytime
- Pain Mastery Equipment - those things that they need to engage in self-care (e.g., ice packs, heating pad, foam rollers, TENS unit, hot tub, pillow, etc.)
- Personnel - those people who can assist the person with pain (e.g., PCP, massage therapist, prescribers, and social support persons)
- Schedule - identifying *when* to use each of the tools, equipment, personnel (e.g., daily, weekly, prn, "when the pain is between 6-7, 8-9," etc.)

The Master Plan is filled out by the individual with their unique information and they are then encouraged to keep a copy with them at all times for easy reference. High-intensity pain can limit one's ability to recall effective ideas or skills in the moment. A Master Plan can be a helpful reminder and source of hope; "Look at this long list of skills that I *know* work for me, I know what I can do to help myself in this moment."

Support: Social Forums

In addition to neuroplasticity skills and tracking DATA, the MPM website also provides a venue for social support. Social support is often lacking for people with chronic pain due to the limitations and isolation pain causes. These forums are moderated to guide conversations and enhance learning, while providing motivation, accountability, and a safe environment to explore setbacks and struggles.

Scalability

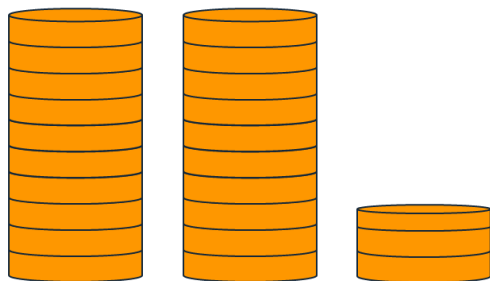
While we have seen strong effectiveness within our individual and group psychotherapy sessions, the translation of the model to the interactive website allows for massive scalability, literally allowing anyone with internet capability, access to the information and methods to develop pain mastery.

Cost Effective

There is no doubt that pain is an expensive problem. The current solutions available are aimed at reducing the financial burden of pain, but with the access to care limitation, the financial benefit is limited. An individual engaged in psychotherapy with a single focus on pain paid at an average reimbursement rate would cost approximately \$2220 (\$111/session for 20 sessions). The direct comparison for that same person to learn the skills from home at their own pace over a 6 month period using the MPM website would cost \$120 (\$20/month for 6 months). This is *only 5% of the cost* of traditional mind-body interventions for pain, effectively removing the barrier of financial burden.

Individual/Group Psychotherapy

1 Person x 20 Sessions = \$2220



E-learning and Training

1 Person x 6 months = \$120



Plus, potentially reduced utilization of other healthcare resources

Target Population

Adults with any kind of chronic pain are ideal candidates for MPM. Whether it is mechanical, muscle, inflammatory, chemical, or neuropathic pain, individuals will likely benefit from MPM and be able to identify at least a few skills that are effective in improving the intensity, bothersomeness, or impact of their pain. As it is a web-based tool that addresses the many aspects affected by chronic pain, it could potentially serve both those with a more recent onset of their chronic pain and those who have experienced limited benefit from routine care (Level 1 and Level 2 interventions according to the ICSI guidelines). Individuals who have additional medical or psychiatric needs would likely benefit from adjunctive individual or group therapy.

Substance use is a common concern among the medical community when working with individuals with chronic pain due to the types of medications that are often prescribed. While the MPM is not sufficient to address substance abuse disorders, it can be used in conjunction with other treatments for substance use as MPM will address the pain components for individuals. Additionally, as individuals have new, non-pharmacological ways to self-manage their pain, the utilization of opioids may be reduced.

Early Pilot Study Results

To better understand outcomes of the MPM website, we are collecting pre and post data from individuals willing to participate. The measures capture three core components Pain Self-Efficacy, Pain Interference, and Pain Intensity.

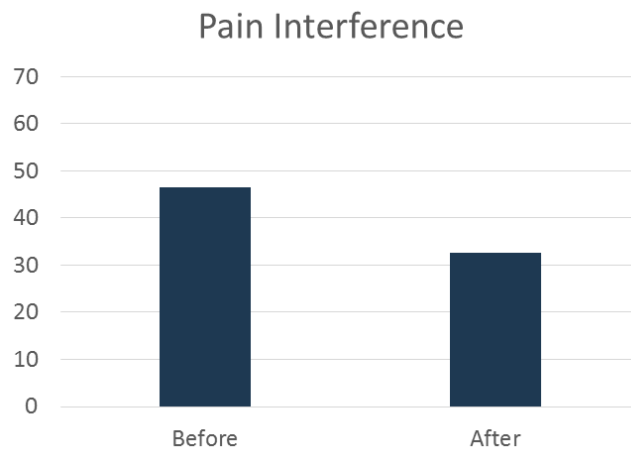
1. Pain Self-Efficacy - confidence in one's ability to engage in activities that have a positive effect on the experience of pain. The Pain Self Efficacy Questionnaire (Nicholas, 2007) is a validated measure of this construct. Scores range from zero to sixty, with higher scores indicating stronger confidence.

Early results with a sample size of 7 indicate that there is an improvement in Pain Self-Efficacy after completing all the lessons of the MPM. Mean scores before intervention was 25 (SD = 8.3), while the mean scores after was 30.33 (SD = 9.0). Although the sample size was small, a paired sample t-test approached significance.



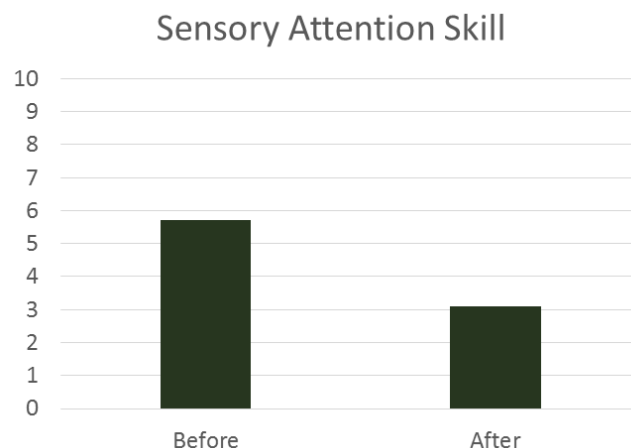
2. Pain Interference - this measures the limitations a person experiences as a result of their pain. Measuring function for these purposes is conducted using the final questions of the Brief Pain Inventory - Short Form (Cleeland, 1991). The seven sub-questions address the range of interference of pain in general activity, walking ability, mood, normal work, relations to others, sleep and enjoyment in life. Total scores range from zero to seventy, with higher scores indicating more interference in activities of daily living associated with pain.

Early results with a sample size of 8 indicate that there is an improvement in the function, as measured by a reduction in interference after completing all the lessons of the MPM. Mean score prior to intervention were 46.5 (SD = 11.80) and post intervention mean was 32.625 (SD = 17.01). Despite the small sample size, this effect demonstrated significance for paired sample t-test ($p < .01$).

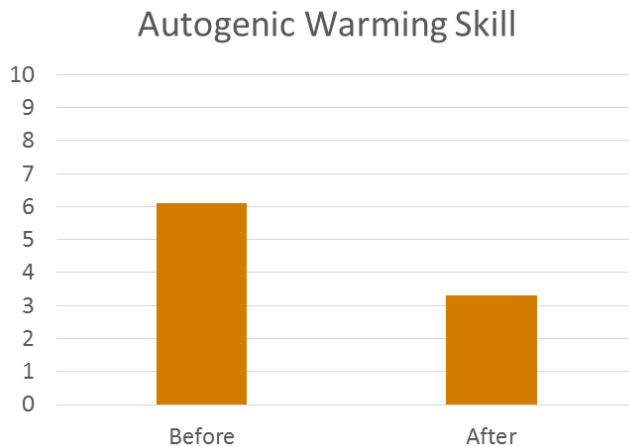


3. Pain Intensity - the most common assessed measure of pain, MPM captures this through self-report when utilizing individual skills presented during training for the individual. Scores range from zero to ten, with higher scores indicating more intense pain.

Using the example of the first lesson, everyone (in person and online) is taught, the Passive Sensory Attention skill to activate the endogenous opioid system. This skill takes roughly 10-15 minutes to practice. Results of a sample of 23 indicated a mean pain intensity of 5.7 (SD = 1.84) before practice, and 3.1 (SD = 1.96) after practice, which was a significant difference in a paired-samples t-test ($p < .001$).



Autogenic Warming is another lesson that is part of MPM. It has been shown to actively dilate blood vessels (Zelter et al., 1979) and reduce inflammation (Nolan et al., 2012). This skill takes roughly 30-40 minutes to practice. Results of a sample of 14 individuals shows that initial pain ratings had a mean of 6.1 (SD = 1.99) and after practice pain ratings had a mean of 3.32 (SD = 1.66). This difference was significant with a paired-samples t-test ($p < .001$). Further, this 50% reduction in pain meets criteria for “Substantial Improvement” according to the IMMPACT recommendations for chronic pain trials (Dworkin et al., 2008).



As a point of comparison, both of these skills exceed the expected 10% intensity reduction demonstrated in meta-analyses of opiate effectiveness (specific to osteoarthritis of the knee; Bjordal et al., 2007).

Case Studies

“Jane”

Jane was a 48 year old female, presenting with chronic migraines, fibromyalgia, cervical dystonia, and peripheral neuropathy. She presented with a complex health history, including but not limited to gastric bypass surgery, nasal surgery, multiple car accidents, two knee surgeries, four hand surgeries, common variable immunodeficiency, prior pulmonary emboli, and prior cellulitis.

Her initial pain ratings ranged from 7 to 9, with an average of 7. She reported seeing medical providers approximately 6-8 times each week. Jane was taught numerous MPM skills to address the range of her pain and functional difficulties. Over time she reduced her medical visits to less than 2 per week and reduced her average pain ratings to a 4 with a range of 3 to 7. She continues to engage in active pain support, paying it forward to new group members, and sharing her successes and appropriately seeking support when she struggles. Further her original pain medication regimen was a daily combination of 10 mg OxyContin ER q12h, 10 mg oxycodone q4-6h, and 4 mg Dilaudid q4h. After six months of intervention she no longer used a daily opiate and only used Dilaudid 4mg 1-2 times per week.

“Sally”

Sally was a 36 year old female with migraine pain and self-reported pain level of 9 on a scale of 0-10. The pain had lasted for the previous six days and had no response to medication. When she came in for her session, she was taught a MPM skill that focused on dilation of blood vessels, release of muscle tension, and activation of endogenous opioids. After the skill was practiced in session she rated her pain at a level of 2. That same day, this patient had a scheduled appointment with her neurologist for injections to treat her migraines. At the conclusion of the session, she decided to cancel the neurologist appointment as it was no longer necessary.

“Jack”

Jack was a 32 year old male presenting with chronic back pain due to injury, history of neuropathic pain, fusion, and regular steroid injections. He also presented with depression secondary to pain as well as several stressors. He rated his average pain between 6-7 when off of medications, and 4-6 when on medications. His goals were to find non-pharmacological ways to improve pain and to decrease opioid medications.

Over the course of using MPM skills in individual therapy, Jack was able to decrease pain intensity an average of 2.5 points on the 0-10 scale, with reprieve lasting an average of 2-3 hours. One particular day, he had nerve impingement causing sensations of cold, tingling, and numbness in his left arm and hand, rating his pain as a 5. After practicing a MPM skill, he reported a decrease in pain from a 5 to a 2, feeling warmth and even sweating in his left hand. He noted that practicing MPM skills decreased his pain intensity the same or more than the opioid medications. This fact gave him the confidence to taper off of opioid medications.

Summary

The Mastering Pain Method exists to translate the latest science into usable skills to reduce the intensity, impact, agony, and stigma of pain. The methods are rooted in biology and taught in an interactive, validating, and supportive online environment, reducing obstacles in access to care. It is massively scalable given its web-based environment and extremely cost-effective. As a web-based integration of existing evidence-based interventions and the emerging science of neuroplasticity, the MPM website has the potential to revolutionize pain management. It is in the best interest of both individuals with chronic pain and those who pay for their care, that the MPM website be utilized as a primary tool in pain intervention.

References

- Cleeland, C.S., Ryan, K.M. (1994). Pain assessment: global use of the brief pain inventory. *Ann Acad Med Singapore*, 23, 129-38.
- Dworkin, R.H. et al. (2008). Interpreting the clinical importance of treatment outcomes in chronic pain clinical trials: IMMPACT Recommendations. *Journal of Pain*, 9, 105-121.
- Hoffman, Hoffman, B. M., Papas, R. K., Chatkoff, D. K., & Kerns, R. D. (2007). Meta-analysis of psychological interventions for chronic low back pain. *Health psychology*, 26(1), 1–9.
- Hooten WM, Timming R, Belgrade M, Gaul J, Goertz M, Haake B, Myers C, Noonan MP, Owens J, Saeger L, Schweim K, Shteyman G, Walker N. (Updated November 2013). *Institute for Clinical Systems Improvement. Assessment and Management of Chronic Pain.*
- IOM (Institute of Medicine). 2011. *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research.* Washington, DC: The National Academies Press.
- Nicholas, M. K. (2007). The pain self-efficacy questionnaire: Taking pain into account. *European Journal of Pain*, 11(2), 153-163.
- Nolan, R.P., Floras, J.S., Harvey, P.J., Hicock, N., Hendrickx, H., & Talbot, D. (2012). Behavioral modification of the cholinergic anti-inflammatory response to C-reactive protein in patients with hypertension. *Journal of Internal Medicine*, 272, 161-169.
- Veehof, M.M., Oskam, M-J., Schreurs, K.M.G., & Bohlmeijer, E.T. (2011). Acceptance-based interventions for the treatment of chronic pain: A systematic review and meta-analysis. *Pain*, 152, 533-534.
- Zelter, L., Dash, J., & Holland, J. P. (1979). Hypnotically induced pain control in Sickle Cell Anemia. *Pediatrics*, 64, 533-536.