THE SCIENCE OF SMILING & BENEFITS TO PAIN RELIEF

A WHITE PAPER ON HOW THE PHYSICAL ACT OF SMILING CAN HAVE A POSITIVE IMPACT ON PAIN RELIEF IN ATHLETES

Compiled by Goody's® Pain Relief

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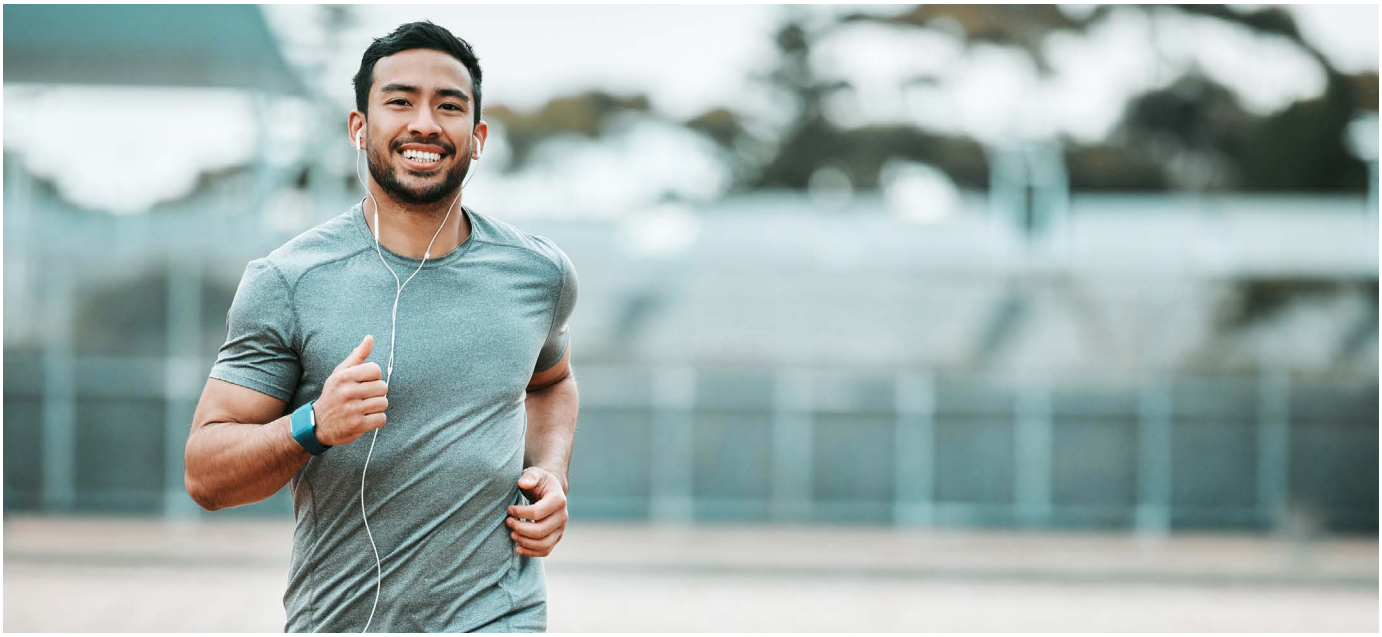
TABLE OF CONTENTS



INTRODUCTION

When it comes to pain relief for athletes, we usually think of ice baths, foam rollers, or over-the-counter meds. But what if one of the most powerful tools for managing physical discomfort doesn't come from a pharmacy—or even a gym? What if it's something as simple, natural, and accessible as a smile?

This white paper, presented by Goody's® Pain Relief, dives into the surprising science of how smiling—yes, *smiling*—can actually reduce pain. For athletes pushing their physical limits, like marathon runners, discomfort is part of the journey. Whether it's muscle soreness, cramping, or fatigue, "powering through" is a familiar expression – and there's little to be done in-the-moment. But a growing body of research suggests that the act of smiling might offer an unexpected boost, before the recovery efforts even begin.

This paper examines published literature spanning 20 years that indicates smiling may in fact help with pain relief. The connection is both psychological and physiological: smiling activates the release of feel-good neurotransmitters like dopamine, serotonin, and endorphins, all of which play a role in reducing the perception of pain. It also engages the parasympathetic nervous system, helping the body relax and counteract stress responses that often amplify pain.

For athletes, the implications are real: smiling through a tough workout or during recovery isn't just about keeping a positive attitude—it may actually help you feel better, faster. From enhanced emotional resilience to measurable physical comfort, the science is clear: when it comes to pain relief, a smile can go a long way.

Section 1: The Science Behind Smiling and Pain Reduction

1.1 The Brain's Response to Smiling

- Smiling might not be the first tool athletes like long-distance runners think of, but it has measurable effects on the brain that can support emotional wellbeing during the highs and lows of training. When you smile, the brain releases a mix of neuropeptides and neurotransmitters – like dopamine, serotonin and endorphins that help lift your mood, reduce stress and create a sense of calm (Johnson., 2022). These feel-good chemicals play an essential role in recovery, especially for runners navigating peak training moments or the emotional comedown after a race.
- Beyond immediate mood boosts, smiling may contribute to longer-term brain resilience. Studies on mindfulness-based stress reduction (MBSR) – a practice often used by endurance athletes – show that positive emotional habits can physically change the brain, including reducing gray matter in the amygdala, the center for processing fear and stress (Carmody et al., 2009). It's a reminder that navigating pain at mile 20 of a marathon or while training is mental just as it is physical.

EVEN INTENTIONAL OR "FAKE" SMILES HAVE BEEN SHOWN TO ACTIVATE THE PARASYMPATHETIC NERVOUS SYSTEM, SUPPORTING STRESS RELIEF AND CARDIOVASCULAR RECOVERY.

1.2 Smiling and the Nervous System

- While most runners focus on muscle repair and hydration post-run, few think about how the nervous system resets – and smiling can play a role here too. The parasympathetic nervous system, which governs rest and relaxation, becomes more active during positive emotional states like those triggered by smiling. This shift helps counterbalance the stress-driven sympathetic system, resulting in lowered heart rate, reduced blood pressure and a sense of physiological calm (Berg & Jensen., 2011). It's the body's way of entering "recovery mode."
- Interestingly, smiling itself – not just the mood it reflects – can stimulate this rest-and-digest response. Even intentional or "fake" smiles have been shown to activate the parasympathetic nervous system, supporting stress relief and cardiovascular recovery (Berg & Jensen., 2011). For runners, this means that adding small moments of joy – even during the race itself, not just as part of a cool-down – can help reset the nervous system and speed up overall recovery.

1.3 The Facial Feedback Hypothesis

- Smiling isn't just a reaction to feeling good – it can help create those good feelings. The "Facial Feedback Hypothesis" suggests that our facial expressions send signals back to the brain, shaping how we feel emotionally. So, when a runner forces a smile on a tough run, that expression can actually reinforce a more positive mood and outlook (Coles & Larsen., 2019). It's a small, powerful trick for managing the emotional rollercoaster of training and racing.
- This feedback loop also extends to the body. Research shows that smiling is linked to lower heart rates and quicker recovery from stressful or uncomfortable situations – even physical ones (Pressman et al., 2021). In other words, smiling can help regulate both mind and body during recovery.

Section 2: Smiling and Pain Management – What Research Shows

2.1 Clinical Studies on Smiling and Pain Perception

- One early study explored how spontaneous smiling affects how people experience physical discomfort, asking participants to immerse their hands in cold water – a challenge not unlike the mental grit runners need during long-distance efforts. Those who smiled during the task showed lower heart rates and reported stronger emotional recovery afterward, compared to those who didn't smile (Taylor & Francis., 2009). This suggests that smiling may act as a subtle form of emotional regulation that helps the body adapt to discomfort.
- Research in medical settings offers further evidence. In hospital environments, patients who smiled during procedures not only experienced lower heart rates, but also reported feeling less pain than those who kept neutral expressions (Pressmam et al., 2021). The implication? Smiling may help reduce both the physical and emotional weight of discomfort, acting as a natural complement to traditional pain treatments. For runners pushing to the finish line or managing soreness post-race, this reinforces the idea that mindset matters, because how you feel emotionally can influence how you recover physically.
- Smiling has also been linked to muscle relaxation and reduced tension, which is especially relevant to athletes and active individuals. In one study, smiling during physical tasks was shown to reduce both muscular effort and the subjective feeling of strain (Brick., 2018).

PATIENTS WHO SMILED DURING PROCEDURES NOT ONLY EXPERIENCED LOWER HEART RATES, BUT ALSO REPORTED FEELING LESS PAIN THAN THOSE WHO KEPT NEUTRAL EXPRESSIONS.

2.2 Smiling and Endorphin Release

- At the chemical level, smiling influences the release and activity of endorphins – natural compounds that help block pain and elevate mood. Recent research has explored endorphin modulators that enhance the body's natural pain-fighting abilities without the risks associated with traditional pain medications (Traynor & Alt., 2021). Smiling activates similar pathways, suggesting a simple, low-risk way for athletes to support their bodies during intense physical moments and recovery.
- Laughter – which often accompanies genuine smiles – has also been shown to trigger even broader benefits. Studies show that laughing stimulates major muscle groups, increases oxygen intake, boosts endorphins and helps release physical tension (Pruthi., 2023). Again, for athletes, joyful moments shared with teammates may support both emotional balance and physical recovery.

Section 3: Real-World Applications – How Smiling Can Be Used to Reduce Pain

3.1 Smiling in Healthcare Settings

- In clinical environments, smiling has been shown to help reduce anxiety and strengthen the bond between caregivers and patients. Studies highlight how a genuine smile can foster trust and ease tension during medical interactions, helping patients feel more comfortable and emotionally supported (Jaffe 2011).
- Further research reveals certain types of smiles – those expressing warmth and empathy – can actively help the body recover from stress. So-called "reward" and "affiliation" smiles have been linked to faster cortisol recovery and better emotional outcomes in therapeutic settings, while more forced or dominant expressions may actually prolong stress responses. (JD., 2018). These small, mindful habits may contribute to a more effective and holistic exercise experience.

3.2 The Role of Smiling in Mental Health and Stress Reduction

- From a physiological perspective, smiling has deep evolutionary roots in stress management and social bonding. It's been linked to improved heart health, lower blood pressure and even a boost in immune function – valuable benefits for runners whose bodies are constantly in motion (Goldstein., 2025). What began as a "fear grin" in primates has evolved into a powerful tool for connection and self-soothing, helping runners navigate both physical discomfort and emotional stress.

"FAKE" SMILES CAN ACTIVATE KEY NEUROCHEMICALS AND ENDORPHINS, SEROTONIN AND STRESS-REDUCING NEUROPEPTIDES THAT SUPPORT MOOD AND PAIN REGULATION.

3.3 Everyday Strategies to Use Smiling for Pain Relief

- Smiling can be a surprisingly effective addition to a runner's daily recovery routine – even if it starts as a conscious effort. Research shows that even intentional or "fake" smiles can activate key neurochemicals and endorphins, serotonin and stress-reducing neuropeptides that support mood and pain regulation (Acevedo et al., 2021). For athletes of all types, adding moments of lightness during and post-working could potentially help tip the body into a more relaxed, healed state.

Conclusion: Harnessing the Power of The Smile - A Performance Edge for Endurance Athletes

For high-performing athletes, pain isn't something that only shows up after the finish line—it's a constant companion during the race itself. Whether it's the final miles of a marathon, the punishing climb of a trail run, or the high-intensity push of interval training, endurance athletes are constantly navigating discomfort in real time. The ability to manage that pain, mentally and physically, can be the difference between pushing through or breaking down.

As emerging science shows, the simple act of smiling isn't just a post-race feel-good moment—it can be a performance-enhancing tool. Smiling under pressure has been linked to a measurable decrease in perceived exertion, improved emotional control, and the release of neurotransmitters like dopamine and endorphins that blunt pain and elevate mood. It also supports parasympathetic nervous system activity, which can help regulate breathing and heart rate under stress.

For elite and everyday athletes alike, smiling becomes a subtle but effective tactic—something you can call on mid-stride, mid-set, or mid-surge to recalibrate the body and mind. It's not about denying the pain, but about shifting your relationship with it. In the world of endurance sports, where mental strength is just as critical as physical conditioning, that shift could be a game-changer.

So the next time you're deep in the grind, facing down fatigue, try something unexpected: smile. Science says it just might help you go farther, faster, and with a little less pain.

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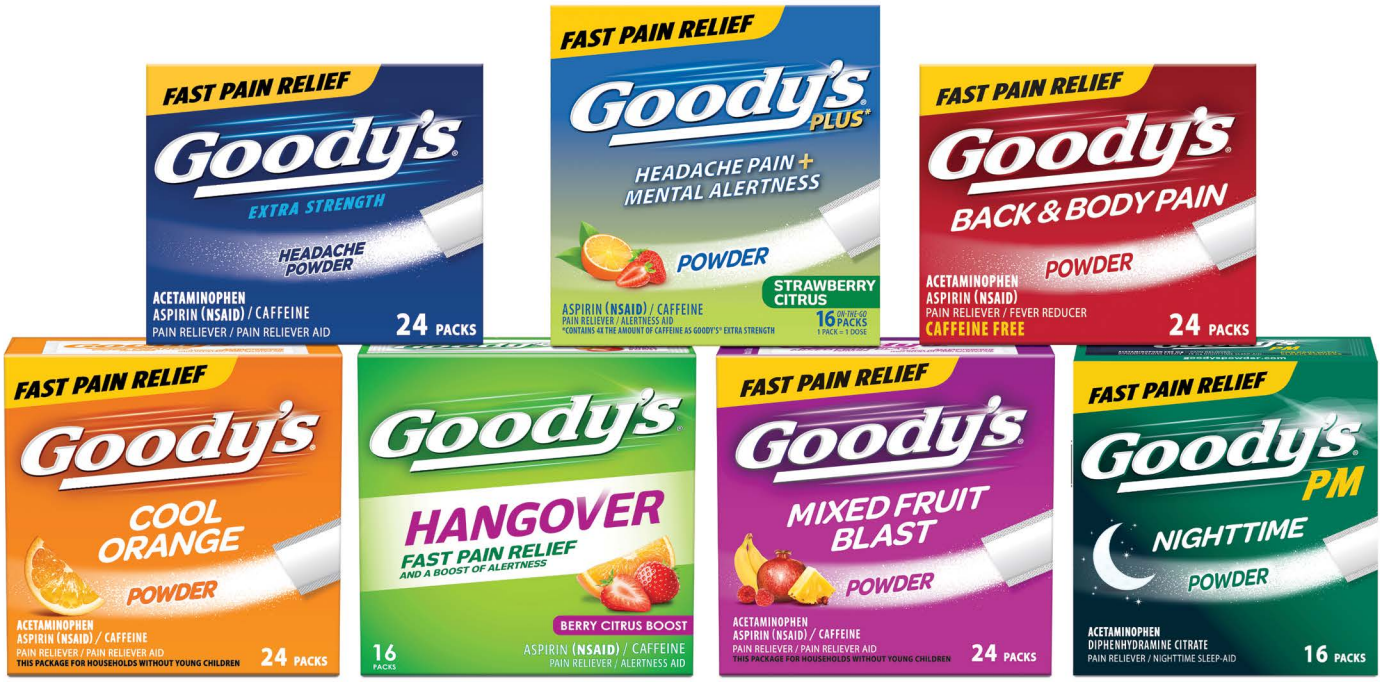

About the Author

Goody's® has been trusted for over 90 years to deliver fast-acting relief for a wide range of pain, including headaches, body aches, and more. Its unique powder formula is designed for quick absorption, making it a go-to solution for pain relief—especially during recovery.

It's important to note that over-the-counter medications like Goody's®, which contain NSAIDs (nonsteroidal anti-inflammatory drugs), are not recommended for use during endurance events or intense training sessions. Long-distance runners and high-performance athletes should avoid NSAIDs while actively competing or training—especially when the body is under extreme physical strain.

That's why a holistic approach to performance and recovery is key. During training and racing, non-pharmaceutical strategies—such as pacing, hydration, breathing techniques, and even something as simple as a smile—can help athletes manage discomfort and improve mental resilience. Post-activity, Goody's® can be a helpful part of a recovery toolkit when used as directed and under the guidance of a healthcare provider.

For more information, visit www.goodyspowder.com.