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Why Winter May Worsen Migraines and How to Help Manage Them

Analysis by Dr. Joseph Mercola | October 29, 2026

STORY AT-A-GLANCE

- Winter could worsen migraines because cold, darkness, and routine disruption can overload your nervous system and may reduce your brain's ability to regulate pain signals
- Seasonal drops in light exposure may disrupt melatonin and circadian rhythm, which may lower your brain's resilience and increase headache frequency and intensity
- Excess LA from seed oils may damage mitochondrial energy production, which could make your brain more reactive to stress and more prone to migraine attacks in any season
- Stable daily patterns — consistent sleep timing, hydration, meals, and movement — may play a role in reducing neurological stress and raise your migraine threshold
- Supporting cellular energy by lowering LA intake and supporting mitochondrial function may help your brain stay calm, resilient, and less reactive year-round

Cold weather does more than make your joints stiff or your skin dry. It could change how your brain generates energy, and for many people, that shift might show up as migraine pain. Migraine is a neurological condition marked by recurring head pain, sensory sensitivity, nausea, and cognitive fog. During winter, those symptoms often intensify — not because something is "wrong" with you, but because your biology could be pushed into a less stable state.

What makes winter different is the way multiple stressors stack on top of each other. Colder temperatures can narrow blood vessels. Shorter days alter brain chemistry. Indoor air can dry out tissues. Daily routines shift. On their own, these changes seem minor. Together, they can place sustained pressure on your nervous system. When that pressure exceeds your brain's ability to adapt, migraine activity tends to rise.

There's also a deeper metabolic layer that often gets overlooked. Your brain depends on steady energy production to stay calm and resilient. When that energy system becomes strained, migraine thresholds could drop. One potential contributor is excess linoleic acid (LA), a polyunsaturated fat common in seed oils and processed foods.

High levels of this fat may interfere with how your mitochondria function, making it harder for brain cells to meet energy demands during times of stress, including seasonal shifts. This could explain why winter migraines can feel different from summer ones. The environment is more demanding, and the margin for error shrinks. Small disruptions that you could tolerate in warmer months may suddenly trigger symptoms.

Understanding that this is a systems issue — not a personal failure — can change how you approach migraine management. Once you see how seasonal stress, energy metabolism, and dietary fats intersect, the pattern becomes clear. From there, you can start addressing the contributing factors rather than simply covering up symptoms.

Cold Weather May Turn Your Nervous System Into a Migraine Trigger

Winter weather may shift your body into a more vulnerable neurological state, in part because cold temperatures may affect the nerves and blood vessels in your head and neck. In an India Today report, Dr. Kunal Bahrani, chairman and group director of neurology at Yatharth Hospitals, says that **exposure to cold** can cause rapid constriction of blood vessels, which may irritate the trigeminal nerve* — a major pain-processing pathway involved in migraines.[1]

When this nerve becomes overstimulated, even minor environmental stress may escalate into a full migraine episode.

- **Temperature swings can place physical stress on your vascular system —** Moving repeatedly between warm indoor environments and cold outdoor air can force blood vessels to expand and contract quickly. This repeated vascular strain could heighten nerve sensitivity and lower the threshold for migraine activation. For people prone to migraines, this may mean everyday winter routines like commuting or stepping outside can bring on pain without warning.

- **Dry winter air quietly worsens dehydration and nerve irritation —** Indoor heating dries out the air, which increases fluid loss through breathing and skin. Even mild dehydration reduces blood volume and thickens circulation, making it harder for oxygen and nutrients to reach your brain efficiently. This physiological stress could increase susceptibility to headache pain and worsen existing migraine patterns.

- **Vitamin D decline may compound neurological sensitivity —** Reduced sun exposure lowers vitamin D levels, which are linked to migraine frequency. Vitamin D is involved in nerve stability and inflammation control, and a deficiency could remove a protective buffer against pain signaling. This may make winter a biologically high-risk season for migraine flare-ups, even in people who feel otherwise healthy.

- **Sleep disruption adds another layer of vulnerability —** Shorter days can interfere with circadian rhythm, the internal clock that regulates sleep-wake cycles. Irregular sleep patterns may destabilize neurological function and heighten pain sensitivity. When sleep quality drops, your brain may become less resilient to stress and more reactive to migraine triggers.

- **Lifestyle shifts may intensify the problem —** Winter often brings reduced physical activity, irregular meals, and higher caffeine intake. Each of these factors could strain your nervous system and contribute to migraine risk.[2] On their own they seem minor, but together they may create a cumulative load that pushes susceptible individuals toward more frequent and severe attacks.

Seasonal Patterns Help Explain Why Migraine Management Needs to Change with the Weather

A report from the American Migraine Foundation discusses why migraine patterns shift with the seasons and how environmental changes interact with your nervous system.[3] Multiple seasonal variables may stack together and overwhelm your brain's ability to self-regulate.*

- **Barometric pressure changes may trigger migraine attacks in some people —** Changes in atmospheric pressure may alter the balance between internal sinus pressure and external air pressure.[4] When this balance shifts, sensory nerves inside your head may become irritated. Your brain may interpret this irritation as a threat signal, potentially activating migraine pathways even in the absence of other triggers.

- **Seasonal shifts may destabilize internal timing systems that regulate pain —** Consistent daily timing acts like an internal anchor for your nervous system. When daylight hours shorten or fluctuate, that timing weakens. Hormone release, sleep-wake signaling, and neural recovery become less coordinated. This loss of rhythm may reduce your brain's capacity to dampen incoming stress signals, making migraine episodes easier to trigger and harder to shut down.

- **Behavioral compression may increase neurological load rather than dispersing it —** During winter months, activities tend to cluster into shorter daylight windows. Movement decreases, meals become less regular, and caffeine use often shifts earlier or later in the day. These compressed patterns stack stressors closer together instead of spreading them out, which may raise baseline neurological tension and lower the threshold for migraine activation.

  Stable sleep timing, predictable meals, regular hydration, and routine activity may reduce the amount of sensory interpretation the brain must perform. This may free up metabolic resources and lower the likelihood that minor stressors will escalate into pain.

- **Awareness converts vulnerability into control —** Identifying seasonal patterns may give you leverage over your symptoms. When you anticipate periods of vulnerability, you can adjust behavior before symptoms escalate. This shift — from reacting to migraines to managing their timing — may reduce fear, lower baseline stress, and help restore a sense of agency over your nervous system.

  When your brain learns what to expect, it scans less for danger. That reduction in vigilance may lower overall neurological load and reduce migraine frequency. According to the American Migraine Foundation, anticipating seasonal triggers can be a useful tool for people trying to manage migraine preventatively.

Excess LA May Be a Hidden Contributor to Many Migraines

When migraines show up repeatedly, the problem may not be just weather, stress, or hormones. At the core, your brain may be struggling to produce stable energy. That breakdown may start inside your mitochondria, the tiny structures inside your cells that generate fuel. One potential disruptor of this process is excess LA, found widely in seed oils. When LA intake is excessive, mitochondrial efficiency may drop, and your nervous system may become fragile and reactive.

- **Excess LA may act like a mitochondrial toxin —** LA breaks down easily when exposed to heat, oxygen, or light. Once inside your body, these oxidized fragments may damage mitochondrial membranes and interfere with energy production. When your cells can't generate enough adenosine triphosphate (ATP), your brain may become hypersensitive to normal stimuli like light, sound, or pressure changes. That sensitivity may help turn everyday sensations into migraine pain.

- **Damaged cardiolipin may disrupt energy flow at the cellular level —** Cardiolipin is a specialized fat that lines the inner membrane of your mitochondria and holds the energy-producing machinery together. When LA replaces healthier fats in this structure, cardiolipin may lose its shape and function. Energy production may become inefficient, and oxidative stress may increase.

This may create conditions that favor migraine activity because your brain may no longer have the energy buffer it needs to stay calm under stress.

- **Impaired cleanup may allow dysfunctional cells to linger —** Healthy mitochondria rely on a process called apoptosis, which removes damaged cells before they cause problems. Oxidized LA may interfere with this cleanup system. When faulty cells stick around, inflammation may persist and energy production may stay impaired. Over time, this may build a neurological environment that favors chronic migraines rather than recovery.

- **Seed oils are a primary source of excess LA —** The largest sources of LA come from soybean, corn, safflower, sunflower, canola, and cottonseed oils. These oils dominate restaurant meals, packaged foods, and fried items. Even foods marketed as "healthy," including many olive and avocado oils, often contain seed oil blends. Conventionally raised pork and chicken also carry high LA levels because the animals accumulate it in their tissues.

- **Lowering LA may allow mitochondria to recover —** When you reduce LA intake, damaged fats in your tissues may gradually get replaced with more stable fats. This process takes time, but some people notice benefits within weeks as mitochondrial function improves and inflammation eases. Your nervous system may become less reactive, and migraine frequency may decline alongside that improved energy stability.

How to Help Calm Winter Migraines by Supporting Cellular Energy

Your brain runs on energy, and when that energy system becomes unstable, migraine thresholds may drop. No matter the time of year, focus on addressing possible contributors — mitochondrial overload that may be driven by LA, nutrient gaps, and seasonal stressors. Once you stabilize cellular energy, migraines may become less frequent or severe. Here's how to approach this in a way that works in real life.

1. **Lower LA to support your mitochondria —** If you do only one thing, make it this. Excess LA may damage mitochondria and disrupt how your brain produces energy. It may also act like estrogen in your body, which may increase neurological sensitivity and migraine risk.

   To support your brain and overall health, keep LA intake within 2 to 5 grams per day. LA is an essential fat, so the goal is a moderate intake, not zero. That means avoiding seed oils such as soybean, corn, sunflower, safflower, canola, and cottonseed.

   It also means avoiding fried foods and most restaurant meals, because they almost always rely on these oils. I recommend using stable fats like grass-fed butter, ghee, or tallow instead. To track your intake, I recommend you download my **Mercola Health Coach app** when it's available. It has a feature called the Seed-Oil Sleuth, which monitors your LA intake to a tenth of a gram.

2. **Support mitochondrial resilience with key nutrients —** Migraines may increase when your cells lack the raw materials needed to make energy. Vitamin D may support nerve stability and inflammation control. **B vitamins**, especially riboflavin, folate, B6, and B12, help convert food into usable energy inside mitochondria. **Magnesium** helps regulate nerve signaling and excitability. CoQ10 supports the electron transport chain, which helps power your cells.

   If you struggle with frequent migraines, increase your intake of magnesium-rich foods — like leafy greens — and ask your healthcare provider whether a magnesium supplement, such as magnesium glycinate or malate, is appropriate for you. For severe cases, ask your healthcare provider whether intravenous magnesium, given under medical supervision, is an option.

3. **Support energy alongside, not instead of, symptom relief —** Many people focus only on pain relief and may overlook energy instability. When your mitochondria struggle, your brain may become hypersensitive to light, temperature shifts, and pressure changes.

By supporting energy production as well, you may reduce the need for constant coping strategies. This approach may give you control instead of reaction. Keep using any acute or preventive migraine treatment your healthcare provider has recommended.

4. **Create temperature stability for your nervous system —** Rapid shifts between cold outdoor air and warm indoor spaces may stress blood vessels and sensory nerves. If you notice migraines after going outside, layer clothing so your head, neck, and chest stay warm.

   This may reduce the sudden vascular changes that may contribute to migraine pain. I also recommend minimizing dramatic indoor temperature swings, especially at night, because temperature stability may help your nervous system relax.

5. **Lock in sleep timing to support melatonin and help calm your nervous system —** Your circadian rhythm helps regulate hormone release, temperature regulation, and pain sensitivity. When that rhythm drifts, migraine thresholds may drop. Predictable sleep timing may help support biological order.

   Melatonin plays a central role here. **Melatonin** is primarily produced in your mitochondria in response to near-infrared light exposure. It does far more than regulate rest — it helps protect brain cells, temper inflammation, and stabilize energy production inside mitochondria.

   When melatonin release is disrupted, migraine risk may rise. A 2019 systematic review found that melatonin was associated with reductions in headache frequency of 51%, intensity of 53%, and duration of 46%.*[5]

   To support this system, get bright outdoor light early in the day to anchor your circadian rhythm, then protect darkness at night by dimming lights, avoiding blue light, and sleeping in a fully dark room. This may support the natural rise and fall of melatonin that helps keep your nervous system resilient.

When you lower excess LA and replace it with steady energy support, migraine patterns may lose their intensity and frequency year-round. You're not fighting your brain anymore. You’re giving it the support that helps it stay calm.

**These findings are from research conducted in clinical settings. Results may not apply to all individuals.*

This article is for informational purposes only and does not constitute medical advice. Consult a qualified healthcare provider before making changes to your health regimen.

FAQs About Migraines in the Winter

Q: Why do migraines get worse during winter?

A: Winter may stress your nervous system from multiple directions at once. Cold temperatures can tighten blood vessels, shorter days may disrupt circadian rhythms, indoor air can dry out tissues, and daily routines may become less consistent. Together, these factors may increase neurological strain and lower your brain's ability to tolerate stress, potentially making migraines more frequent and intense.

Q: What role does LA play in migraine development?

A: Excess LA, found in seed oils and processed foods, may damage mitochondrial function. When mitochondria can't produce energy efficiently, your brain may become hypersensitive to normal stimuli like light and pressure. This energy failure may be one reason migraines escalate, especially during seasonal stress. Reducing LA intake may allow mitochondria to recover and support brain function.

Q: Why does sleep timing matter for migraines?

A: Your brain relies on consistent timing to regulate hormones, inflammation, and energy production. Irregular sleep may disrupt melatonin release, which may protect brain cells and calm inflammation. When melatonin rhythms are off, migraine thresholds may drop. Keeping a fixed wake-up time may help support rhythm and help your brain regain stability.

Q: How do daily habits influence migraine frequency?

A: Inconsistent meals, dehydration, reduced movement, and fluctuating caffeine intake may all increase neurological load. These habits don't cause migraines alone, but they may stack together and overwhelm your system. Stable routines may reduce the amount of stress your brain must process, potentially making migraines less likely to occur.

Q: What may help reduce winter migraines over the long term?

A: Consider supporting energy balance in addition to, not instead of, the treatment your healthcare provider recommends. Keep LA within 2 to 5 grams per day, support mitochondrial function with key nutrients, stabilize sleep timing, and maintain predictable daily rhythms. When your brain has reliable energy and fewer stress signals, migraine frequency and intensity may decline.

Sources and References

- [1] India Today. December 12, 2025
- [2] ENT Care Centers. December 31, 2024
- [3] American Migraine Foundation. December 14, 2017
- [4] Mayo Clinic. Migraines: Are They Triggered by Weather Changes?
- [5] Medicine (Baltimore). 2019 Jan 18;98(3):e14099