



Research Summary: Fatigue #5

As featured in Dr. Kenny Mittelstadt's video:
"Tired All the Time? Most Common Lifestyle & Root Causes of Fatigue"
Date of Publication: 04/14/2026

Research Context:

This week's topic explores how chronic fatigue isn't just about doing too much or needing more rest. It's about how your body's energy systems gradually fall out of balance over time. Many people experiencing fatigue feel like they're doing everything right, sleeping more, eating better, trying to stay consistent, and yet still not feeling like themselves. That disconnect can be confusing, and it often leads people to assume it's just stress, aging, or something they have to live with.

From a functional medicine perspective, fatigue is rarely random. It's a signal that your body may be operating in an energy deficit, where the demands placed on your system are quietly outpacing your ability to recover. This often develops through a combination of lifestyle factors, internal imbalances, and subtle system stress that doesn't always show up on standard lab work.

Key Findings from the Research:

Study 1 (PMID 33762368):

Researchers found that disrupted sleep and poor recovery patterns are strongly linked to ongoing fatigue, even when total sleep time appears adequate. It's not just about how many hours you spend in bed, but whether your body is actually moving through the deeper stages of sleep that restore energy. When sleep is fragmented or low quality, your system doesn't fully reset, which can leave you feeling tired the next day regardless of how long you slept. Over time, this creates a pattern where fatigue builds, not because you're not trying to rest, but because your body isn't able to recover efficiently. This helps explain why many people feel stuck in cycles of exhaustion despite improving their sleep habits.

Study 2 (PMID 32050677):

Researchers found that disrupted sleep and poor recovery patterns are strongly linked to ongoing fatigue, even when total sleep time appears adequate. It's not just about how many hours you spend in bed, but whether your body is actually moving through the deeper stages of sleep that restore energy. When sleep is fragmented or low quality, your system doesn't fully reset, which can leave you feeling tired the next day regardless of how long you slept. Over time, this creates a pattern where fatigue builds, not because you're not trying to rest, but because your body isn't able to recover efficiently. This helps explain why many people feel stuck in cycles of exhaustion despite improving their sleep habits.

Study 3 (PMID 39882819):

A more recent review found a strong connection between unstable blood sugar patterns and poor sleep quality, especially in people who experience nighttime awakenings. When blood sugar rises and falls throughout the day, the body has to constantly adjust, which can carry over into the night. These fluctuations can trigger stress responses that wake you up, even if there's no obvious external reason. Over time, this creates a feedback loop where poor sleep worsens blood sugar stability, and unstable blood sugar further disrupts sleep. In practical terms, this helps explain why someone might feel wired at night, wake up in the middle of the night, or experience energy crashes during the day, all as part of the same underlying pattern.



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Functional Medicine Connections:

Here's how these pieces fit together: your body doesn't create energy through one system alone. Sleep, blood sugar, nutrient status, stress chemistry, immune activity, and even gut function are all part of the same communication network. When one area becomes strained, the others often have to compensate. That compensation can work for a while, which is why many people keep functioning even as they feel more depleted. But over time, that hidden effort raises the overall load on the system and reduces how much margin you have left.

This is one reason fatigue can feel so confusing. It may look like a sleep problem on the surface, but poor sleep can affect blood sugar regulation the next day. Blood sugar swings can increase stress chemistry. Ongoing stress can interfere with digestion, nutrient absorption, and recovery.

And if nutrient status is not where it needs to be, the body has fewer raw materials to support energy production in the first place. From a functional medicine perspective, this is why fatigue is often more about patterns than a single diagnosis.

Practical Reflections & Takeaways:

Think about your own patterns for a moment. When you feel the most tired, what was happening in the day or two before that? Was your sleep more fragmented, your stress higher, your meals more inconsistent, or your recovery lower than usual? Fatigue often makes more sense when you zoom out and stop looking at it as a random symptom in isolation.

You might also ask yourself whether your body has been giving you quieter clues before the fatigue got louder. Maybe it was needing more caffeine to get through the day, feeling shaky or foggy before meals, waking up in the night, or noticing that you are no longer bouncing back the way you used to.

Those details matter. They are not just annoyances. They are part of the story your body is telling.

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