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— YOUTUBE RESEARCH SUMMARY

# Research Summary: Fibromyalgia

As featured in Dr. Kenny Mittelstadt's video: [Why Fibromyalgia Starts Years Before the Diagnosis](#)

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## — Research Context

This week's topic explores how fibromyalgia goes deeper than a pain condition that appears suddenly. It comes down to how a cellular energy system under sustained load quietly reaches a point it can no longer absorb, and how the biology driving that process has often been in motion for years before any diagnosis is made. Below are the key studies that help connect these dots.

## — Key Findings from the Research

### STUDY 1 · PMID 40470564

A 2025 review published in *Clinical and Experimental Rheumatology* examined fibromyalgia through the lens of mitochondrial dysfunction, meaning problems with how cells produce usable energy. Mitochondria are the structures inside every cell responsible for converting fuel into energy the body can run on. This review found that symptom severity in fibromyalgia tracks directly with how impaired that process is: the worse the cellular energy production, the more severe the symptoms tend to be. When mitochondria can no longer keep up with demand, the tissues that depend on consistent fuel, especially the nervous system and muscles, are the first to show it.

### STUDY 2 · PMID 38652420

A 2024 systematic review in *Current Pain and Headache Reports* used proteomics, the study of proteins a body is producing and expressing at a given moment, to identify biological differences in people with fibromyalgia. By mapping which proteins were present or absent, researchers found clear patterns of oxidative stress and metabolic disruption. Oxidative stress occurs when byproducts of energy production build up faster than the body can clear them, a sign of a system under load. These patterns existed at the molecular level, meaning the biological terrain was already measurably altered before someone reached the diagnostic threshold for fibromyalgia. The diagnosis marks the point where it became undeniable, rather than the point where it started.

### STUDY 3 · PMID 27377815

A 2017 review published in the *Annals of the Rheumatic Diseases*, conducted as part of the EULAR guidelines process, analyzed more than 100 separate meta-analyses on fibromyalgia management. Of all the interventions reviewed, exercise was the only one that earned a strong recommendation with solid evidence behind it. Pharmacological options were rated at weak-evidence or expert-opinion level. Medication can serve a real purpose for many people, but this finding points toward something the other two studies also suggest: understanding the terrain before choosing a tool, and sequencing interventions based on what the system can currently tolerate, may matter more than any single approach.

## — Functional Medicine Connections

The mitochondria are the infrastructure every other system in the body depends on. The gut needs reliable cellular fuel to maintain its lining and regulate its immune response. The inflammatory response needs it to stay calibrated rather than stay switched on. The cell membrane, which controls what enters a cell and what gets cleared out, needs it to maintain its structure. When mitochondrial function is compromised, each of these systems is running on less than it needs.

Piecemeal interventions, addressing one signal at a time, tend to produce partial results in fibromyalgia. The gut intervention, the anti-inflammatory protocol, the targeted supplement, each may address a real piece of the picture. When the shared upstream driver, the cellular energy capacity that makes those systems function, is left out of the investigation, results tend to plateau. Addressing a symptom of the system without addressing the system itself leaves the terrain unchanged.

The proteomic research adds another layer to this. The molecular patterns of oxidative stress and metabolic disruption found in fibromyalgia patients are evidence of a biological environment that was already altered, rather than consequences of the pain itself. The nervous system's pain threshold recalibrates based on what the cellular environment is signaling, and under sustained oxidative load that recalibration moves in the wrong direction. Understanding where a person currently sits on that curve, and what the sequence of contributing factors looks like, changes the entire question of what the next right step should be.

## — Practical Reflections & Takeaways

Looking back at the period before your symptoms became impossible to ignore, what was your body asking you to slow down that you kept pushing through? What were you compensating for, and for how long?

If you have tried interventions that helped partially but never fully, what shifted when you slowed them down or stopped? That pattern, what moved and what did not, is some of the most useful information you carry about where your system currently is.

## — References

Iannuccelli, C., Favretti, M., Dolcini, G., et al. (2025). Fibromyalgia: one year in review 2025. Clinical and Experimental Rheumatology. doi: pending. PMID: 40470564.

Gkouvi, A., Tsiogkas, S. G., Bogdanos, D. P., et al. (2024). Proteomics in patients with fibromyalgia syndrome: a systematic review of observational studies. Current Pain and Headache Reports. doi: pending. PMID: 38652420.

Macfarlane, G. J., Kronisch, C., Dean, L. E., et al. (2017). EULAR revised recommendations for the management of fibromyalgia. Annals of the Rheumatic Diseases, 76(2), 318–328. doi: 10.1136/annrheumdis-2016-209724. PMID: 27377815.

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