

# WHAT IS POST-EXERTIONAL MALAISE (PEM) & POST-EXERTIONAL SYMPTOM EXACERBATION (PESE)?

PEM is the hallmark feature of ME/CFS. Now being recognized in a subset of individuals with post-acute sequelae of COVID (PASC) also known as Long COVID (LC).

PEM/PESE is the worsening/exacerbation of a patient's symptoms and function after exposure to exertion (physical, cognitive, emotional, orthostatic, or sensory) that was previously tolerated. It may be immediate or manifest within hours or days. PEM/PESE can also be episodic or cumulative. It may take hours, days, weeks, or even longer to return to baseline. Sometimes a new, less functional baseline is established.



## PEM/PESE SYMPTOMS

- “Flu-like symptoms” (fevers, sore throats, swollen glands, arthralgia, myalgia, fatigue)
- Cognitive (brain fog, word-finding difficulties, reduced concentration, etc.)
- Unrefreshing sleep (paradoxical sleep patterns, “wired but tired,” etc.)
- Headaches (including migraine)
- Sensory sensitivity (light, sound, smell, touch, vibration, temperature)
- Orthostatic intolerance (very common in ME/CFS)

## PEM/PESE FUNCTIONAL IMPAIRMENTS ARE THE RESULT OF SYSTEMIC IMPAIRMENTS:

- Mitochondrial
- Autonomic
- Metabolic
- Immunologic
- Neurologic/CNS
- Cardiovascular
- Gastrointestinal
- Musculoskeletal
- Hypothalamus-Pituitary-Adrenal Axis (HPA)

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## PEM/PESE EXPERIENCE

It's not uncommon for people experiencing PEM/PESE to be restricted to bed during the PEM/PESE cycle. They may struggle to complete even basic ADLs. Those on the severe and very severe scales may become completely dependent.



## PEM/PESE CLINICAL IMPLICATIONS

- PEM/PESE is perhaps the most debilitating, miserable, and frustrating aspect of ME/CFS and LC.
- Whether prescribed or on their own accord, patients that push through their symptoms may eventually experience a particularly severe or prolonged PEM/PESE cycle.
- It has been long recognized by clinical providers who treat ME/CFS that continued and repeated episodes of PEM/PESE within any one individual appear to be associated with a worsened long-term functional baseline.