

Antifragility, rest, and low back pain

Paola Guraieb-Chahín^{1*}, and Adriana Cabrera-Perdomo²

¹Neurological Center (CENOR), ABC Medical Center; ²Blanco Yoga. Mexico City, Mexico

Dear Editor,

Antifragility is a term coined by Nassib Nicholas Taleb in his book *Antifragile: things that gain from disorder*¹. It consists in the ability of a system to benefit from stressors. Taleb proposes some definitions in his thesis: “robust” to describe systems that resist stressors, “resilient” for those systems that recover from stressors, and the term “fragile” to describe systems that are negatively affected in response to stressors¹. In addition, the author proposes that randomness benefits systems when they are antifragile¹. Thus, an antifragile system benefits from both stressors and randomness.

In medicine, there are several examples of the benefits of “antifragility.” While sustained physical or emotional stress is considered detrimental, certain kind of stressors could be beneficial. The easiest to conceptualize is physical exercise. Other examples would be strengthening the immune system with recurrent infections in childhood, or by immune system activity with exposure to the gut microbiome. There are, however, numerous medical practices today that favor the “fragility” of the body. Such practices keep the body away from stressful situations from which it could benefit. The most common example of these practices is rest.

Rest was a commonly prescribed treatment in the 20th century as a treatment for a variety of injuries, including injury to the spine and spinal cord. Over time, the negative impact of rest has been recognized as a slow and even diminished healing factor for the patient. Bed rest was a common practice during the 19th century and did not suffer counter arguments until the Second World War, when, faced with the need for beds in hospitals, soldiers were motivated to get up and

mobilize shortly after an injury had occurred. These individuals recovered faster than soldiers confined to bed for an extended period of time².

Spinal injuries are common conditions, and despite the great physical and emotional burden it places on sufferers, rehabilitation after an injury remains an under-researched area³. Some authors have suggested that rest after acute spinal cord injury improves bone marrow perfusion. However, there is insufficient evidence to justify that prolonged periods of rest (6 weeks or more, in the absence of hemodynamic or biomechanical instability) lead to a better prognosis⁴. In fact, current recommendations favor the early mobilization of patients. Rest for long periods of time has been associated with significant complications, including pressure ulcers, contractures, muscle atrophy, respiratory tract infections, and cardiovascular complications, as well as the psychological implications that rest has for the patient⁵.

In the case of patients with acute low back pain, first contact physicians continue to provide rest as a tool, often with little scientific evidence to support it. Low back pain is a very prevalent medical condition (40% in a person's life) and is the leading cause of disability globally⁶⁻⁸. According to epidemiological studies⁸, 90% of low back pain problems correspond to non-specific low back pain and lumbar radicular syndromes. Frontline recommendations include staying active and movement education. Adjuvant options include heat application, manual therapy, NSAIDs, and structural exercise. Guidelines currently do not recommend imaging patients (unless serious spinal pathology is suspected) and avoid strong analgesics including opioids⁹. However, a minority of patients receive messages from the first contact physician

*Correspondence:

Paola Guraieb-Chahín
E-mail: paola.guraieb@gmail.com

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to stay active and exercise, while inappropriate use of analgesia and imaging persists⁷. Worryingly, patient care, particularly in emergency departments, is dominated by guideline interventions that are unnecessary, costly, and would likely result in more harm than benefit.

Low back pain benefits from antifragility, movement, and situations that can, to some extent, “stress” the spine. Flexion, extension, and lateral column movements decrease the intradiscal pressure and therefore favor conservation of the nucleus pulposus of the disk¹⁰. When the cause of the patient’s painful symptoms is thought to be nerve root injury, it is usually treated through the administration of anti-inflammatory analgesics. However, the evidence for effectiveness in local anti-inflammatory action is poor, and the risk of adverse effects is important¹¹. Movement-based interventions, such as stretching, or practices of oriental origin (such as yoga) have also been evaluated in randomized studies in this type of patients and have shown effectiveness in improving function and reducing symptoms, with benefits lasting for months¹².

Consideration of behavioral and other less invasive interventions can also be of benefit to the patient. Meditation techniques have been evaluated in systematic reviews and meta-analyses of controlled trials^{11,13} concluding that they are safe and effective interventions. Meditation is the practice of sustaining uninterrupted attention at one point; it is the redirection of attention to the source of meditation, in a sustained way that eventually causes the subject to meditate. The neuro-anatomical and physiological effects of meditation practices have been continuously reported, as well as how psychosocial factors are linked to pain and its associated disability¹². These systematic reviews have postulated the advantage of meditation in the intensity and degree of disability of chronic back pain, and the improvement in the quality of life of patients^{11,13}.

We propose to consider less invasive interventions in the treatment of patients with low back pain. A multidisciplinary approach considering strengthening and flexibility as well as mind body connection strategies such as meditation. In Nassib Nicholas Taleb’s terms, more conservative treatment techniques would mean more robust systems. That is, more resistant to stressors and therefore more antifragile. Hence, chronic back pain benefits from antifragility.

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Conflicts of interest

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Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

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