

Resilience in the Face of Chronic Pain

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CHRONIC PAIN & FATIGUE RESEARCH CENTER

UNIVERSITY OF MICHIGAN HEALTH SYSTEM

Resilience in the Face of Chronic Pain

TOPICS

- Understanding the nature of pain helps us understand the potential power of resilience.
 - The emergence of positive psychology and its implications for physical health.
 - Positive affect and resilience – implications for individuals with chronic pain.
 - Integrating positive affect skills into everyday practice and life.
-

The nature of pain.

These studies tell us three very important things about the nature of pain:

- *Thoughts, emotions and pain are all neural events processed by some of the same areas of the brain,*
- *Damage/tissue injury can be optional in the experience of pain,*
- *Psychological, affective (emotional) and attentional processes are associated with the experience of pain.*

Pain is much, much more than simple stimulus and response.

The nature of fibromyalgia pain.

JAMA The Journal of the
American Medical Association

Clinical Review & Education

Clinical Crossroads

Fibromyalgia A Clinical Review

Daniel J. Clauw, MD

IMPORTANCE Fibromyalgia is present in as much as 2% to 8% of the population, is characterized by widespread pain, and is often accompanied by fatigue, memory problems, and sleep disturbances.

OBJECTIVE To review the epidemiology, pathophysiology, diagnosis, and treatment of fibromyalgia.

[+](#) Author Video Interview at jama.com

[←](#) Related article page 1570 and JAMA Patient Page page 1577

[+](#) Supplemental content at jama.com

[+](#) CME Quiz at

Mechanistic Characterization of Pain

Any combination may be present in a given individual

Peripheral (nociceptive)

- Inflammation or mechanical damage in tissues
- NSAID, opioid responsive
- Responds to procedures
- Classic examples
 - Acute pain due to injury
 - Osteoarthritis
 - Rheumatoid arthritis
 - Cancer pain

Neuropathic

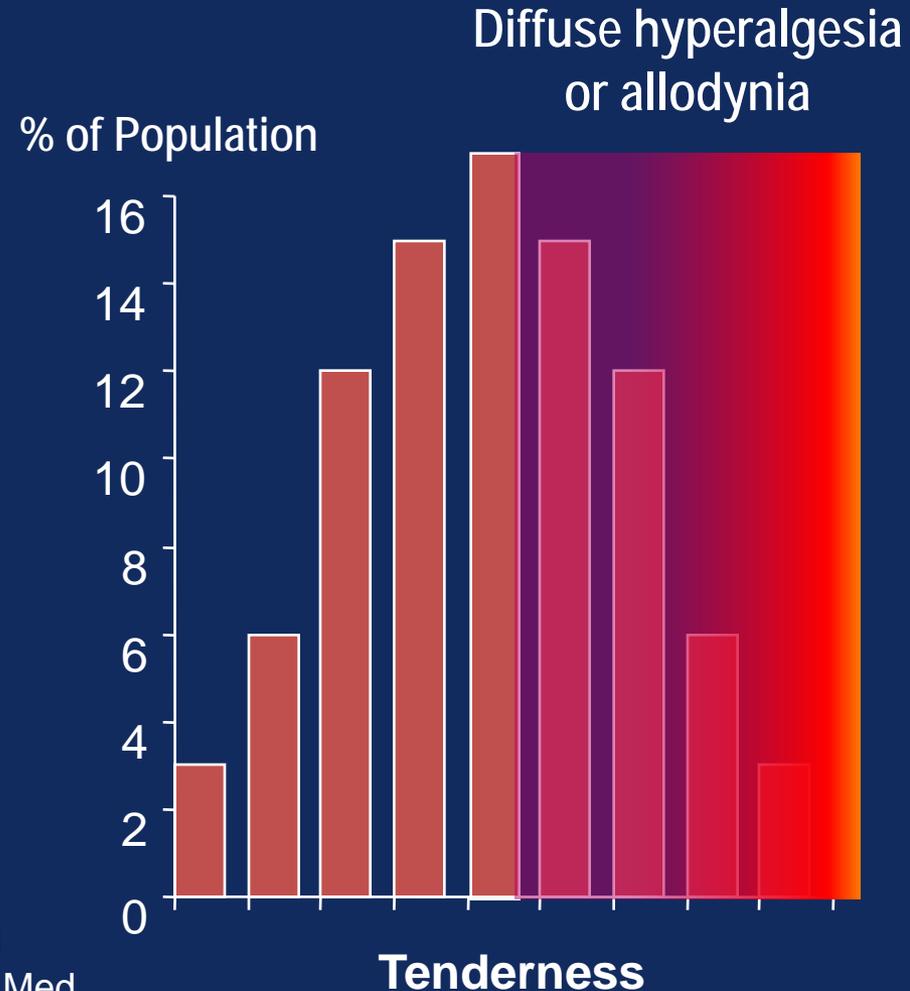
- Damage or dysfunction of peripheral nerves
- Responds to both peripheral (NSAIDs, opioids, Na channel blockers) and central (TCA's, neuroactive compounds) pharmacological therapy
- Classic examples
 - Diabetic neuropathic pain
 - Post-herpetic neuralgia

Central (non-nociceptive)

- Characterized by central disturbance in pain processing (diffuse hyperalgesia/allodynia)
- Responsive to neuroactive compounds altering levels of neurotransmitters involved in pain processing
- Classic examples
 - **Fibromyalgia**
 - Irritable bowel syndrome
 - TMJD
 - Tension headache

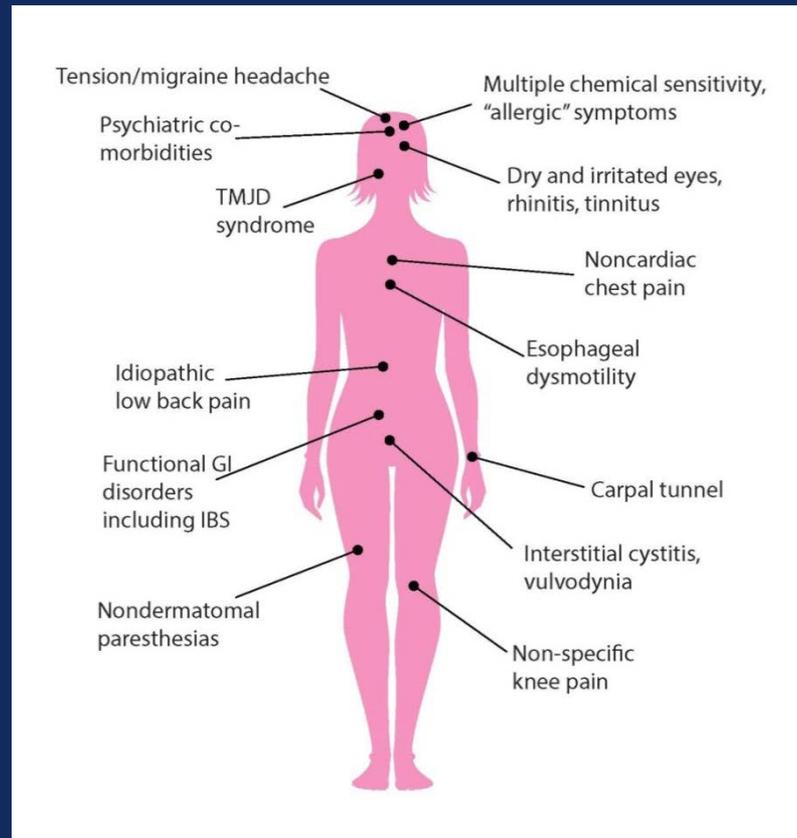
Pain sensitivity in the general population.

- Like most other physiological processes, we have a “volume control” setting for how our brain and spinal cord processes pain¹
- This is likely *set* by genetic factors²⁻⁴ and *modified* by neurohormonal factors, neural plasticity and environmental factors
- The higher the volume control setting, the more pain we will experience, irrespective of peripheral nociceptive input



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Ten to fifteen percent of the population at risk for a centralized pain disorder



Tremendous overlap, widespread pain = fibromyalgia

"Prone" to Chronic Pain

Pain Prone Phenotype

- Female
- Early life trauma
- Family and/or personal history of chronic pain (youth)*
- Chronic centrally-mediated symptoms (fatigue, poor sleep, cognitive)
- Negative thoughts, affective disturbance
- Diffuse hyperalgesia, attenuated descending analgesia

Exposure to "stressors" or acute, peripheral nociceptive input (incl. emotional pain)

New or different region of chronic pain

Negative Affect

Negative affect:

- Sadness
- Fear
- Anger
- Guilt
- Shame
- Loneliness
- Frustration
- Jealousy
- Disgust



Negative affect associated with chronic pain

- Numerous studies linking negative affect to key factors in chronic pain:
 - Higher clinical pain intensity
 - Higher pain report
 - Worse weekly pain
 - Lower pain tolerance
 - Increased experimental pain sensitivity
 - Less tolerance to pain
 - Hyperalgesia
 - Greater use of pain medication
 - Worse analgesia (pentazocine)
 - Pain-related disability
 - Increased fatigue
 - More physical symptoms
 - Greater impact of pain on cognition
 - Higher levels of psychiatric comorbidity
 - Poor quality of life
 - Poor self-efficacy for pain management

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The deadly nature of pain?

76

J. McBeth *et al.*

TABLE 2. Pain status and subsequent all-cause mortality risk

Pain status	Number in group	Person-years of follow-up	Number of deaths	Rate ^a	Crude		Adjusted			
					MRR	(95% CI) ^b	MRR ^b	(95% CI) ^b	MRR ^c	(95% CI) ^b
No pain	1993	14 308	389	27.2	Referent	–	Referent	–	Referent	–
Regional pain	1590	10 954	411	37.5	1.9	1.6, 2.3	1.2	1.02, 1.4	1.2	1.01, 1.4
Widespread pain	761	5178	217	41.9	2.4	1.9, 2.9	1.3	1.1, 1.5	1.3	1.1, 1.5

^aPer 1000 person-years. ^bAdjusted for age, sex, practice and ethnic group. ^cPlus adjustment for Townsend score.

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ORIGINAL ARTICLE

Mortality in Fibromyalgia: A Study of 8,186 Patients Over Thirty-Five Years

FREDERICK WOLFE,¹ AFTON L. HASSETT,² BRIAN WALITT,³ AND KALEB MICHAUD⁴

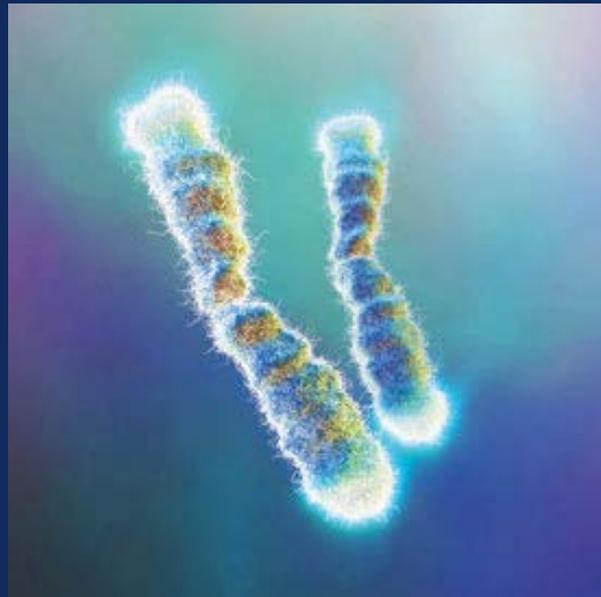
ARTHRITIS & RHEUMATISM
Vol. 62, No. 10, October 2010, pp 3101–3108
DOI 10.1002/art.27623
© 2010, American College of Rheumatology

Mortality in a Cohort of Danish Patients With Fibromyalgia

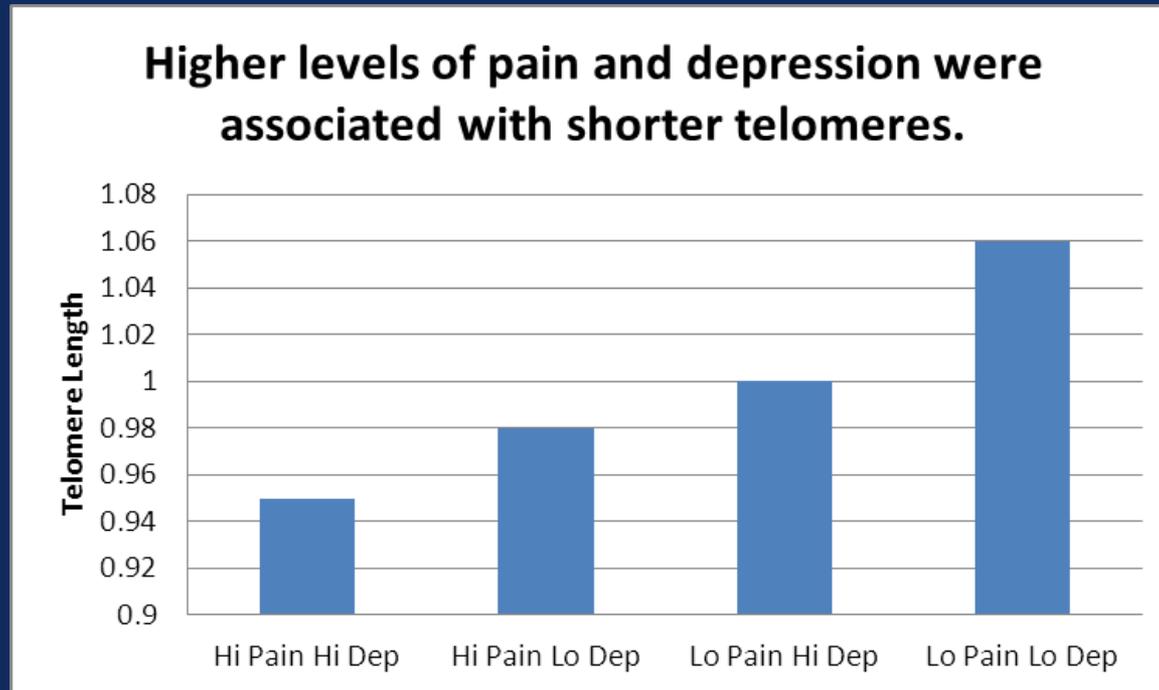
Increased Frequency of Suicide

Lene Dreyer,¹ Sally Kendall,² Bente Danneskiold-Samsøe,³
Else Marie Bartels,² and Henning Bliddal³

The nature of pain – premature aging

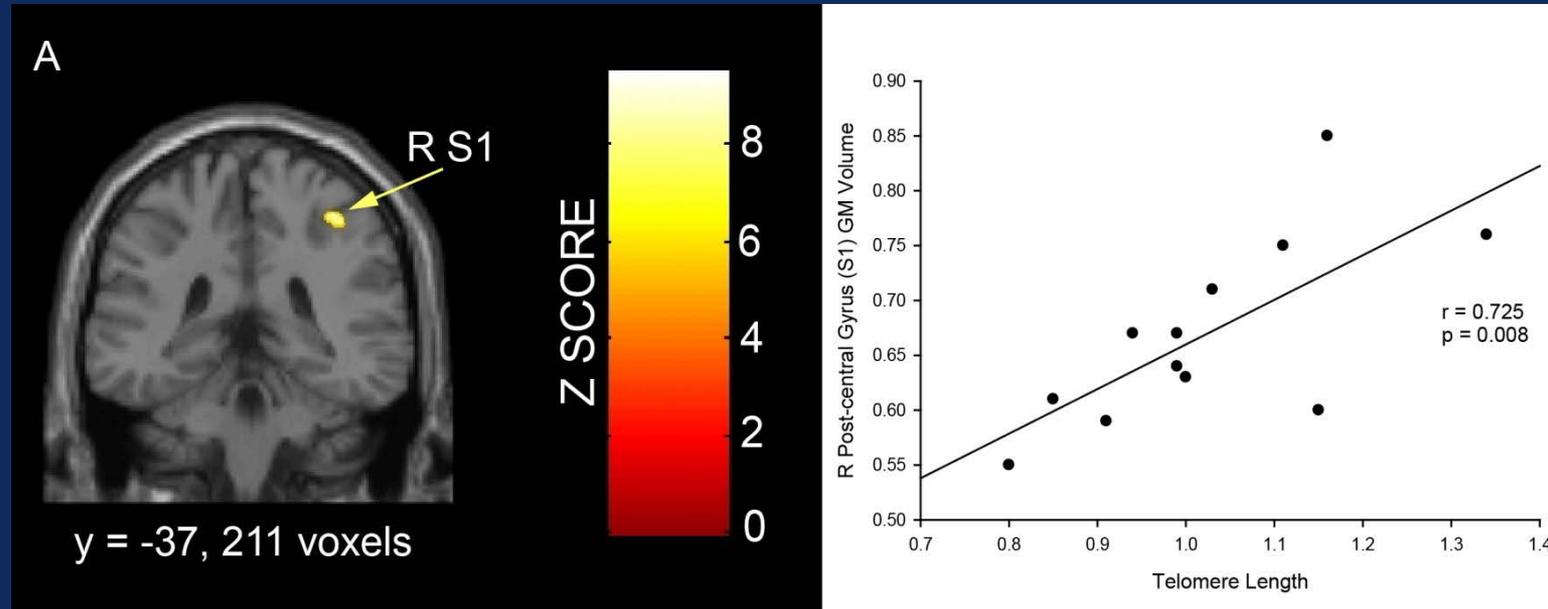


The nature of pain – premature aging



The difference between groups 1 and 4 was equivalent to > 6 years of aging.

The nature of pain – premature aging



Statistical parametric map indicating brain regions showing a significant positive correlation between gray matter volume and telomere length.

Fibromyalgia patients with shorter telomeres showed less GM volume in **right primary somatosensory cortex**.

The promise of Positive Psychology

Promoting resilience as a science

- The science of human behavior, derived from the Greek word 'psyche' meaning spirit, or soul.
- Psychology has become associated with psychopathology – what is wrong with the person.
- The goal has been to ameliorate the ‘bad’ (depression, anxiety, dysfunctional cognitions) - to return the person to a state consistent with the absence of ‘bad’.
- “The aim of positive psychology is to catalyze a change in psychology from a preoccupation only with repairing the worst things in life to **also building the best qualities in life**”

Martin E. P. Seligman



Resilient individuals with chronic pain

Resilient Subgroups

- No study to date in patients with chronic pain has demonstrated that all of the patients evaluated had a particular negative trait, psychiatric comorbidity, dysfunctional behavior, or set of unfortunate circumstances.
 - Always a resilient subgroup – about 30% of patients.
-



The power of positive affect!!!

- Positive affective variables in many cases are more powerful predictors of health outcomes than negative affective variables!
-

Positive affect a better predictor of outcome in pain?

- Solid prospective and experimental studies found PA related to:
 - Lower overall pain ratings
 - Lower pain intensity scores
 - Decreased same day pain report
 - Decreased subsequent day pain report
 - Decreased subsequent week pain report
 - Increased induced pain tolerance
 - Decreased induced pain sensitivity
 - Longer tolerance to pain
 - Evoked potential moderation
 - Decreased use of pain medication
 - Lower post-op pain ratings
 - Greater walking times post-surgery
 - Length of stay in colorectal cancer surgery

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Positive affect plus

Positive affect can be a specific construct, e.g., as measured by the PANAS, or an “umbrella” term that enables the study of a number of factors associated with resilience.

- Self-efficacy
- Social support
- Psychological well-being
- Internal locus of control
- Extraversion
- Hardiness, perseverance, grit
- Optimism
- Determination/courage
- Benefit finding, gratitude & PTG
- Spirituality and prayer
- Forgiveness
- Sense of coherence

Positive affect and Fibromyalgia

Fibromyalgia

- PA associated with lower levels of:
 - Pain¹
 - Fatigue²
 - Pain catastrophizing³
 - Psychiatric comorbidity⁴
- Deficit of PA!! Flat or normal levels of NA
- With elevated stress, a greater loss in positive affect (PA) is seen in FM compared to other chronic pain conditions. Plus, inability to sustain PA in stressful times adds to pain and fatigue.⁵
- Zautra: dysfunctional positive affect regulation (the lack of ability to sustain positive affect during times of increased pain or stress)
- New evidence – less efficient in modulating pain by positive affect (compared to health controls).⁶



Affective balance and pain

Arthritis & Rheumatism (Arthritis Care & Research)
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DOI 10.1002/art.23708
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ORIGINAL ARTICLE

The Relationship Between Affect Balance Style and Clinical Outcomes in Fibromyalgia

AFTON L. HASSETT,¹ LAURA E. SIMONELLI,² DIANE C. RADVANSKI,¹ STEVEN BUYSKE,³
SHANTAL V. SAVAGE,¹ AND LEONARD H. SIGAL⁴

- Fibromyalgia patients (n=79) and medical controls (n=92) were drawn from 240 patients assessed at the Lyme Disease Clinic of UMDNJ-Robert Wood Johnson Medical School.

NIMH K08 MH65360-01

Affective balance and pain

- Groups differed regarding affect balance style ($P = 0.0061$), with FM patients being more likely than controls to be categorized as:
 - Depressive (odds ratio 5.60)
 - Reactive (odds ratio 3.81).
- Reactive and Depressive ABS were associated with greater pain ($P = 0.001$) and worse functioning ($P < 0.0001$) compared with Healthy ABS.
- Reactive ABS were associated with the highest risk meeting DSM-IV criteria for having a Pain Disorder.
- Significant association between ABS and psychiatric comorbidity ($P < 0.0001$), Depressive and Reactive ABS having a 9.00 and 4.75 odds ratio, respectively, of having psychiatric comorbidity compared with Healthy ABS.

Affect and allostatic load

- Allostatic Load: the price the body pays for repeatedly responding to excessive stress and/or when the stress response fails to “turn off” when no longer needed.
 - Increased risk for:
 - Hypertension,
 - Cardiovascular disease,
 - Insulin dependent diabetes,
 - Abdominal obesity,
 - Cognitive dysfunction with aging.

Affect and allostatic load

Psychobiological processes underlying the relationships between PA and health.

- PA associated with:
 - Cortisol output
 - Heart rate/HRV
 - Blood pressure
 - Inflammatory markers (IL-6)
- Relationships are independent of NA and depressed mood!





Interventions that enhance resilience



Interventions that enhance resilience

Social Support Round Robin

- Make eye contact with somebody sitting next to you. Give him or her a **fist bump**.
 - Take a moment and think about something you really like about that person.
 - Choose something special about him or her that is generally seen as a character strength (creativity, intelligence, integrity, courage, sense of humor, perseverance).
 - If this person is a stranger, choose something about his or her presentation or demeanor.
 - If this person is somebody with whom you have a conflict, all the more important to identify something you like and/or respect.
 - Now, tell the person what it is that you appreciate and/or admire.
-

Interventions that enhance resilience

Keeping a Gratitude Diary

1. Every day, write down 5 things for which you are grateful. It can be anything - feeling the sunshine on your face, happy that a friend phoned, receiving a present, being able to take a walk, anything. Work out a time to do this. Ideally, around the same time every day works best.
 2. Make a commitment to yourself that you will write down 5 things every day - this is very important.
 3. The 5 things MUST be DIFFERENT each time. Never repeat anything.
 4. Smile as you write them down. This will help you to feel grateful.
 5. You can write a lot about each thing, get really detailed, write why you are grateful for it. Or if you don't have time, just write one line.
-

Interventions that enhance resilience

The Gratitude Visit

1. Think of the people still alive — parents, friends, teachers, coaches, teammates, employers, and so on — who have been especially kind to you but have never heard you express your gratitude.
2. Write and rewrite a Gratitude Letter to one of these individuals, describing in concrete terms why you are grateful. The letter should name the specific things they did for you, and exactly how it has affected your life. Tell them what you are doing now and how you often remember his or her efforts. Make it sing.
3. Call the person in advance and make an appointment with them. Do not tell them the purpose of the visit except in vague ways, e.g., “there’s something important I would like to tell you about.”
4. Deliver it personally and read the letter aloud to them in his or her presence. Then discuss with each other how you both feel about each other, about gratitude specifically, and about the future.

Interventions that enhance resilience

Intentional Kindness - Everyday we do kind things and fail to recognize the frequency, meaning and appreciation by others of these small acts.

- 1) In this exercise, you will on a daily basis do one intentionally kind thing for a loved one, one for a complete stranger and one for yourself.
- 2) When you do these kind things for others, look the person in the eye and be gracious. Expect nothing in return, but acknowledge the gratitude if offered.
- 3) When you do the kind thing for yourself, acknowledge the importance of self-care and kindness.
- 4) Log these acts in a journal every day for seven days. Note what the act of kindness was and how doing it made you feel.

Interventions that enhance resilience

Savoring a Beautiful Day:

1. Set aside a block of time for your own pleasures. Set aside a minimum of one hour or a maximum of a full eight-hour day. A half-day is just about perfect for the first time you do this exercise.
2. Block that time out on your calendar now, and do not let anything interfere, if possible. Next plan one activity or, even better, a sequence of activities that brings you real pleasure, and carry them out as you planned them.
3. Here is the further twist. Savor each of the activities using all of your senses and with feelings of gratitude and optimism.

Interventions that enhance resilience

Distraction

- Good evidence for distraction through pleasant and engaging stimuli.
 - Imagery
 - Music
 - Video games
 - Toys
 - Virtual reality
 - Reading
 - Movies (engaging!)
- Concept of FLOW



Interventions that enhance resilience

- Concept of “Flow:” the mental state of operation in which the person is fully immersed in what he or she is doing by a feeling of energized focus and full involvement.

Mihaly Csikszentmihalyi

Example: Athlete absorbed in a competition
(remember Devin?)



Patient empowerment via technology.

Novel interventions based on the principles of positive psychology.

- Tailored for chronic pain
- Increase well-being and functional status
- Self-management or with HP coaches (nurses, PT, OT)
- Web-based, open access (CBT [FibroGuide], PPT)



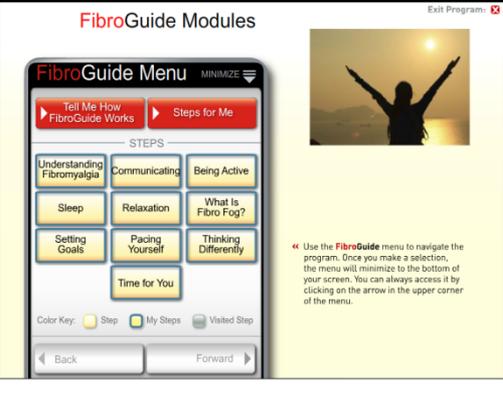
Patient empowerment via technology.

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FibroGuide

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Pacing Yourself

Feeling well and doing too much
Have you ever done too much when you feel well and then "paid for it" later? If so, you may have fallen into a frustrating cycle in which you exert it and then feel worse, which then causes you to have more pain and fatigue. Overexerting yourself can cause a flare-up, which is a term that is used to describe a transient appearance or worsening in symptoms such as feeling muscle and joint pain, feeling tired, or having trouble getting the right kind of sleep.

When you get caught up in this catch-up/flare-up cycle, you may:

- Feel well and do too much
- Have a flare-up
- Fall behind in tasks while you rest and recover
- Repeat the cycle when you feel well again

Many people with fibromyalgia may find it easier to fall into this catch-up/flare-up cycle because tasks, like household chores, that used to be quick and simple may now take longer to complete. This can make it hard to accomplish everything that you need to do each day. As a result, you may feel the need to make up for bad days by playing catch-up on good days.

Do more by pacing yourself
Learning how to pace yourself can help you break this catch-up/flare-up cycle. Pacing

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<http://fibroguide.med.umich.edu/>

Unmet needs?

How do we modify our approach to at risk patients?

- Better assessment strategies (e.g., questionnaires, brief interviews)
 - Prophylactic medications (e.g., gabapentin, SNRIs)
 - Integrate non-pharmacological intervention (e.g., CBT, resilience)
 - Follow-up specific to psychiatric symptoms
 - Enhance environment and practices
-

Unmet needs?

Healing environment

- Music
- Soft lighting
- Attractive design, homey
- Therapeutic aromas



Interventions that enhance resilience

Expectations and Language

- Neil Farber, MD - use of "Comfort Scores"
 - "How comfortable are you?"
 - "What can we do to make you more comfortable?"
 - Opens possibility for: another pillow, drink of water, an additional blanket instead of more pain medication.
- Post Caesarean section recovery, women randomized to "comfort" or "pain" scores groups. Those in the comfort group reported less bother from the surgery, less pain unpleasantness and requested less analgesia.





Comprehensive “intensive” care.

Comprehensive multidisciplinary pain care in a healing environment.

Two-week intensive program for patients and family.



Comprehensive care.

Program and culture inspired by the principles of positive psychology.



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