



Bateman Horne Center

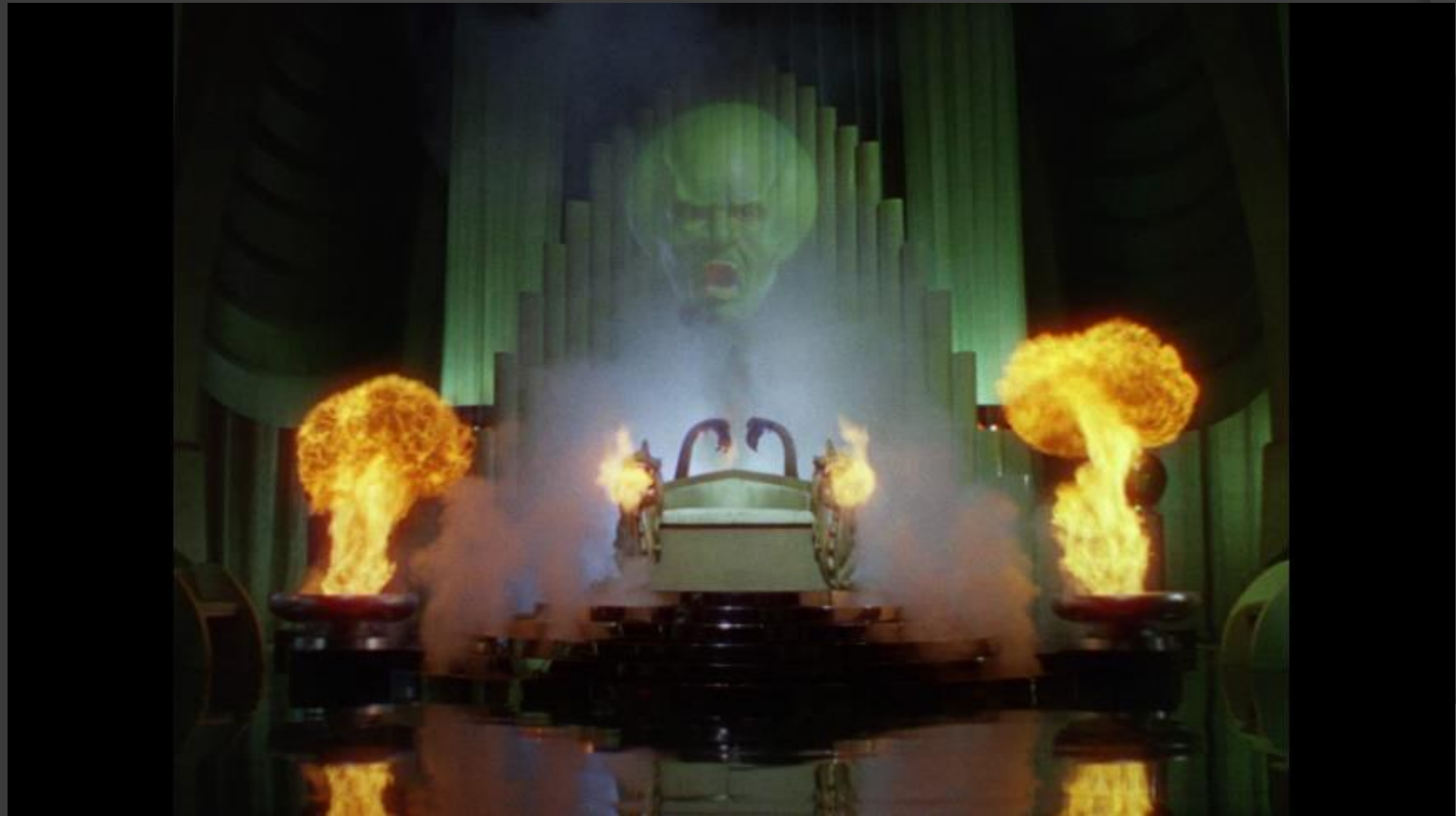
RESEARCH | CLINICAL CARE | EDUCATION

Lucinda Bateman MD

August 2016

SIMPLE BUT EFFECTIVE TOOLS FOR MANAGEMENT OF MECFS AND FM

We are not in Kansas...



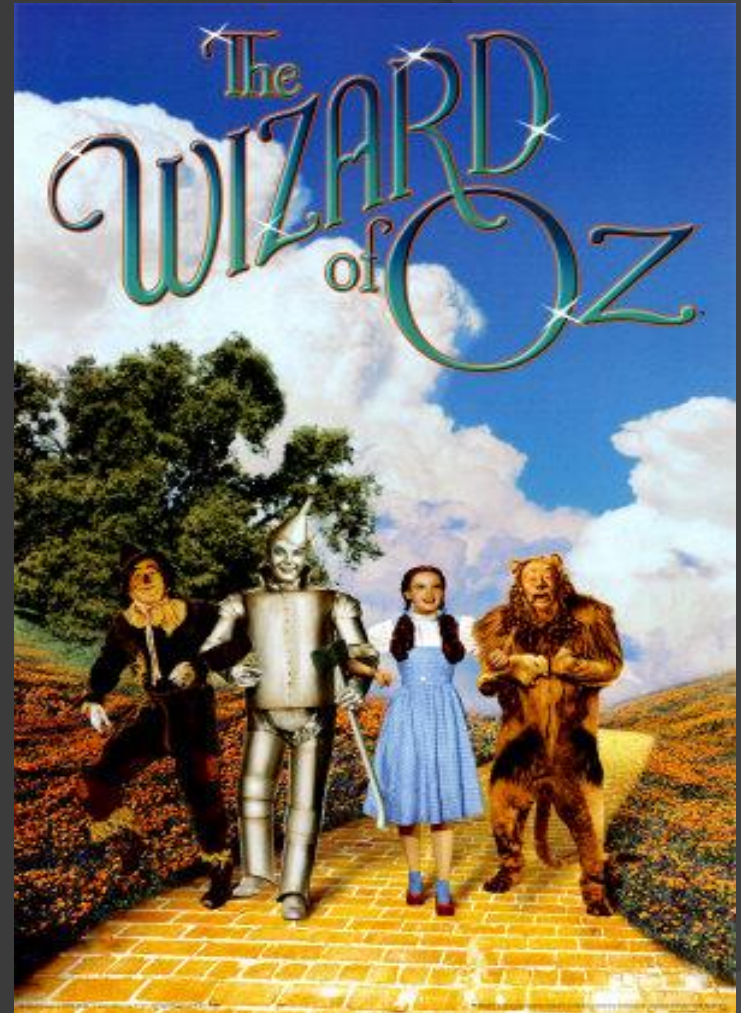


Once after a long
consultation my
patient said:



"You remind me of
the Wizard of Oz"

- ◉ We want powerful wizards and good witches to give us the things we long for...
- ◉ Yet the answers are within us.
 - courage, heart, brains
- ◉ There is no place like home...
 - modern medicine and science
- ◉ Its time to go home to Kansas



ME/CFS Clinical Diagnostic Criteria:

CORE criteria* (all are required for diagnosis)

- 1) **Impaired function** related to exhaustion/fatigue/low stamina
- 2) **PEM:** post exertional malaise (illness relapse)
- 3) **Unrefreshing sleep**
- 4) A. **Cognitive impairment** and/or
B. **Orthostatic intolerance**

***Must be moderate-severe and frequent (present >50% of time)**

Other common features of illness

- Pain**
- Immune manifestations** (allergy, inflammation, sensitivities)
- Infection** (viral or atypical)

A time tested approach to Supportive and Self Management:

- ⦿ **Address all other diagnosable conditions**
(differential diagnosis and treatment plan)
- ⦿ **“Pace” activity to prevent relapse symptoms**
(preventive activity management)
- ⦿ **Address the major aspects of illness**
 - **SLEEP:** Achieve most restorative
 - **ORTHOSTATIC INTOLERANCE:** improve
 - **PAIN:** control severe pain
 - **MENTAL HEALTH:** build emotional resilience
 - **FITNESS:** Achieve best based on tolerance
 - Strength, flexibility, balance, weight, “cardio”



MECFS Differential diagnosis:

- History (symptoms, function, PEM) and physical exam. Include 10 min stand test, careful neurologic exam, observe cognition and fatiguability. Discuss core criteria.
- Thoughtful assessment of mood/mental health.
- CBC, CMP, TSH (free T4), ESR (and/or CRP), UA**
 - fasting lipids, Vit D, Vit B12, testosterone, FSH, CPK...
- Routine preventive tests:** Mammogram, pap, prostate exam, immunizations, colon cancer screen...etc
- Appropriate workup of all symptoms and exam or test findings:** Fatigue, exercise intolerance, focal and generalized pain, headaches, neurocognitive complaints, disturbed sleep, dizziness, murmurs, orthostatic BP and P, elevated LFT's, abnormal brain MRI, etc.

Medical Illness

Neurologic—MS, Parkinsons, dementia, stroke, sleep apnea, stimulant withdrawal

Malignant---active/metastatic, treatment

Autoimmune/inflammatory---rheumatoid arthritis, lupus, allergies

Infections---sinusitis, pneumonia, bladder, mono, STD/PID

Cardiopulmonary—CHF (inadequate pump)
CAD (muscle ischemia), arrhythmia, COPD

Metabolic---anemia, vitamin deficiencies, hypoxemia, obesity, low sodium,

Endocrine/hormone---menopause, low testosterone, hypothyroidism, metabolic syndrome, diabetes, adrenal insufficiency, Cushing's disease, pregnancy

FM— central sensitivity syndrome
hyperalgesia/allodynia

MECFS--CNS, neuroendocrine, infection, autoimmune, autonomic dysregulation, orthostatic intolerance

Medications: antihistamine, cardiac, cholesterol, mental health

Deconditioning

Obesity

Being stressed, overextended

Poor sleep

HPA-axis dysregulation

Poor nutrition

Pain

MH Disorders

Grief

Depression of all types

Anxiety disorders

Bipolar disorder

Psychotic illness

Alcohol and drug abuse

Eating disorders

FATIGUE

**AGE
related
fatigue**

Examples of medical conditions that may cause *similar or overlapping presentation*:

- Medication side effects
- Nutritional deficiencies
 - B vitamins. Vitamin D.
- Chronic active infection
 - Hepatitis B or C, HIV, TB
 - Lyme disease
 - Sinusitis
- Cancer, primary and recurrent
- Cancer treatments
- Obesity, severe
- Primary sleep disorders
- Allergies, **mast cell disorders**
- Cardiopulmonary disease
 - PFO (patent foramen ovale)
 - Cardiomyopathy
 - POTS
 - Pulmonary hypertension
- Chronic autoimmune or inflammatory diseases
 - Lupus, Polymyalgia Rheumatica (PMR)
 - **Celiac disease**
- Ehlers Danlos Syndrome (EDS)
- Neurological Diseases
 - **Neuroinflammatory disorders (MS, PD...)**
 - **Autonomic NS disorders**
- Endocrine conditions
 - Thyroid disorders
 - Hyperparathyroidism
 - Menopause, female or male
 - HPA-axis disorders
- Statin induced myopathy
- Rare conditions

"Fatigue" and PEM

1) Limited stamina. Small envelope. Low threshold for relapse

physical. cognitive. orthostatic. sensory.

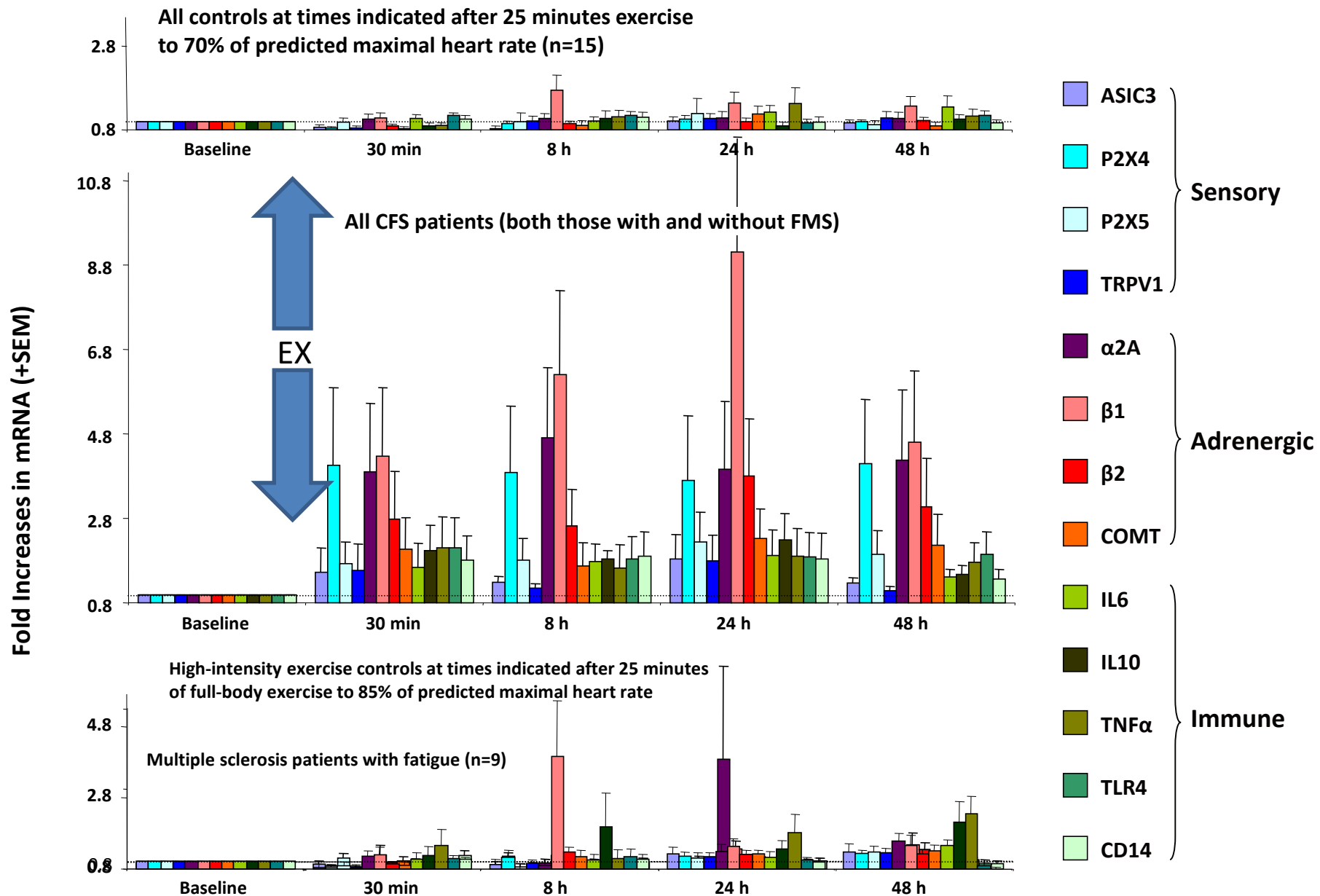
2) “PEM” is illness relapse. The consequence of doing more than the envelope allows. (there are other causes of illness relapse as well)



“Moderate exercise increases expression for sensory, adrenergic, and immune genes in Chronic Fatigue Syndrome patients but not in normal subjects.” Alan R. Light, Andrea White, Ronald Hughen, and Kathleen C. Light, The Journal of Pain. Vol 10. Issue 10. November 2009. Pgs 1099-1112

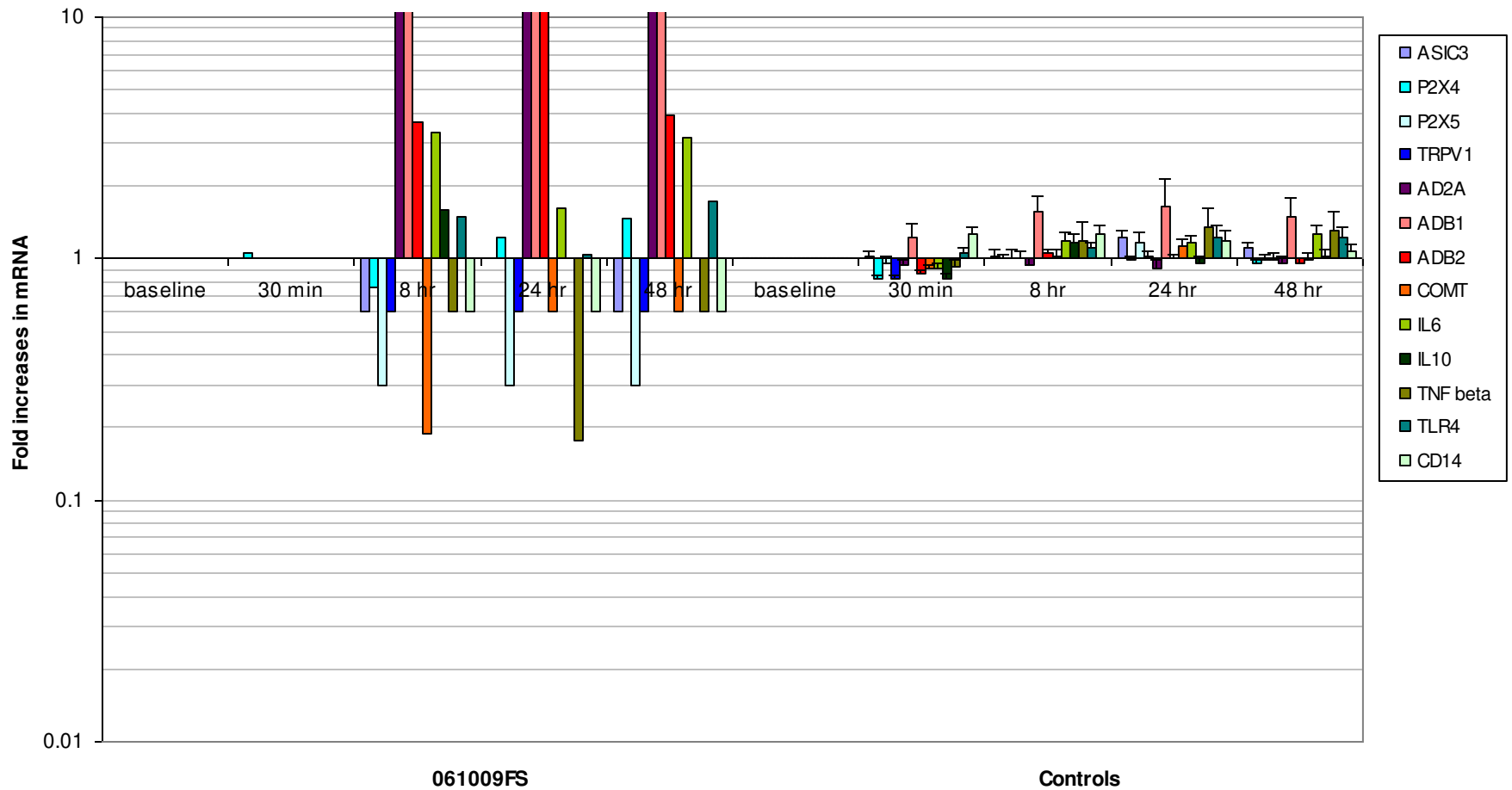


“Gene expression alterations at baseline and following moderate exercise in patients with Chronic Fatigue Syndrome, and Fibromyalgia Syndrome.” A.R. Light, L. Bateman, D. Jo, R. W. Hughen, T.A. VanHaitisma, A.T. White, K.C. Light. The Journal of Internal Medicine, DOI: 10.1111/j.1365-2796.2011.02405.x (published on-line June 2011)



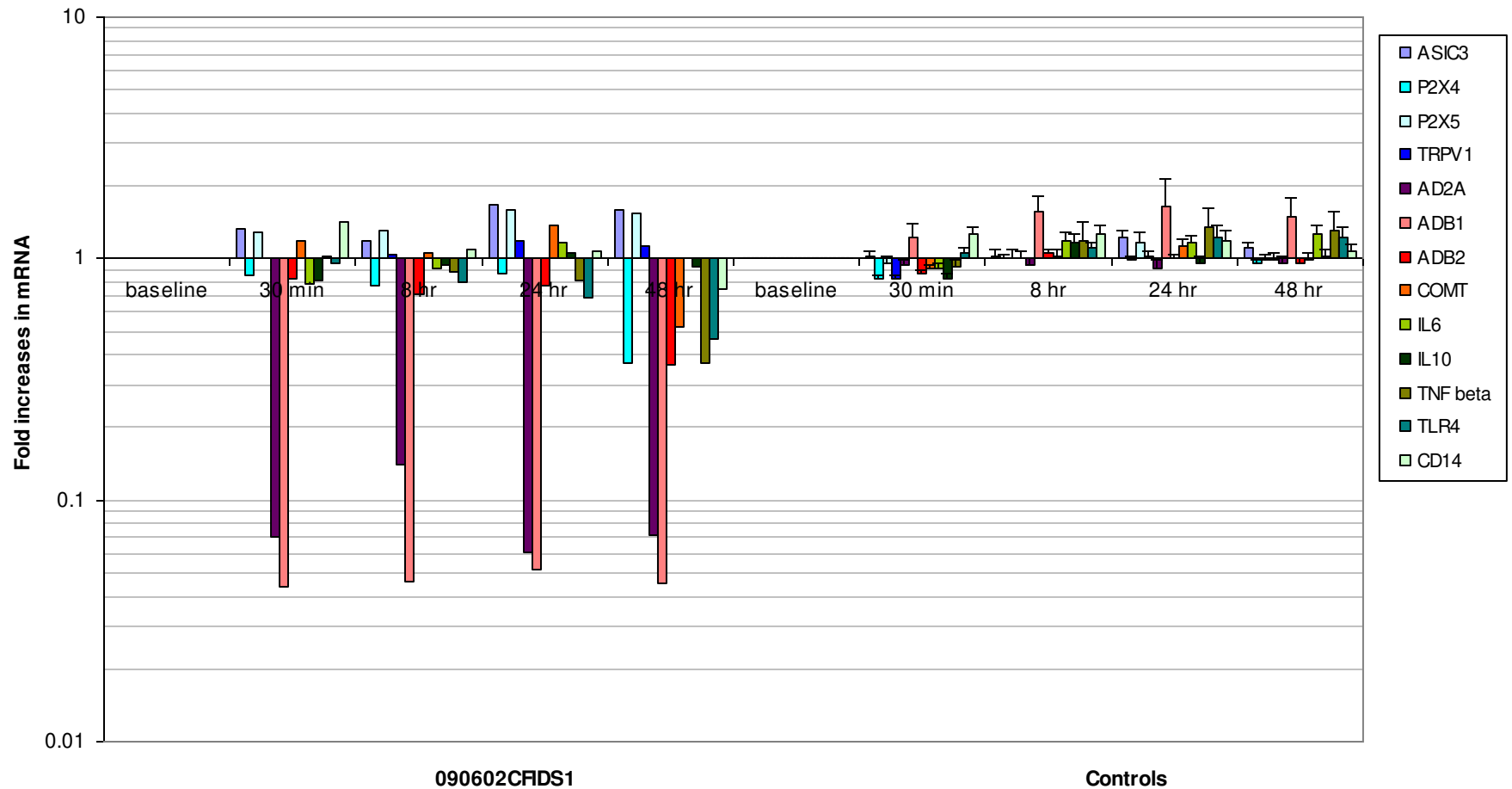
Patient 061009FS vs Control subjects

50's male, disabled former professional. MECFS/FM/POTS



Patient 090602CFIDS1 vs Control subjects

20 yr male (teenage onset)
rockhound CFS/FM/OI



"Fatigue" and PEM

No diagnostic tests are available
in the clinical setting

It will be up to you.

- ⦿ Communicate clearly
- ⦿ Self manage.

Cardiopulmonary Exercise testing on sequential days shows changes, but may cause significant PEM and doesn't guide treatment ----except to reinforce the need for "pacing"



Tool #1: "pacing"

If you are given one dollar of "energy" a day, and one dollar is 4 hours...how do you spend it?



- Go until you drop? ----crash
- Four hours in the morning?---then your day is finished
- Two hours in the morning and two in the afternoon?----
- One hour at 9 am, noon, 3 pm and 6 pm?---then crash...
- 20 min at 9 am, 10 am, 11 am, 12 noon, 1 pm, 2 pm, 3 pm, 4 pm, 5 pm, 6 pm, 7 pm, 8 pm?



"pacing" is....

- ⦿ Limiting activity to 10% most of the time
- ⦿ Activity spread out through the day.
- ⦿ Recovery behaviors between activities
- ⦿ Avoidance of significant DEBT (PEM)
- ⦿ An awareness that when debt accrues, it should be “paid off” asap.
- ⦿ Being mostly in a preventive, not rescue mode



"Pacing" reduces the frequency and severity of PEM and improves prognosis

- Do the amount of activity that doesn't induce PEM for more than 24 hours
- The ideal goal is feeling "back to baseline" the following morning after sleep
- If PEM is induced, rest until it resolves.
- Develop a heightened sense of awareness about the threshold of relapse, and the consequences of pushing beyond it.
- Don't be afraid ---be in charge

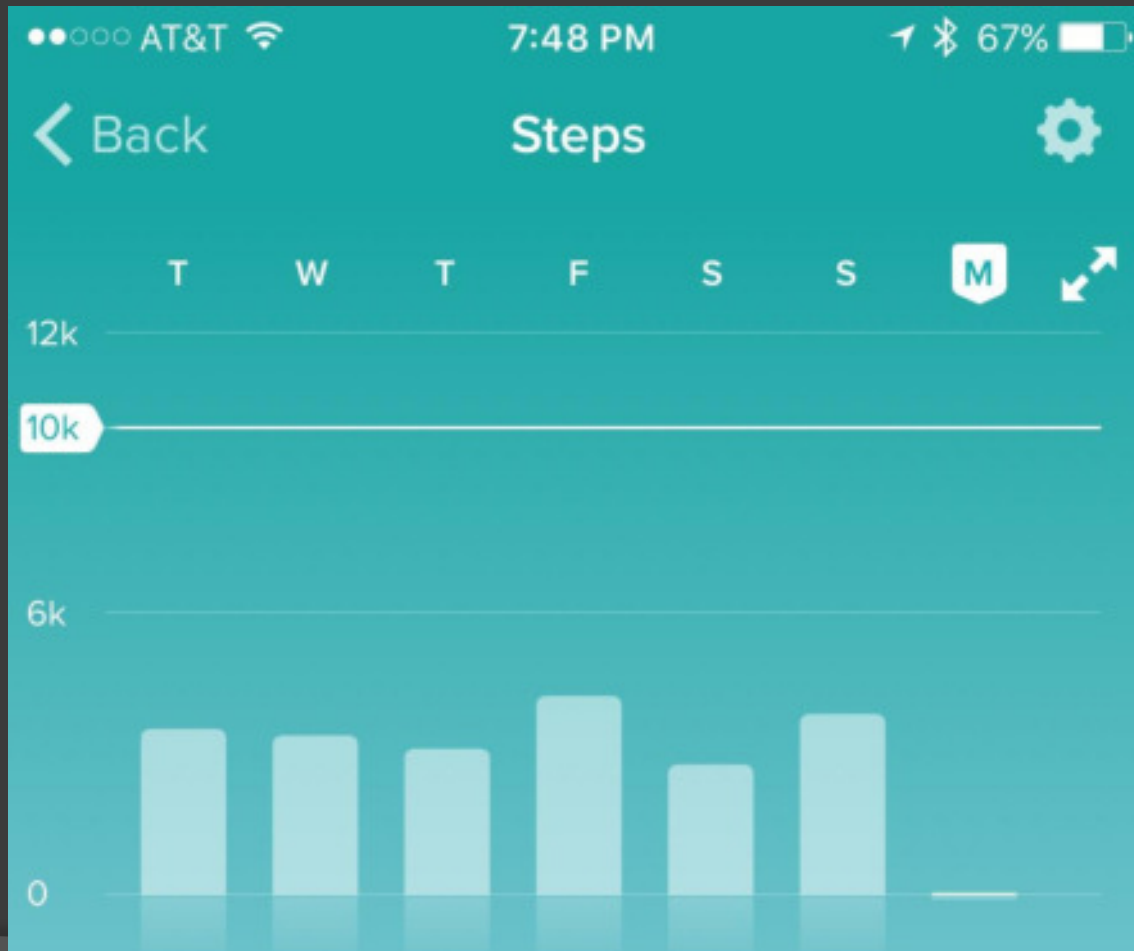


Self monitoring devices can help:
Activity. Sleep. Heart rate.

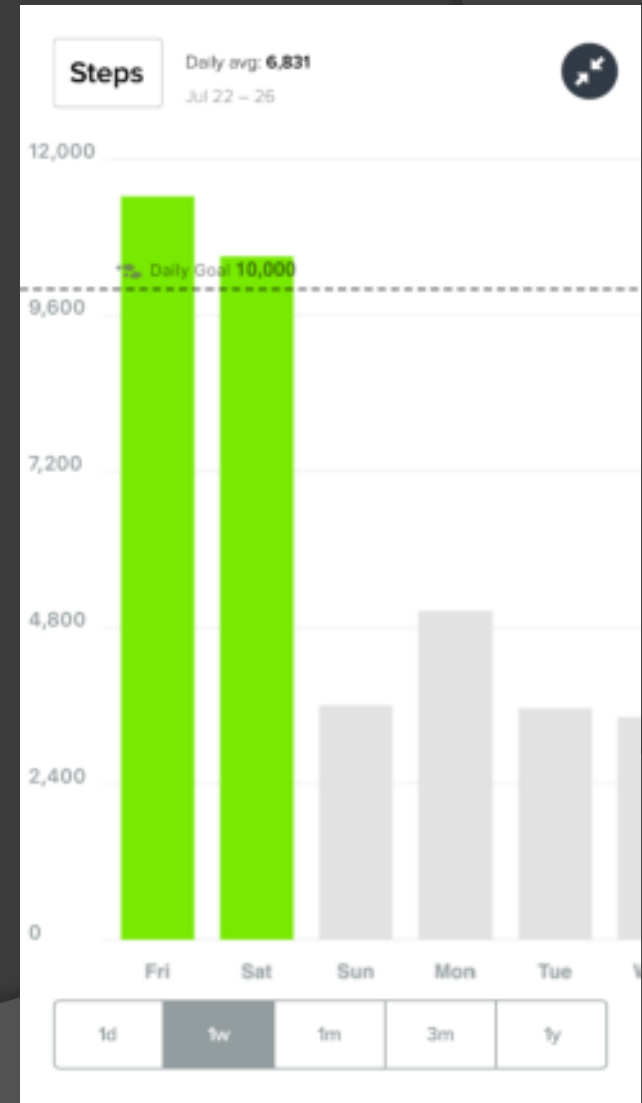


Steps per day....

PACING...



NOT PACING...



Unrefreshing sleep

- ◎ Sleep disturbances are common

- Included in all CFS ME/CFS, ME and FM case definitions or symptom criteria
- Present in >90% of all diagnosed (Jason*)

- ◎ Sleep abnormal in

- **Quality** (light, restless, interrupted, heavy)
- **Duration/timing** (delayed, prolonged, irregular)

Unrefreshing sleep

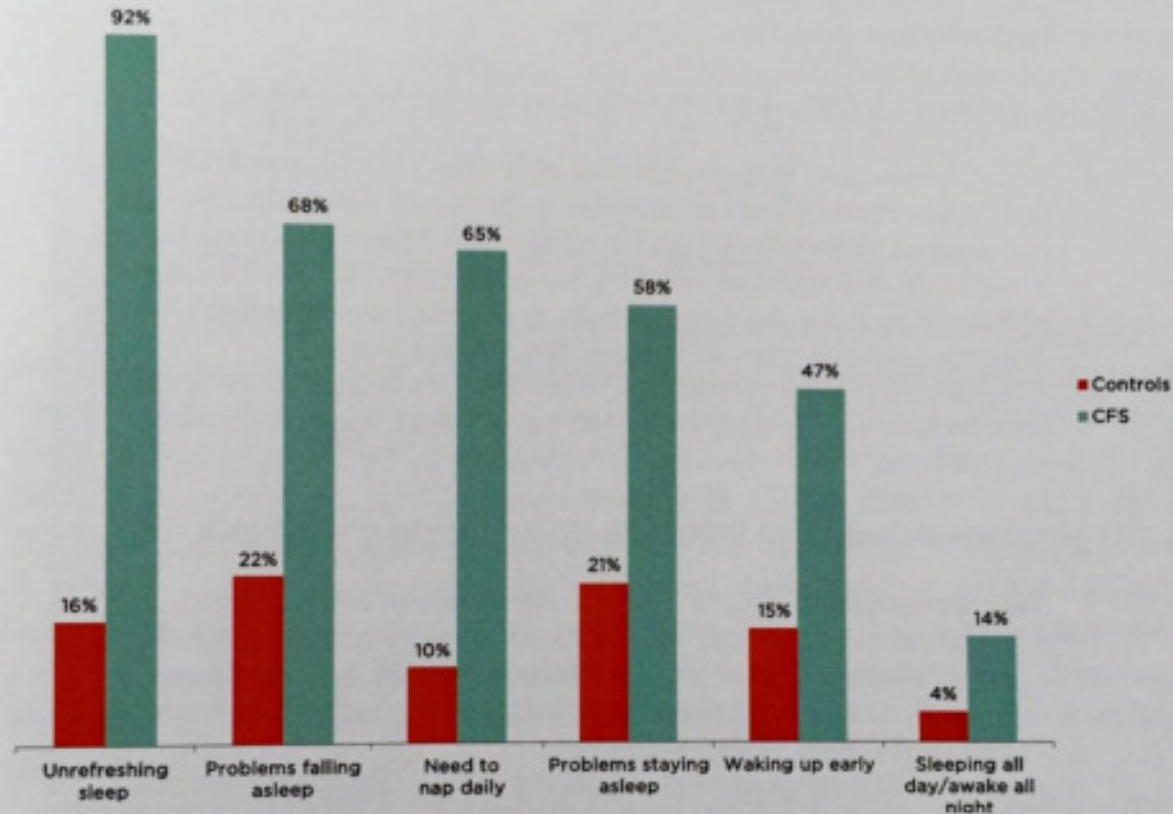


FIGURE 4-2 Percentage of ME/CFS patients and healthy controls reporting sleep-related symptoms of at least moderate severity that occurred at least half of the time during the past 6 months.

NOTE: All patients fulfilled the Fukuda definition for CFS.

SOURCE: Jason et al., 2013b.

“Unrefreshing sleep” is the most consistently reported symptom of MECFS

This includes sleeping too much or too little, trouble falling asleep, light sleep and frequent awakenings, trouble getting back to sleep, early morning awakening, trouble waking up after finally getting to sleep, need for naps and irregular sleep cycles.







pwMECFS spend more time in bed
and have less quality sleep*

*Morris 1993

300 Dutch CFS patients*

(those with primary sleep disorders excluded)

Four types of sleep presentation (1 PSG):

- ①  sleep time  REM *(catch up sleep?)*
- ②  REM *(drugged sleep?)*
- ③  #arousals/hour *(disrupted sleep?)*
- ④  sleep  REM *(insomnia?)*

Observing/Monitoring sleep

- ⦿ Polysomnography---\$\$\$ and good for some observations. “Sleep lab artifact” can be high and is often ignored.
- ⦿ Home sleep study---new
- ⦿ Pulsoximetry overnight---only records when oxygen dips too low
- ⦿ **You should monitor your own sleep!**
 - Fitbit or other self monitoring devices
 - Ouraring



8 hr 31 min asleep

1d

1w

1m

3m

1y

Daily avg: 7 hr 40 min

Nov 10 – 20

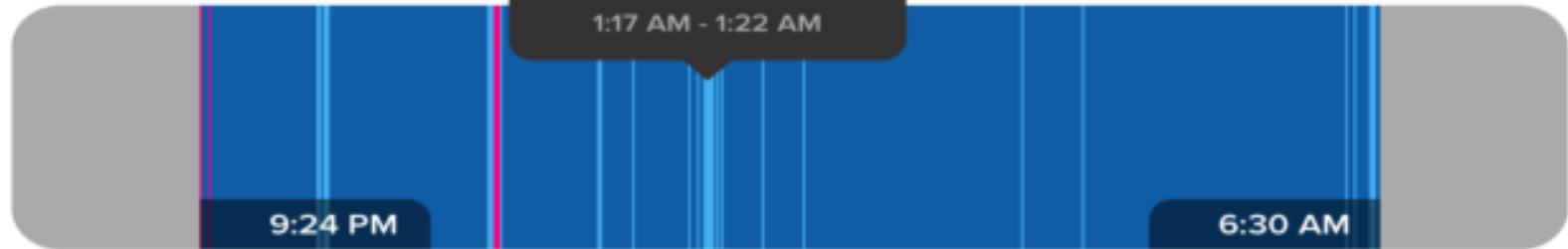


Awake for 5 mins (3x)

Restless for 30 mins (18x)

Restless 5 min

1:17 AM - 1:22 AM



7 hr 14 min asleep

1d

1w

1m

3m

1y

Daily avg: 7 hr 49 min

Nov 16 – 26



Awake for 4 mins (1x)

Restless for 13 mins (8x)



Tuesday, November 24

This Week 7 hr 56 min avg

Sun 10:33 PM – 6:43 AM 7 hr 56 min >

Last Week 7 hr 5 min avg

Thu 10:28 PM – 6:58 AM 8 hr 6 min ★

Wed 10:54 PM – 5:58 AM 6 hr 51 min >

Tue 12:14 AM – 6:58 AM 6 hr 17 min >

Jul 17 – 23 8 hr 26 min avg

7/22 10:06 PM – 7:12 AM 8 hr 36 min ★

7/20 3:58 PM – 5:29 PM 1 hr 24 min ★

7/20 12:40 AM – 8:28 AM 7 hr 2 min ★

7/19 12:14 AM – 9:00 AM 8 hr 15 min ★

Jul 10 – 16 7 hr 43 min avg

7/13 10:42 PM – 6:30 AM 7 hr 34 min >

7/12 11:30 PM – 6:42 AM >

This Week 4 hr 20 min avg

Today 11:24 PM – 8:43 AM 4 hr 46 min >

Wed 9:08 AM – 10:34 AM 15 min >

Wed 12:06 AM – 7:28 AM 3 hr 39 min >

Last Week 4 hr 58 min avg

Sat 11:44 PM – 9:45 AM 5 hr 46 min >

Thu 11:47 PM – 10:08 AM 6 hr 31 min >

4/6 11:50 PM – 7:21 AM 3 hr 50 min >

4/5 12:40 AM – 8:48 AM 3 hr 44 min >

Nov 15 – 21, 2015 5 hr 12 min avg

4/20 10:54 PM – 7:27 AM >

Last Week

4 hr 58 min avg

Sat 11:44 PM – 9:45 AM



5 hr 46 min



Thu 11:47 PM – 10:08 AM



6 hr 31 min



4/6 11:50 PM – 7:21 AM



3 hr 50 min



4/5 12:40 AM – 8:48 AM



3 hr 44 min



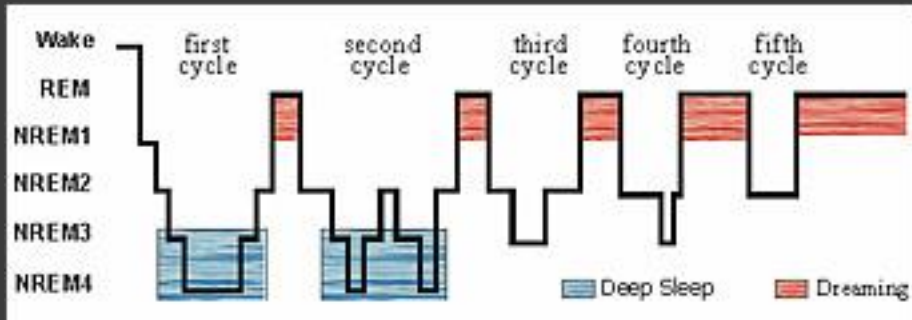
Fitbit or equivalent monitoring device

- ⦿ Records hours of “sleep”
- ⦿ Documents the number of disruptions
- ⦿ Not very good at identifying what causes the disruptions
- ⦿ Not very good at recording quality of sleep (sleep stages)

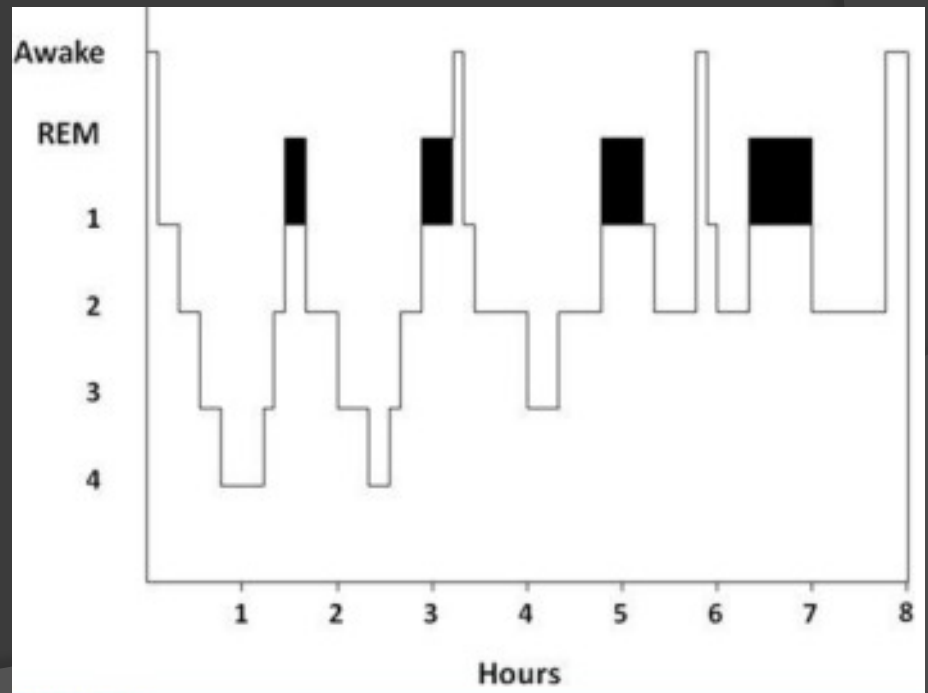


Hypnograms

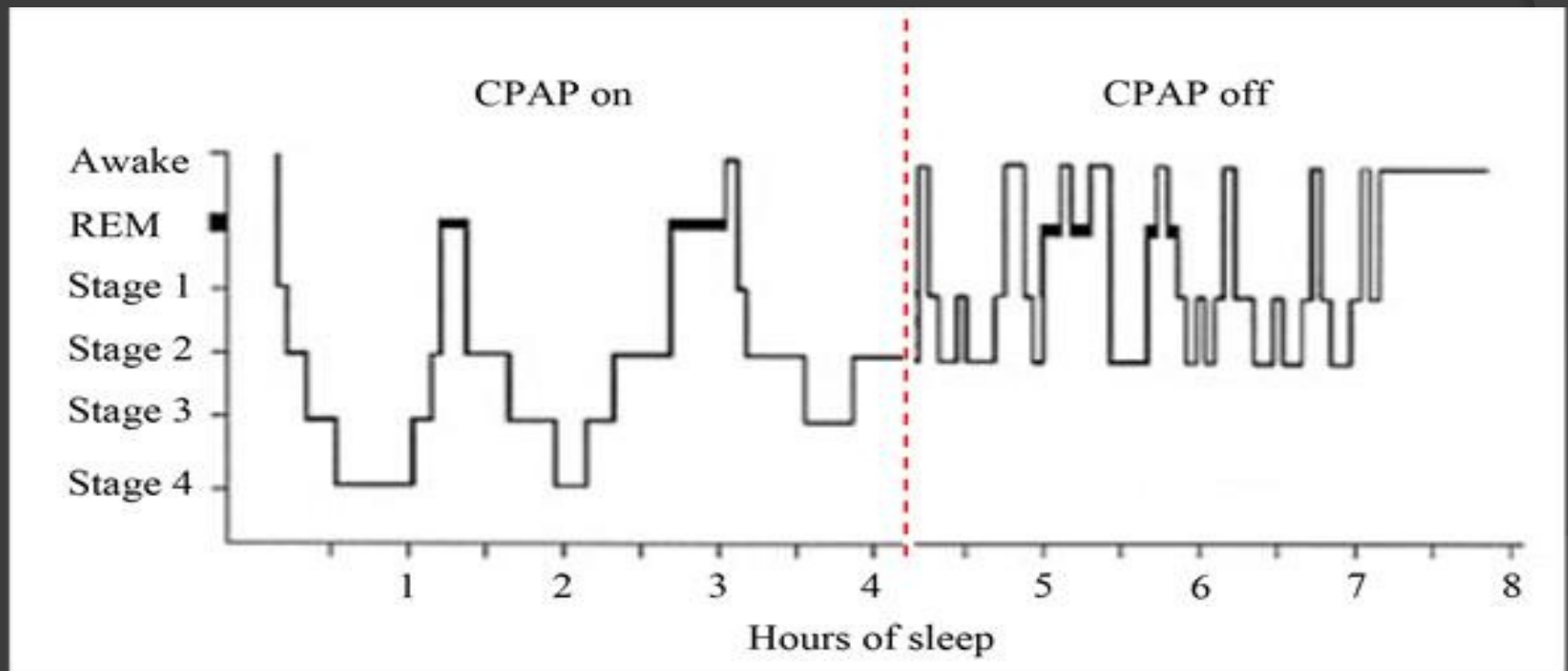
two examples of “normal” sleep cycles or stages



Graphic representation of
sleep stages recorded with
EEG leads
during polysomnography



OSA (obstructive sleep apnea) hypnogram--on and off CPAP



Polysomnography (PSG)

- You can read your own hypnogram if you have undergone PSG. But it represents only one night and might not represent your sleep stages at home.
- Many people sleep lightly, with more disturbances or discomfort during PSG.
- This is “sleep study artifact”
- The best way to study sleep is to record many nights



oura ring



High Speed Memory
Measures, analyzes & stores
Up to 3 weeks
Works without phone

ARM® Cortex™ M0
High performance
Ultra Power Efficient
Realtime processing

Advanced sensors
LEDs for optical pulse
measurement



Powerful Battery
Li-Ion 40mAh
Ultra low
consumption

Smart Wireless
Connects & Syncs
with mobile phone
Bluetooth® Smart

Evolving firmware
Fast updates
Fully automatic
From mobile App

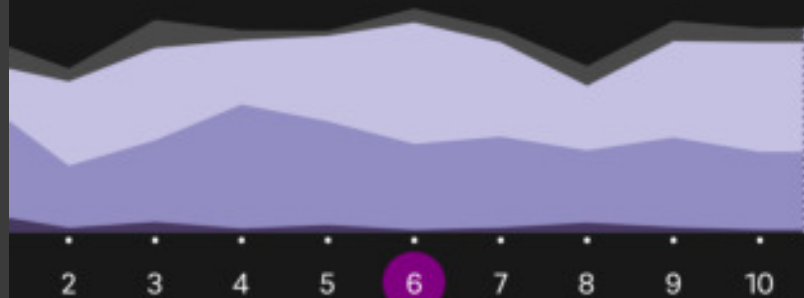
Activity. Sleep. Readiness





SLEEP

Awake REM Light Deep



Total Sleep Time

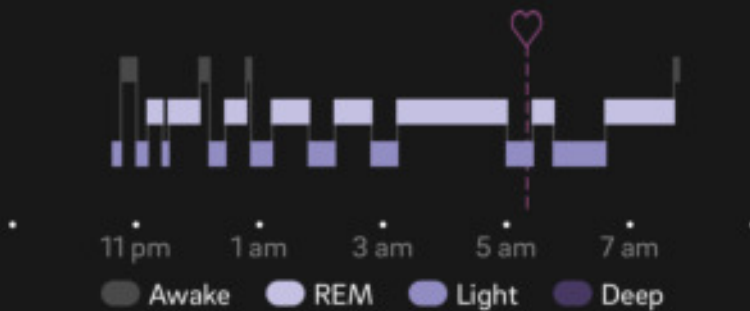


10:36 PM

8h 31m



7:48 AM



0h 1m

0%

Deep

4h 59m

55%

REM

3h 31m

39%

Light

0h 34m

6%

Awake



10:52 PM

Total Sleep Time

6^h 49^m



6:09 AM



12 am

2 am

4 am

6 am

8 am



Awake



REM



Light



Deep

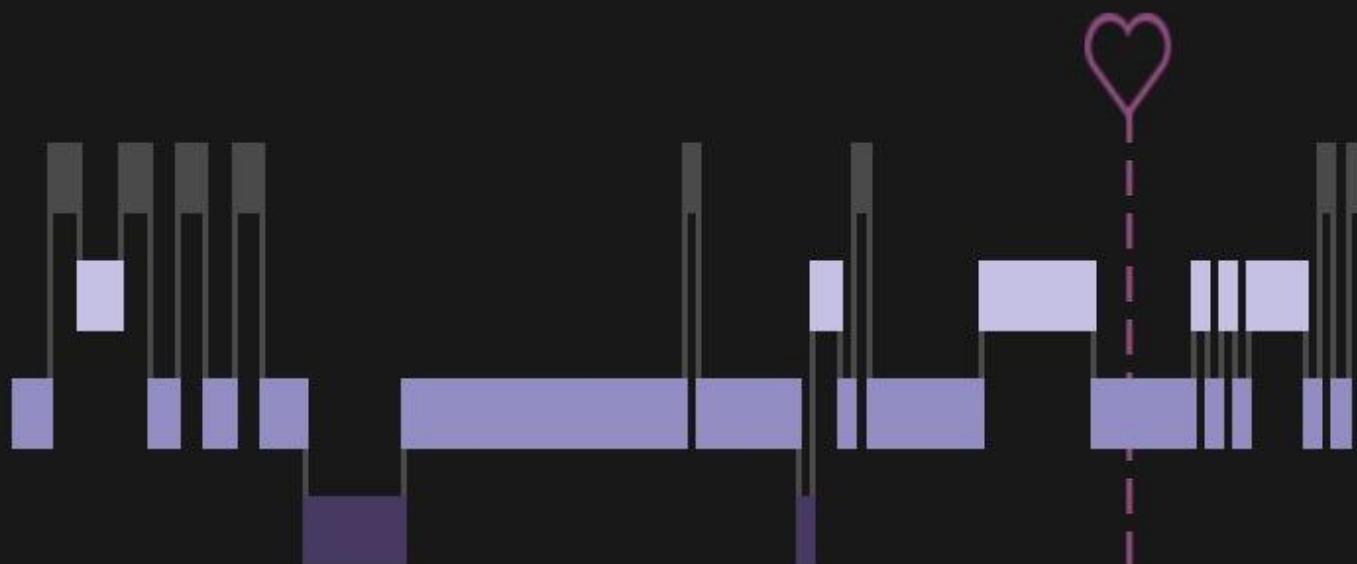


10:30 PM

Total Sleep Time

6^h 51^m

6:30



● Awake ● REM ● Light ● Deep

Tool #2: Investigate your sleep and make your sleep better.

- "Unrefreshing sleep" may mean sleep is abnormal and not restorative
- Dysregulated sleep is insidiously destructive over time.
- Use every healthy method possible to achieve "restorative sleep"
- Develop skills in relaxation and understand medications



Helpful hints

- ⦿ Sleep hygiene--- become an expert
- ⦿ Reduce all causes of sleep disruption
- ⦿ Aim treatment at causes of disturbed sleep
- ⦿ Use medications in an informed way
- ⦿ Don't give up because it is a constant battle
- ⦿ More restorative sleep improves fatigue, cognition, pain and mood.



Sleep resources

- Lucinda Bateman MD
<https://www.youtube.com/watch?v=w4OEGOCw3Dg> (SolveCFS)
- Suzanne D. Vernon PhD
<https://www.youtube.com/watch?v=icJWo2smjO8>
- N. Lee Smith MD
<https://www.youtube.com/watch?v=uUYdtLo1FWk>

Tool #3: Assess and treat OI

Orthostatic intolerance and autonomic dysregulation:

- measurable
- treatable



Measuring orthostatic intolerance

- Tilt Table test (not readily available or standardized)
- 10 min NASA lean test
- FitBit or other HR tracking devices can track heart rate as an indicator of exercise effort, but also an indirect measure of orthostatic intolerance



10 min NASA lean test

Lying down on bed at rest:

- Supine 1 minute BP: 114/76 Pulse: 75 Pulse ox 98%
- Supine 2 minute BP: 112/78 Pulse: 75

Standing straight with shoulder blades against the wall and feet 6" from the wall:

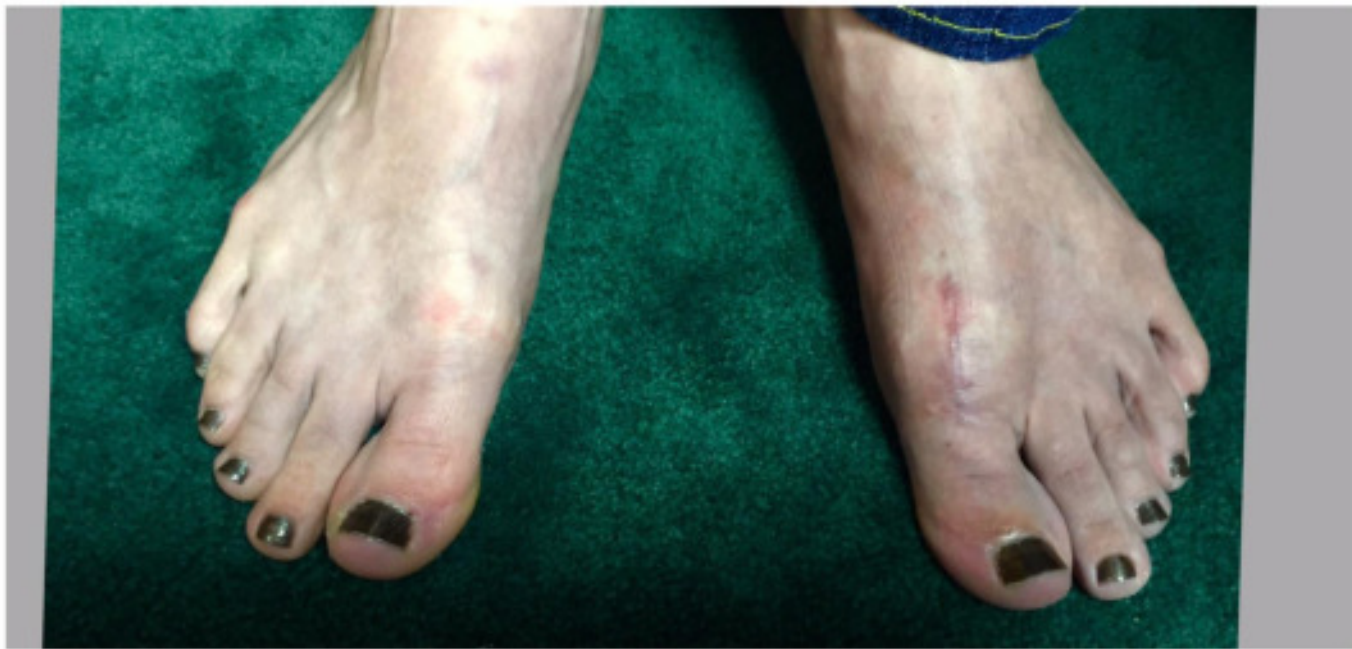
- Standing 0 minute BP: 111/86 Pulse: 89
- Standing 1 minute BP: 118/80 Pulse: 90 Pulse oximeter 95% "Lightheaded"
- Standing 2 minute BP: 120/92 Pulse: 92
- Standing 3 minute BP: 120/98 Pulse: 93 "Tired"
- Standing 4 minute BP: 121/98 Pulse: 94 "Trying to catch breath"
- Standing 5 minute BP: 123/100 Pulse: 95 "Heavier breathing and the desire to sit"
- Standing 6 minute BP: 124/90 Pulse: 97 Pulse ox 94%
- Standing 7 minute BP: 116/52 Pulse: 98. "Feels very different but cannot explain it"
- Standing 8 minute BP: 108/50 Pulse: 99 Pulse ox 92%.
- Standing 9 minute BP: 108/60 Pulse: 100 "Feeling hot, thirsty, blurry vision"
Dependent rubor in feet noted
- Standing 10 minute BP: 95/50 Pulse: 100 "Need to lie down"

She became emotional and teary after lying down

10 min NASA lean test summary

- Systolic blood pressure (SBP)
 - SBP decreased from 114 supine to 95 standing at 10 minutes (-19 mm Hg)
- Diastolic blood pressure (DBP)
 - DBP decreased from 78 supine to 50 standing at 8 minutes (-28 mm Hg)
- Heart rate (beats per minute--bpm)
 - HR increased from 75 bpm supine (lying down) to 100 bpm standing at 9 minutes. (+25 bpm)
- Symptoms match changes in VS
- There are also physical signs







10 min NASA lean test

19 year old male. BMI 18. Intake BP 110/64 and P 80

Became ill in 9th grade while training for cross country. Felt run down. Sick more often. Then IBS→ Nausea and dizziness -→ Tension and migraines -→ Exercise intolerance. -→ Abdominal and chest pain -→ Couldn't finish the year. Struggled with ups and downs sophomore, junior and senior year. Set off defiantly for college on his own...but returned

Pulse seated and relatively relaxed: 89 bpm

- standing at 1 min 104 "it feels like I'm heavy; I feel light headed, weak"
- standing at 2 min 120
- standing at 3 min 113 "head hurting more, harder to concentrate"
- standing at 4 min 123 "now my leg muscles are hurting"
- standing at 5 min 115
- standing at 6 min 118 "hands and feet are definitely very heavy right now"
- standing at 7 min 117
- standing at 8 min 115
- standing at 9 min 120 "everything above is getting worse, blurred vision",
- standing at 10 min 129 "starting to shake"

HR increases 40+

Brain checked out.

Return for full NASA 10 min lean test.

10 min NASA lean test

No medications in the last 24 hours and is not wearing any compression clothing. He has been drinking a little less water than normal.

Lying on bed at rest:

- Supine 1 minute BP: **131**/65 Pulse: 86 Pulse ox 98%
- Supine 2 minute BP: 131/65 Pulse: **82**
- Supine 3 minute BP: 130/61 Pulse: 89

Standing straight with shoulder blades against the wall and feet 6" from the wall

- Standing 0 minute BP: 126/54 Pulse: 114 Feels blood going down, light headed, weak
- Standing 1 minute BP: 116/71 Pulse: 112 Pulse ox 95%
- Standing 2 minute BP: 121/82 Pulse: 100
- Standing 3 minute BP: 112/86 Pulse: 105
- Standing 4 minute BP: 118/85 Pulse: 107 Pulse ox 94% "Just more worse" - :Starting to shake
- Standing 5 minute BP: 116/80 Pulse: 111
- Standing 6 minute BP: 115/85 Pulse: 121
- Standing 7 minute BP: **111**/89 Pulse: 117 "Lack of concentration, getting headache, achy"
Dependent rubor
- Standing 8 minute BP: 113/76 Pulse: 114
- Standing 9 minute BP: 112/79 Pulse: 123 "Feels like I'm breathing heavily"
- Standing 10 minute BP: 114/86 Pulse: **128**

SBP dropped from 131 to 111 (-20)

DBP 61---> 54---> 89

Pulse increased from 82 to 128 (+40)

32 year old woman with severe migraines, fibromyalgia, depression, dizziness. She has not taken any of her morning medications and is not wearing compression clothing today.

Orthostatic Vital Signs/The NASA LEAN Test

- Supine 1 minute BP: **118**/64 Pulse: 89.
- Supine 2 minute BP: 116/60 Pulse: **85**

Standing straight with shoulder blades against the wall and feet 6" from the wall

- Standing 0 minute BP: 104/80 Pulse: 85
- Standing 1 minute BP: 108/74 Pulse: 119
- Standing 2 minute BP: 96/70 Pulse: 116
- Standing 3 minute BP: 108/75 Pulse: 123 Arms "almost feel like they are tingling"
- Standing 4 minute BP: 98/78 Pulse: 120
- Standing 5 minute BP: 96/73 Pulse: 123 Lightheaded and dizzy (as if she is spinning)
- Standing 6 minute BP: **91**/73 Pulse: 125
- Standing 7 minute BP: 94/74 Pulse: 122
- Standing 8 minute BP: 96/74 Pulse: 122
- Standing 9 minute BP: 92/79 Pulse: 126 Increased lightheadedness, nausea
- Standing 10 minute BP: 93/80 Pulse: **120** Increased "electrical buzz" from when she started the test. Pt reports she always has this but it is worse today after the test.

Summary:

27 mmHg drop in SBP meets criteria for orthostatic hypotension (> 20 mmHg decrease)
41 bpm increase in pulse meets criteria for POTS (at least 30 bpm increase)

Not all devices monitor heart rate
FitBit Charge HR or Blaze are examples that do



37 year old professional woman. 2-4 HUA/d.
Sitting: BP 112/75. P-77

10 min NASA stand/lean test

Lying down resting:

Supine: BP 99/68 P- 68

Standing with upper back against wall, feet 6" from the wall.

Standing at 0 minutes: BP 99/72 P- 90

Standing at 1 minute: BP 90/74 P-100 mild weakness all over, heavy feeling in legs

Standing at 2 minutes: BP 101/74 P- 94 dependent rubor hands, facial pallor

Standing at 3 minutes: BP 104/84 P-111 hands tingling

Standing at 4 minutes: BP 104/83 P-101 nausea

Standing at 5 minutes: *unable to measure*

Standing at 6 minutes: BP 88/62 P-132 palpitations

Standing at 7 minutes: BP 94/64 P-115 palpitations, increased nausea

Standing at 8 minutes: did not register on B/P cuff

Tingling in face increased, tingling all over, sees spots, muted sounds, legs gave way, vision blacking out. We assisted her then to slide supine onto floor.

Interventions for OI:

- ⦿ Recognize and avoid triggers
 - heat, prolonged standing, over-exertion...
- ⦿ Compression
 - Socks, sleeves and clothing
 - midodrine, stimulants, Desmopressin*
- ⦿ Volume—fluids, salt intake, fludrocortisone, desmopressin
- ⦿ Heart rate control— low dose beta blockers
- ⦿ Northera—raises norepinephrine (NE)

Interventions for OI:

Exercise with a goal to increase

- muscular strength in legs and trunk
- cardiovascular health from aerobic activity

Exercise TIPS

- drink 500 cc cold water prior
- wear compression
- lie down or sit during some exercises
- work gradually into the cardio (walking)
- exercise in water--



Ol-friendly exercise

- supine or seated
 - Yoga or pilates
- water exercise



Orthostatic intolerance resources

- Melissa Cortez MD

- [https://www.youtube.com/watch?v= eydfpVtb0c](https://www.youtube.com/watch?v=eydfpVtb0c)
- Youtube Bateman Horne Center "Remaining Upright: Approach to Orthostatic Intolerance."

- <http://dysautonomiainternational.org/>

- <http://www.dinet.org/>



Pain

- Pain is highly variable
- Pain responds to treatment
- Pain specialists can help with many aspects of pain management



Tool #4: Assess and treat pain

- ⦿ Hyperalgesia, pain amplification (FM)
- ⦿ Osteoarthritis
- ⦿ Spine---cervical and lumbar DJD/DDD
- ⦿ Headaches
- ⦿ Migraine headaches
- ⦿ IBS
- ⦿ neuropathies



Fibromyalgia (ACR 1990)

Chronic (>3 months)

Widespread (4 quadrants of body & spine)

Pain and Tenderness (>11/18 tender points)

Hyperalgesia (*amplified pain signaling*)

*Stiffness, headache,
pain in the muscles and joints, bowel, bladder, pelvis, chest,
tingling and numbness, photophobia, etc*

FM Pain (pain amplification)

Pain responds to

- Restorative sleep
- Relaxation, meditation, emotional calm
- The right amount of physical activity
 - not too little (being sedentary)
 - not too much (light but not intense exercise)
- Massage, acupuncture, other manual methods.



FM pain--medications

Utilize CNS-pain modulating drugs:

- ◎ **Drugs (FDA approved) for FM**
 - Anticonvulsant: **pregabalin** (Lyrica)
 - SNRI: **duloxetine** and **milnacipran** (Savella)
- ◎ **Drugs (non-FDA approved) used for FM**
 - **gabapentin**
 - other anticonvulsants: topiramate, zonisamide..
 - Low dose TCA: **amitriptyline, doxepin, cyclobenzaprine**
 - SNRI: levomilnacipran, venlafaxine, desvenlafaxine
 - tramadol, opioids
 - **LDN** (low dose naltrexone)...

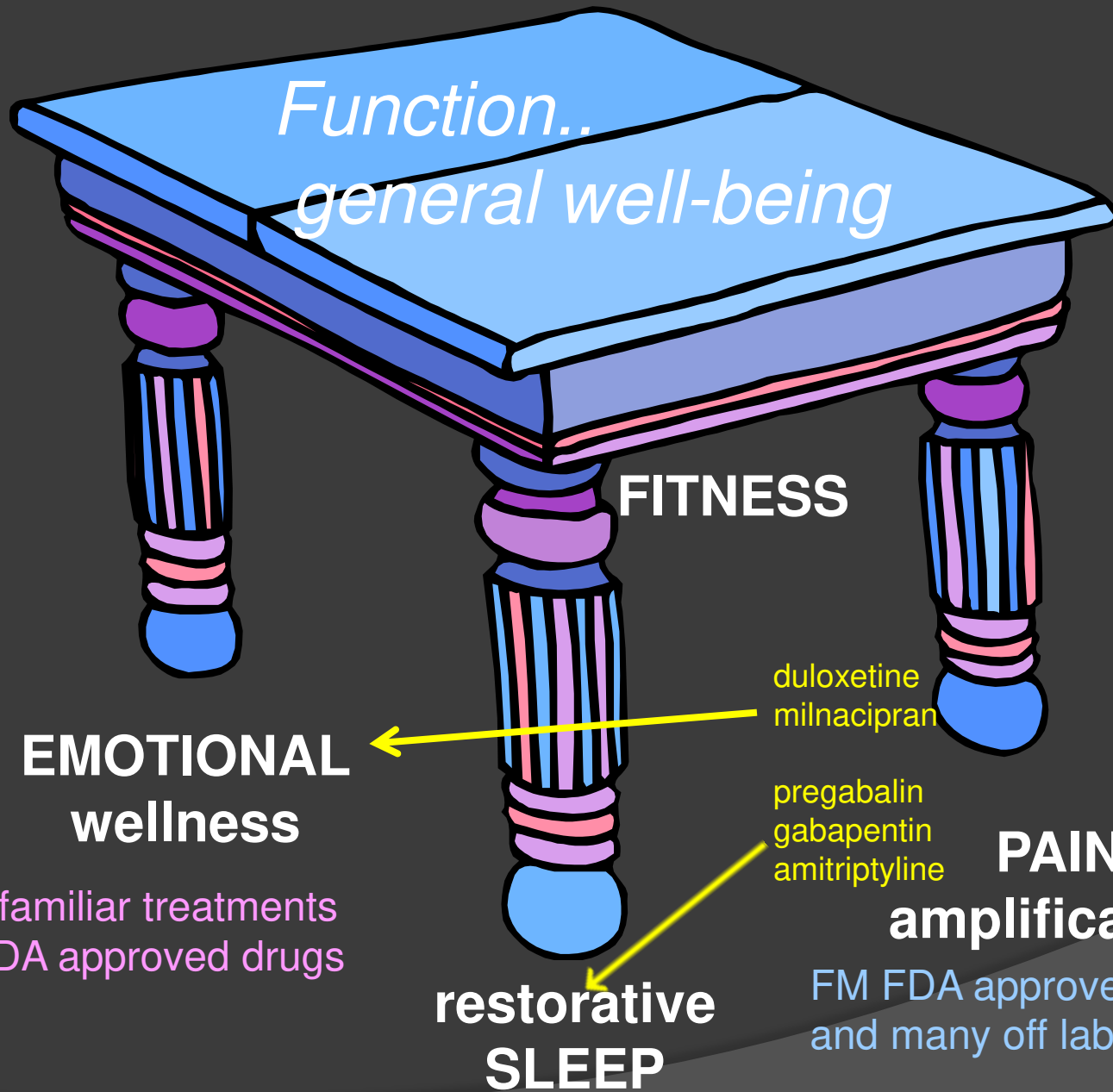
Topical agents can be helpful (lidocaine, diclofenac, gabapentin, etc)

LDN (low dose naltrexone)

- naltrexone hydrochloride is an opioid receptor antagonist. FDA approved for treatment of alcohol and opioid dependence (50 mg).
- In very low doses (4.5 mg) LDN may
 - paradoxically decrease pain due an increase in the release of endogenous opioids with transient blockade
 - calm microglial cell activation in the CNS (anti-inflammatory or neuroinflammatory agent)

Low-dose naltrexone for the treatment of fibromyalgia: findings of a small, randomized, double-blind, placebo-controlled, counterbalanced, crossover trial assessing daily pain levels. Younger J1, Noor N, McCue R, Mackey S. Arthritis Rheum. 2013 Feb;65(2):529-38. doi: 10.1002/art.37734

The use of low-dose naltrexone (LDN) as a novel anti-inflammatory treatment for chronic pain. Younger J, Parkitny L, McLain D. Clin Rheumatol. 2014 Apr;33(4):451-9. doi: 10.1007/s10067-014-2517-2. Epub 2014 Feb 15. **Review.**



Cognitive impairment

- ⦿ Cognitive slowing. MECFS recruit more brain areas to accomplish tasks. Need more time. Need to be rested.
- ⦿ Strategies for dealing with it:
 - Good “pacing”
 - work when more rested
 - allow more time to do same tasks
 - utilize daytimer, iphone, other recording/signaling devices
 - dampen other sensory input
 - quiet room
 - low lights
 - no people or chaotic signaling



Tool #5: improve cognitive impairment

- ⦿ Pace activity and avoid PEM
- ⦿ Work toward restorative sleep
- ⦿ Improve orthostatic intolerance
- ⦿ Avoid medications that worsen cognition

- ⦿ modafinil, Nuvigil,
- ⦿ Adderall, methylphenidate

Medications may improve quality but not quantity of activity tolerance. May feel like doing more but induce PEM.



Extra slides not discussed during
the presentation

Drugs used for sleep disturbances:

Longer acting sleep “sustainers” *off-label use for sleep:*

***TCA:** amitriptyline (10-20 mg), doxepin (5-20 mg)

Other antidepressants: trazodone 25-100 mg, mirtazapine 7.5-15 mg

***Anticonvulsants:** gabapentin 300-1200 mg, topiramate 25-100 mg

Benzodiazepines: clonazepam or lorazepam 0.5-1 mg

Atypical antipsychotics: quetiapine 12.5-50 mg, olanzapine 2.5-5 mg

These longer acting drugs may give FM patients “hangover” symptoms the next morning if dosed too high or taken too late in the evening.

Choose a sleep medication based on comorbid conditions and the nature of the sleep disturbances.

*additional benefits for pain

Drugs used for sleep disturbances:

Sleep “initiators” or hypnotics

FDA approved for insomnia, not specifically for fibromyalgia



zolpidem 5-10 mg (approx 4 hours, CR 6 hours)

zaleplon 5-10 mg (approx 2 hour duration)

eszopiclone 1,2 or 3 mg (approx 6 hour duration)

benzodiazepines, ex: *temazepam* 15-30 mg (tolerance/habituating)

*Belsomra/suvorexant. orexin receptor antagonist (suppresses wakefulness)

- *Chronic use discouraged, and thus problematic for chronic illness*
- *Tolerance or dependence typically develops.*
- *Better for sleep initiation than to sustain sleep all night.*
- *Better for PRN use rather than nightly use*

*may prove different than other sleep agents