



Fatigue in MS: 2005 update

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Fatigue in MS

- One of the more disabling symptoms
- Affects about 75/90 % of the patients
- May be the onset symptom
- Transient or chronic
- May occur at any stage of the disease
- May impact on activities of daily life

Fatigue is one of the two major reasons for unemployment among people with MS.

The USA social security administration responded in 1996 by adding fatigue to the list of causes of MS-related disability in the code for disability impairments

✓ The following characteristics help to distinguish fatigue in MS from normal fatigue

- ✓ It comes on easily
- ✓ It prevents sustained physical functioning
- ✓ It interferes with responsibilities
- ✓ It interferes with physical functioning
- ✓ It causes frequent problems

✓ 40-70 % of patients who experience fatigue do so on a daily basis, typically up to 6 hours, usually in the afternoon

✓ People with MS who have severe fatigue do not experience significant spontaneous improvement over intervals as long as 2 years

Fatigue is a subjective experience therefore self-reported instruments are probably the best to quantify the phenomenon...

| <u><i>Name of scale</i></u> | <u><i>Outcomes</i></u> | <u><i># of items</i></u> |
|--|---|--------------------------|
| Modified fatigue impact scale (MFIS) | Cognitive Physical Psychosocial | 21 |
| Multidimensional assessment of fatigue (MAF) | Severity Timing Distress | 16 |
| Multidimensional fatigue inventory (MFI) | General activity Mental and physical motivation | 24 |
| Fatigue severity scale (FSS) | Severity on daily living | 9 |
| Functional assessment of multiple Sclerosis | Tiredness-thinking subscale | 9 |

The Fatigue Severity Scale

Table 2 The FSS: each patient is asked to respond to the following nine statements by choosing a number between one and seven, where one indicates strongly disagree and seven indicates strongly agree

| <i>Statement</i> | <i>Score</i> |
|---|--------------|
| 1. My motivation is lower when I am fatigued | _____ |
| 2. Exercise brings on my fatigue | _____ |
| 3. I am easily fatigued | _____ |
| 4. Fatigue interferes with my physical functioning | _____ |
| 5. Fatigue causes frequent problems for me | _____ |
| 6. My fatigue prevents sustained physical functioning | _____ |
| 7. Fatigue interferes with carrying out certain duties and responsibilities | _____ |
| 8. Fatigue is among my three most disabling symptoms | _____ |
| 9. Fatigue interferes with my work, family, or social life | _____ |
| Total Score | _____ |

Reprinted with permission from Krupp *et al.*¹⁶

Could we define fatigue into more rigorously quantifiable components?

Motor Fatigue → Decline in motor performance during sustained muscle activity

Cognitive Fatigue → Decline in cognitive performance during sustained cognitive activity

Lassitude → Subjective sense of reduced energy

Rochester Fatigue Diary, Schwid 2002

Fatigue: influencing factors

- Heat
- Depression
- Pain
- Weakness
- Hypertonia
- Joint and bone alterations
- Sleep disorders

Medications that can cause fatigue

Analgesic

Antidepressant

Antihypertensive

Asthma drugs

Antidiabetics

Genitourinary

Interferons

Sedative

Anticonvulsivants

Antihistamines

Anti-inflammatory

Cardiac

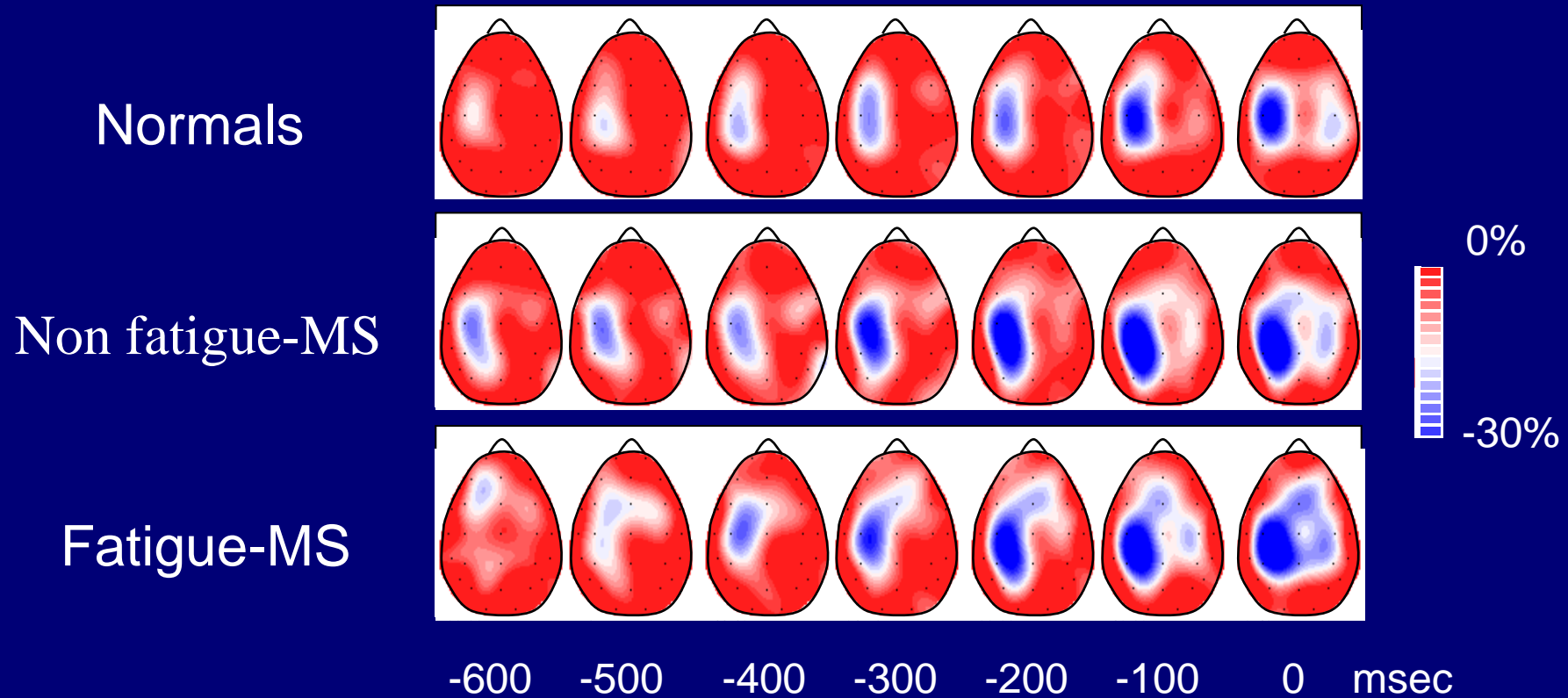
Gastrointestinal

Hormones

Muscle relaxants

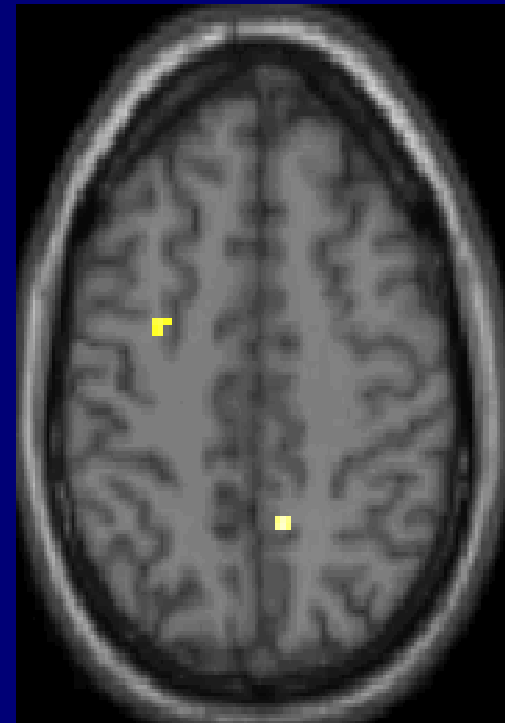
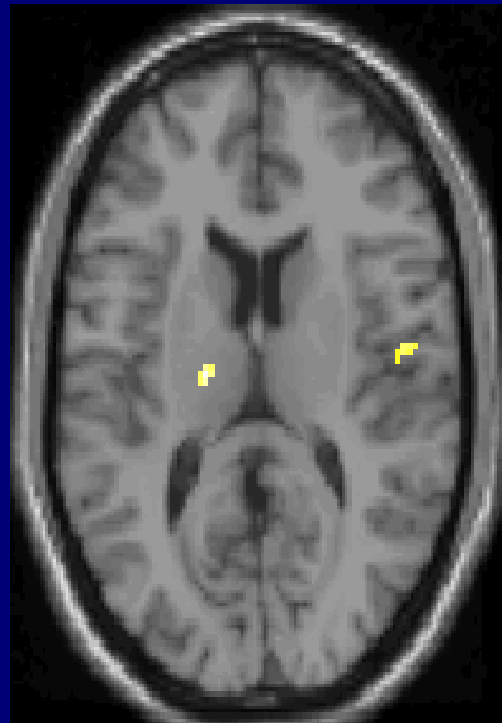
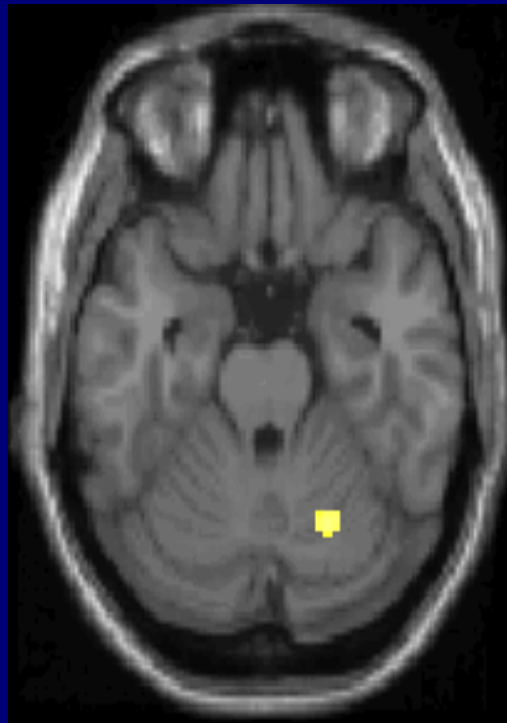
Others

Beta ERD (power decrease; cortical activation)
before self-paced movement



Leocani et Colombo 2001

Relative cortical activation of nfMS vs fMS during right hand movement



Brichetto G. et al. (Multiple Sclerosis 2003; 9: 458-460)
Symptomatic medication use in Multiple Sclerosis

- ✓ 665 MS patients interviewed on symptomatic medication taken
- ✓ 37% were taking at least one symptomatic medication
- ✓ The most commonly treated symptoms were:
 - ✓ pain (28%)
 - ✓ spasticity (27%)
 - ✓ Mood disorder (16%)
 - ✓ Bladder dysfunction (8%)
- ✓ Fatigue was treated only in 3%
- ✓ This could be due to the fact that it is one of the “invisible” symptoms of MS
- ✓ Patients may not be aware that certain symptoms are actually related to MS, reporting them therefore not to the neurologist, but to the general practice physician

Treatment of Fatigue in MS:

Other therapies

- 4-aminopyridine and 3,4-diaminopyridine (SAE: seizures, hepatitis)
- Amantadine
- Aspirine
- SSRI
- Prokarin
- ALCAR
- aerobic exercise
- cooling therapy
- occupational therapy

Aerobic exercise therapy improves cardiovascular fitness, strength and health status in people with mild to moderate disability from MS

Aerobic exercise therapy may help improve fatigue in mildly disabled people with MS.

Petajan. Ann Neurol. 39: 432-41, 1996

15 weeks of 30'-40' training session per week

- ✓ Reduction of fatigue at week 40
- ✓ Increase in maximum aerobic capacity
- ✓ Increase in physical work capacity

Aerobic exercise

- ✓ Determine mode of aerobic exercise based on individual interest, ability and availability
- ✓ Recommend an individualized home exercise program consisting of 3 to 5 sessions per week at a mild to moderate level of perceived exertion for 3 to 30 minutes
- ✓ Increase by approximately 10 % per week to maximum tolerance

Oken B.S. et al. (AAN 2003) **Randomized trial of Yoga and exercise in MS: improvements of fatigue, but not cognitive function compared to control group**

- ✓ 69 MS patients, EDSS $<$ or $=$ 6.0
- ✓ 3 groups: - weekly bicycle exercise class
- weekly yoga class
- waiting list control group } for 6 months
- ✓ 17 % dropout rate
- ✓ No effects of the interventions on cognitive outcome measures
- ✓ Improvement in general and physical fatigue in the MFI and fatigue on the POMS in the two intervention groups
- ✓ Some changes in mood related to interventions
- ✓ Subjects in the intervention group also reported their health in general to be better compared to a year ago

