

# Vermoeidheid



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I'm so tired, I haven't slept a wink  
I'm so tired, my mind is on the blink  
I wonder should I get up and fix  
myself a drink  
No,no,no.

# Wat is vermoeidheid?

- Onderscheid tussen “normale” verklaarbare vermoeidheid, en “pathologische” vermoeidheid

# Dimensions

- fatigue lasting 1-6 months (prolonged fatigue),
- or >6 months (chronic fatigue),
- or met diagnostic criteria for chronic fatigue syndrome.

# Dimensions

- musculoskeletal pain/fatigue
- neurocognitive difficulties
- inflammation
- sleep disturbance/fatigue
- mood disturbance

# Dimensions questionnaires

- Multidimensional Fatigue Inventory (MFI)
  - General fatigue
  - Physical fatigue
  - Reduced activity
  - Reduced motivation
  - Mental fatigue

# Dimensions

## Hickie

- musculoskeletal pain/fatigue
- neurocognitive difficulties
- inflammation
- sleep disturbance/fatigue
- mood disturbance

## Smets (MFI-20)

- physical fatigue
- mental fatigue
- general fatigue
- reduced activity
- reduced motivation

# Dimensions questionnaires

- Dutch Fatigue Scale
  - 9 items over symptomen
- Dutch *exertion* fatigue scale
  - 9 items gerelateerd aan fysieke inspanning



# Cultuur

<b>MFI-20</b>	<b>Dutch COPD patients</b>	<b>American COPD patients</b>
General fatigue		
Physical fatigue		
Reduction activity		
Reduction motivation		
Mental Fatigue		

# Cultuur

<b>MFI-20</b>	<b>Dutch COPD patients</b>	<b>American COPD patients</b>
General fatigue	14 (4)	14 (4)
Physical fatigue	14 (5)	15 (4)
Reduction activity	15 (3)	14 (5)
Reduction motivation	12 (4)	11 (4)
Mental Fatigue	10 (3)	10 (4)

# Relevantie

<b>Vermoeidheid (MFI-20)</b>	<b>Correlatie Kwaliteit van leven (SGRQ)</b>
General fatigue	0,75
Physical fatigue	0,68
Reduction activity	0,46
Reduction motivation	0,42
Mental Fatigue	0,38

# Prevalentie

- 8% heeft vermoeidheid als klacht bij (huis)arts
- 41% heeft symptomen van chronische vermoeidheid

# Prevalentie (twin study n=4024)

- Severity (0-39): 14,8
- Abnormal fatigue: 25,3%
- prolonged fatigue: 1,1%
- Comorbidity depression

# Prevalentie (MFI-20 scores)

- Radiotherapie patiënten scoren vergelijkbaar met andere groepen, en lager dan chronic fatigue patiënten

# Relatie

Vermoeidheid (MFI-20)	Longfunctie (FEV <sub>1</sub> )
General fatigue	-0,28
Physical fatigue	-0,37
Reduction activity	<b>-0,62</b>
Reduction motivation	<b>-0,55</b>
Mental Fatigue	-0,23

# Relatie

<b>Vermoeidheid (MFI-20)</b>	<b>Longfunctie (FEV<sub>1</sub>)</b>	<b>Spierkracht Quadriceps</b>
General fatigue	-0,28	-0,43
Physical fatigue	-0,37	-0,49
Reduction activity	-0,62	-0,15
Reduction motivation	-0,55	-0,34
Mental Fatigue	-0,23	-0,40



# Relatie

<b>MFI-20</b>	<b>FEV1</b>	<b>Quadriceps force</b>	<b>Borg dyspoea</b>
General fatigue	-0,28	-0,43	-0,39
Physical fatigue	-0,37	-0,49	-0,29
Reduction activity	-0,62	-0,15	-0,34
Reduction motivation	-0,55	-0,34	-0,65
Mental Fatigue	-0,23	-0,40	-0,30

# Relatie

<b>MFI-20</b>	<b>FEV1</b>	<b>Quadriceps force</b>	<b>Borg dyspoea</b>	<b>Max workload</b>
General fatigue	-0,28	-0,43	-0,39	-0,28
Physical fatigue	-0,37	-0,49	-0,29	-0,44
Reduction activity	-0,62	-0,15	-0,34	-0,21
Reduction motivation	-0,55	-0,34	-0,65	-0,39
Mental Fatigue	-0,23	-0,40	-0,30	-0,35

# Relatie

**Table 4.** Multiple regression (stepwise) analyses of fatigue at baseline, beta and total  $R^2$

	General fatigue $\beta$	Physical fatigue $\beta$	Reduced activity $\beta$	Reduced motivation $\beta$	Mental fatigue $\beta$
<i>Demographic characteristics</i>					
Age			0.19	-0.23 <sup>a</sup>	
<i>Disease- and treatment-related variables</i>					
Type of treatment (radiotherapy with surgery, 1; other, 0)	0.36 <sup>b</sup>				
<i>Physiological variables</i>					
Maximal workload	-0.001	-0.40 <sup>b</sup>	-0.07	0.07	
Muscle force upper extremity		0.03			
Muscle force lower extremity	-0.03	0.02		0.04	
<i>Symptom distress variables</i>					
Physical symptoms (RSCL)	0.27 <sup>a</sup>	0.13		0.01	0.50 <sup>c</sup>
Psychological symptoms (RSCL)	0.16			0.06	0.14
<i>Perceived functioning</i>					
Physical functioning (RAND-36)	-0.40 <sup>b</sup>	-0.20		-0.27 <sup>a</sup>	-0.13
Psychological functioning (RAND-36)	-0.11	-0.14	-0.23 <sup>a</sup>	-0.15	-0.09
Role limitations physical problems (RAND-36)	-0.12	-0.44 <sup>c</sup>	-0.40 <sup>b</sup>	-0.10	-0.13
Self-efficacy (ALCOS)		-0.06	-0.10	-0.40 <sup>b</sup>	-0.11
Total $R^2$	48.8%	54.6%	26.2%	38.7%	25.4%

Only variables entered into the model are depicted.

<sup>a</sup> $p < .05$ ; <sup>b</sup> $p < .01$ ; <sup>c</sup> $p < .001$ .

Abbreviations: RSCL, Rotterdam Symptom Check List.

# Relatie met veroudering

- Prevalentie?
- Relatie met activiteit en belastbaarheid

PM R. 2010 May;2(5):406-13

- Reflectie van

- veroudering Aging Clin Exp Res. 2010 Apr;22(2):100-15

- aandoening of beperking

Phys Med Rehabil Clin N Am. 2010 May;21(2):321-37. Dev Med Child Neurol. 2009 Aug;51(8):670-8

Therapie, training, gedragstherapie

# Therapie, training, gedragstherapie

Domain	Dutch population	Group	Pre-intervention	Post-intervention
<i>General fatigue</i>	09.91(5.2)	PT+CBT	15.7 (3.5) <sup>***</sup>	11.4 (3.3) <sup>†</sup>
		PT	15.6 (3.3) <sup>***</sup>	11.6 (3.8) <sup>†</sup>
		WLC	15.1 (3.3) <sup>***</sup>	13.1 (4.1) <sup>†††</sup>
<i>Physical fatigue</i>	09.79(4.9)	PT+CBT	15.6 (3.3) <sup>***</sup>	9.3 (3.5)
		PT	15.0 (3.3) <sup>***</sup>	10.1 (3.7)
		WLC	14.3 (3.7) <sup>***</sup>	12.3 (4.3) <sup>†††</sup>
<i>Mental fatigue</i>	08.69(4.6)	PT+CBT	13.3 (3.8) <sup>***</sup>	11.4 (3.6) <sup>††</sup>
		PT	12.7 (4.5) <sup>***</sup>	10.5 (3.8) <sup>††</sup>
		WLC	12.8 (4.4) <sup>***</sup>	11.9 (4.4) <sup>††</sup>
<i>Reduced motivation</i>	08.23(4.0)	PT+CBT	10.7 (3.4) <sup>***</sup>	8.1 (3.6)
		PT	10.7 (4.3) <sup>***</sup>	8.2 (3.5)
		WLC	11.4 (3.7) <sup>***</sup>	10.0 (3.7) <sup>††</sup>
<i>Reduced activation</i>	08.3(4.8)	PT+CBT	13.2 (4.2) <sup>***</sup>	<u>9.4 (4.0)</u>
		PT	12.7 (3.7) <sup>***</sup>	9.2 (3.4)
		WLC	13.1 (3.9) <sup>***</sup>	11.1 (4.3) <sup>†††</sup>

# Therapie

Domain	Condition	Between-group change (95% CI) WLC = reference	Between-group change (95% CI) PT = reference
<i>General fatigue</i>	PT+CBT	-1.3 (-3.1 to 0.4)	0.6 (-1.1 to 2.3)
	PT	-2.0 (-3.5 to -0.5) **	Reference
	WLC	reference	
<i>Physical fatigue</i>	PT+CBT	-2,7 (-4.5 to -1.0) **	-0.3(-2.0 to 1.4)
	PT	-2.4 (-4.0 to -0.9) ***	reference
	WLC	reference	
<i>Mental fatigue</i>	PT+CBT	-0.5 (-2.3 to 1.2)	1.0 (-0.7 to 2.8)
	PT	-1.6 (-3.1 to -0.1)*	reference
	WLC	reference	
<i>Reduced motivation</i>	PT+CBT	-0.6 (-2.1 to 1.0)	0.7 (-0.8 to 2.2)
	PT	-1.3 (-2.6 to 0.36)	reference
	WLC	reference	
<i>Reduced activation</i>	PT+CBT	-0.9 (-2.6 to 0.8)	0.8 (-0.9 to 2.4)
	PT	-1.7 (-3.1 to -0.2)*	reference
	WLC	reference	

- Exercise can be regarded as beneficial for individuals with cancer-related fatigue during and post cancer therapy. Further research is required to determine the optimal type, intensity and timing of an exercise intervention.

*Cramp. Cochrane Database of Systematic Reviews 2008, Issue 2.*



- Delivery of a standardized resistive exercise PT intervention is feasible during outpatient radiation therapy and is associated with preserved physical well-being. However, benefits were not sustained, and ***fatigue was not affected***

Cheville. Am J Phys Med Rehabil. 2010 Aug;89(8):611-9.

- Three months of individualized, prescriptive exercise leads to improved cardiovascular endurance, fatigue, and symptoms of depression in breast cancer survivors.

CBT is effective in reducing the symptoms of fatigue at post-treatment compared with usual care, and may be more effective in reducing fatigue symptoms compared with other psychological therapies. The evidence base at follow-up is limited to a small group of studies with inconsistent findings. There is a lack of evidence on the comparative effectiveness of CBT alone or in combination with other treatments, and further studies are required to inform the development of effective treatment programmes for people with CFS.

# Therapie, hoe werkt training?

# Therapie, hoe werkt training?

**Table 5.** Hierarchical multiple regression analyses of change in fatigue

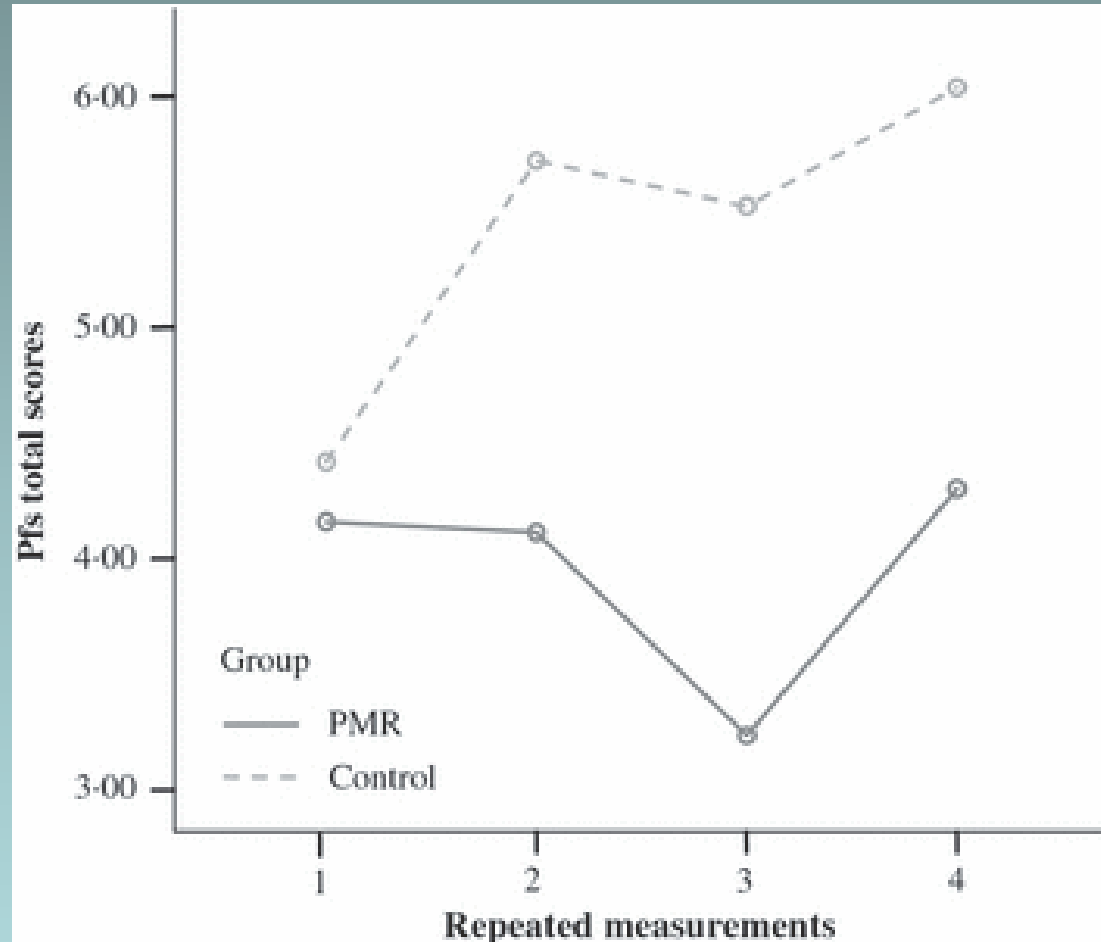
Predictors	General fatigue T1				Physical fatigue T1				Reduced activity T1				Reduced motivation T1				Mental fatigue T1								
	$\beta$	$R^2$	$ch$	$Fch$	$p$	$\beta$	$R^2$	$ch$	$Fch$	$p$	$\beta$	$R^2$	$ch$	$Fch$	$p$	$\beta$	$R^2$	$ch$	$Fch$	$p$					
Step 1	.46			46.3	<.001	.41			26.9	<.001	.38			31.2	<.001	.44			42.3	<.001	.36			30.0	<.001
<i>Fatigue preintervention (T0)</i>	.68 <sup>c</sup>					0.64 <sup>c</sup>					.62 <sup>c</sup>					.67 <sup>c</sup>					.60 <sup>c</sup>				
Step 2	.07			3.8	<.05	.17			7.1	<.001	.11			5.1	<.01	.08			4.2	<.01	.06			5.6	<.01
<i>Physiological variables</i>																									
$\Delta$ Maximal workload						-.02																			
$\Delta$ Muscle force upper extremity																									
$\Delta$ Muscle force lower extremity																									
<i>Symptom distress variables</i>																									
$\Delta$ Physical symptoms	.08																				.25 <sup>a</sup>				
$\Delta$ Psychological symptoms																									
<i>Perceived functioning</i>																									
$\Delta$ Physical functioning	-.23 <sup>a</sup>																								
$\Delta$ Psychological functioning																									
$\Delta$ Role limitations physical problems																									
$\Delta$ Self-efficacy																									
Total $R^2$ (%)		53%					58%					49%					52%								42%

<sup>a</sup> $p < .05$ ; <sup>b</sup> $p < .01$ ; <sup>c</sup> $p < .001$ .

$\Delta$ , difference between T0 and T1.

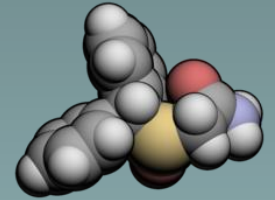
# Therapie, entspanning

# Therapie, entspanning



Demiralp. J Clin Nurs. 2010 Apr;19(7-8):1073-83.

# Therapie, medicamenteus Modafinil



- neurotransmitter
- a performance-enhancing doping
- a "wakefulness promoting agent"
- tactical paramedics in Maryland may administer modafinil to law enforcement personnel in order to "enhance alertness / concentration" and "facilitate functioning with limited rest periods"



# Therapie, medicamenteus

**Table 3. Repeated-Measures Analyses of Fatigue Scale Scores at Baseline and Week 4 for Modafinil and Placebo Groups**

Measure	Modafinil (n = 62)		Placebo (n = 53)		<i>F</i>	<i>P</i>
	Baseline	Week 4	Baseline	Week 4		
Fatigue Severity Scale, mean (SD)	52 (7)	34 (5)	52 (6)	43 (13)	13.05	<.001
Chalder Fatigue Scale, mean (SD)	32 (5)	22 (8)	32 (5)	26 (8)	5.01	.027
Role Function Scale, mean (SD)	39 (7)	22 (9)	36 (6)	27 (11)	14.90	<.001
Epworth Sleepiness Scale, mean (SD)	14 (5)	9 (5)	14 (5)	11 (6)	6.33	.013

Rabkin J Clin Psychiatry 2010;71(6):707–715

# Therapie

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Outcome	Baseline		Cycle 4	
	Modafinil	Placebo	Modafinil	Placebo
BFI-3	7.39	7.43	6.87	7.09
ESS	18.16	19.19	16.82	18.38
CESD	16.90	17.79	15.89	16.12
POMS-DD	3.87	4.09	3.37	3.56

# Vermoeidheid

- Multidimensioneel
- Veel voorkomend
- Relevant
- Oorzaak niet bekend
- Therapie
  - Exercise
  - Cognitieve gedragstherapie
  - Ontspanning
  - Modafinil
- Werkingsmechanismen onbekend