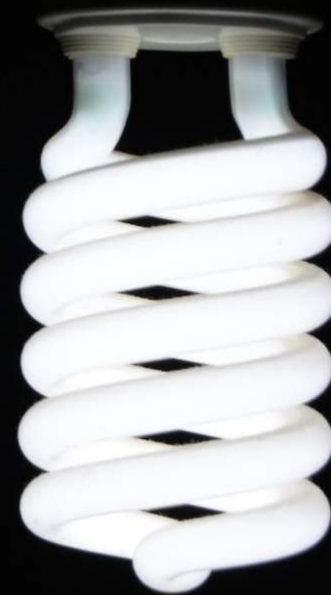


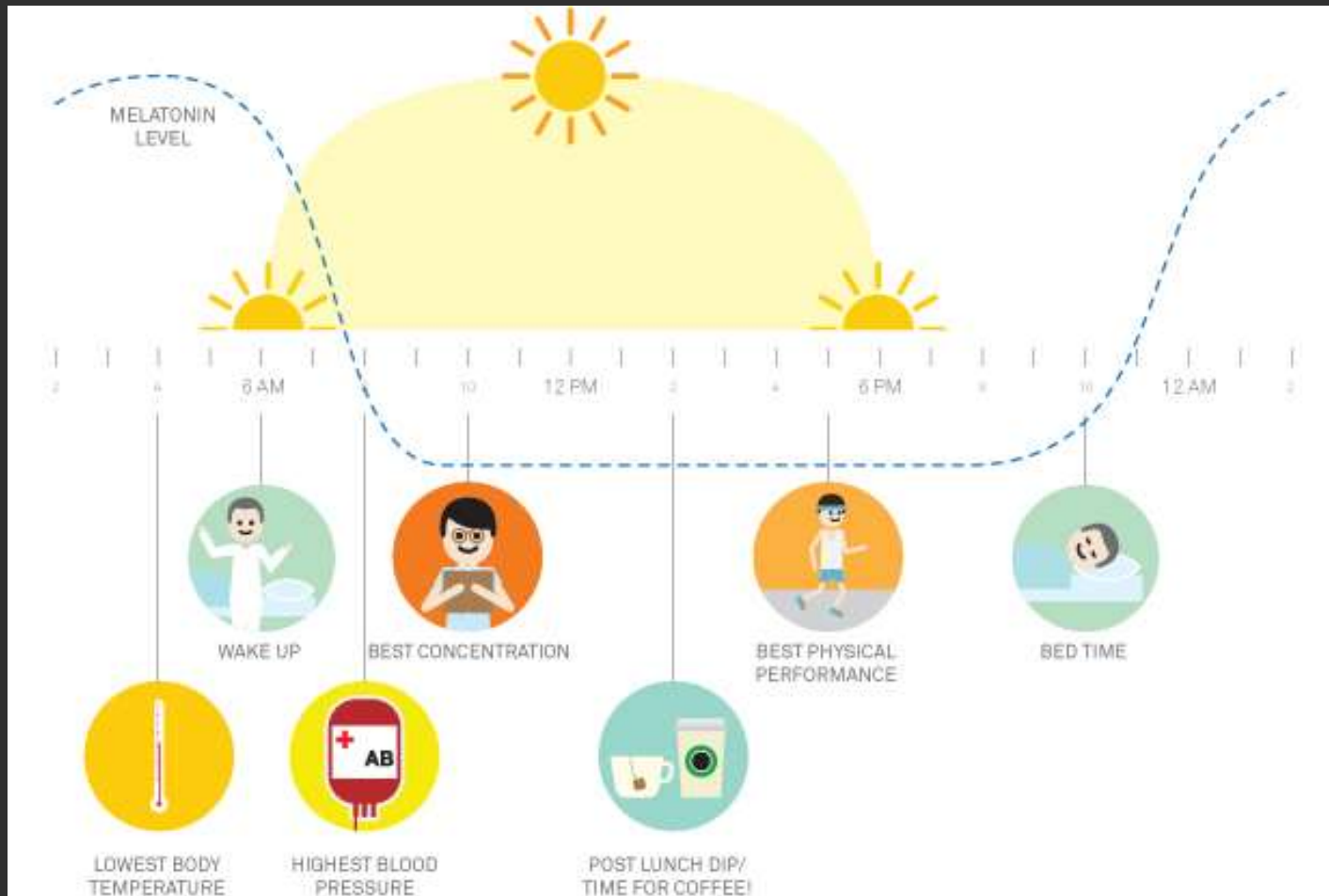
Lichttherapie bij slaapstoornissen ouderen

NKOP Symposium 2017

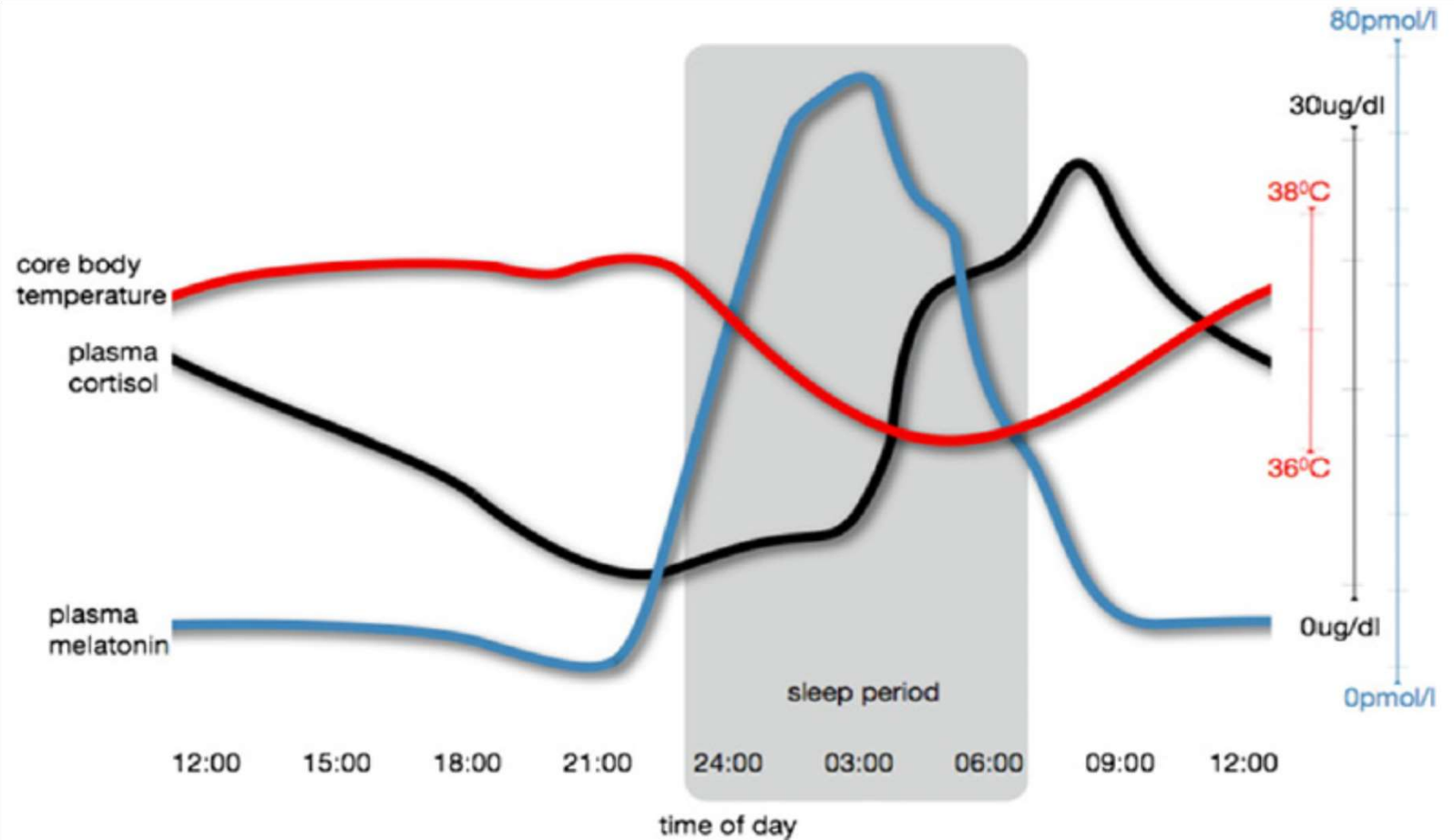
Lichttherapie

Achtergrond

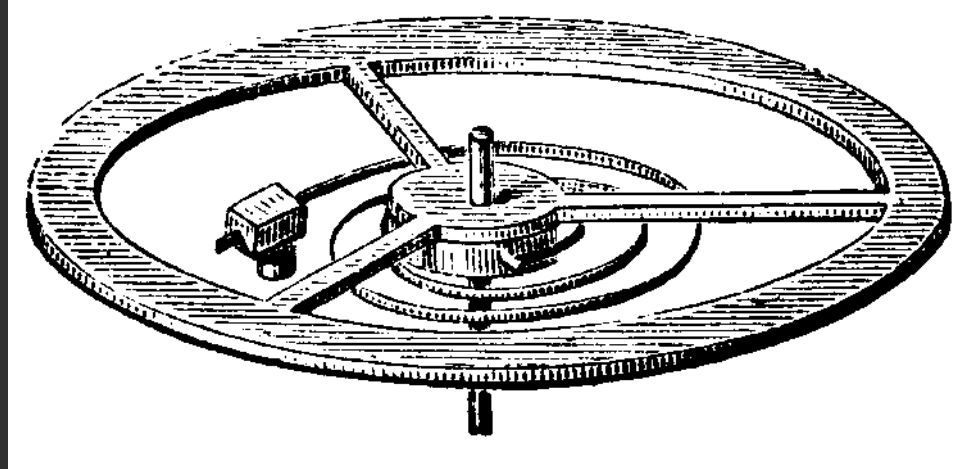


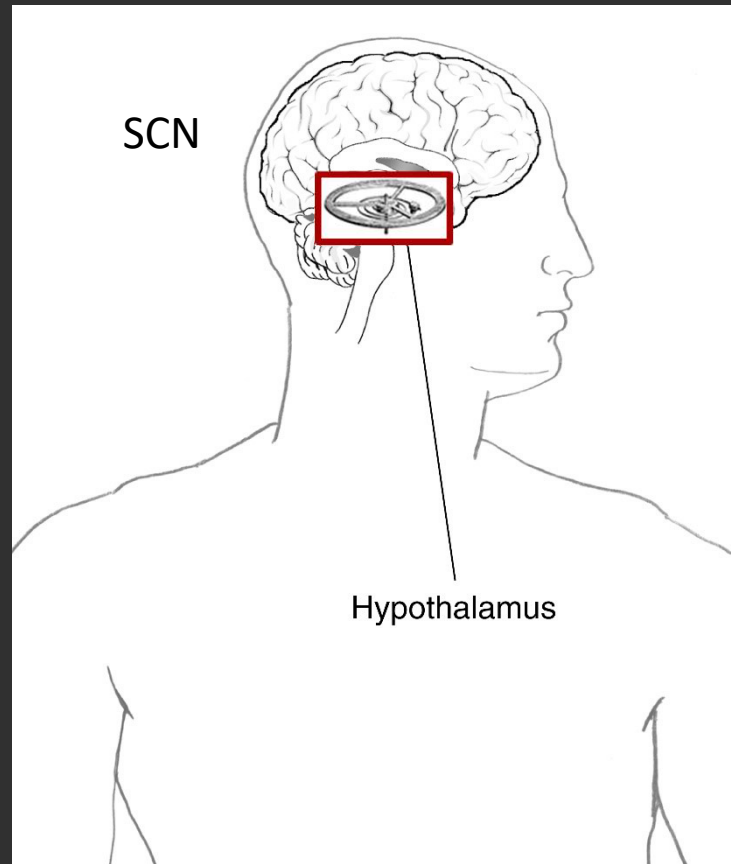


Circadiaanse ritme

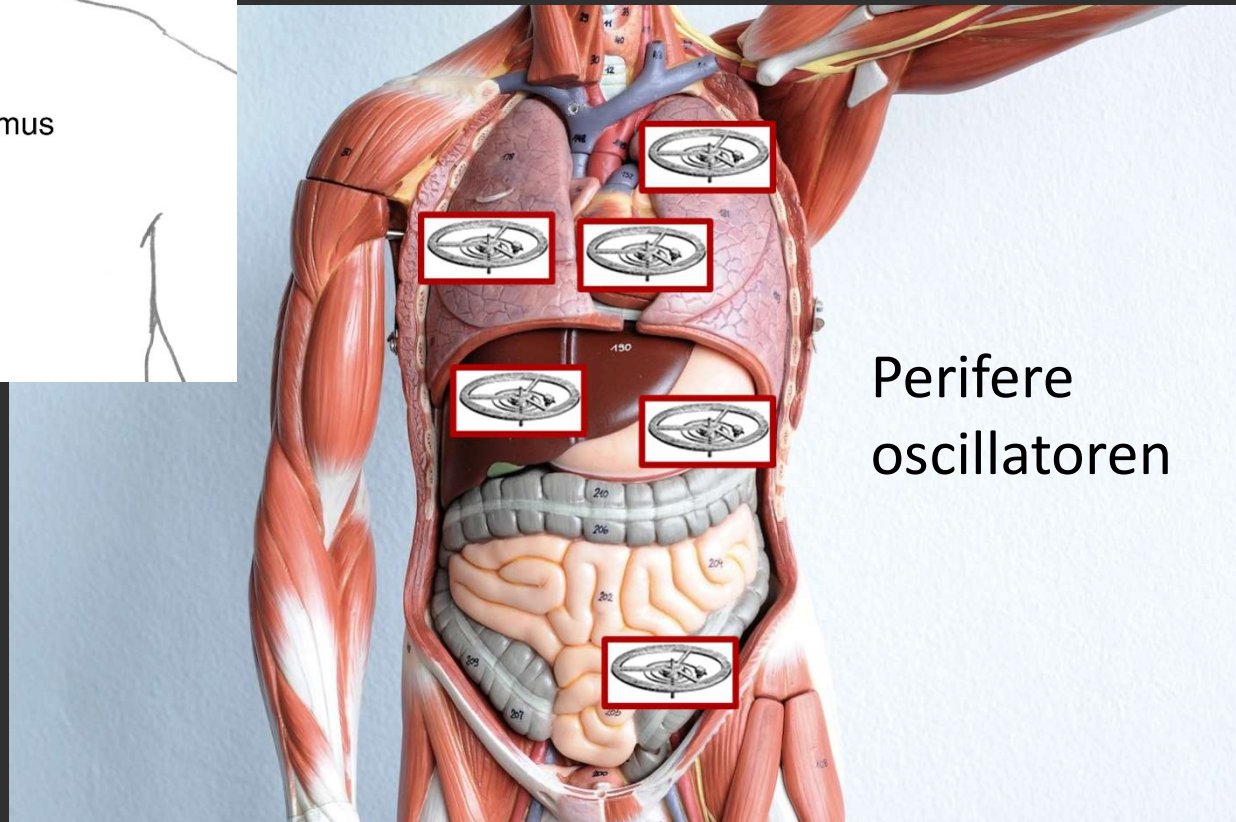


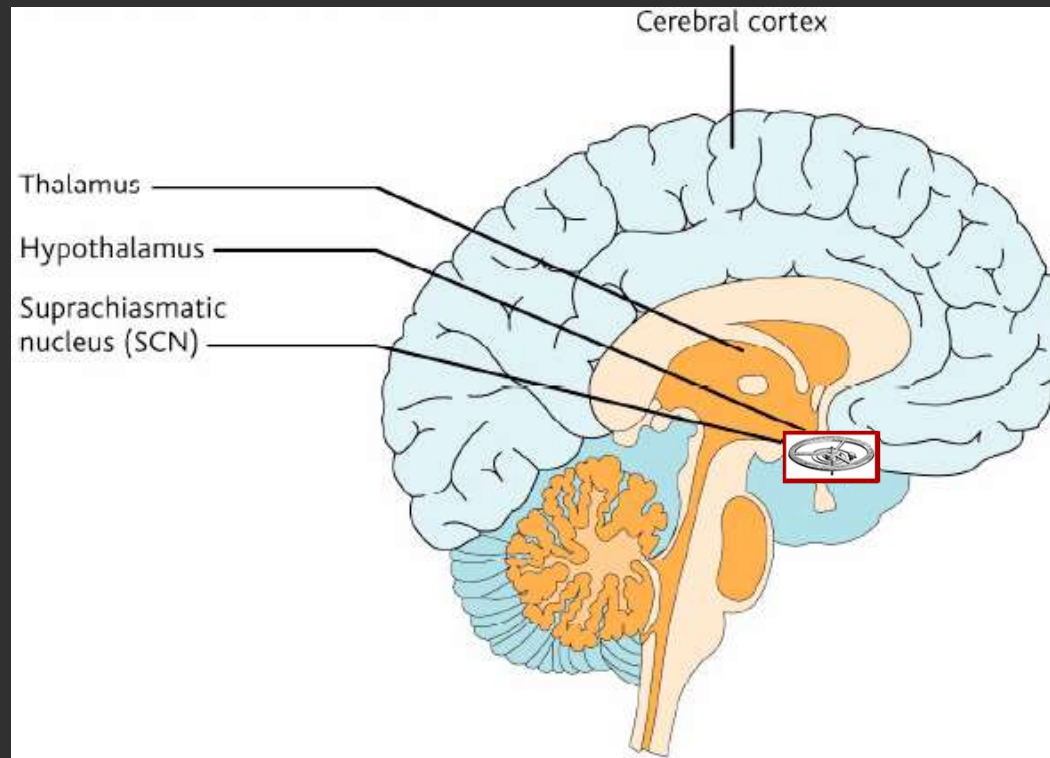
Oscillator



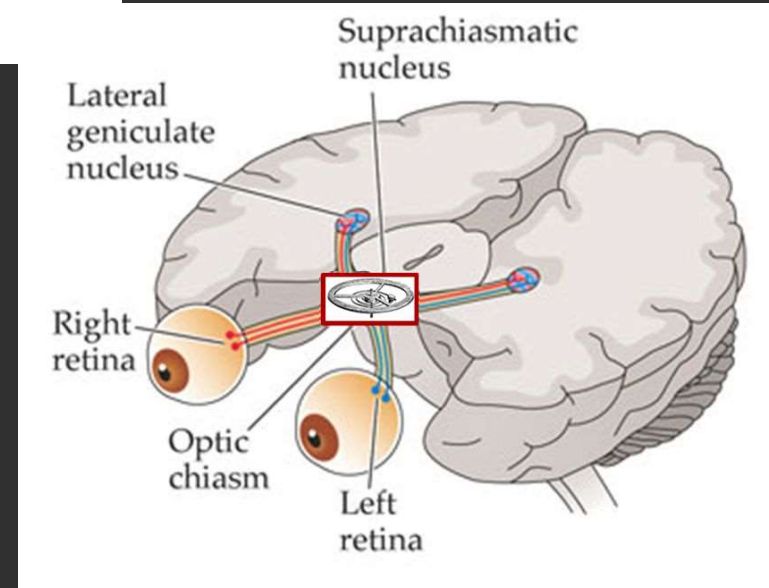


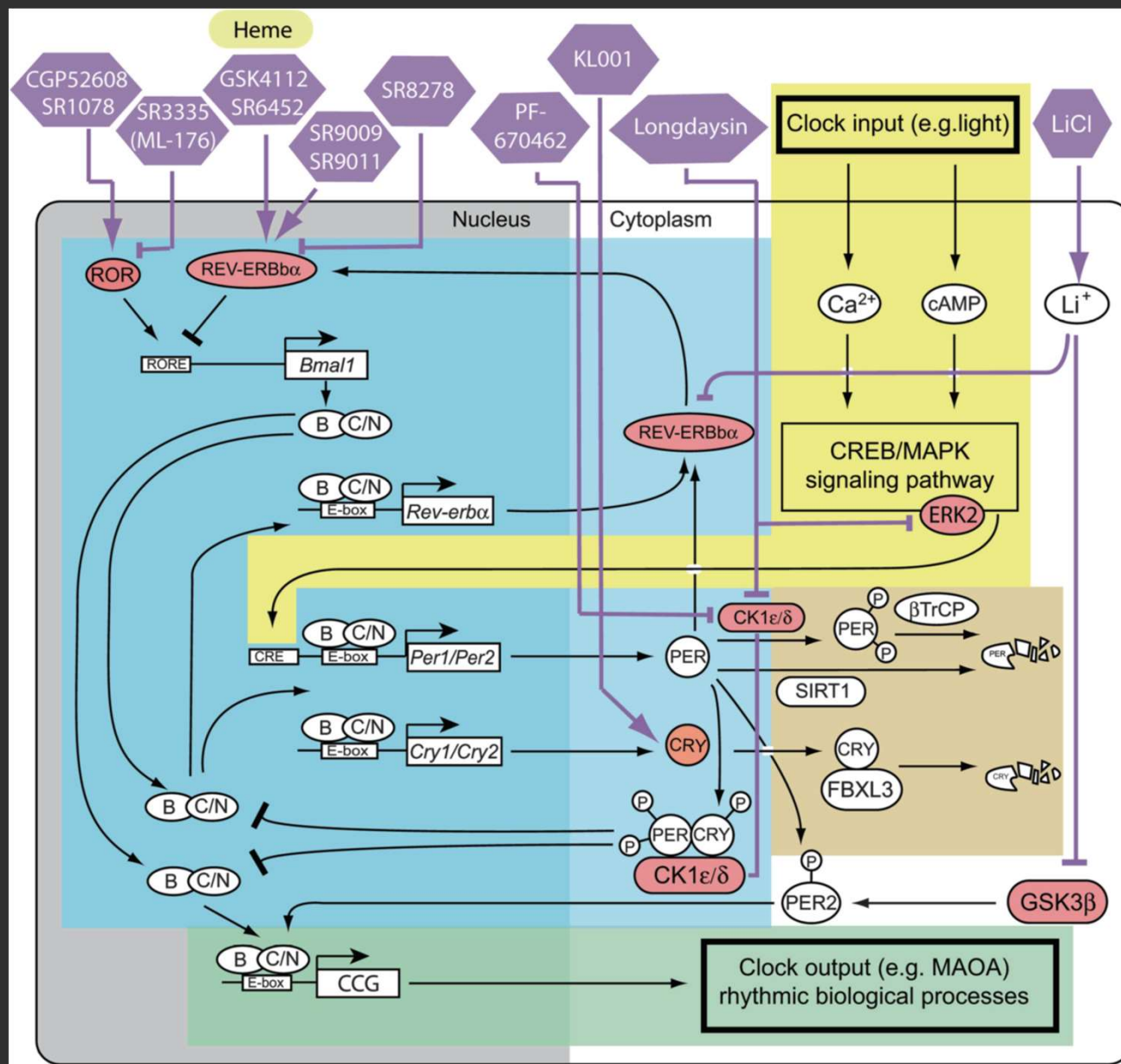
Suprachiasmatic nucleus
(SCN; nucleus suprachiasmaticus)

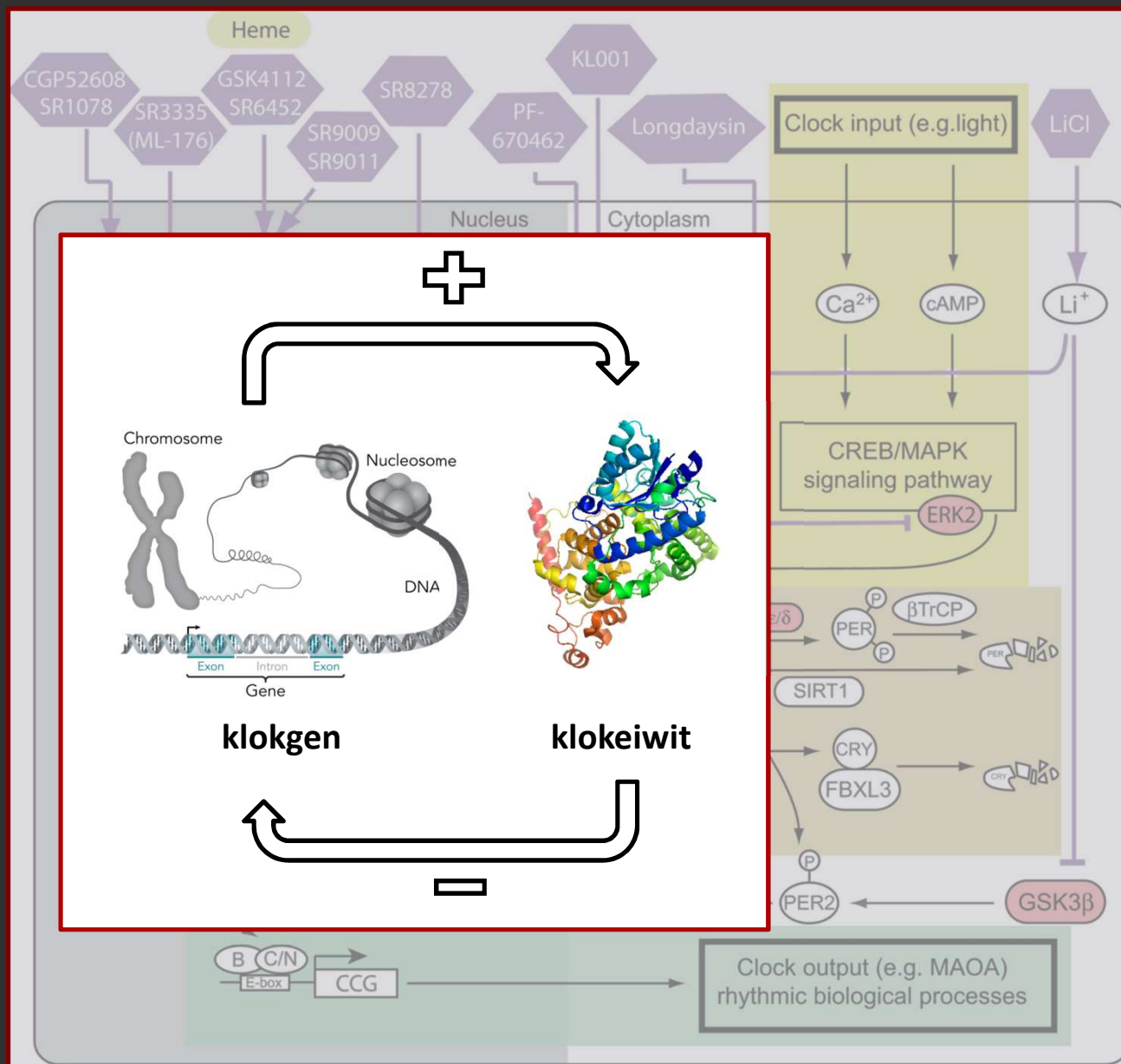




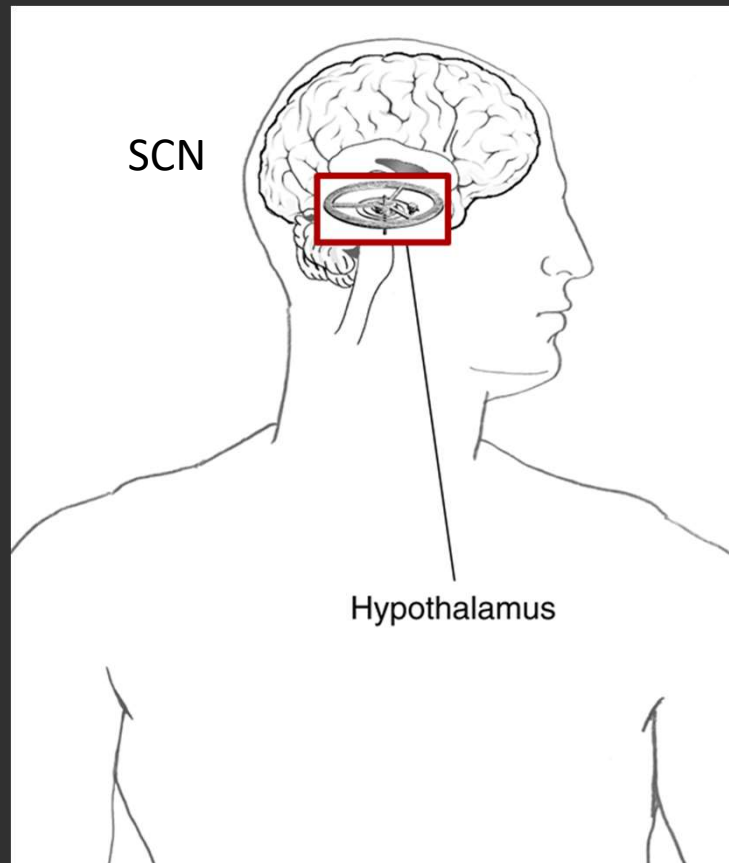
Suprachiasmatic nucleus
(SCN; nucleus suprachiasmaticus)





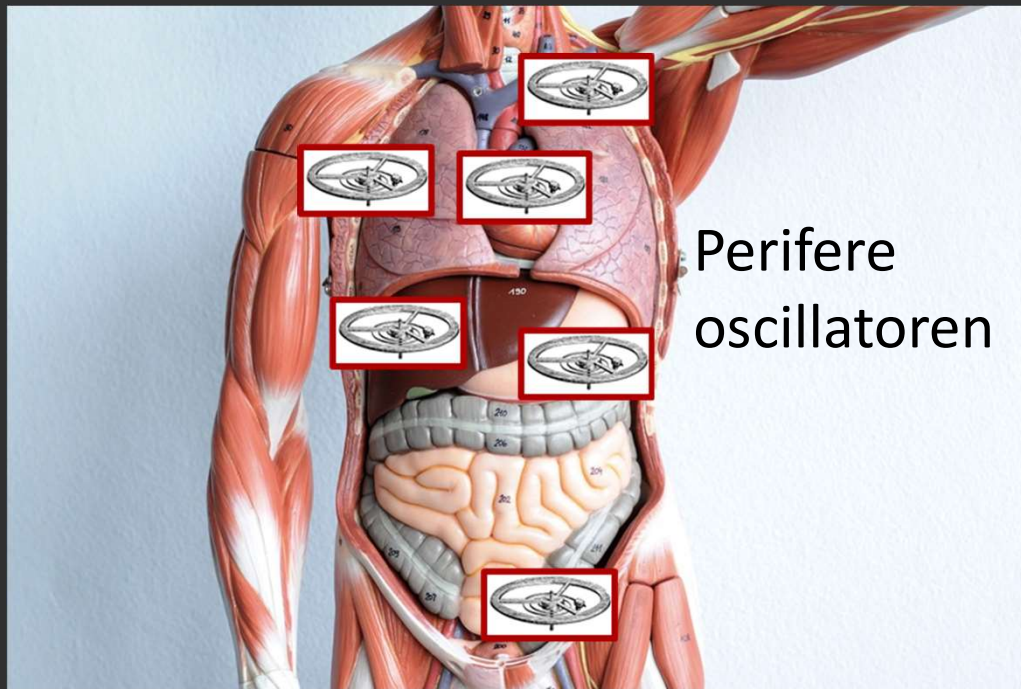






“Zeitgeber”

“Entrainment”



Perifere
oscillatoren

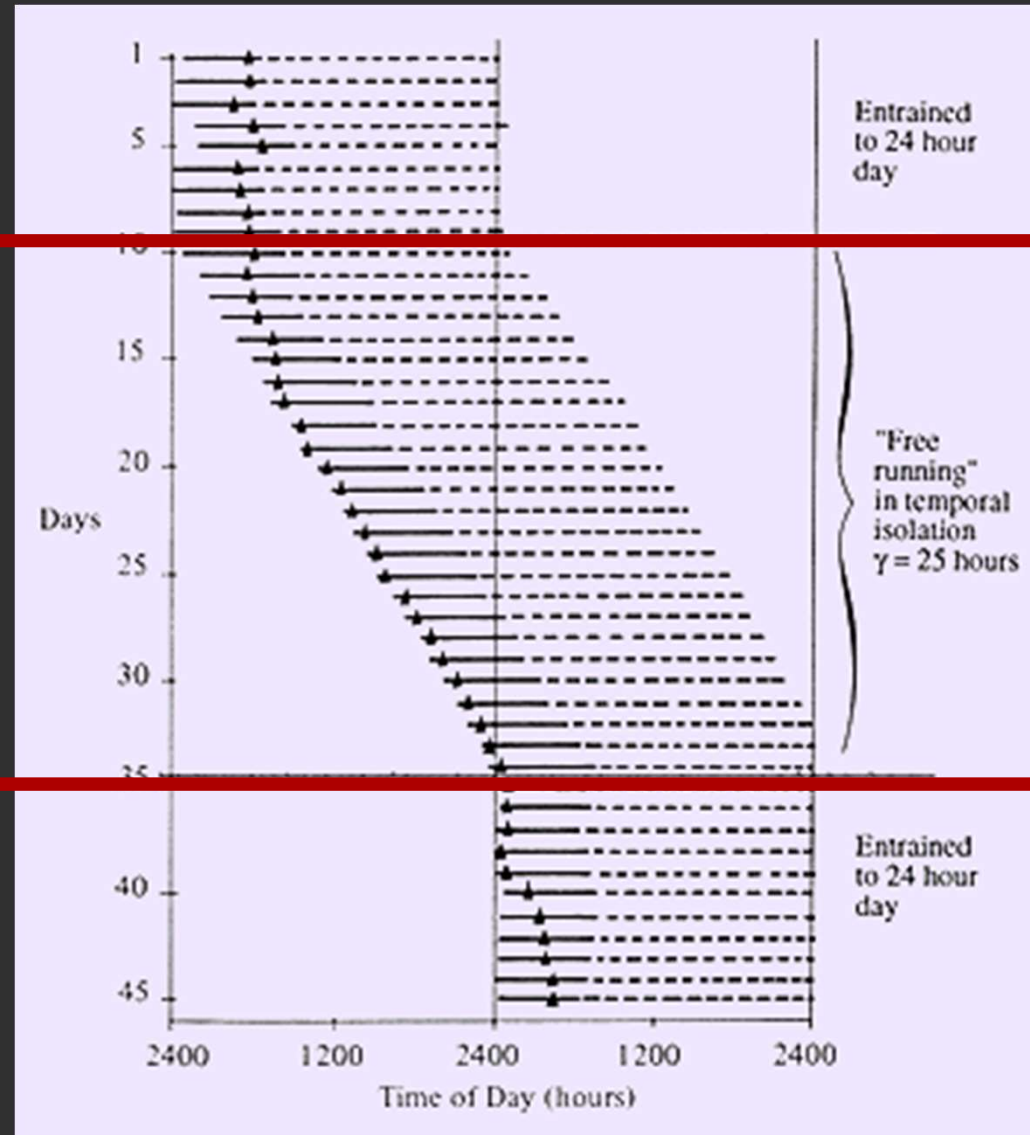


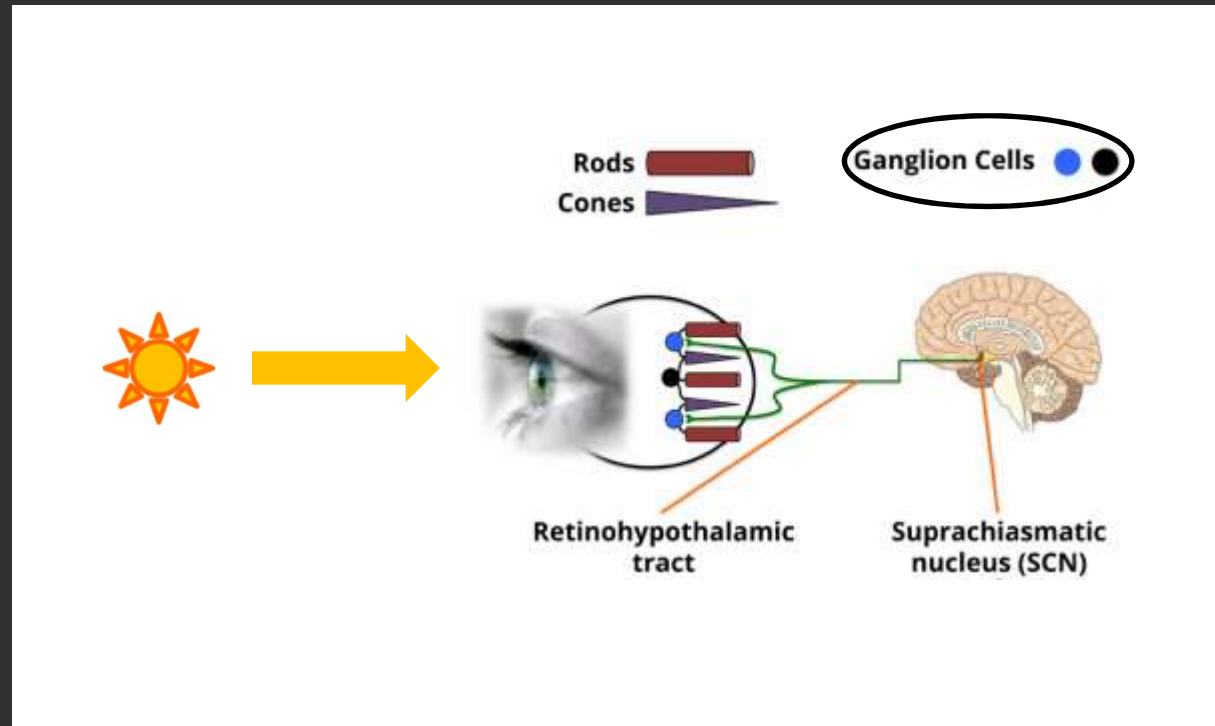
“Zeitgeber”

“Entrainment”



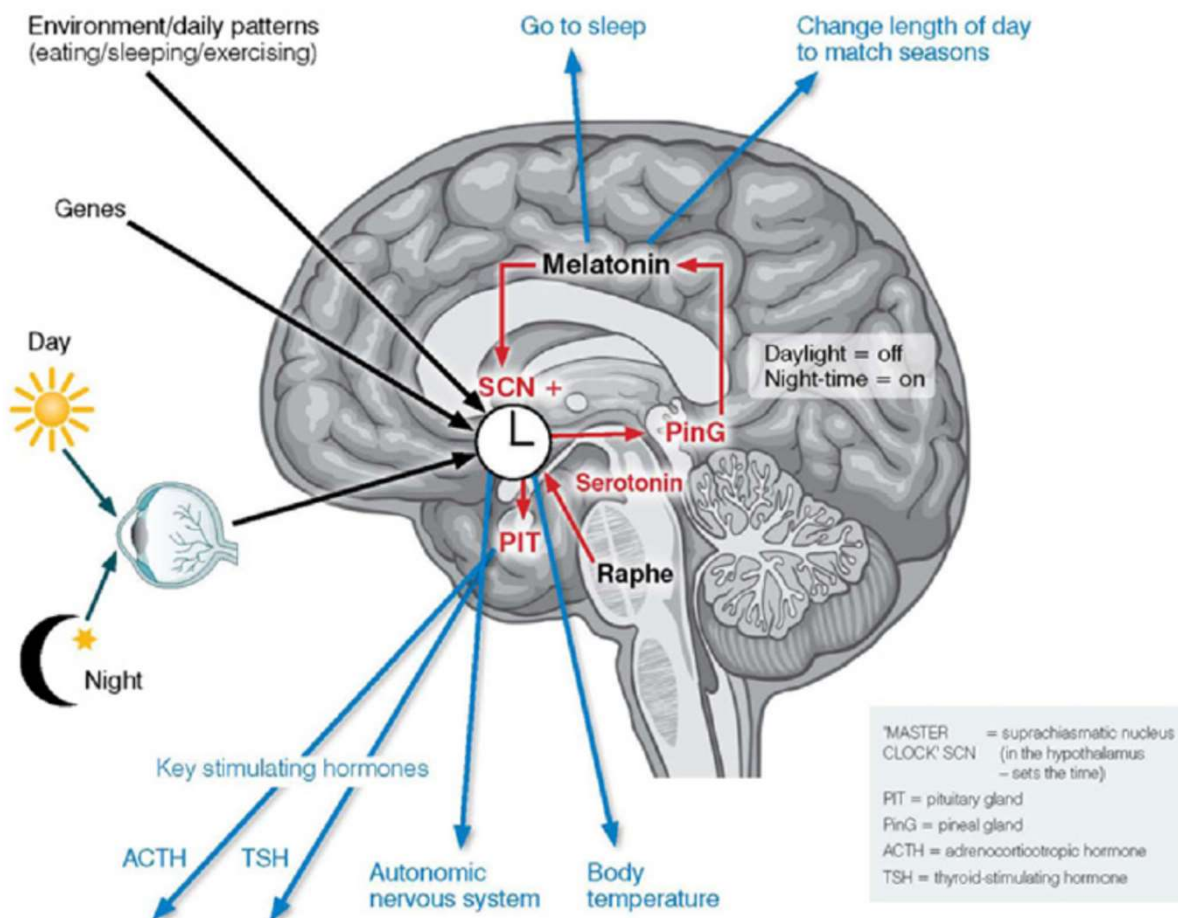
“Free running state”





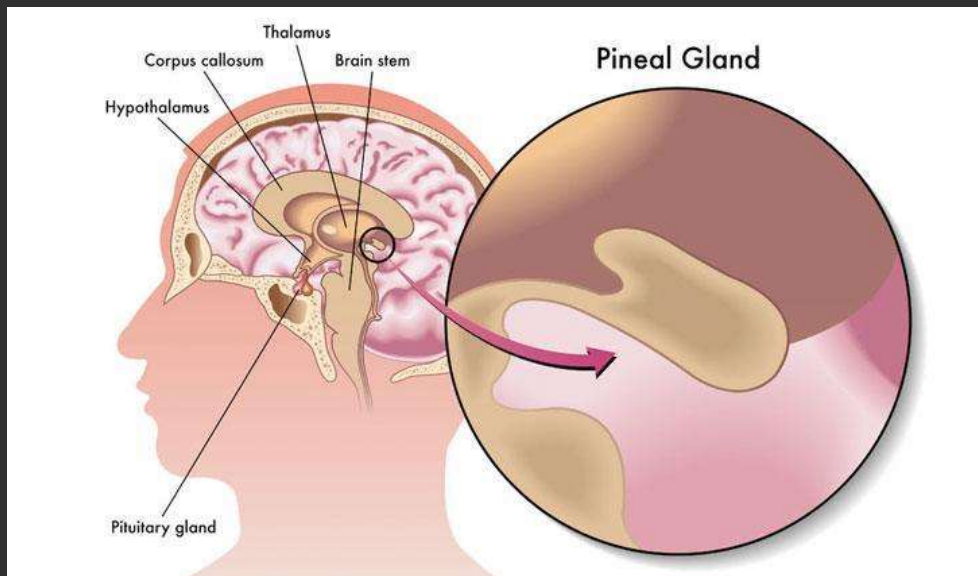
tractus
retinohypothalamicus

Setting the 24-hour circadian rhythm

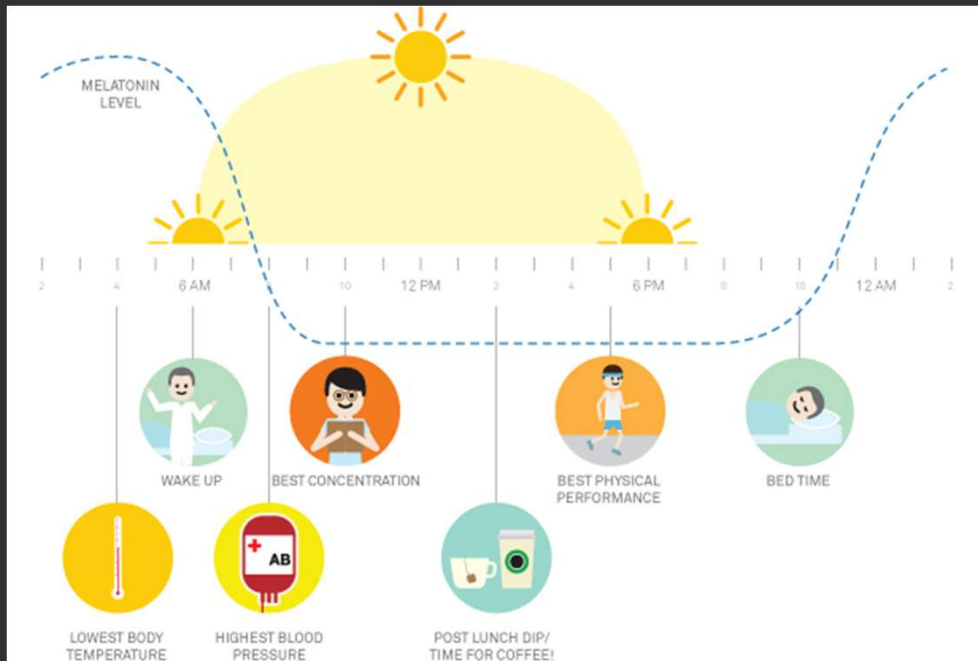


ORGAN LEVEL

Adrenal gland	Thyroid gland	Heart	Pancreas	Liver	Fat	Muscle	Gut
							
cortisol	thyroid hormone		insulin	glycogen	lipid metabolism		



Melatonin

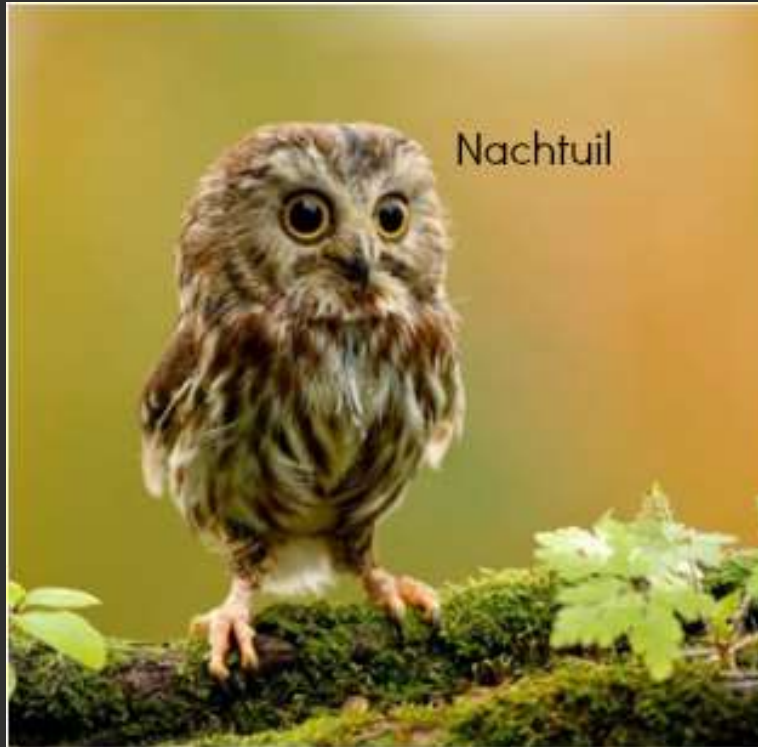


Placebo



Melatonin (5 mg)

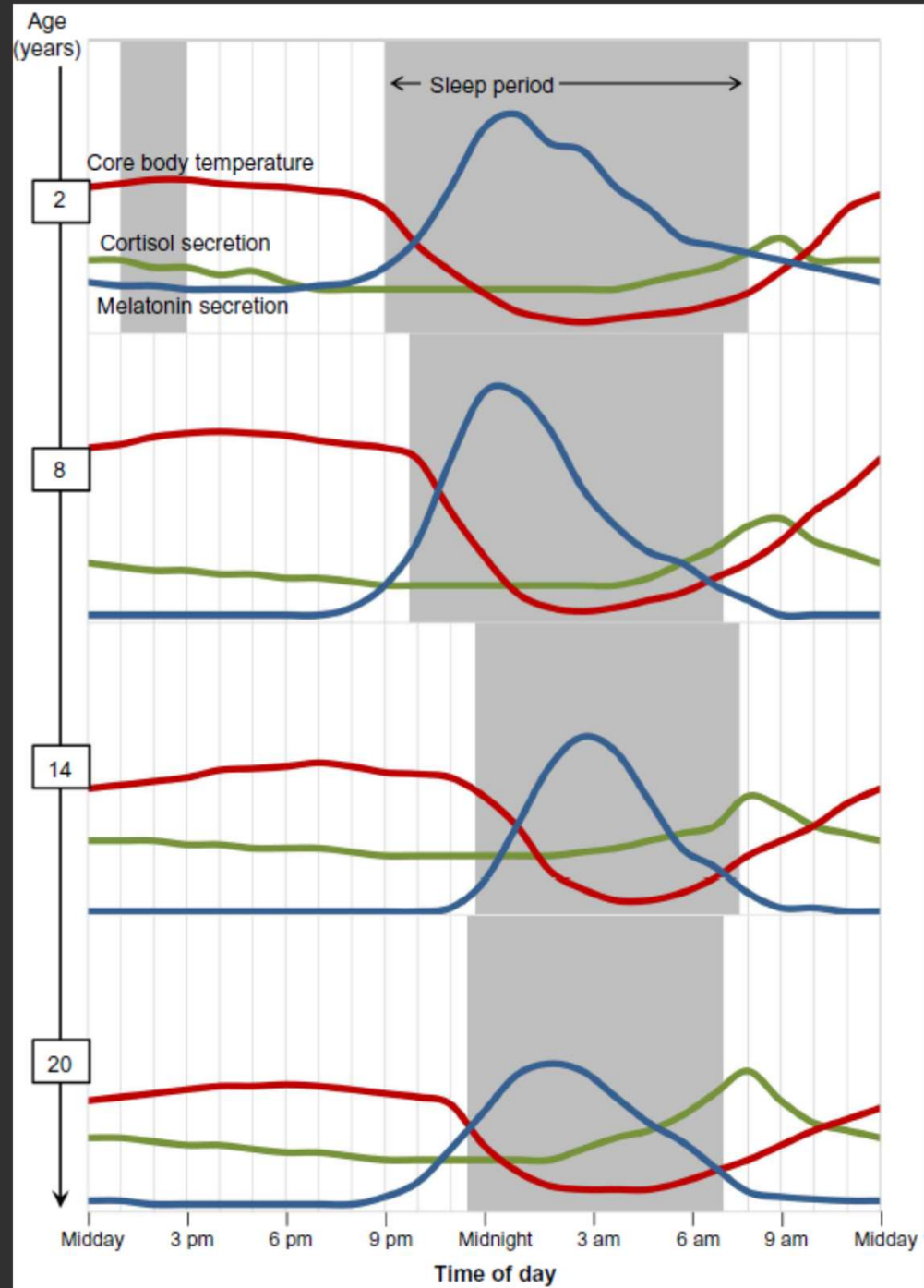
Chronotype



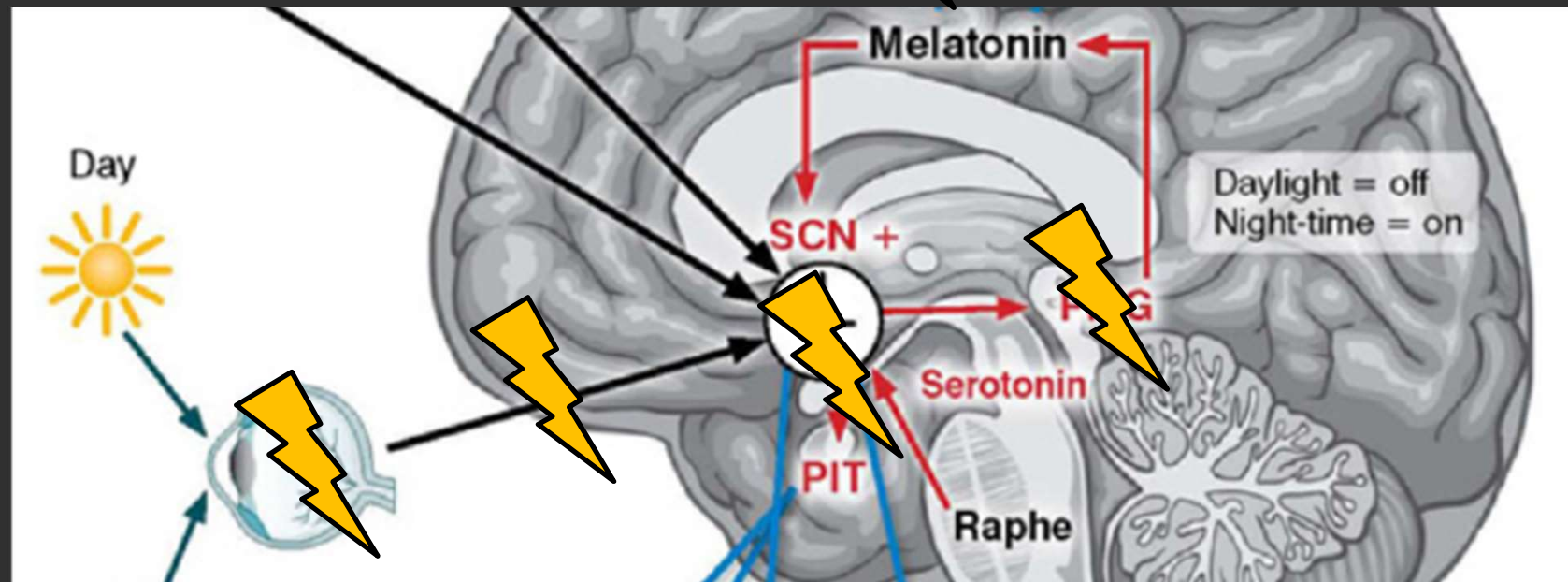
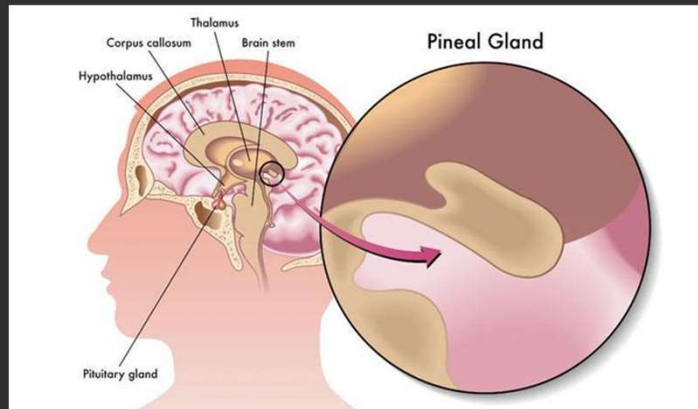
Nachtuil



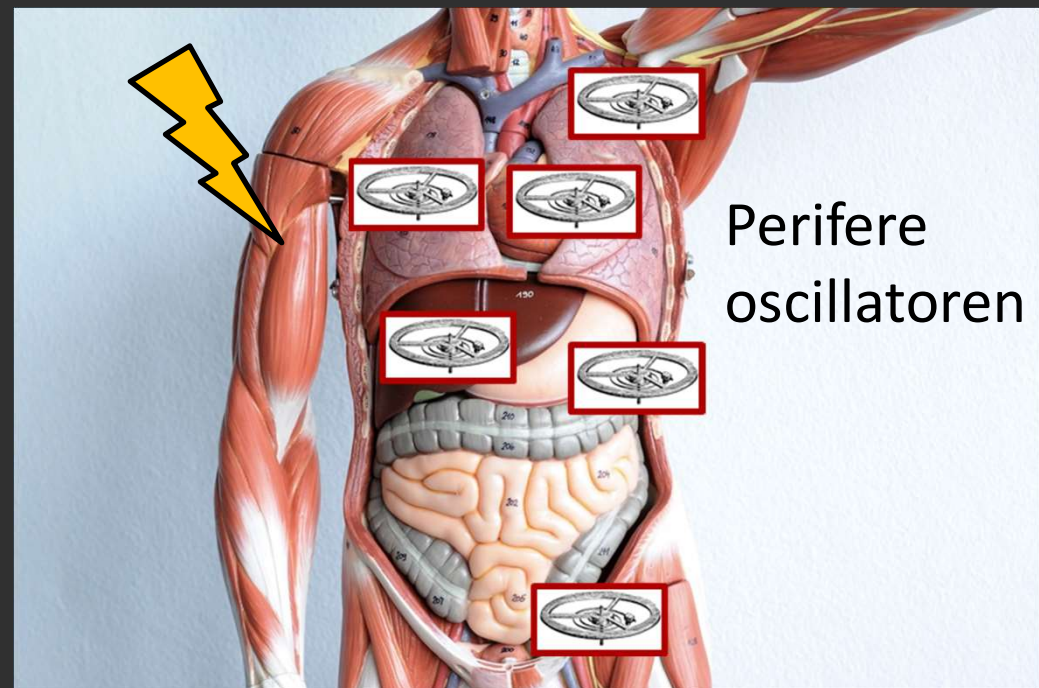
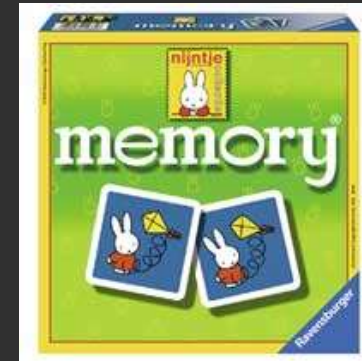
Vroege vogel



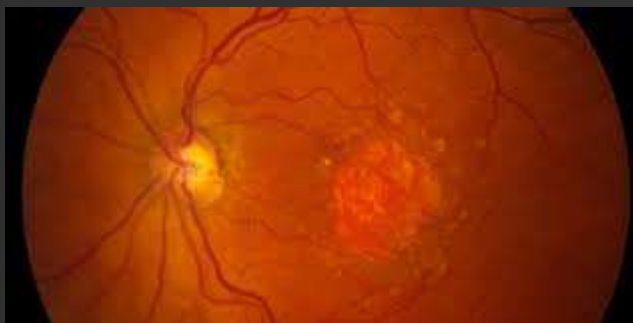
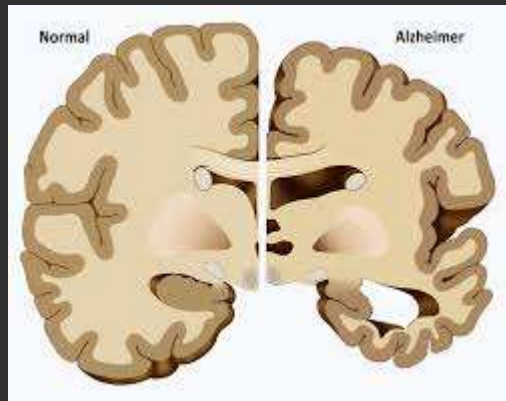
Veroudering en het circadiaanse ritme



Veroudering en het circadiaanse ritme



Veroudering en het circadiaanse ritme



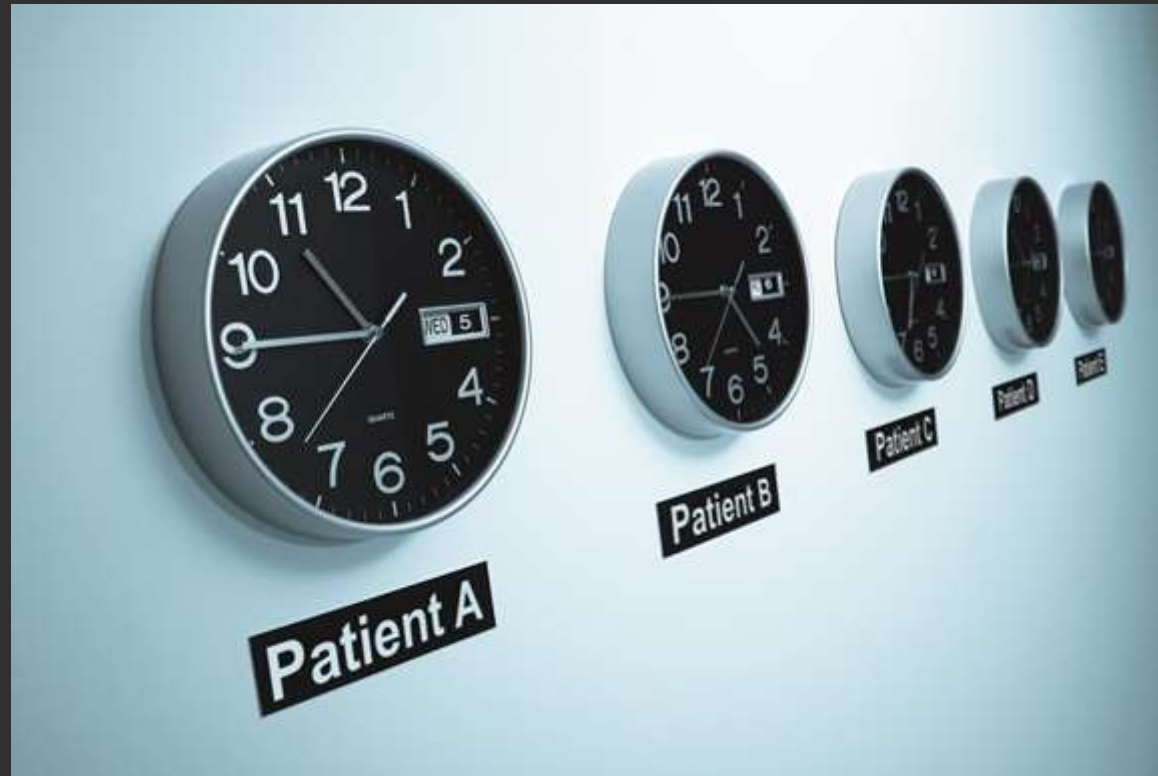
Veroudering en het circadiaanse ritme



Circadiane ritmeslaapstoornissen

- Vervroegde-slaapfasesyndroom
- Vertraagde-slaapfasesyndroom
- Onregelmatig slaap-waakritme
- Niet-24-uurs-slaap-waakritme





Psychiatrische chronotherapie:

Gecontroleerde blootstelling aan prikkels uit de omgeving die inwerken op de biologische ritmes om zodoende therapeutisch effect te krijgen bij het behandelen van psychiatrische aandoeningen.



Vincenzo Chiarugi (1759-1820)



Lichttherapie



Seasonal affective
disorder (SAD);
winterdepressie

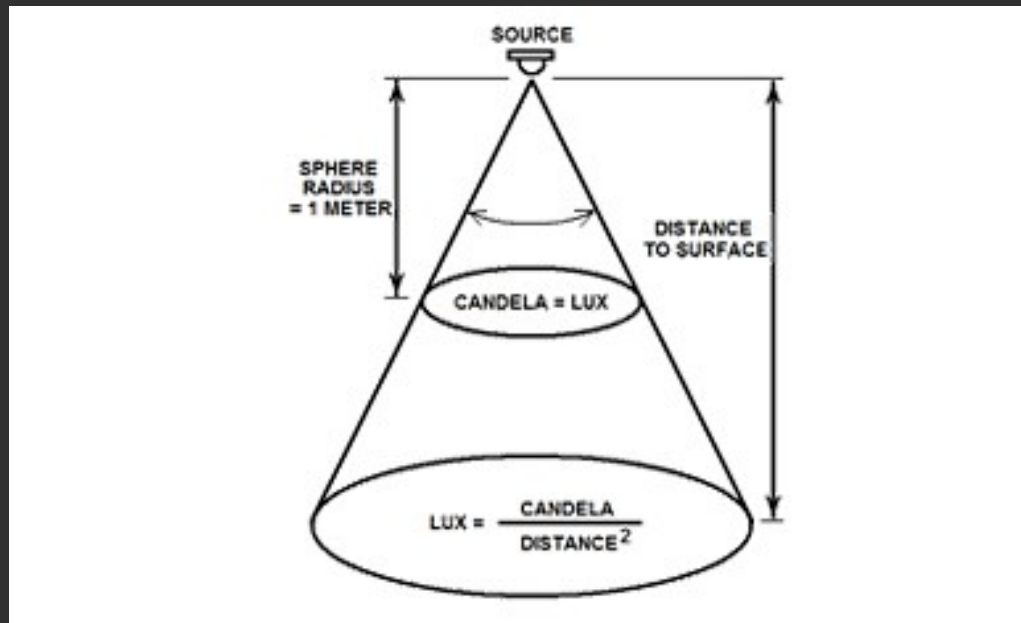


**Bij winterdepressie:
10.000 lux
30 tot 45 minuten**



Candela en lux

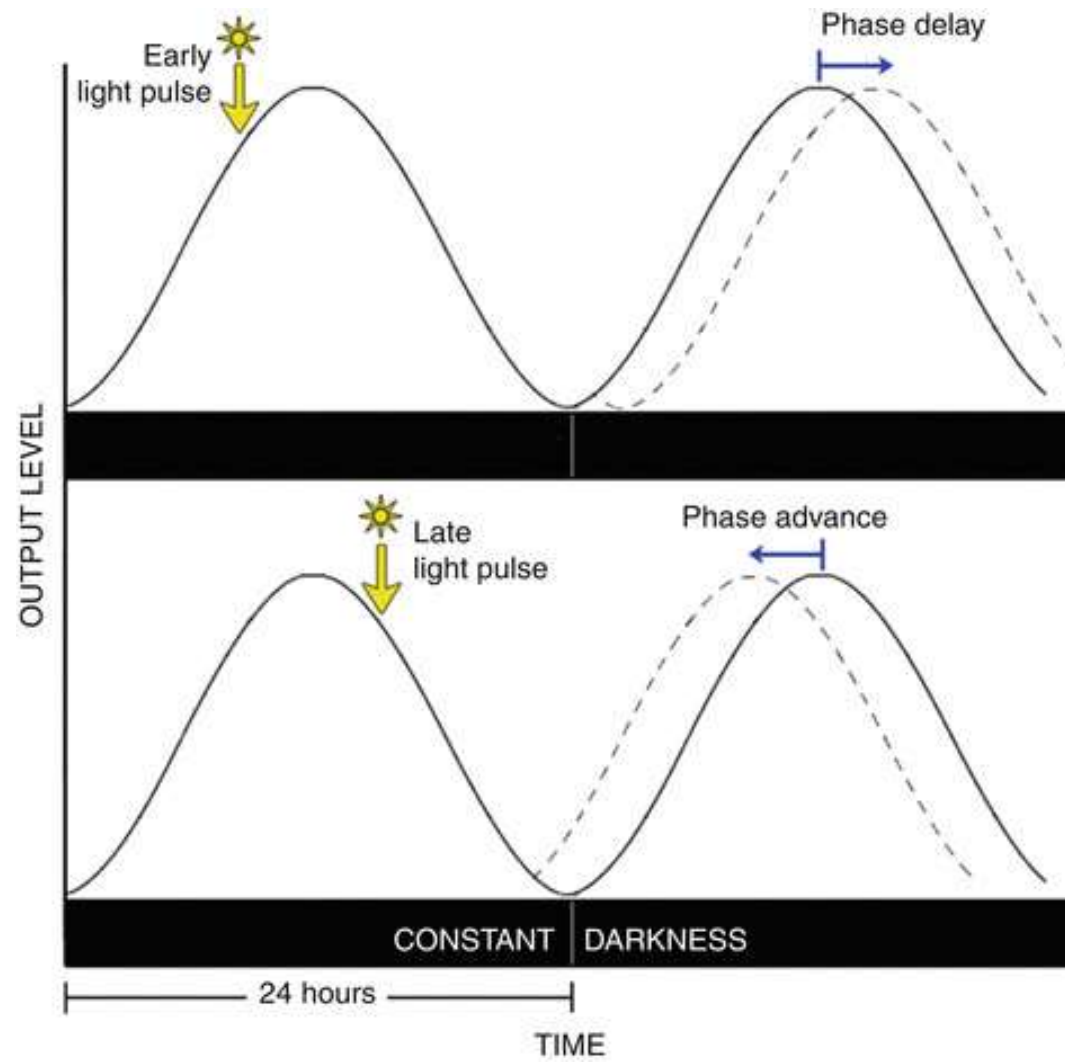
- Candela is de eenheid voor lichtsterkte
- Lux is de eenheid voor verlichtingssterkte



Voorbeelden lux

- Zonlicht: 100 000 - 130 000 lux
- Daglicht, indirect zonlicht: 10 000 - 20 000 lux
- Bewolkte dag: 1000 lux
- Volle maan: 0.1 lux



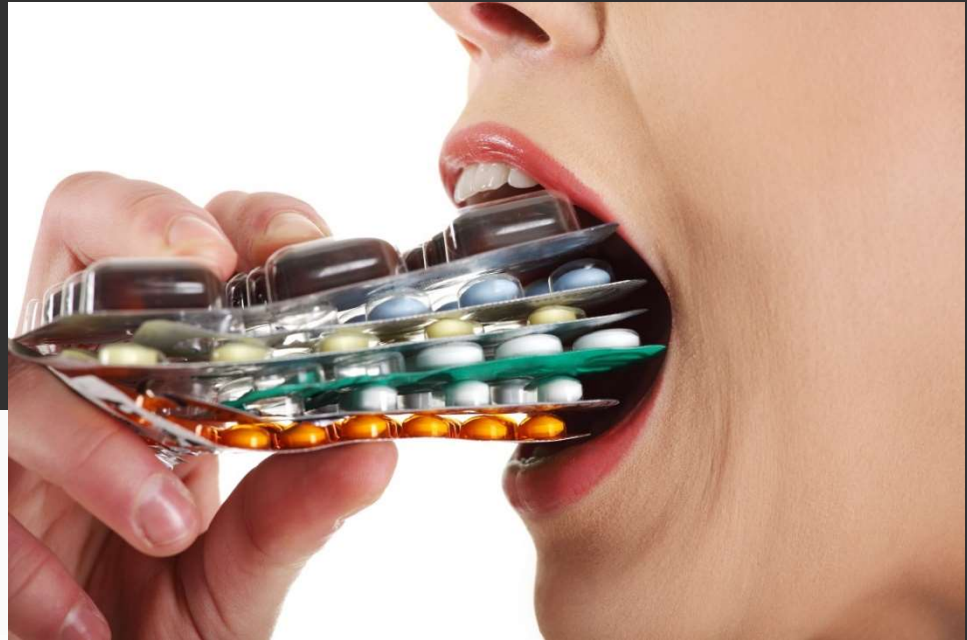


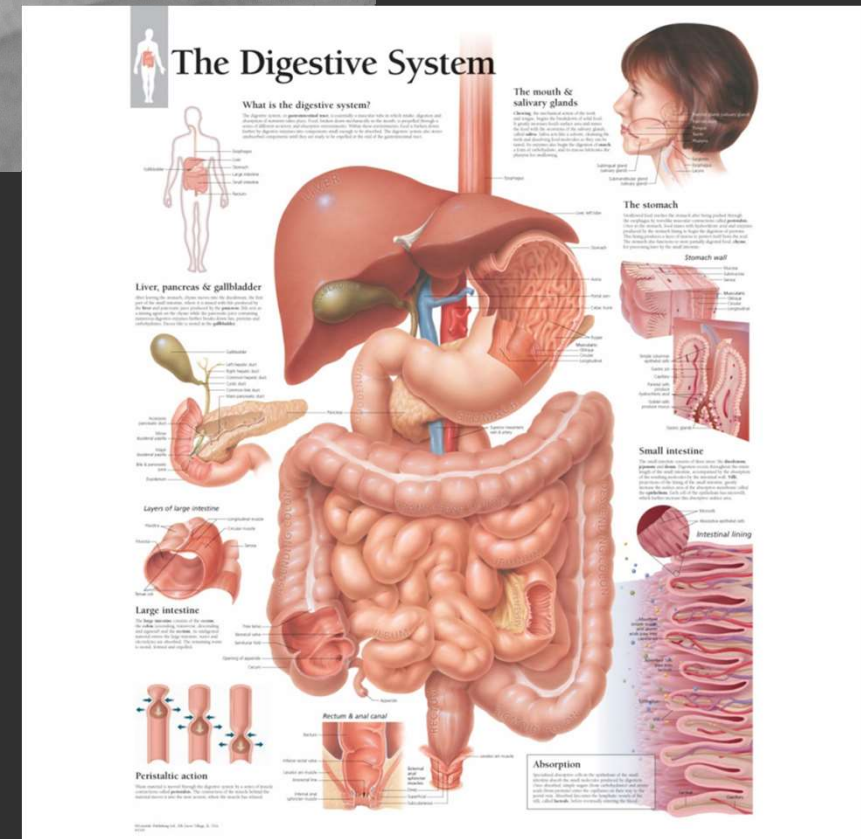
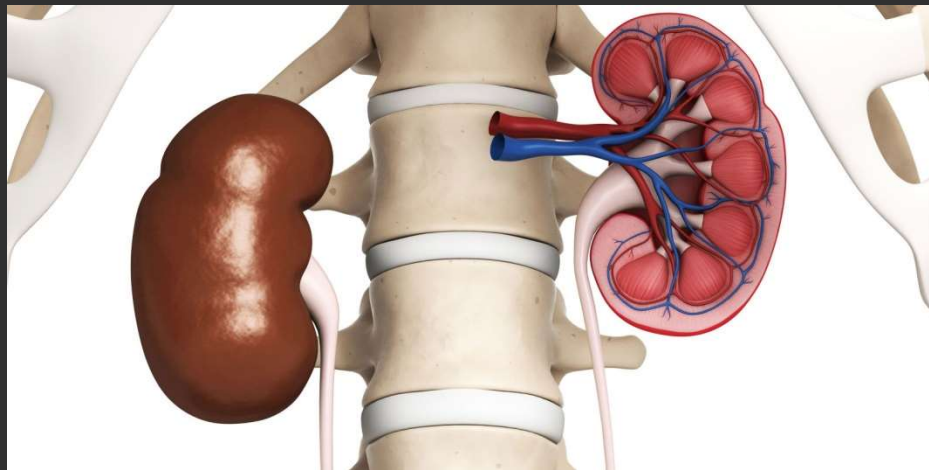
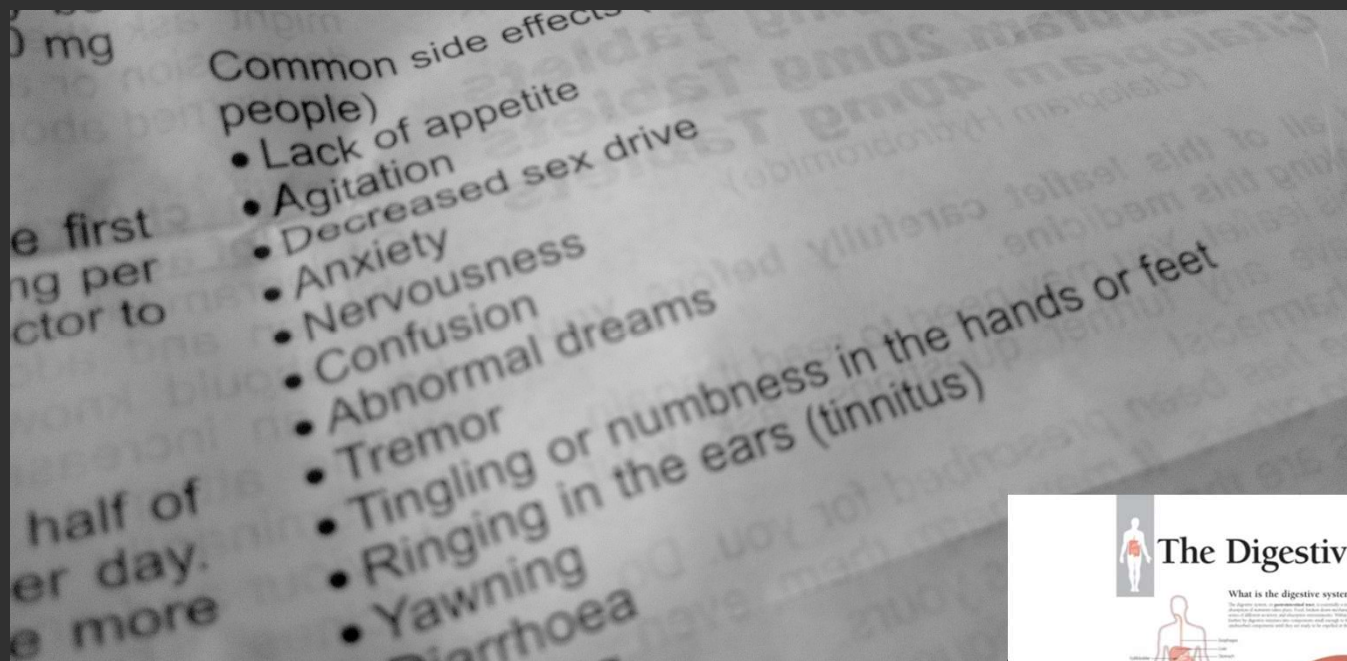
Lichttherapie vs. slaapmedicatie

Voor- en nadelen



Voordelen lichttherapie







Nadelen lichttherapie



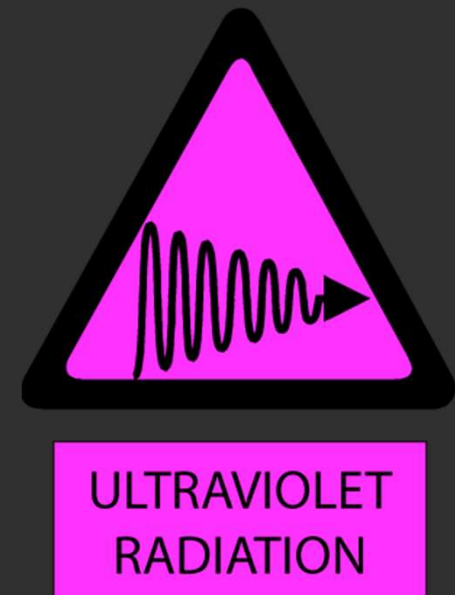
PHASE 1



Lichttherapie – Somatiek oog

Overweeg consult van oogarts voor start lichttherapie bij:

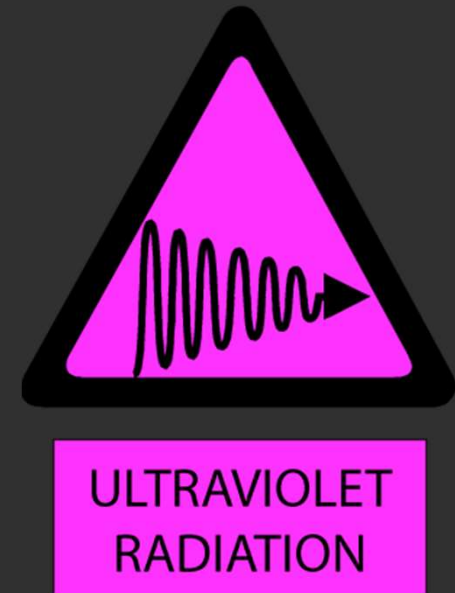
- Retina dystrofie (Retinitis pigmentosa)
- Leeftijdsgebonden maculadegeneratie
- Diabetische retinopathie
- Chorioretinitis, b.v. door:
 - HIV
 - Vogt-Koyanagi-Harada syndroom
 - Sarcoïdose
 - Morbus Beçet



Lichttherapie – Somatiek huid

Overweeg consult van dermatoloog voor start lichttherapie bij:

- Porfyrie
- Lupus erythematodes
- Chronische actinische dermatitis
- Urticaria solaris



Lichttherapie - Medicatie

Absoluut gecontra-indiceerd zijn:

- Fenothiazine (derivaten)
- Psoraleen
- Antiarrhythmica
- Antireumatica
- Medicatie tegen porfyrie
- Medicatie tegen malaria
- Sint-janskruid

Bij twijfel, controleer bijsluiter op
fototoxische, -sensitieve of –allergische
reacties!



Lichttherapie bij slaapproblemen





Circadiane ritmeslaapstoornissen

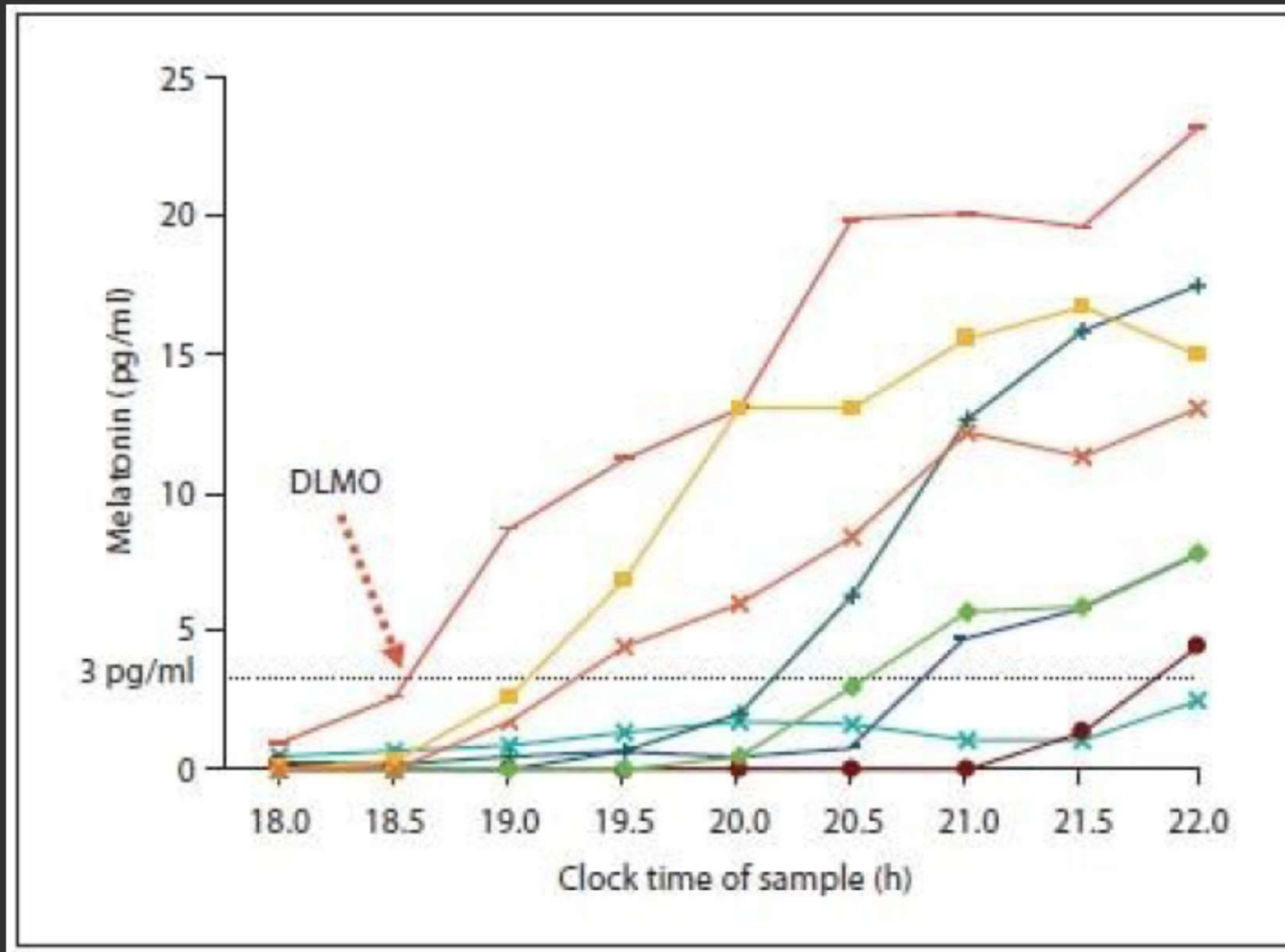
Chronotype



Nachtuil



Vroege vogel



Dim Light Melatonin Onset (DLMO)



Salivary Melatonin ELISA Kit

Item #: 1-3402 (single), 1-3402-5 (5-pack)



The Most **Accurate, Easiest**
and **Fastest** Melatonin Assay!

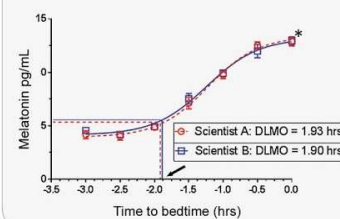
Assay Comparison:

	Salimetrics Assay	Other Assays
Accurate: Antibody Designed for Results in Saliva	✓	-
Fast: Results in < 4 Hours	✓	-
Accurate: Low Analytical Sensitivity	✓	✓
Fast: No Sample Pre-Treatment (One Wash Step)	✓	-
Accurate: Consistent, Reliable Results	✓	-
Easy: 100 µL Sample Volume	✓	-
Accurate: Average %CV < 5%	✓	-
Easy: Simple Protocol	✓	-
Accurate: Best Precision for DLMO Levels	✓	-

Protocol Comparison

Assay Procedure	Time Required (hrs)	
	Other	Salimetrics
Sample Extraction, Wash, Diluent	0.4	-
Pipette Samples, Stds, Controls	0.2	0.2
Incubation #1 & Wash	20.0	3.0
Conjugate, Incubation #2 & Wash	3.1	-
SA-HRP, Incubation #3 & Wash	1.1	-
TMB, Incubate, Stop, Read	0.6	0.6
Total Time (hrs)	25	4

Trust Your Assay Always Accurate DLMO Determination



* Samples run in triplicate



Better Collection. Better Assays. Better Results. Better Science.

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Unit 7 Acorn Business Centre, Oaks Drive, Newmarket, Suffolk, CB8 7SY

MORNINGNESS-EVENINGNESS QUESTIONNAIRE
Self-Assessment Version (MEQ-SA)¹

Name: _____ Date: _____

For each question, please select the answer that best describes you by circling the point value that best indicates how you have felt in recent weeks.

1. *Approximately* what time would you get up if you were entirely free to plan your day?

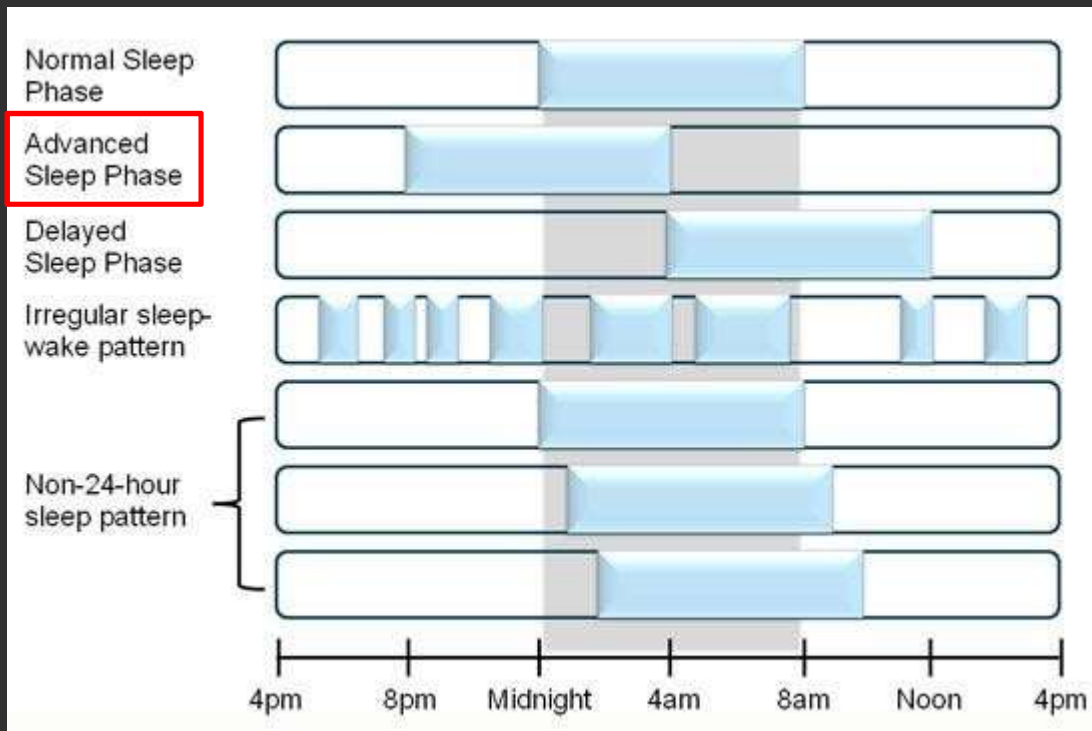
- [5] 5:00 AM–6:30 AM (05:00–06:30 h)
- [4] 6:30 AM–7:45 AM (06:30–07:45 h)
- [3] 7:45 AM–9:45 AM (07:45–09:45 h)
- [2] 9:45 AM–11:00 AM (09:45–11:00 h)
- [1] 11:00 AM–12 noon (11:00–12:00 h)

INTERPRETING AND USING YOUR MORNINGNESS-EVENINGNESS SCORE

This questionnaire has 19 questions, each with a number of points. First, add up the points you circled and enter your total morningness-eveningness score here:

Scores can range from 16-86. Scores of 41 and below indicate "evening types." Scores of 59 and above indicate "morning types." Scores between 42-58 indicate "intermediate types."

16-30	31-41	42-58	59-69	70-86
definite evening	moderate evening	intermediate	moderate morning	definite morning



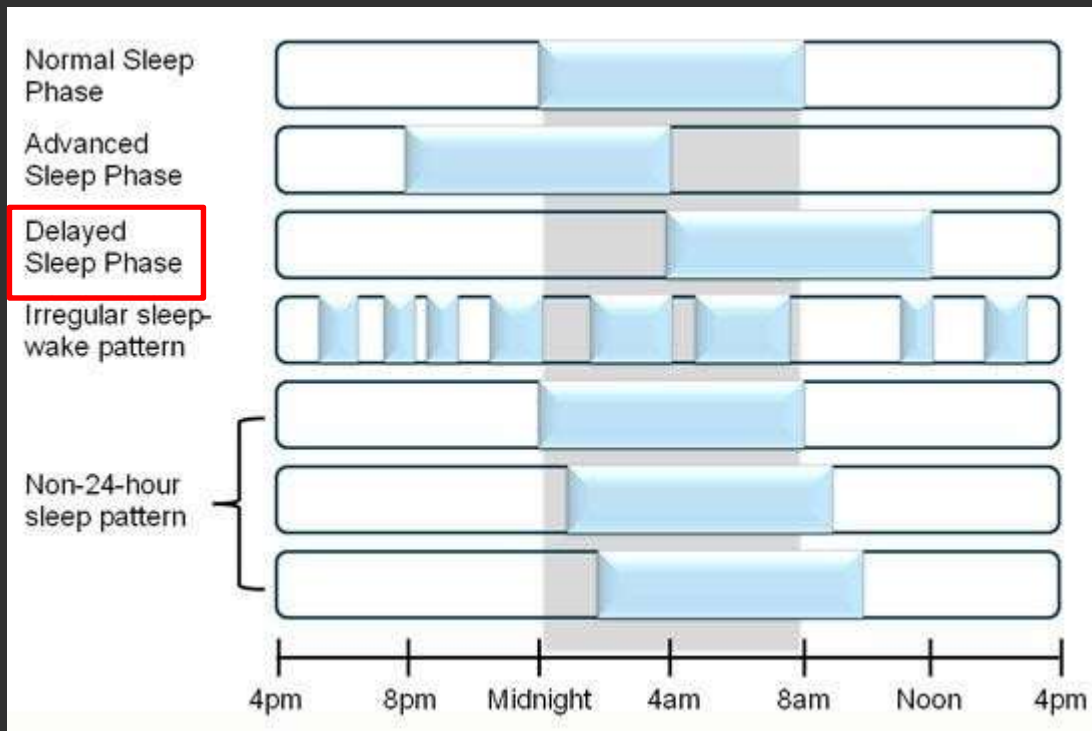
INTERPRETING AND USING YOUR MORNINGNESS-EVENINGNESS SCORE

This questionnaire has 19 questions, each with a number of points. First, add up the points you circled and enter your total morningness-eveningness score here:

81

Scores can range from 16-86. Scores of 41 and below indicate "evening types." Scores of 59 and above indicate "morning types." Scores between 42-58 indicate "intermediate types."

16-30	31-41	42-58	59-69	70-86
definite evening	moderate evening	intermediate	moderate morning	definite morning



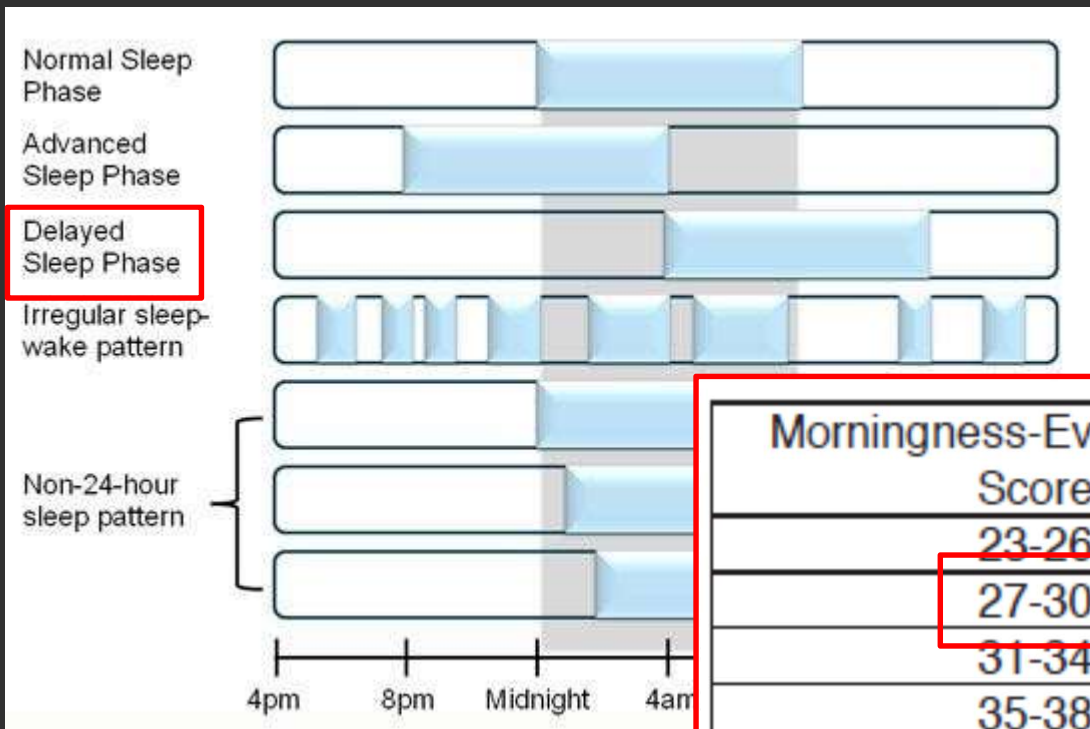
INTERPRETING AND USING YOUR MORNINGNESS-EVENINGNESS SCORE

This questionnaire has 19 questions, each with a number of points. First, add up the points you circled and enter your total morningness-eveningness score here:

?

Scores can range from 16-86. Scores of 41 and below indicate "evening types." Scores of 59 and above indicate "morning types." Scores between 42-58 indicate "intermediate types."

16-30 definite evening	31-41 moderate evening	42-58 intermediate	59-69 moderate morning	70-86 definite morning
---------------------------	---------------------------	-----------------------	---------------------------	---------------------------



Morningness-Eveningness Score	Start time for light therapy
23-26	8:15 AM
27-30	8:00 AM
31-34	7:45 AM
35-38	7:30 AM
39-41	7:15 AM
42-45	7:00 AM
46-49	6:45 AM
50-53	6:30 AM
54-57	6:15 AM
58-61	6:00 AM
62-65	5:45 AM
66-68	5:30 AM
69-72	5:15 AM
73-76	5:00 AM

Tijdstip lichttherapie

- Vervroegde-slaapfasesyndroom:
Twee uur tussen 20:00 en 23:00 uur gedurende twaalf dagen met 4000 lux
- Vertraagde-slaapfasesyndroom:
Twee uur tussen 6:00 en 9:00 uur gedurende twee weken met 2500 lux (m.b.v. MEQ)



Lichttherapie bij andere oorzaken van slaapproblemen

- Dementieel syndroom
- Niet seizoensgebonden depressieve stoornis

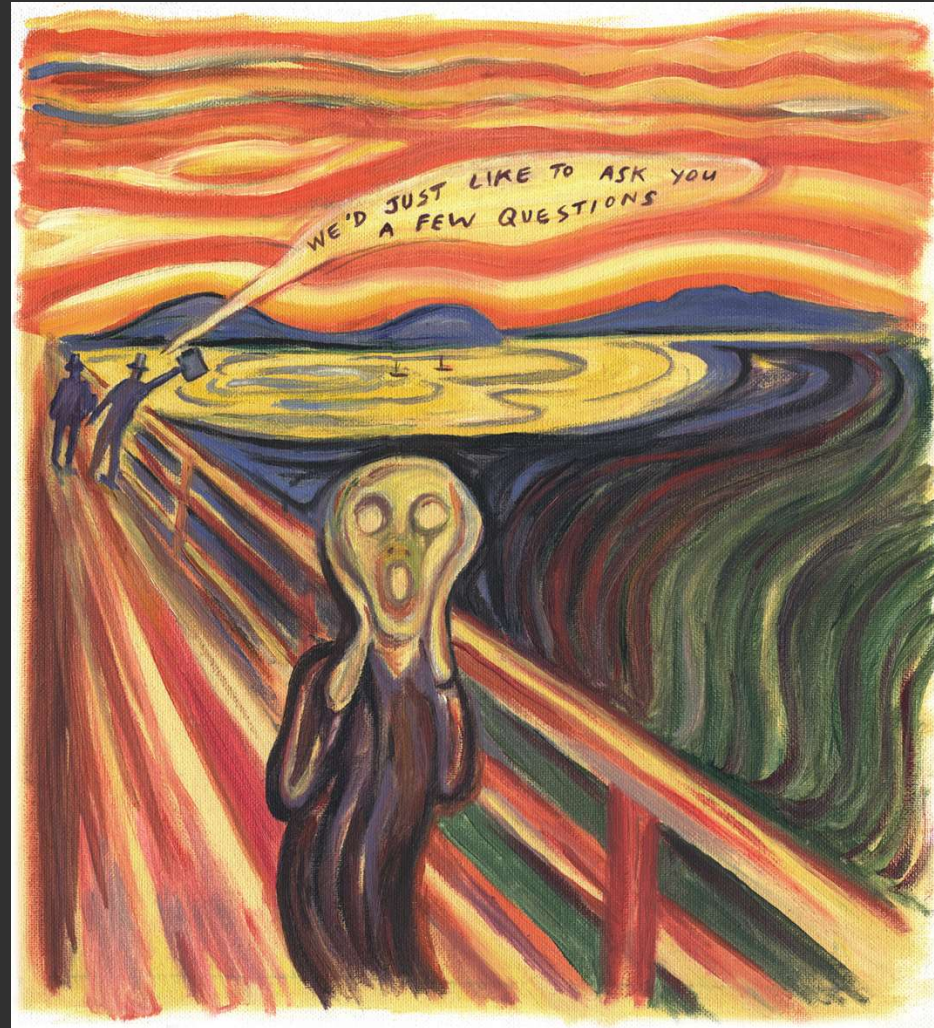


Morningness-Eveningness Score	Start time for light therapy
23-26	8:15 AM
27-30	8:00 AM
31-34	7:45 AM
35-38	7:30 AM
39-41	7:15 AM
42-45	7:00 AM
46-49	6:45 AM
50-53	6:30 AM
54-57	6:15 AM
58-61	6:00 AM
62-65	5:45 AM
66-68	5:30 AM
69-72	5:15 AM
73-76	5:00 AM

TAKE HOME MESSAGES

- Slaapproblemen bij ouderen; altijd aandacht voor de drie pijlers: normale slaapveroudering, slaaphygiene en slaapstoornissen
- Denk aan lichttherapie als monotherapie of adjuvans bij behandeling van slaapstoornissen (of depressieve) bij ouderen
- Houd rekening met de timing van lichttherapie (MEQ, DLMO)
- Meer onderzoek naar lichttherapie bij slaapstoornissen is nodig

DANK VOOR UW AANDACHT!



VRAGEN?

Bronvermelding

- Albrecht. 2013. Circadian clocks and mood-related behaviors. Handbook Experimental Pharmacology (217):227-39. Berlin Heidelberg: Springer-Verlag.
- Benedetti et al. 2007. Chronotherapeutics in a psychiatric ward. Sleep Medicine Reviews 11:509-522.
- Cajochen et al. 2003. Role of melatonin in the regulation of human circadian rhythms and sleep. Journal of Neuroendocrinology 15:432-437.
- Carpenter et al. 2015. Variations in the sleep-wake cycle from childhood to adulthood: chronobiological perspectives. ChronoPhysiology and Therapy 5:37-49.
- Hickie et al. 2013. Manipulating the sleep-wake cycle and circadian rhythms to improve clinical management of major depression. BMC Medicine 2013, 11:79.
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- Lieveise et al. 2012. Chronotherapie bij stemmingsstoornissen. Tijdschrift voor Psychiatrie 54(6):527-537.

Bronvermelding (vervolg)

- Moore. 1997. Circadian rhythms: basic neurobiology and clinical applications. *Annu Rev Med* 48:253-266.
- Nutt et al. 2008. Sleep disorders as core symptoms of depression. *Dialogues Clin Neurosci*. 10:329-336.
- Sack et al. 2007. Circadian Rhythm Sleep Disorders: Part I, Basic Principles, Shift Work and Jet Lag Disorders. *Sleep*. 2007 Nov;30(11):1460-83.
- Sack et al. 2007. Circadian Rhythm Sleep Disorders: Part II, Advanced Sleep Phase Disorder, Delayed Sleep Phase Disorder, Free-Running Disorder, and Irregular Sleep-Wake Rhythm. *Sleep*. 2007 Nov;30(11):1484-501.
- Montgomery, Lilly. 2006. Insomnia in the elderly. *BMJ Clin Evid*. 2007 Oct 1;2007. pii: 2302.
- Campos Costa et al. 2013. Aging, circadian rhythms and depressive disorders: a review. *Am J Neurodegener Dis* 2013;2(4):228-246
- Dimitriou, Tsolaki. 2017. Evaluation of the efficacy of randomized controlled trials of sensory stimulation interventions for sleeping disturbances in patients with dementia: a systematic review. *Clinical Interventions in Aging* 2017;12 543–548

Bronvermelding (vervolg)

- Wirz-Justice et al. 2013. Chronotherapeutics for Affective Disorders; A Clinician's Manual for Light and Wake Therapy. 2nd, revised edition. Karger Publishers.
- <https://www.wikipedia.org/>
- www.cet.org

Bronvermelding (vervolg)

- Afbeelding; sheet 2:

<https://static.pexels.com/photos/397998/pexels-photo-397998.jpeg>

- Afbeelding; sheet 3:

<https://fuzzyscience.wikispaces.com/file/view/circadian%20rhythm%20image.jpg/365583844/circadian%20rhythm%20image.jpg>

- Afbeelding; sheet 5:

https://upload.wikimedia.org/wikipedia/commons/d/d6/Balancier_avec_ressort_spiral.png

<http://www.fototime.com/FF76A469AFDD77F/orig.jpg>

<http://www.fototime.com/CDC84D059C048F3/standard.jpg>

- Afbeelding; sheet 6:

<http://www.ed2go.com/binaries/content/gallery/ed2go/products/17070.jpg>

- Afbeelding; sheet 7:

<http://www.almrsal.com/wp-content/uploads/2014/05/Circadian-rhythms-are-regulated-by-a-biological.jpg>

<https://image.slidesharecdn.com/newmicrosoftofficepowerpointpresentation-141221085356-conversion-gate01/95/sleep-wake-regulation-42-638.jpg?cb=1419152152>

Bronvermelding (vervolg)

- Afbeelding; sheet 9:

<https://s3-ap-southeast-1.amazonaws.com/subscriber.images/biology/2016/09/29115635/Packaging-of-DNA-helix-300x225.png>

<https://upload.wikimedia.org/wikipedia/commons/1/16/CRY1Pretty.png>

- Afbeelding; sheet 10:

<http://www.bristol.ac.uk/media-library/sites/news/2014/april/brain-article.jpg>

- Afbeelding; sheet 11:

https://www.nasa.gov/sites/default/files/styles/ubernode_alt_horiz/public/thumbnails/image/filament_banner.jpg

- Afbeelding; sheet 12:

https://www.instagram.com/p/_u6pVzKhl4/?taken-by=damoforce

<https://www.shutterstock.com/search/similar/82385032>

- Afbeelding; sheet 13:

<http://www.sleepsources.org/uploads/sleepsyllabus/img/image36.gif>

Bronvermelding (vervolg)

- Afbeelding; sheet 14:

<https://www.yourgenome.org/sites/default/files/styles/banner/public/banners/stories/fruit-flies-in-the-laboratory/single-fruit-fly-drosophila-melanogaster-on-white-background-cropped.jpg?itok=TAQXNXmm>

- Afbeelding; sheet 16:

<https://www.slaapinfo.nl/weetjes/wat-is-melatonine-en-waarom-helpt-het-tegen-slapeloosheid/>

- Afbeelding; sheet 17:

<http://www.beautylab.nl/wp-content/uploads/2012/11/earlybirdnightowl.png>

- Afbeelding; sheet 19:

<https://www.healthxchange.sg/sites/hexassets/Assets/ask-the-specialists/common-eye-conditions-elderly.jpg>

- Afbeelding; sheet 20:

<https://www.yourfacemd.com/wp-content/uploads/2017/06/Rubinstein-6-Things-to-Know-About-Tummy-Tuck-570x378.jpg>

<http://static.intertoys.nl//BLKCAS/960x960/1004184.jpg>

<http://sintomasde.net/wp-content/uploads/2015/06/arthritis.jpg>

Bronvermelding (vervolg)

- Afbeelding; sheet 21:

<https://www.santeplusmag.com/wp-content/uploads/Voici-comment-protéger-votre-cerveau-dAlzheimer.jpg>

http://www.drmoamedsabry.com/uploads/6/5/1/2/65127053/126279_orig.jpg

<http://www.opticienaarhuis.com/wp-content/uploads/2012/02/Macula-Degeneratie.jpg>

<https://www.howsleepworks.com/images/rls.jpg>

- Afbeelding; sheet 22:

<https://fengshuiwin.com/wp-content/uploads/2016/05/roomdark-778x389.jpg>

- Afbeelding; sheet 23:

<https://i.guim.co.uk/img/static/sys-images/Books/Pix/pictures/2009/6/30/1246362664957/Clock-with-multiple-hands-001.jpg?w=620&q=55&auto=format&usm=12&fit=max&s=c7664eee73ced8b1af9ead85a4f68fec>

- Afbeelding; sheet 24:

<https://media.istockphoto.com/photos/international-business-concept-picture-id157288044?k=6&m=157288044&s=612x612&w=0&h=CgVniaeQOuQqhW01Ew1xn9NZ9mJ3hTFRY2yc5PK1j5g=>

Bronvermelding (vervolg)

- Afbeelding; sheet 26:

[https://upload.wikimedia.org/wikipedia/commons/thumb/e/e2/Portrait of Vincenzo Chiarugi. Wellcome M0019406.jpg/783px-Portrait of Vincenzo Chiarugi. Wellcome M0019406.jpg](https://upload.wikimedia.org/wikipedia/commons/thumb/e/e2/Portrait_of_Vincenzo_Chia_rugi._Wellcome_M0019406.jpg/783px-Portrait_of_Vincenzo_Chiarugi._Wellcome_M0019406.jpg)

- Afbeelding; sheet 27:

<https://www.comfortland.nl/image/cache/data/Lou-lou/BE06040-web-600x600.jpg>

- Afbeelding; sheet 28:

<https://www.keblog.it/wp-content/uploads/2015/09/criceti-carini-16.jpg>

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- Afbeelding; sheet 29:

https://bilder.t-online.de/b/82/08/35/04/id_82083504/920/c_raw/tid_da/lichttherapie-zu-hause.jpg

- Afbeelding; sheet 30:

<https://s-media-cache-ak0.pinimg.com/474x/7d/a5/a7/7da5a7f225dbf93abc9c1488bd4ed6c5.jpg>

Bronvermelding (vervolg)

- Afbeelding; sheet 31:

http://cdn.playbuzz.com/cdn/b4aff0e6-eb99-4ea9-aadd-560f348d8d6d/d17ff4ad-db68-435e-877b-1389615f2e94_560_420.jpg

- Afbeelding; sheet 34:

<https://albertsonnevelt.nl/assets/img/comp/albertsonnevelt.nl/medicijnen-tegen-stress-7-natuurlijke-manieren-voor-meer-rust-3377-w800.jpg>

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- Afbeelding; sheet 35:

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Bronvermelding (vervolg)

- Afbeelding; sheet 36:

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- Afbeelding; sheet 37:

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- Afbeelding; sheet 38:

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<https://i.pinimg.com/736x/01/b6/20/01b6208d771bb91d25d8296c5c1525fe--awkward-yeti-funny-cute.jpg>

Bronvermelding (vervolg)

- Afbeelding; sheet 39:

<https://i.pinimg.com/236x/2b/64/69/2b6469de772ad0aafd5b0333b8271da1.jpg>

- Afbeelding; sheet 41:

<https://i.pinimg.com/236x/bd/41/17/bd4117f0f7100052a75afe9f47fb8172--ring-bearer-box-pill-boxes.jpg>

- Afbeelding; sheet 43:

http://www.laprensa.com.ar/multimedios/imgs/11585_620.jpg

- Afbeelding; sheet 46:

http://stratechscientific.com.au/wp-content/uploads/Salimetrics_Salivary_Melatonin_Assay.jpg

- Afbeelding; sheet 49:

<https://static1.squarespace.com/static/568c59f7a128e6a4d70e4c9a/t/568ddb5ecbce-d68aa5550a7f/1452137312730/?format=500w>

- Afbeelding; sheet 56:

<http://amberhawk.typepad.com/.a/6a0115709c6f9d970b01348784e519970c-800wi>