

## Gehirnregeneration: Kann Infrarotlicht Parkinson und Alzheimer umkehren?

**Die Nahinfrarot-Lichttherapie kann psychische Erkrankungen und neurodegenerative Erkrankungen wie Demenz, Schlaganfall, ALS und traumatische Hirnverletzungen verbessern, aber auch Alzheimer und Parkinson.**

Bei folgenden Beschwerden und Krankheiten empfehlen wir Infrarotlicht:

- Alzheimer / Demenzerkrankungen
- Wundheilung
- Herzinfarkt
- Schlaganfall
- Rückenmarksverletzung
- Arthritis
- familiäre amylotrope Lateralsklerose (FALS)
- diabetische Geschwüre
- Karpaltunnelsyndrom
- Major Depression
- Angststörung
- traumatische Hirnverletzung
- Multiple Sklerose

Infrarotlicht ist ein gutes zusätzliches Hilfsmittel zu unseren bewährten Living Nature® Therapien. Nur Infrarot bringt zu wenig, dass das Grundproblem an der Wurzel gelöst wird.

### Referenzen:

1. Bird, T.D. (1998). Alzheimer disease overview. GeneReviews® [Internet]. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK1161/>
2. Goedert, M. (2015). Alzheimer's and Parkinson's diseases: the prion concept in relation to assembled A $\beta$ , tau, and  $\alpha$ -synuclein. Science, 349, 1255555.
3. Stone, J. (2008). What initiates the formation of senile plaques? The origin of Alzheimer-like dementias in capillary haemorrhages. Medical Hypotheses, 71, 347–359.
4. Gonzalez-Lima, F., Barksdale B.R., & Rojas J.C. (2014). Mitochondrial respiration as a

target for neuroprotection and cognitive enhancement. *Biochemical Pharmacology*, 88, 584-593. doi: 10.1016/j.bcp.2013.11.010

5. Bergman, H., & Deuschl, G. (2002). Pathophysiology of Parkinson's disease: from clinical neurology to basic neuroscience and back. *Movement Disorders*, 7(Suppl. 3), S28-S40.
6. Lanciego, J.L., Luquin, N., & Obeso, J.A. (2012). Functional Neuroanatomy of the Basal Ganglia. *Cold Springs Harbor Perspectives in Medicine*, 2(12), a009621.
7. De Virgilio, A. et al. (2016). Parkinson's disease: Autoimmunity and neuroinflammation. *Autoimmunity Reviews*, 15(10), 1005-1011. doi: 10.1016/j.autrev.2016.07.022.
8. Gitler A.D. et al. (2009). Alpha-synuclein is part of a diverse and highly conserved interaction network that includes PARK9 and manganese toxicity. *Natural Genetics*, 41, 308-315.
9. Exner, N. et al. (2012). Mitochondrial dysfunction in Parkinson's disease: molecular mechanisms and pathophysiological consequences. *EMBO Journal*, 31, 3038-3062. doi: 10.1038/emboj.2012.170
10. Johnstone, D.M. et al. (2015). Turning On Lights to Stop Neurodegeneration: The Potential of Near Infrared Light Therapy in Alzheimer's and Parkinson's Disease. *Frontiers in Neuroscience*, 9, 500. doi: 10.3389/fnins.2015.00500
11. Colucci-D'Amato, L., & Bonavita, V. (2006). The end of the central dogma of neurobiology: stem cells and neurogenesis in adult CNS. *Neurological Science*, 27(4), 266-270.
12. Altman, J. (1962). Are new neurons formed in the brains of adult mammals? *Science*, 135, 1127-1128.
13. Kaplan, M.S., & Hinds, J.W. (1977). Neurogenesis in the adult rat: electron microscopic analysis of light radioautographs. *Science*, 197, 1092-1094.
14. Martino, G. et al. (2011). Brain regeneration in physiology and pathology: the immune signature driving therapeutic plasticity of neural stem cells. *Physiological Reviews*, 91(4), 1281-1304.
15. Nottebohm, F. (2002). Why are some neurons replaced in adult brain? *Journal of Neuroscience*, 22(3), 624-628.

16. Naeser, M.A. et al. (2014). Significant improvements in cognitive performance post-transcranial, red/near-infrared light-emitting diode treatments in chronic, mild traumatic brain injury: open-protocol study. *Journal of Neurotrauma*, 31,(11), 1008-1017. doi: 10.1089/neu.2013.3244.
17. Barrett, D.W., & Gonzalez-Lima, F. (2013). Transcranial infrared laser stimulation produces beneficial cognitive and emotional effects in humans. *Neuroscience*, 230, 13-23. doi: 10.1016/j.neuroscience.2012.11.016.
18. Blanco, N.J., Maddox, W.T., & Gonzalez-Lima, F. (2015). *Journal of Neuropsychology*, 11(1),14-25. doi: 10.1111/jnp.12074.
19. Xuan, W. et al. (2013). Transcranial low-level laser therapy improves neurological performance in traumatic brain injury in mice: effect of treatment repetition regimen. *PLoS ONE*, 8, e53454.
20. Xuan, W. et al. (2014). Transcranial low-level laser therapy enhances learning, memory, and neuroprogenitor cells after traumatic brain injury in mice. *Journal of Biomedical Optics*, 191(10), 108003.
21. Michalikova, S. et al. (2008). Emotional responses and memory performance of middle-aged CD1 mice in a 3D maze: effects of low infrared light. *Neurobiology of Learning and Memory*, 89(4), 480-488.
22. Shaw, V.E. et al. (2012). Patterns of Cell Activity in the Subthalamic Region Associated with the Neuroprotective Action of Near-Infrared Light Treatment in MPTP-Treated Mice. *Parkinsonian Disease*, 2012, 29875. doi: 10.1155/2012/296875.
23. Darlot, F. et al. (2016). Near-infrared light is neuroprotective in a monkey model of Parkinson disease. *Annals of Neurology*, 79(1), 59-65. doi: 10.1002/ana.24542.
24. Maloney, R., Shanks, S., & Maloney J. (2010). The application of low-level laser therapy for the symptomatic care of late stage Parkinson's disease: a non-controlled, non-randomized study. *American Society of Laser Medicine and Surgery*, 185.
25. Rojas, J.C., & Gonzalez-Lima, F. (2011). Low-level light therapy of the eye and brain. *Eye and Brain*, 3, 49-67.
26. Muili, K.A. et al. (2012). Amelioration of experimental autoimmune encephalomyelitis in C57BL/6 mice by photobiomodulation induced by 670 nm light. *PLoS ONE*, 7, e30655.

27. Chung, H. et al. (2012). The Nuts and Bolts of Low-level Laser (Light) Therapy. *Annals of Biomedical Engineering*, 40(2), 516-533.gma
28. Hou, S.T. et al. (2008). Permissive and Repulsive Cues and Signalling Pathways of Axonal Outgrowth and Regeneration. *International Review of Cell and Molecular Biology*, 267, 121-181.
29. Purushothuman, S. et al. (2013). The impact of near-infrared light on dopaminergic cell survival in a transgenic mouse model of parkinsonism. *Brain Research*, 1535, 61-70.