

Physiotherapy as a non-pharmacological treatment for sleep disturbances in Parkinson's Disease

*Susanne Buechner*¹, A. Eisendle¹, C. Raccagni^{1,2,3}

¹Department of Neurology, Provincial Hospital of Bolzano (SABES-ASDAA), Bolzano-Bozen, Italy

²Lehrkrankenhaus der Paracelsus Medizinischen Privatuniversität, Salzburg, Austria

³Department of Neurology, Innsbruck Medical University, Innsbruck, Austria

Introduction: Sleep disturbances (SDs) are common in persons with Parkinson's Disease (PD)¹. SDs can be very annoying and have a negative impact on life quality of patients and caregivers². SDs include nocturnal and diurnal complaints such as insomnia, REM sleep behavior disorder, sleep fragmentation, and excessive daytime sleepiness¹⁻³. The causes of SDs are manifold, and comorbidities such as obstructive sleep apnea syndrome and benign prostatic hypertrophy may further worsen the sleep quality. Treatment of SDs in PD is often unsatisfactory, and the intake of other medications complicates the pharmacologic strategy. The number of non-pharmacological treatments (NPT) that can improve sleep quality is growing fast, showing less adverse effects compared to medication⁴. Among NPT, physiotherapy has been described as a useful tool against SDs, which also improves motor performance and overall life quality of PD patients⁵⁻⁶.

Objective: Our aim is to investigate whether intensive physiotherapy can subjectively improve SDs in PD patients.

Methods: To date, 8 PD patients (H&Y stage 1,5-2; age 46-73 years; 4 female, 4 males; without SDs medication) have been interviewed before and after 7 weeks of intensive physiotherapy using the Epworth Sleepiness Scale and the Parkinson Disease Sleep Scale-2⁷⁻⁸.

Results: Our preliminary results have shown no statistically significant improvement in sleep problems from baseline to post-physiotherapeutic intervention, as measured by both validated questionnaires.

Conclusions: The interest in NPT for SDs in PD patients is increasing. In the study results available so far, no relevant improvement of SDs after physiotherapy could have been demonstrated. Certainly, studies with much larger patients' cohorts and subdivision into groups according to SDs severity are needed to determine the effect of physiotherapy on SDs in PD, as we can only speculate that NPT may be a useful tool for SDs in PD.

References:

- [1] Suzuki K, Miyamoto M, Miyamoto T, Iwanami M, Hirata K. Sleep disturbances associated with Parkinson's disease. *Parkinsons Dis.* 2011;2011:219056. doi: 10.4061/2011/219056. Epub 2011 Aug 17. PMID: 21876839; PMCID: PMC3159123.
- [2] Chahine LM, Amara AW, Videnovic A. A systematic review of the literature on disorders of sleep and wakefulness in Parkinson's disease from 2005 to 2015. *Sleep Med Rev.* 2017 Oct;35:33-50. doi: 10.1016/j.smrv.2016.08.001. Epub 2016 Aug 31. PMID: 27863901; PMCID: PMC5332351.
- [3] Loddo G, Calandra-Buonaura G, Sambati L, Giannini G, Cecere A, Cortelli P, Provini F. The Treatment of Sleep Disorders in Parkinson's Disease: From Research to Clinical Practice. *Front Neurol.* 2017 Feb 16;8:42. doi: 10.3389/fneur.2017.00042. PMID: 28261151; PMCID: PMC5311042.
- [4] Lee J, Kim Y, Kim YL. Non-pharmacological therapies for sleep disturbances in people with Parkinson's disease: A systematic review. *J Adv Nurs.* 2018 Apr 27. doi: 10.1111/jan.13694. Epub ahead of print. PMID: 29700848.
- [5] Amara AW, Wood KH, Joop A, Memon RA, Pilkington J, Tuggle SC, Reams J, Barrett MJ, Edwards DA, Weltman AL, Hurt CP, Cutter G, Bamman MM. Randomized, Controlled Trial of Exercise on Objective and Subjective Sleep in Parkinson's Disease. *Mov Disord.* 2020 Jun;35(6):947-958. doi: 10.1002/mds.28009. Epub 2020 Feb 24. PMID: 32092190; PMCID: PMC8826749.

- [6] Raccagni C, Goebel G, Gaßner H, Granata R, Ndayisaba JP, Seebacher B, Schoenherr G, Mitterhuber J, Hendriks P, Kaindlstorfer C, Eschlboeck S, Fanciulli A, Krismer F, Seppi K, Poewe W, Bloem BR, Klucken J, Wenning GK. Physiotherapy improves motor function in patients with the Parkinson variant of multiple system atrophy: A prospective trial. *Parkinsonism Relat Disord*. 2019 Oct;67:60-65. doi: 10.1016/j.parkreldis.2019.09.026. Epub 2019 Sep 24. PMID: 31621609.
- [7] Johns MW. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. *Sleep*. 1991 Dec;14(6):540-5. doi: 10.1093/sleep/14.6.540. PMID: 1798888.
- [8] Trenkwalder C, Kohnen R, Högl B, Metta V, Sixel-Döring F, Frauscher B, Hülsmann J, Martinez-Martin P, Chaudhuri KR. Parkinson's disease sleep scale--validation of the revised version PDSS-2. *Mov Disord*. 2011 Mar;26(4):644-52. doi: 10.1002/mds.23476. Epub 2011 Feb 10. PMID: 21312275.