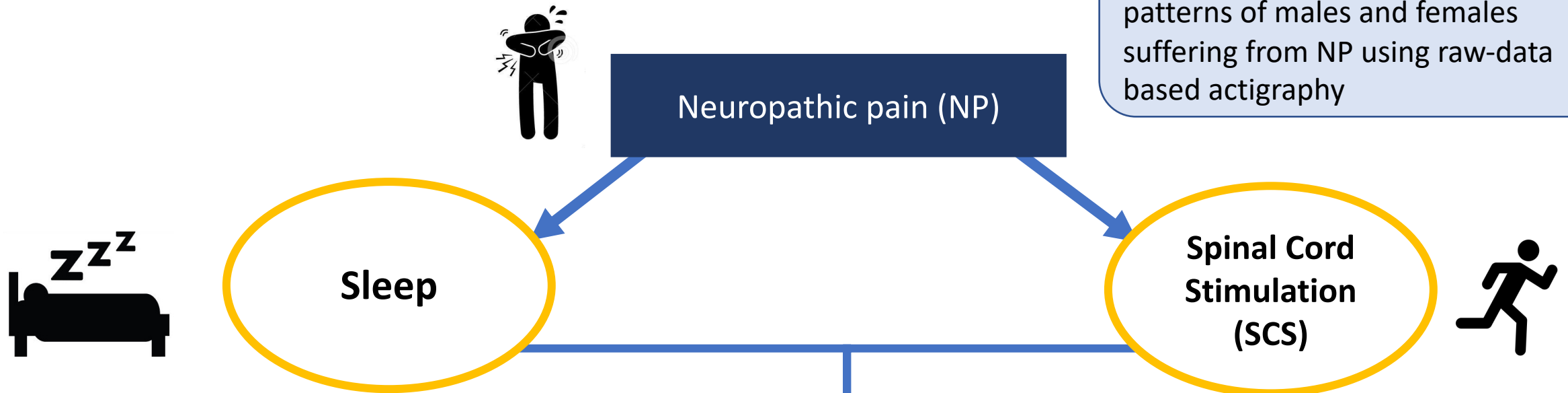


Investigating the effects of short-term spinal cord stimulation on sleep health in patients with refractory neuropathic pain: A state-of-the-art actigraphy analysis

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General Aim: investigate the effect of short-term SCS on the sleeping patterns of males and females suffering from NP using raw-data based actigraphy



- Subjective sleep questionnaires support the use of SCS¹
- Actigraphy is a reliable objective tool that measures sleep²
→ Count vs Raw acceleration data

Methods

Participants

- One-hundred and six (n=106) with NP in their back and/or lower limbs were enrolled
- 49 females (49.96 ±12.74 years; trial successful in 34) and 57 males (54.81 ± 13.32 years; trial successful in 38)

Protocol

Night 1



- Initiate SCS
- Baseline actigraphy measures

Night 7



- Follow-up actigraphy measures

- GENEActiv actigraphy device worn on the wrist
- Sampling frequency: 50 Hz



Methods cont'd

Sleep Analysis

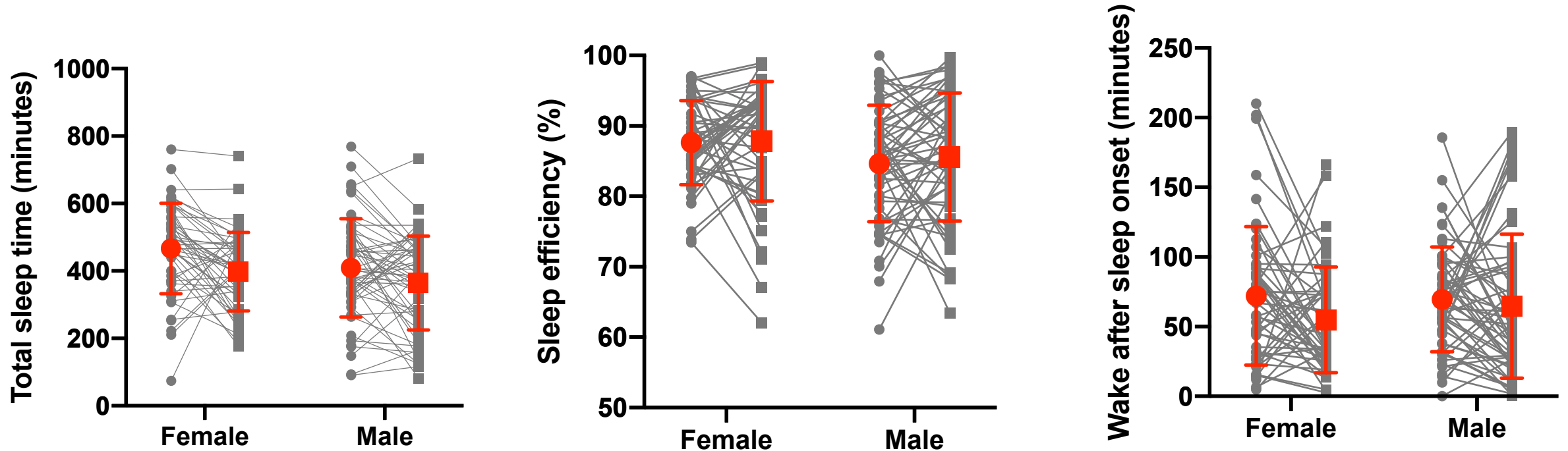
- **GGIR R Package³**: Auto-calibrate signal → Non wear time removal → van Hees et al (2015, 2018) sleep algorithms

Total Sleep Time (TST)	Total amount of sleep, in minutes
Sleep Efficiency (SE)	Ratio between TST and time in bed, expressed as a %
Wake after sleep onset (WASO)	Time spent awake after initial sleep onset in minutes

- Univariate analyses: Sleep metrics were different between the successful vs. unsuccessful participants
 - SCS trial success: 50% reduction in intensity of pain compared to baseline (Numerical Rating Scale)
- Mixed-model ANOVA: Sleep metrics in males and females at baseline (night 1) and follow-up (night 7)

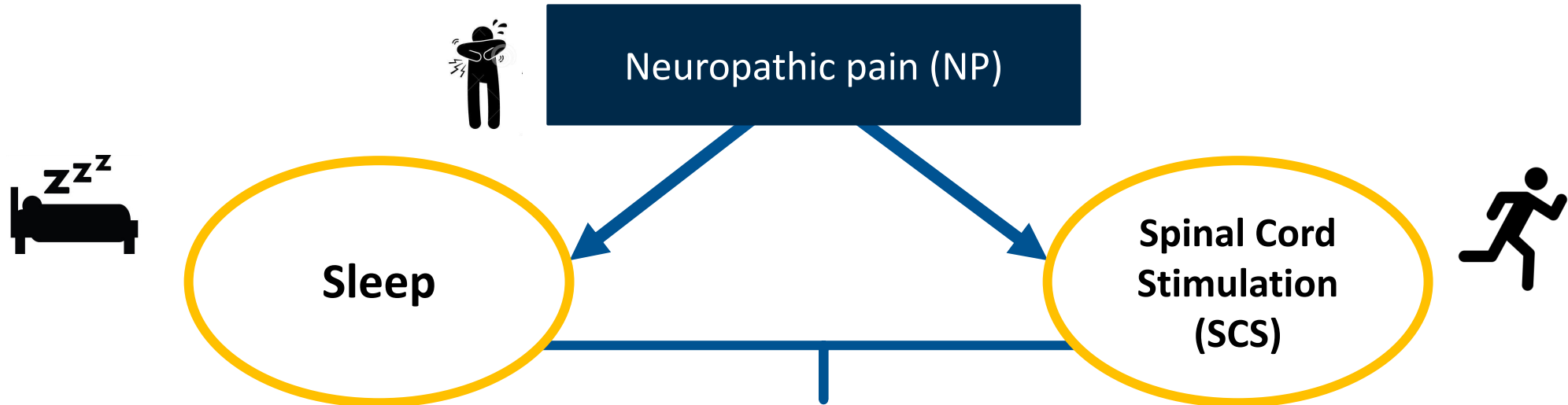
Results

● Baseline
■ Follow-up



- Univariate analyses → no significant difference between successful and unsuccessful participants
- Mixed-model ANOVA → significant main effect of time-point (TST & WASO) and sex (SE & TST)

Conclusions



- SCS significantly improves the sleep of individuals suffering from NP → reduction in WASO

Future Directions

- Are these improvements in sleep are maintained long-term, and result in improved functional and quality of life outcomes?

References

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2. De Jaeger M, Goudman L, De Groote S, Rigoard P, Monlezun O, Moens M. Does Spinal Cord Stimulation Really Influence Sleep? <https://doi.org/10.1111/ner.12850>. *Neuromodulation*. 2019/04/01 2019;22(3):311-316. [doi:https://doi.org/10.1111/ner.12850](https://doi.org/10.1111/ner.12850)
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