

Supplemental Material

The impact of daily caffeine intake on nighttime sleep in young adult men

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Table 1. Sleep-wake times derived from the subjective sleep logs prior the in-lab part of the study.

Parameter	Placebo	Caffeine	Withdrawal	Condition Effect
Bedtime	23.15 ± 0.13	23.32 ± 0.15*	23.27 ± 0.14	$F_{2,37} = 4.59; p = 0.02$
Lightsoff	23.24 ± 0.15	23.41 ± 0.16*	23.37 ± 0.14	$F_{2,37} = 3.99; p = 0.03$
Lightson	7.31 ± 0.16	7.46 ± 0.19	7.45 ± 0.16	$F_{2,33.1} = 3.12; p = 0.06$
Wake-up	7.10 ± 0.15	7.24 ± 0.15*	7.26 ± 0.15	$F_{2,36.9} = 3.56; p = 0.04$
Time in bed	8.09 ± 0.07	8.04 ± 0.08	8.08 ± 0.06	$F_{2,35.1} = 0.14; p > 0.8$

Represented are means ± standard errors. Mixed model analysis of variance was performed (PROC MIXED) using the statistical software SAS (SAS Institute, Cary, NC, USA; version 9.4). Contrasts were calculated by the LSMEANS statement and degrees of freedom were adjusted based on Kenward and Roger¹.

* $p < 0.05$ compared to the placebo condition after correction for multiple comparisons.

Table 2. Sleep-wake times estimated from actimetric data.

Parameter	Placebo	Caffeine	Withdrawal	Condition Effect
Sleep start	23.40 ± 0.18	23.82 ± 0.17*	23.83 ± 0.15*	$F_{2,26} = 6.09; p < 0.01$
Sleep end	7.08 ± 0.20	7.44 ± 0.19*	7.41 ± 1.16*	$F_{2,25.6} = 4.39; p = 0.02$
Assumed sleep	7.60 ± 0.09	7.52 ± 0.12	7.52 ± 0.13	$F_{2,31.6} = 0.16; p > 0.8$

Represented are means ± standard errors. Mixed model analysis of variance was performed (PROC MIXED) using the statistical software SAS (SAS Institute, Cary, NC, USA; version 9.4). Contrasts were calculated by the LSMEANS statement and degrees of freedom were adjusted based on Kenward and Roger¹. Thirteen datasets were excluded from the analyses due to technical problems.

* $p < 0.05$ compared to the placebo condition after correction for multiple comparisons.

References

- 1 Kenward, M. G. & Roger, J. H. Small sample inference for fixed effects from restricted maximum likelihood. *Biometrics* **53**, 983-997, doi:10.2307/2533558 (1997).