

Supplementary Table 1. Duration of NIRS measurement (HbO_2) included in the power spectral density analysis **after artifact removal per total duration of each sleep stage**

Subject no.	age (years)	BMI	Light sleep		Slow wave sleep		REM sleep	
			Control	dLAN	Control	dLAN	Control	dLAN
1	29	23	189.5/246.5	153.5/223.5	112.5/134.0	105/118	63/83	54/87
2	28	25	133.5/252	136.5/301.5	63.5/71	17/73.5	70.5/95	74/133
3	28	23	180/298	176/301	42/44	51.5/58	85/116	53/92.5
4	23	23	183.5/260	90/239	121.5/139	53/152.5	52.5/85	40/98.5
5	26	26	104.5/254	120.5/218.5	82.5/104.5	76.5/95.5	69.5/101.5	102.5/138
6	28	24	209.5/305.5	228/317	23/28.5	58/67	51.5/109	56/117
7	28	18	107/222.5	142.5/250	54.5/62.5	80/89.5	28.5/41	32/47
8	25	22	118/214	136/270.5	75.5/83.0	44/155.5	44.5/90.5	55.5/111
9	32	25	209/296.5	217/308	69.5/78.0	73/85	85/94.5	65/81.5
10	23	23	225/272.5	201.5/252.5	111.5/122.5	98.5/108.5	82/96.5	94.5/109.5
11	24	20	178/213	164.5/189.5	135/142.5	141/158.5	73/95	112.5/127.5
12	27	24	161/256.5	205.5/303.5	87/90.5	62/70	120.5/144	118.5/139
13	27	20	82/247.5	141.5/250	67/119.0	92.5/107.5	35/68	55/67.5
14	27	22	233.5/333	206/297.5	66.5/68.0	62/71	61.5/74	78.5/91
Average (percentage)			165.3/262.3 (63.0%)	165.6/265.9 (62.3%)	79.4/91.9 (86.4%)	72.4/97.9 (74.0%)	65.9/92.4 (71.3%)	70.8/102.9 (68.8%)

- All patients were male.

- Data are expressed in minutes.

- Abbreviations: NIRS, near-infrared spectroscopy; HbO_2 , oxy-hemoglobin; BMI, body mass index; REM, rapid eye movement; dLAN, dim light at night.

Supplementary Table 2. Effects of dLAN on heart rate variability

		Control	dLAN	P value
LS	Mean RR (ms)	1081 (1000–1245)	1160 (1020–1209)	0.25
	SDNN (ms)	88.3 (78–103.8)	107.3 (85.1–112.8)	0.096
	RMSSD (ms)	69.0 (45.7–87.7)	67.9 (43.1–88.3)	0.95
	pNN50 (%)	44.8 (18.2–55.4)	42.2 (23.1–58.7)	0.40
	VLF (%)	58.2 (50.7–67.0)	64.8 (56.9–74.2)	0.16
	LF (%)	18.6 (14.2–22.1)	14.2 (10.4–21.1)	0.11
	HF (%)	21.3 (13.6–27.8)	20.5 (12.6–27.6)	0.68
SWS	LF (n.u.)	45.9 (36.8–52.5)	43.4 (38.2–55.1)	0.88
	HF (n.u.)	54.1 (47.5–63.2)	56.6 (44.9–61.8)	0.88
	LF/HF	0.85 (0.58–1.11)	0.77 (0.62–1.24)	0.75
	Mean RR (ms)	1043 (977–1264)	1110 (991–1207)	0.43
	SDNN (ms)	70.2 (51.8–79.7)	73.6 (53.1–93.6)	0.048*
	RMSSD (ms)	62.8 (38.8–90.3)	59.0 (39.6–79.8)	0.98
	pNN50 (%)	45.6 (19.9–62.0)	39.7 (18.9–55.4)	0.98
REM	VLF (%)	43.9 (39.9–61.0)	57.7 (51.0–68.4)	0.005*
	LF (%)	18.2 (15.6–23.4)	16.1 (7.8–18.9)	0.009*
	HF (%)	34.7 (23.2–43.3)	28.2 (18.4–34.2)	0.013*
	LF (n.u.)	40.1 (25.7–44.1)	33.0 (24.4–45.0)	0.33
	HF (n.u.)	59.9 (55.9–74.3)	67.0 (55.0–75.6)	0.33
	LF/HF	0.67 (0.35–0.79)	0.49 (0.32–0.82)	0.36
	Mean RR (ms)	1023 (909–1142)	1062 (910–1133)	0.29
- Data are expressed as the median (25%–75% interquartile range).				
<ul style="list-style-type: none"> - Abbreviations: dLAN, dim light at night; LS, light sleep; SWS, slow wave sleep; REM, rapid eye movement sleep; RR, R-R interval; SDNN, standard deviation of all R-R intervals; RMSSD, root-mean-square differences of successive R-R intervals; pNN50, proportion of pairs of successive R-Rs that differ by more than 50 ms; VLF, very low frequency (0.00–0.04 Hz); LF, low frequency (0.04–0.15 Hz); HF, high frequency (0.15–0.40 Hz); n.u., normalized unit. 				
<ul style="list-style-type: none"> *P value < 0.05 				

Supplementary Table 3. Effects of dLAN on EEG spectral power in μ V²

		Control	dLAN	P value
LS	SO	32.6 (18.8-39.3)	24.1 (18.7-35.1)	0.064
	Delta	5.66 (3.14-6.10)	5.09 (3.03-5.92)	0.12
	Theta	0.65 (0.45-0.78)	0.64 (0.42-0.78)	0.55
	Alpha	0.26 (0.23-0.32)	0.25 (0.23-0.32)	0.056
	Beta	0.050 (0.036-0.055)	0.042 (0.033-0.051)	0.056
SWS	SO	90.9 (72.0-113.6)	87.8 (59.4-112.9)	0.78
	Delta	14.9 (10.4-17.7)	15.3 (9.0-18.4)	0.27
	Theta	1.03 (0.72-1.19)	1.04 (0.67-1.27)	0.59
	Alpha	0.30 (0.23-0.45)	0.29 (0.22-0.46)	0.51
	Beta	0.035 (0.025-0.043)	0.033 (0.027-0.043)	0.47
REM	SO	12.7 (7.9-15.0)	10.3 (7.1-12.5)	0.084
	Delta	2.13 (1.49-2.70)	1.98 (1.52-2.42)	0.064
	Theta	0.46 (0.38-0.51)	0.46 (0.39-0.52)	0.83
	Alpha	0.16 (0.11-0.21)	0.15 (0.10-0.22)	0.36
	Beta	0.035 (0.027-0.040)	0.029 (0.024-0.044)	0.18

- Data are expressed as the median (25%-75% interquartile range).

- Abbreviations: dLAN, dim light at night; EEG, electroencephalography; LS, light sleep; SWS, slow wave sleep; REM, rapid eye movement sleep; SO, slow oscillation.

Supplementary Figure 1. Characteristics and wave distribution of light exposed to the subjects at the third night

