Table S1. Neuropsychological tests by cognitive domain

Vigilance

Psychomotor vigilance task[1]

The test measures the speed with which subjects respond to a visual stimulus on a computer screen by pressing the space-bar during a 10-minute period. Scores are mean reaction time and number of lapses (>500 milliseconds).

Attention

D-KEFS Trail making test (TMT)[2]*, condition 2-3*

** Color trails test*[3]*, condition 1*

Subjects are asked to connect numbers in ascending order (TMT condition 2, Color trails, condition 1) and connect letters in alphabetical order (TMT condition 3) by drawing lines between them with a pencil. Scores are time to completion in seconds.

d2 Test of Attention[4]

Subjects are asked to cross out the target stimuli with a pencil (d's with two accent marks), while ignoring the distracting stimuli. The test consists of 14 lines of stimuli for which the subjects have 20 seconds per line. Scores are number of correctly crossed out targets minus number of incorrectly crossed out distracting stimuli.

Memory

Rey's auditory verbal learning test (Dutch version)[5,6]

A series of 15 unrelated one-syllable words is read over 5 trials. After each trial the subjects are asked to recall the words they remember. Twenty minutes after the last trial the delayed recall is tested. Scores are number of words recalled on the 5 immediate trials and the score on the delayed recall trial.

** Location learning test*[7]

The test consists of a 5×5 matrix with 10 pictures. Subjects are presented this matrix for 30 seconds and are subsequently asked to correctly place the pictures on the matrix. Subjects are given 5 learning trials and a delayed recall trial after 15 minutes. Scores are total number of displacements after 5 trials and total number of displacements on the delayed recall trial.

Working Memory

WAIS-III Letter-number sequencing[8]

A series of letter and number combinations, from 2 to 9 letter-number combinations are read by the examiner. Subjects are instructed to repeat each series by, first, repeating the numbers in ascending order and then the letters in alphabetical order. Scores are number of correct items.

** WMS-IV Symbol Span*[9]

Subjects are briefly shown a series of abstract symbols on a screen and then asked to select the symbols from an array of symbols, in the same order they were presented on the previous screen. Scores are number of correct items.

Executive functioning (mental flexibility, planning and organization)

D-KEFS TMT[2]*, condition 4*

**Color trails test*[3]*, condition 2*

Subjects are asked to connect numbers alternating with letters (TMT condition 4) or to connect yellow numbers alternating with pink numbers (Color trails test). Scores are time to completion in seconds.

Tower of London[10]

The test consists of 2 boards with 3 pegs and 3 beads with different colors. Subjects are asked to copy different patterns on the examiner's board in as few moves as possible without breaking the imposed rules. Scores are number of moves to completion.

Language

Category fluency[11]

The test consists of naming animals and occupations for 1 min each. Scores are the number of correct words per category.

Visuoperception

D-KEFS TMT[2]*, condition 1*

Subjects are asked to cross out the number '3' between distracting numbers and letters. The page is placed at the subjects' midline. Scores are time to completion in seconds.

Bells test[12]

In this test subjects are asked to circle all 35 bells embedded within a large number distractors (houses, horses, etc.) The page is placed at the subjects' midline. Scores are the number of circled bells.

Psychomotor ability

D-KEFS TMT[2]*, condition 5*

Subjects are asked to trace a line connecting a number of circles as fast as possible without missing any of the circles. Scores are time to completion in seconds.

Finger tapping task[13]

Subjects are instructed to tap their index finger on the space-bar of the test computer as quickly as possible for 10 seconds. Subjects start with a practice trial after which the trial is repeated 5 times. This procedure is repeated with the non-dominant hand. Scores are number of taps per hand.

Intelligence

WAIS-III Matrix reasoning[8]

Subjects are shown incomplete matrices or series and are instructed to complete the matrices or series by selecting the correct response option. Score are number of items correct.

* nonverbal alternative for patients with aphasia

References Table S1

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Table S2. Cognitive outcomes

	CPAP (n=20)			Control (n=16)					
	T0	**ΔT1**	**ΔT2**	**T0**	**ΔT1**	**ΔT2**	***p*-value ΔT1*[1]**	**ES ΔT1***	***p*-value ΔT2*[2]**
Vigilance	-0.33 (1.18)	0.19 (0.64)	0.00 (0.44)	-0.33 (1.18)	0.13 (0.49)	-0.17 (0.57)	0.34	<0.01	0.54
Attention	-1.34 (1.01)	0.49 (0.66)	0.13 (0.34)	-1.48 (1.18)	0.22 (0.46)	0.29 (0.44)	0.05	0.09	0.37
Memory	-0.78 (1.11)	0.43 (0.82)	0.20 (0.66)	-0.79 (1.02)	0.06 (0.87)	0.28 (0.65)	0.32	<0.01	0.94
Working memory	-0.64 (1.30)	-0.09 (0.85)	0.12 (0.38)	-0.71 (1.44)	0.06 (0.61)	0.04 (0.54)	0.16	0.03	0.28
Executive functioning	-1.16 (1.05)	0.37 (0.69)	0.50 (0.57)	-0.97 (1.29)	-0.17 (0.86)	0.56 (0.66)	<0.01	0.26	0.23
Language	-1.33 (0.77)	0.30 (0.59)	0.16 (0.54)	-1.16 (1.18)	0.22 (0.60)	0.08 (0.52)	0.11	0.05	0.84
Visuoperception	-0.34 (1.16)	0.23 (0.77)	0.16 (0.66)	-0.87 (1.31)	0.20 (0.72)	0.22 (0.76)	0.38	<0.01	0.98
Psychomotor ability	-0.30 (0.62)	0.00 (0.32)	-0.04 (0.12)	-0.32 (0.76)	0.00 (0.28)	-0.12 (0.43)	0.45	<0.01	0.53
Intelligence	-1.00 (1.03)	0.40 (0.58)	-0.03 (0.40)	-1.00 (1.07)	0.38 (0.81)	0.17 (0.47)	0.33	<0.01	0.05

Values are presented as mean z-score (standard deviation). ΔT1 = difference score between T1-T0. ΔT2 = difference score between T2-T1. * difference between groups by multivariate analysis of covariance adjusted for age and stroke severity. [1]p-value = one-tailed; [2]p-value = two-tailed. ES = effect size (partial eta squared).

Table S3. Functional outcomes

	CPAP (n=20)			Control (n=16)					
	T0	**ΔT1**	**ΔT2**	**T0**	**ΔT1**	**ΔT2**	***p*-value ΔT1[*3]**	**ES ΔT1[*]**	***p*-value ΔT2[*4]**
Neurological status[1]	-0.23 (1.00)	0.72 (0.63)	0.07 (0.38)	0.01 (0.89)	0.51 (0.68)	0.16 (0.28)	0.08	0.06	0.21
NIHSS[2o]	6.70 (4.37)	-3.50 (3.28)	-0.18 (1.90)	5.81 (3.87)	-2.19 (2.71)	-0.50 (1.67)			
CNS[2]	8.10 (2.66)	0.98 (1.52)	0.25 (1.18)	8.75 (2.44)	0.69 (1.92)	0.49 (0.76)			
ADL[1]	-0.33 (0.92)	1.17 (0.85)	-	-0.31 (0.98)	1.03 (0.88)	-	0.11	0.05	-
USER mobility[2]	13.95 (9.73)	12.65 (9.03)	-	14.19 (10.14)	12.38 (10.16)	-			
USER self care[2]	19.25 (10.89)	11.85 (10.00)	-	19.56 (10.89)	9.00 (8.48)	-			

Values are presented as mean z-score[1] or scale score[2] (standard deviation). NIHSS = National Institutes of Health Stroke Scale; CNS = Canadian Neurological Scale; ADL = activities of daily living; USER = Utrecht Scale for Evaluation of Rehabilitation. º higher score is lower performance. ΔT1 = difference score between T1-T0. ΔT2 = difference score between T2-T1. * difference between groups by (multivariate) analysis of covariance adjusted for age and stroke severity. [3]p-value = one-tailed; [4] p-value = two-tailed. ES = effect size (partial eta squared).

Table S4. Secondary outcomes

	CPAP (n=20)			Control (n=16)					
	T0	**ΔT1**	**ΔT2**	**T0**	**ΔT1**	**ΔT2**	***p*-value ΔT1*[1]**	**ES ΔT1***	**p-value ΔT2*[2]**
Sleepiness (SSS)	2.05 (0.95)	0.05 (1.39)	-0.05 (0.82)	1.81 (0.98)	0.13 (1.45)	-0.19 (0.83)	0.41	<0.01	0.93
Sleep quality (SQS)	9.10 (4.03)	1.25 (2.67)	0.95 (2.44)	11.19 (3.31)	-1.56 (3.71)	0.25 (4.05)	0.07	0.07	0.33
Fatigue (CIS-20r)	73.40 (24.5)	-1. 30 (22.18)	1.50 (13.06)	69.27 (21.27)	-5.7 (21.28)	2.50 (10.12)	0.12	0.04	0.30
Anxiety (HADS-A)	5.15 (3.48)	-0.75 (2.90)	1.45 (3.24)	4.06 (3.28)	-0.94 (2.35)	1.00 (2.71)	0.45	<0.01	0.21
Depression (HADS-B)	4.80 (3.17)	0.45 (3.03)	1.20 (2.82)	4.00 (3.20)	0.13 (4.16)	0.19 (2.04)	0.33	<0.01	0.29

Values are presented as mean scale scores (standard deviation). ΔT1 = difference score between T1-T0. ΔT2 = difference score between T2-T1. * difference between groups analysis of covariance adjusted for age and stroke severity. [1]p-value = one-tailed; [2] p-value = two-tailed. ES = effect size (partial eta squared); SSS = Stanford Sleepiness Scale; SQS = Sleep Quality Scale; CIS-20r = Checklist Individual Strength; HADS = Hospital Anxiety and Depression Scale.

Table S5. Patient characteristics of the non-OSA and OSA group

Characteristics	Non-OSA (n=44)	OSA (n=36)	*p*-value
Age (years)	54.0 (10.4)	59.1 (8.6)	0.02[a]
Sex (males)	23 (52.3)	22 (61.1)	0.43[b]
Education level, median (range)	4 (1-6)	4 (1-6)	0.03[c]
BMI	24.4 (3.6)	27.1 (5.8)	0.01[a]
Stroke type			0.97[b]
Ischemia	29 (65.9)	24 (66.7)	
Hemorrhage	12 (27.3)	10 (27.8)	
Subarachnoid hemorrhage	3 (6.8)	2 (5.6)	
Stroke severity			0.94[c]
Mild (LACS)	8 (18.2)	6 (16.7)	
Moderate (PACS/POCS)	32 (72.7)	27 (75.0)	
Severe (TACS)	4 (9.1)	3 (8.3)	
Recurrent stroke	6 (13.6)	6 (16.7)	0.71[b]
Days between onset and admission	17.6 (13.7)	16.8 (15.0)	0.80[a]
Days between onset and NPA	38.6 (14.7)	35.9. (18.2)	0.47[a]
Days admitted to rehabilitation unit	71.1 (29.2)	74.7 (33.9)	0.77[a]
Apnea-hypopnea index	6.6 (4.3)[1]	34.2 (14.8)	<0.001[a]
Oxygen desaturation index	8.6 (6.8)	30.5 (14.3)	<0.001[a]

Values are presented as mean (SD) or n (%).[1] based on 23 non-OSA patients that underwent polygraphy. PACS = partial anterior circulation stroke; LACS = lacunar stroke; TACS = total anterior circulation stroke; POCS= posterior circulation stroke; NPA = neuropsychological assessment. [a] Student's t-test; [b] Chi-square test; [c] Mann-Witney U test.

Table S6. Cognitive outcomes for non-OSA group compared to OSA groups

	Non-OSA (n=44)					CPAP (n=20)		Control (n=16)	
	T0	**Δ**T1	**Δ**T2 (n=31)	ES **Δ**T1	ES* **Δ**T2	ES **Δ**T1	ES **Δ**T2	ES **Δ**T1	ES **Δ**T2
Vigilance	0.14 (0.84)	-0.06 (0.90)	0.20 (0.63)	-0.07	0.24	0.16	0.00	0.11	-0.14
Attention	-0.79 (1.09)	0.49 (0.76)	0.27 (0.57)	0.41	0.22	0.44	0.11	0.18	0.22
Memory	-0.68 (1.34)	0.51 (0.92)	0.39 (0.78)	0.41	0.31	0.37	0.15	0.06	0.27
Working memory	-0.33 (1.39)	0.52 (0.80)	0.02 (0.63)	0.40	0.02	-0.07	0.08	0.04	0.04
Executive functioning	-0.70 (1.18)	0.37 (0.61)	0.25 (0.65)	0.31	0.22	0.35	0.45	-0.12	0.34
Language	-0.98 (0.78)	0.29 (0.71)	0.10 (0.52)	0.32	0.11	0.33	0.14	0.21	0.08
Visuoperception	-0.14 (0.78)	0.03 (0.90)	0.44 (0.90)	0.04	0.57	0.20	0.14	0.14	0.17
Psychomotor ability	0.03 (0.52)	-0.06 (0.37)	0.07 (0.26)	-0.12	0.14	0.00	-0.06	0.00	-0.13
Intelligence	-0.36 (1.24)	0.15 (0.90)	0.47 (0.81)	0.13	0.56	0.39	-0.03	0.33	0.14

Values are presented as mean z-score (standard deviation). ΔT1 = difference score between T1-T0. ΔT2 = difference score between T2-T1. * based on n=31. ES = effect size (Cohen's d). Negative ES = decrease of cognitive performance.

Table S7. Functional outcomes for non-OSA group compared to OSA groups

	Non-OSA (n=44)					CPAP (n=20)		Control (n=16)	
	T0	ΔT1	ΔT2 (n=31)	ES ΔT1	ES* ΔT2	ES ΔT1	ES ΔT2	ES ΔT1	ES ΔT2
Neurological status[1]	0.10 (0.99)	0.70 (0.49)	0.11 (0.25)	0.90	0.19	0.82	0.10	0.62	0.21
NIHSS[2] º	5.64 (4.48)	-3.18 (2.57)	-0.48 (1.15)						
CNS[2]	9.1 (2.48)	1.00 (1.30)	0.22 (0.73)						
Activities of daily living[1]	0.27 (0.91)	0.88 (0.74)	-	1.26	-	1.49	-	1.09	-
USER mobility[2]	20.05 (10.07)	9.98 (8.28)	-		-		-		-
USER self care[2]	25.59 (10.02)	8.45 (8.94)	-		-		-		-

Values are presented as mean z-score[1] or scale score [2] (standard deviation). NIHSS = National Institutes of Health Stroke Scale; CNS = Canadian Neurological Scale; USER = Utrecht Scale for Evaluation of Rehabilitation. º higher score is lower performance.

ΔT1 = difference score between T1-T0. ΔT2 = difference score between T2-T1. *based on n=31. ES = effect size (Cohen's d).

Table S8. Secondary outcomes for non-OSA group compared to OSA groups

	Non-OSA (n=44)					CPAP (n=20)		Control (n=16)	
	T0	**Δ**T1	**Δ**T2 (n=31)	ES **Δ**T1	ES* **Δ**T2	ES **Δ**T1	ES **Δ**T2	ES **Δ**T1	ES **Δ**T2
Sleepiness (SSS)	2.09 (1.16)	0.25 (1.29)	-0.45 (1.06)	-0.21	0.43	-0.05	0.05	-0.13	0.19
Sleep quality (SQS)	9.36 (3.76)	0.50 (4.33)	0.35 (3.80)	0.13	0.06	0.35	0.34	-0.46	0.12
Fatigue (CIS-20r)	73.63 (21.56)	-0.30 (21.84)	-0.84 (14.6)	0.03	0.07	0.06	-0.06	0.27	-0.11
Anxiety (HADS-A)	6.16 (4.11)	-0.68 (3.21)	-0.71 (3.01)	0.18	0.16	0.21	-0.42	0.31	-0.36
Depression (HADS-B)	6.30 (4.32)	-0.09 (4.25)	-0.39 (2.97)	0.02	0.20	-0.13	-0.37	-0.03	-0.04

Values are presented as mean z-score[1] or scale score[2] (SD).

ΔT1 = difference score between T1-T0. ΔT2 = difference score between T2-T1. *based on n=31. ES = effect size (Cohen's d). Negative ES = increase of complaints.