

Table S1. Mean (standard deviation) sleep characteristics at baseline and follow-up by age at the baseline groups.

Age	Total	Baseline Women	Men	p*	Total	Follow-up Women	Men	p*
Pittsburgh sleep quality index, score								
[40,45)	4.0 (2.1)	4.0 (2.1)	3.9 (2.1)	0.183	4.8 (2.6)	5.1 (2.7)	4.5 (2.4)	0.005
[45,50)	4.2 (2.4)	4.4 (2.5)	4.0 (2.3)	<0.001	4.8 (2.7)	5.2 (2.9)	4.4 (2.4)	<0.001
[50,55)	4.1 (2.3)	4.3 (2.4)	3.9 (2.1)	0.028	4.7 (2.8)	4.9 (2.9)	4.5 (2.8)	0.167
[55,60)	4.6 (2.4)	4.9 (2.7)	4.2 (2.1)	0.033	5.1 (3.0)	5.9 (3.3)	4.3 (2.5)	<0.001
[60,65)	4.3 (2.3)	4.8 (2.4)	3.9 (2.2)	0.003	5.4 (3.4)	5.9 (3.3)	5.0 (3.5)	0.012
[65,72]	5.1 (2.6)	5.2 (2.3)	5.1 (3.0)	0.624	5.8 (3.6)	6.5 (4.1)	4.8 (2.6)	0.031
Sleep latency, min								
[40,45)	14.9 (15.1)	14.9 (16.2)	14.8 (13.9)	0.139	15.7 (19.3)	17.7 (21.4)	13.6 (16.5)	<0.001
[45,50)	15.9 (16.8)	16.7 (19.5)	15.1 (13.6)	<0.001	16.1 (22.3)	19.1 (26.5)	13.2 (16.6)	<0.001
[50,55)	14.8 (13.6)	16.4 (15.0)	13.3 (11.9)	0.013	16.6 (19.1)	20.5 (21.7)	12.8 (15.4)	0.001
[55,60)	17.5 (17.1)	20.3 (17.3)	14.6 (16.3)	0.037	18.7 (22.5)	22.9 (26.8)	14.4 (16.2)	<0.001
[60,65)	17.1 (20.9)	19.5 (24.5)	15.0 (17.0)	0.162	20.7 (28.0)	25.0 (35.2)	17.0 (19.1)	0.060
[65,72]	21.8 (26.6)	19.7 (16.4)	24.7 (36.4)	0.180	26.0 (29.4)	30.3 (33.7)	20.0 (20.9)	0.086
Habitual sleep efficiency, %								
[40,45)	96.0 (9.4)	97.2 (9.5)	94.8 (9.2)	0.312	92.2 (9.6)	90.6 (10.6)	94.0 (8.1)	<0.001
[45,50)	94.8 (10.0)	94.7 (10.6)	94.9 (9.3)	0.792	91.1 (10.9)	89.7 (11.4)	92.4 (10.2)	<0.001
[50,55)	93.6 (10.7)	93.9 (10.7)	93.3 (10.8)	0.667	90.4 (11.3)	89.5 (11.8)	91.4 (10.8)	0.422
[55,60)	92.3 (11.4)	91.5 (12.8)	93.2 (9.7)	0.103	88.6 (13.1)	85.8 (14.5)	91.6 (10.7)	<0.001
[60,65)	92.6 (10.8)	91.7 (12.1)	93.4 (9.6)	0.228	85.3 (14.7)	84.7 (14.0)	85.8 (15.4)	0.453
[65,72]	88.9 (15.3)	88.8 (14.7)	89.1 (16.2)	0.298	84.1 (16.6)	82.0 (17.6)	87.0 (14.6)	0.010
Time in bed, 24H								
[40,45)	6:44 (1:11)	6:38 (1:17)	6:50 (1:02)	0.129	6:51 (1:03)	6:54 (1:02)	6:48 (1:03)	0.083
[45,50)	6:42 (1:09)	6:33 (1:10)	6:52 (1:06)	<0.001	6:57 (1:10)	6:57 (1:15)	6:57 (1:05)	0.788
[50,55)	6:50 (1:17)	6:43 (1:26)	6:56 (1:07)	0.105	7:04 (1:07)	7:03 (1:04)	7:04 (1:09)	0.291
[55,60)	6:45 (1:08)	6:38 (1:09)	6:52 (1:06)	0.971	7:12 (1:09)	7:07 (1:13)	7:18 (1:05)	0.634
[60,65)	6:41 (1:15)	6:41 (1:20)	6:41 (1:10)	0.809	7:18 (1:45)	7:04 (1:12)	7:31 (2:07)	0.021
[65,72]	6:45 (1:17)	6:52 (1:26)	6:34 (1:03)	0.118	7:12 (1:18)	7:05 (1:21)	7:22 (1:14)	0.697
Sleep duration, 24H								
[40,45)	6:26 (1:05)	6:24 (1:04)	6:27 (1:06)	0.186	6:18 (1:05)	6:14 (1:08)	6:23 (1:01)	0.291
[45,50)	6:20 (1:10)	6:11 (1:14)	6:30 (1:06)	0.001	6:18 (1:09)	6:12 (1:12)	6:24 (1:06)	0.002
[50,55)	6:22 (1:13)	6:16 (1:10)	6:28 (1:15)	0.207	6:22 (1:10)	6:17 (1:08)	6:26 (1:11)	0.116
[55,60)	6:13 (1:14)	6:03 (1:15)	6:23 (1:12)	0.248	6:20 (1:12)	6:03 (1:13)	6:39 (1:06)	0.004

Age	Total	Baseline Women	Men	p*	Total	Follow-up Women	Men	p*
[60,65)	6:09 (1:10)	6:04 (1:15)	6:13 (1:05)	0.325	6:07 (1:15)	5:56 (1:14)	6:17 (1:15)	0.015
[65,72]	5:56 (1:20)	6:01 (1:20)	5:49 (1:19)	0.697	6:00 (1:24)	5:44 (1:25)	6:21 (1:20)	0.009
Bedtime (free days), 24H								
[40,45)	0:08 (1:15)	0:04 (1:18)	0:13 (1:12)	0.703	23:34 (1:19)	23:34 (1:14)	23:34 (1:25)	0.864
[45,50)	23:54 (1:15)	23:54 (1:08)	23:55 (1:21)	0.006	23:15 (1:27)	23:19 (1:25)	23:10 (1:28)	0.043
[50,55)	23:36 (1:20)	23:38 (1:27)	23:34 (1:11)	0.849	22:53 (1:22)	22:52 (1:12)	22:54 (1:31)	0.782
[55,60)	23:24 (1:16)	23:23 (1:11)	23:24 (1:20)	0.312	22:36 (1:10)	22:41 (1:11)	22:31 (1:09)	0.416
[60,65)	22:57 (1:12)	22:49 (1:01)	23:05 (1:21)	0.901	22:35 (1:37)	22:27 (1:11)	22:42 (1:56)	0.242
[65,72]	22:48 (1:16)	22:42 (1:23)	22:57 (1:04)	0.949	22:26 (1:18)	22:34 (1:14)	22:15 (1:22)	0.143
Wake-up time (free days), 24H								
[40,45)	7:18 (1:49)	7:24 (1:27)	7:11 (2:08)	0.477	6:34 (1:46)	6:49 (1:20)	6:18 (2:06)	0.001
[45,50)	6:57 (1:41)	6:54 (1:23)	7:00 (1:56)	0.108	6:15 (1:34)	6:22 (1:27)	6:08 (1:40)	0.014
[50,55)	6:31 (1:27)	6:29 (1:20)	6:33 (1:34)	0.630	6:03 (1:26)	5:59 (1:17)	6:07 (1:34)	0.178
[55,60)	6:14 (1:17)	6:06 (1:11)	6:22 (1:22)	0.367	5:53 (1:13)	5:54 (1:13)	5:51 (1:14)	0.954
[60,65)	5:40 (1:15)	5:33 (1:07)	5:47 (1:21)	0.911	5:40 (1:11)	5:33 (1:07)	5:45 (1:14)	0.488
[65,72]	5:38 (1:14)	5:41 (1:20)	5:33 (1:06)	0.031	5:40 (1:19)	5:42 (1:27)	5:37 (1:06)	0.239
Mid-sleep time (free days), 24H								
[40,45)	3:44 (1:12)	3:42 (1:09)	3:47 (1:15)	0.667	3:06 (1:16)	3:11 (1:07)	3:01 (1:24)	0.035
[45,50)	3:27 (1:10)	3:24 (1:04)	3:31 (1:16)	0.037	2:45 (1:19)	2:49 (1:15)	2:40 (1:22)	0.021
[50,55)	3:03 (1:11)	3:00 (1:14)	3:07 (1:09)	0.934	2:30 (1:22)	2:29 (1:18)	2:30 (1:25)	0.819
[55,60)	2:49 (1:07)	2:44 (1:01)	2:53 (1:12)	0.275	2:14 (1:02)	2:18 (1:02)	2:11 (1:03)	0.673
[60,65)	2:19 (1:02)	2:11 (0:49)	2:26 (1:11)	0.889	2:00 (1:21)	2:00 (0:59)	1:59 (1:36)	0.366
[65,72]	2:13 (1:03)	2:11 (1:08)	2:15 (0:55)	0.227	2:03 (1:08)	2:08 (1:10)	1:56 (1:04)	0.130
Bedtime (workdays), 24H								
[40,45)	23:58 (1:12)	23:57 (1:13)	23:58 (1:12)	0.320	23:28 (1:19)	23:29 (1:14)	23:28 (1:24)	0.816
[45,50)	23:47 (1:11)	23:48 (1:07)	23:45 (1:15)	0.002	23:08 (1:16)	23:13 (1:15)	23:04 (1:18)	0.050
[50,55)	23:30 (1:21)	23:32 (1:22)	23:28 (1:20)	0.544	22:51 (1:23)	22:50 (1:16)	22:53 (1:30)	0.778
[55,60)	23:15 (1:13)	23:14 (1:09)	23:16 (1:17)	0.177	22:35 (1:10)	22:39 (1:10)	22:31 (1:11)	0.290
[60,65)	22:53 (1:10)	22:49 (1:02)	22:56 (1:16)	0.912	22:33 (1:36)	22:25 (1:10)	22:40 (1:54)	0.224
[65,72]	22:43 (1:15)	22:38 (1:20)	22:50 (1:06)	0.826	22:26 (1:18)	22:34 (1:14)	22:15 (1:22)	0.143
Wake-up time (workdays), 24H								
[40,45)	6:25 (1:18)	6:13 (0:54)	6:37 (1:36)	0.033	6:05 (1:44)	6:15 (1:17)	5:54 (2:06)	0.021
[45,50)	6:19 (1:19)	6:10 (1:08)	6:28 (1:28)	0.548	5:59 (1:26)	6:07 (1:15)	5:51 (1:35)	0.006
[50,55)	6:09 (1:23)	6:04 (1:09)	6:14 (1:34)	0.252	5:52 (1:20)	5:50 (1:12)	5:54 (1:28)	0.594
[55,60)	5:59 (1:07)	5:52 (1:03)	6:07 (1:10)	0.120	5:46 (1:11)	5:45 (1:13)	5:48 (1:10)	0.466

Age	Total	Baseline Women	Men	p*	Total	Follow-up Women	Men	p*
[60,65]	5:34 (1:12)	5:30 (1:10)	5:38 (1:13)	0.647	5:35 (1:08)	5:28 (1:07)	5:41 (1:09)	0.498
[65,72]	5:26 (1:03)	5:27 (1:07)	5:23 (0:58)	0.050	5:38 (1:18)	5:39 (1:26)	5:37 (1:06)	0.307
Mid-sleep time (workdays), 24H								
[40,45]	3:11 (1:00)	3:03 (0:51)	3:20 (1:07)	0.189	2:51 (1:12)	2:52 (1:08)	2:50 (1:16)	0.483
[45,50]	3:04 (1:02)	2:59 (0:56)	3:08 (1:07)	0.249	2:35 (1:08)	2:40 (1:04)	2:31 (1:12)	0.028
[50,55]	2:49 (1:10)	2:45 (1:07)	2:54 (1:12)	0.748	2:22 (1:14)	2:20 (1:07)	2:23 (1:21)	0.894
[55,60]	2:37 (1:01)	2:33 (0:56)	2:42 (1:06)	0.096	2:11 (1:01)	2:12 (1:00)	2:09 (1:02)	0.303
[60,65]	2:14 (0:59)	2:10 (0:52)	2:17 (1:05)	0.732	1:56 (1:18)	1:57 (0:58)	1:56 (1:33)	0.349
[65,72]	2:04 (0:57)	2:02 (1:00)	2:06 (0:54)	0.229	2:02 (1:07)	2:07 (1:09)	1:56 (1:04)	0.154
Mid-sleep on free days corrected for sleep debt on workdays, 24H								
[40,45]	3:28 (1:08)	3:19 (1:04)	3:39 (1:11)	0.077	3:00 (1:13)	3:01 (1:05)	2:59 (1:21)	0.356
[45,50]	3:16 (1:08)	3:10 (1:00)	3:22 (1:14)	0.208	2:45 (1:25)	2:51 (1:23)	2:38 (1:26)	0.019
[50,55]	2:58 (1:10)	2:53 (1:14)	3:02 (1:05)	0.551	2:25 (1:17)	2:24 (1:07)	2:26 (1:25)	0.868
[55,60]	2:46 (1:06)	2:43 (1:02)	2:50 (1:10)	0.240	2:13 (1:02)	2:15 (1:02)	2:10 (1:02)	0.513
[60,65]	2:18 (1:02)	2:10 (0:48)	2:26 (1:12)	0.774	1:59 (1:21)	1:59 (0:59)	1:59 (1:36)	0.351
[65,72]	2:10 (1:00)	2:08 (1:04)	2:14 (0:54)	0.353	2:02 (1:07)	2:07 (1:09)	1:56 (1:04)	0.146
Social jet lag, 24H								
[40,45]	0:36 (0:44)	0:41 (0:43)	0:30 (0:45)	0.033	0:20 (0:51)	0:21 (0:43)	0:20 (1:00)	0.475
[45,50]	0:28 (0:41)	0:28 (0:38)	0:28 (0:43)	0.229	0:15 (0:46)	0:17 (0:55)	0:13 (0:34)	0.284
[50,55]	0:18 (0:42)	0:18 (0:32)	0:19 (0:50)	0.757	0:10 (0:37)	0:12 (0:47)	0:09 (0:24)	0.741
[55,60]	0:13 (0:27)	0:14 (0:27)	0:13 (0:27)	0.048	0:05 (0:18)	0:06 (0:19)	0:04 (0:17)	0.065
[60,65]	0:09 (0:24)	0:05 (0:18)	0:12 (0:28)	0.756	0:03 (0:17)	0:03 (0:18)	0:03 (0:16)	0.925
[65,72]	0:10 (0:23)	0:09 (0:19)	0:11 (0:27)	0.686	0:01 (0:07)	0:01 (0:10)	0:00 (0:00)	0.366

p* reflects overall group differences between sex by analysis of variance after adjusting for baseline age, body mass index (BMI, kg/m²), smoking intensity (pack-year), alcohol consumption amount (g/day), hypertension, and diabetes mellitus, occupation.

Table S2. Mean (standard deviation) sleep characteristics at baseline by menopausal status in women.

	Pre-menopause (N=728, 54.5%)	Menopause (N=607, 45.5%)	p*	p**
Age at baseline	45.44 (3.03)	55.07 (6.62)	<0.001	-
PSQI, score	4.1 (2.3)	4.7 (2.6)	<0.001	0.268
Sleep latency, min	15.2 (16.4)	19.1 (19.7)	<0.001	0.018
HSE, %	95.8 (10.1)	92.5 (12.2)	<0.001	0.487
Time in bed, 24H	6:35 (1:14)	6:42 (1:18)	0.068	0.190
Sleep duration, 24H	6:16 (1:09)	6:10 (1:14)	0.095	0.377
MSFsc, 24H	3:13 (1:04)	2:42 (1:06)	<0.001	0.881
Mid-sleep time (F), 24H	3:31 (1:08)	2:48 (1:10)	<0.001	0.750
Mid-sleep time (W), 24H	3:00 (0:54)	2:35 (1:02)	<0.001	0.290
Social jet lag, 24H	0:35 (0:41)	0:15 (0:29)	<0.001	0.005

The final column reflects overall group differences between menopausal status covariates of body mass index (BMI, kg/m²), smoking intensity (pack·year), alcohol consumption amount (g/day), hypertension diabetes mellitus, occupation with** or without* baseline age.

N, number of observations; PSQI, The Pittsburgh sleep quality index; HSE, habitual sleep efficiency; MSFsc, mid-sleep on free days corrected for sleep debt on workdays; free days (F)/workdays (W).