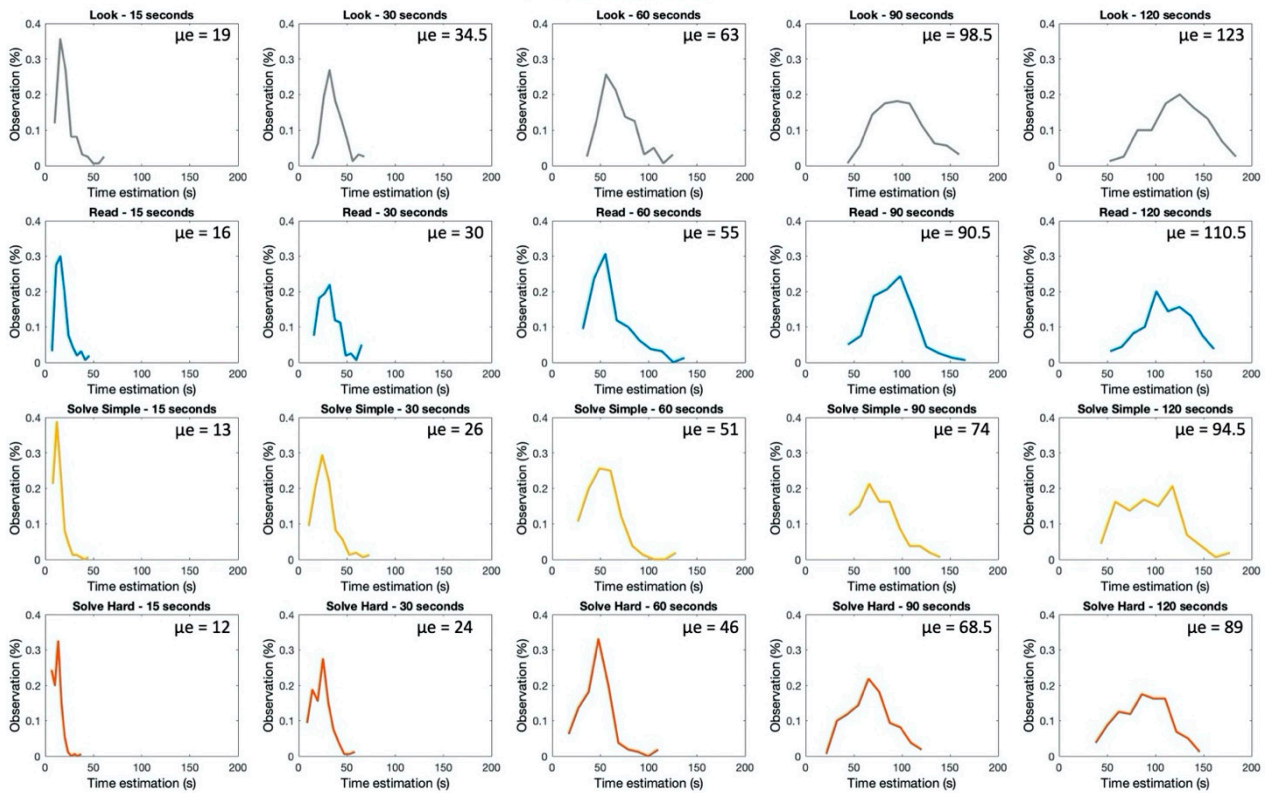


Supplementary Material

a

SITTING CONDITION



b

WALKING CONDITION

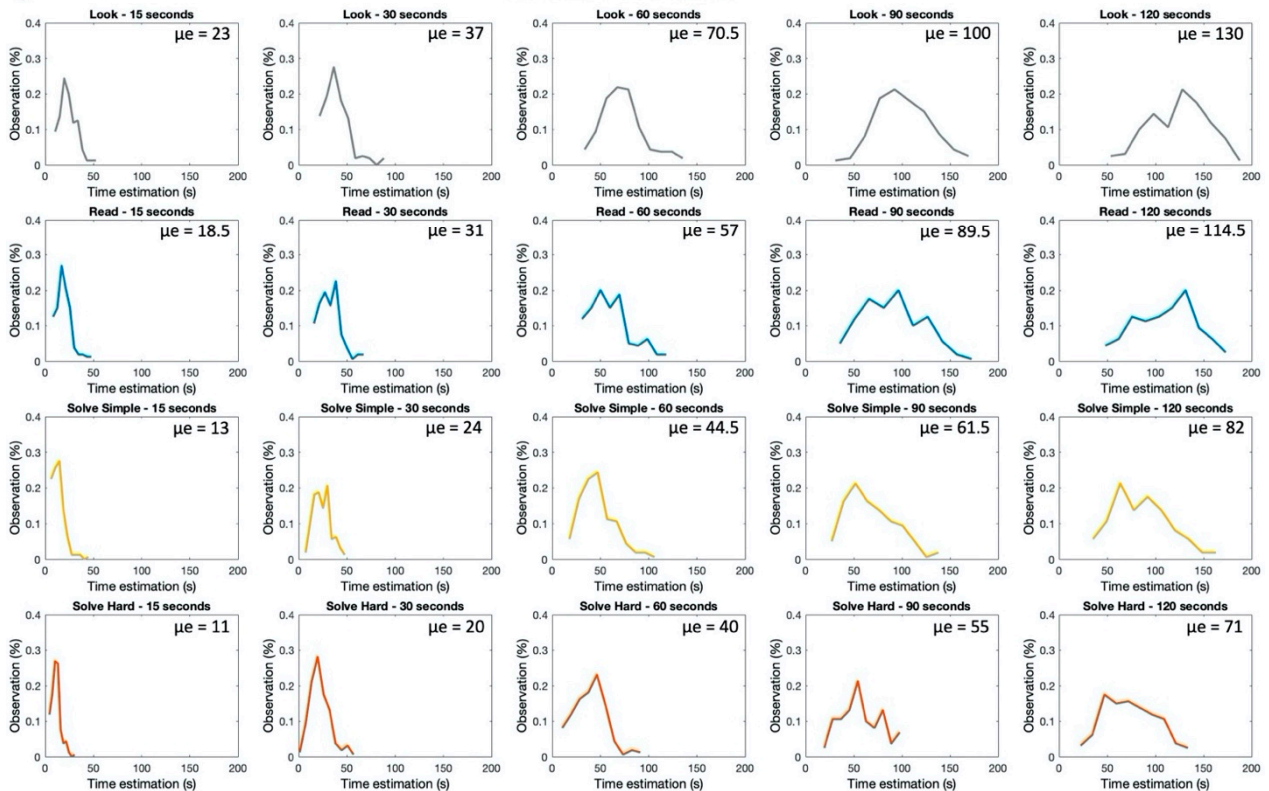


Figure S1. Data distributions for each task and time interval. (a) Sitting condition. (b) Walking condition. The medians of the distributions are reported over each graph.

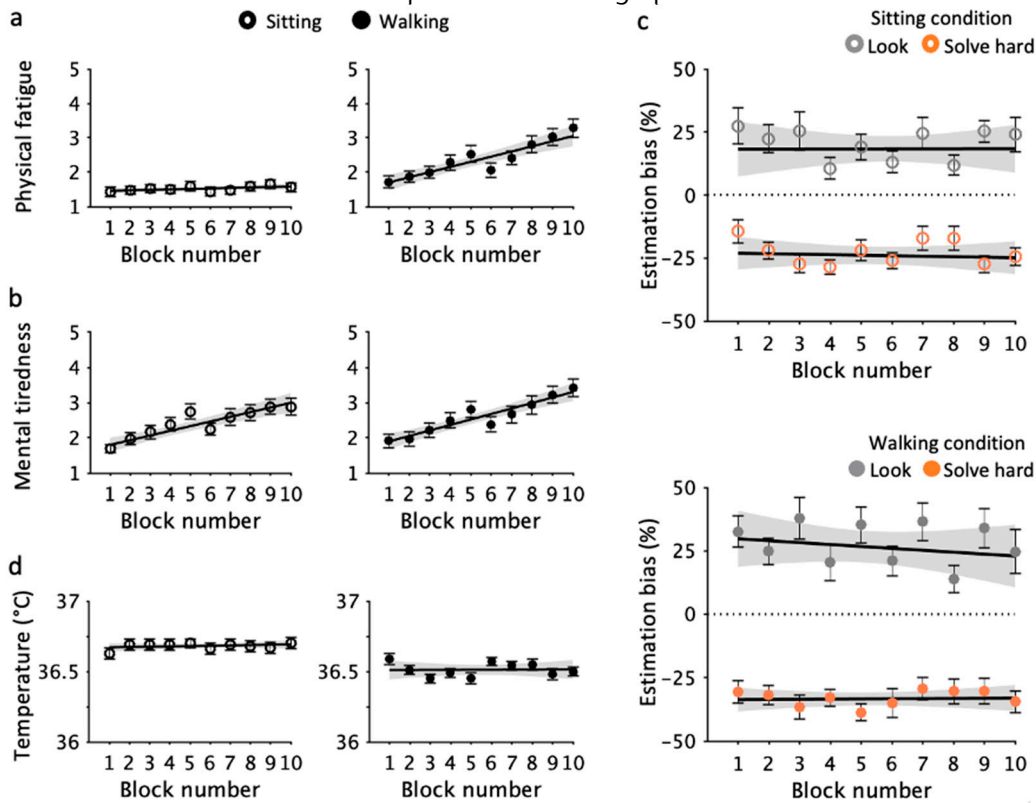


Figure S2. Biological variables and time estimation as a function of block number. (a) **Physical fatigue.** Medium scores of participants. Error bars represent SE. In the sitting condition (left panel), physical fatigue remains stable across blocks ($b = .01$, $t(8) = 2.1$, $p > .05$); in the walking condition (right panel) fatigue significantly increases with block number ($b = .15$, $t(8) = 6.9$, $p < .001$; $R^2 = .86$, $F(8) = 48.8$, $p < .001$). (b) **Mental tiredness.** Medium scores of participants. Error bars represent SE. In the sitting condition (left panel) mental tiredness significantly increases with block number ($b = .13$, $t(8) = 6.9$, $p < .001$; $R^2 = .86$, $F(8) = 47.8$, $p < .001$), as well as in the walking condition (right panel) ($b = .16$, $t(8) = 8.1$, $p < .001$; $R^2 = .89$, $F(8) = 66.2$, $p < .001$). (c) **Time estimation.** Percentage estimation bias in the *look* and *solve hard* tasks, averaged across time intervals, does not change as a function of block number, neither in the sitting (upper panel) or the walking condition (lower panel). (d) **Temperature.** Body temperatures averaged across participants and SE. Participants' temperature does not change as a function of block number, neither in the sitting (left panel) or the walking condition (right panel). Shaded areas represent 95% confidence intervals.

Table S1. Results of Shapiro Wilk test for normality. P-values below 0.05 indicate that the data significantly deviate from a normal distribution.

Sitting	15 seconds	30 seconds	60 seconds	90 seconds	120 seconds
<i>Look</i>	W=0.82, $p < 0.001$	W=0.95, $p < 0.001$	W=0.94, $p < 0.001$	W=0.98, $p < 0.05$	W=0.99, $p > 0.05$
<i>Read</i>	W=0.85, $p < 0.001$	W=0.92, $p < 0.001$	W=0.92, $p < 0.001$	W=0.99, $p > 0.05$	W=0.99, $p > 0.05$
<i>Solve simple</i>	W=0.85, $p < 0.001$	W=0.91, $p < 0.001$	W=0.91, $p < 0.001$	W=0.96, $p < 0.001$	W=0.97, $p < 0.01$
<i>Solve hard</i>	W=0.91, $p < 0.001$	W=0.95, $p < 0.001$	W=0.93, $p < 0.001$	W=0.98, $p < 0.05$	W=0.99, $p < 0.001$
Walking	15 seconds	30 seconds	60 seconds	90 seconds	120 seconds
<i>Look</i>	W=0.96, $p < 0.001$	W=0.91, $p < 0.001$	W=0.96, $p < 0.001$	W=0.99, $p > 0.05$	W=0.98, $p > 0.05$

<i>Read</i>	W=0.92, p < 0.001	W=0.96, p < 0.001	W=0.95, p < 0.001	W=0.98, p > 0.05	W=0.98, p > 0.05
<i>Solve simple</i>	W=0.88, p < 0.001	W=0.97, p < 0.01	W=0.96, p < 0.001	W=0.97, p < 0.01	W=0.97, p < 0.01
<i>Solve hard</i>	W=0.92, p < 0.001	W=0.95, p < 0.001	W=0.98, p < 0.05	W=0.97, p < 0.01	W=0.98, p < 0.05

Table S2. Post-hoc comparisons across cognitive tasks for each time interval in the sitting and walking conditions.

Sitting	Read	Solve simple	Solve hard	Read	Solve simple	Solve hard
	15 seconds			30 seconds		
<i>Look</i>	t=3.6, p>0.05	t=7.8, p>0.05	t=9.6, p<0.05	t=3.7, p>0.05	t=8.7, p<0.05	t=13.2, p<0.001
<i>Read</i>	-	t=4.1, p>0.05	t=5.9, p>0.05	-	t=4.9, p>0.05	t=9.5, p<0.01
<i>Solve simple</i>	-	-	t=-1.0, p>0.05	-	-	t=-4.5, p>0.05
	60 seconds			90 seconds		
	t=9.5, p<0.05	t=17.1, p<0.001	t=23.7, p<0.001	t=9.9, p<0.01	t=17.6, p<0.001	t=24.1, p<0.001
<i>Look</i>	-	t=-6.9, p>0.05	t=14.1, p<0.001	-	t=7.6, p>0.05	t=13.6, p<0.001
<i>Read</i>	-	-	t=-6.5, p>0.05	-	-	t=-14.6, p<0.001
<i>Solve simple</i>	-	-	t=-7.9, p>0.05	-	-	-
	120 seconds					
	t=13.4, p<0.001	t=30.2, p<0.001	t=38.1, p<0.001			
<i>Look</i>	-	t=7.1, p>0.05	t=24.7, p<0.001			
<i>Read</i>	-	-	-			
<i>Solve simple</i>	-	-	-			
Walking	Read	Solve simple	Solve hard	Read	Solve simple	Solve hard
	15 seconds			30 seconds		
<i>Look</i>	t=4.9, p>0.05	t=10.8, p<0.01	t=13.4, p<0.001	t=7.1, p>0.05	t=15.2, p<0.001	t=18.1, p<0.001
<i>Read</i>	-	t=5.8, p>0.05	t=8.4, p<0.05	-	t=8.1, p>0.05	t=10.9, p<0.001
<i>Solve simple</i>	-	-	t=-2.6, p>0.05	-	-	t=-2.9, p>0.05
	60 seconds			90 seconds		
	t=13.6, p<0.001	t=27.5, p<0.001	t=33.8, p<0.001	t=11.5, p<0.001	t=33.8, p<0.001	t=44.9, p<0.001
<i>Look</i>	-	t=13.8, p<0.001	t=20.2, p<0.001	-	t=22.4, p<0.001	t=33.4, p<0.001
<i>Read</i>	-	-	t=-6.3, p>0.05	-	-	t=-11.0, p<0.01
<i>Solve simple</i>	-	-	-	-	-	-
	120 seconds					
	t=14.1, p<0.001	t=41.5, p<0.001	t=53.2, p<0.001			
<i>Look</i>	-	t=27.4, p<0.001	t=39.2, p<0.001			
<i>Read</i>	-	-	t=-11.7, p<0.001			
<i>Solve simple</i>	-	-	-			

Table S3. Results of One-Sample Wilcoxon Signed-Rank test. P-values above 0.05 indicate that the median is not different from 0.

Sitting	15 seconds	30 seconds	60 seconds	90 seconds	120 seconds
<i>Look</i>	Z(15)=133, p < 0.001	Z(15)=136, p < 0.001	Z(15)=121, p < 0.01	Z(15)=111, p < 0.05	Z(15)=93, p > 0.05
<i>Read</i>	Z(15)=111, p < 0.05	Z(15)=85, p > 0.05	Z(15)=70, p > 0.05	Z(15)=58, p > 0.05	Z(15)=27, p < 0.05
<i>Solve simple</i>	Z(15)=52, p > 0.05	Z(15)=39, p > 0.05	Z(15)=11, p < 0.01	Z(15)=0, p < 0.001	Z(15)=1, p < 0.001
<i>Solve hard</i>	Z(15)=10, p < 0.01	Z(15)=0, p < 0.001	Z(15)=2, p < 0.001	Z(15)=0, p < 0.001	Z(15)=0, p < 0.001

Walking	15 seconds	30 seconds	60 seconds	90 seconds	120 seconds
<i>Look</i>	Z(15)=131, p < 0.01	Z(15)=127, p < 0.01	Z(15)=124, p < 0.01	Z(15)=112, p < 0.05	Z(15)=95, p > 0.05
<i>Read</i>	Z(15)=111, p < 0.05	Z(15)=93, p > 0.0501	Z(15)=75, p > 0.05	Z(15)=85, p > 0.05	Z(15)=46, p > 0.05
<i>Solve simple</i>	Z(15)=43, p > 0.05	Z(15)=8, p < 0.01	Z(15)=6, p < 0.001	Z(15)=3, p < 0.001	Z(15)=0, p < 0.001
<i>Solve hard</i>	Z(15)=2, p < 0.001	Z(15)=4, p < 0.001	Z(15)=0, p < 0.001	Z(15)=0, p < 0.001	Z(15)=0, p < 0.001

Table S4. Post-hoc comparisons across durations for each cognitive task in the sitting and walking conditions.

Sitting	<i>Look</i>	<i>Read</i>	<i>Solve simple</i>	<i>Solve hard</i>
<i>15s vs 30s</i>	t=0.4, p>0.05	t=0.4, p>0.05	t=1.3, p>0.05	t=3.9, p>0.05
<i>15s vs 60s</i>	t=-3.4, p>0.05	t=2.4, p>0.05	t=5.9, p>0.05	t=10.6, p<0.01
<i>15s vs 90s</i>	t=-3.9, p>0.05	t=2.9, p>0.05	t=12.7 p<0.001	t=18.7, p<0.001
<i>15s vs 120s</i>	t=-1.8, p>0.05	t=-11.6, p<0.001	t=-24.2, p<0.001	t=-30.3, p<0.001
<i>30s vs 60s</i>	t=-3.8, p>0.05	t=1.9, p>0.05	t=4.6, p>0.05	t=6.6, p>0.05
<i>30s vs 90s</i>	t=-4.2, p>0.05	t=2.5, p>0.05	t=11.4, p<0.001	t=14.7, p<0.001
<i>30s vs 120s</i>	t=-1.4, p>0.05	t=-11.2, p<0.001	t=22.9, p<0.001	t=-26.4, p<0.001
<i>60s vs 90s</i>	t=-0.4, p>0.05	t=0.5, p>0.05	t=6.8, p>0.05	t=8.1, p<0.05
<i>60s vs 120s</i>	t=-5.3, p>0.05	t=-9.2, p<0.01	t=-18.3, p<0.001	t=-19.7, p<0.001
<i>90s vs 120s</i>	t=-5.7, p>0.05	t=-8.7, p<0.01	t=-11.5, p<0.001	t=-11.6, p<0.001
Walking	<i>Look</i>	<i>Read</i>	<i>Solve simple</i>	<i>Solve hard</i>
<i>15s vs 30s</i>	t=-0.1, p>0.05	t=2.0, p>0.05	t=4.2, p>0.05	t=4.5, p>0.05
<i>15s vs 60s</i>	t=-4.5, p>0.05	t=4.1, p>0.05	t=12.5, p<0.001	t=15.9, p<0.001
<i>15s vs 90s</i>	t=-2.7, p>0.05	t=3.8, p>0.05	t=20.4 p<0.001	t=28.8, p<0.001
<i>15s vs 120s</i>	t=-3.5, p>0.05	t=-12.7, p<0.001	t=-34.3, p<0.001	t=-43.4, p<0.001
<i>30s vs 60s</i>	t=-4.3, p>0.05	t=2.1, p>0.05	t=7.9, p>0.05	t=11.4, p<0.001
<i>30s vs 90s</i>	t=-2.5, p>0.05	t=1.8, p>0.05	t=16.2, p<0.001	t=24.2, p<0.001
<i>30s vs 120s</i>	t=-3.7, p>0.05	t=-10.7, p<0.001	t=-30.1, p<0.001	t=-38.8, p<0.001
<i>60s vs 90s</i>	t=1.8, p>0.05	t=-0.3, p>0.05	t=8.2, p<0.05	t=-12.9, p<0.001
<i>60s vs 120s</i>	t=-8.0, p>0.05	t=-8.8, p<0.05	t=-22.1, p<0.001	t=-27.4, p<0.001
<i>90s vs 120s</i>	t=-6.2, p>0.05	t=-8.7, p<0.05	t=-13.9, p<0.001	t=-14.5, p<0.001

Table S5. Results of z-tests between the slopes of best fit lines, shown in Figure 3c and 3d. P-values below 0.05 indicate that the two means are significantly different.

Sitting	<i>Read</i>	<i>Solve simple</i>	<i>Solve hard</i>
<i>Look</i>	z=2.6, p<0.01	z=5.7, p<0.001	z=8.1, p<0.001

<i>Read</i>	-	$z=3.2, p<0.01$	$z=5.4, p<0.001$
<i>Solve simple</i>		-	$z=1.6, p>0.05$

Walking	<i>Read</i>	<i>Solve simple</i>	<i>Solve hard</i>
<i>Look</i>	$z=3.1, p<0.01$	$z=8.6, p<0.001$	$z=12.2, p<0.001$
<i>Read</i>	-	$z=5.2, p<0.001$	$z=7.9, p<0.001$
<i>Solve simple</i>		-	$z=2.3, p<0.05$

Table S6. Post-hoc comparisons between motor conditions for each task and duration.

Walking <i>vs</i> Sitting	15 seconds	30 seconds	60 seconds	90 seconds	120 seconds
<i>Look</i>	$t=2.2, p>0.05$	$t=2.7, p>0.05$	$t=3.2, p>0.05$	$t=1.1, p>0.05$	$t=0.5, p>0.05$
<i>Read</i>	$t=0.9, p>0.05$	$t=-0.7, p>0.05$	$t=-0.8, p>0.05$	$t=0.03, p>0.05$	$t=-0.2, p>0.05$
<i>Solve simple</i>	$t=-0.8, p>0.05$	$t=-3.7, p>0.05$	$t=-7.1, p>0.05$	$t=-8.4, p<0.05$	$t=-10.8, p<0.01$
<i>Solve hard</i>	$t=-1.5, p>0.05$	$t=-2.2, p>0.05$	$t=-6.9, p>0.05$	$t=-11.7, p<0.001$	$t=-14.6, p<0.001$