Figure S1. Individual response of REM latency and arousals to HPLC and LPHC diets
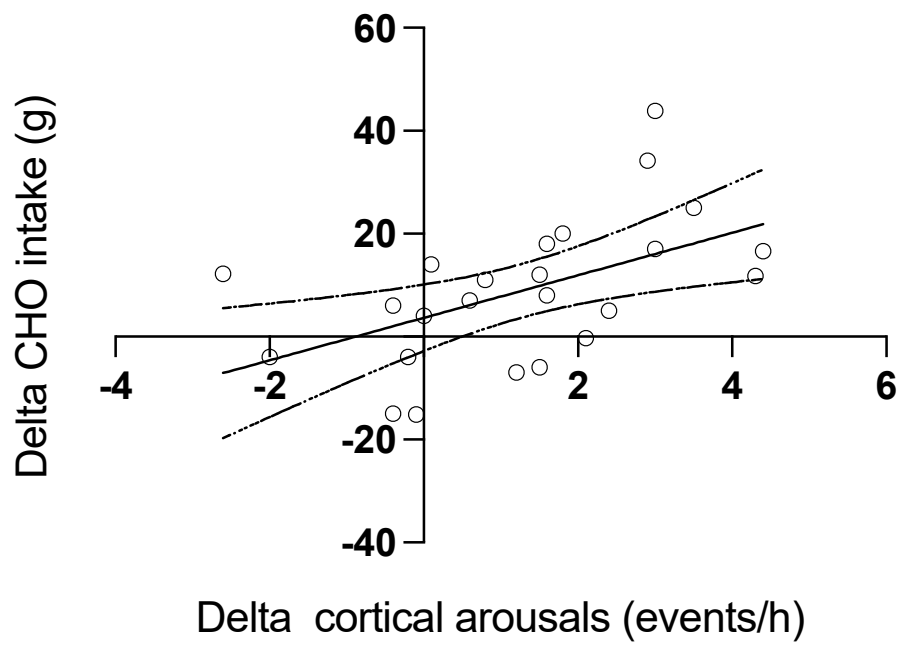
Figure S2. Correlation between Δ cortical arousals and Δ CHO
* (r=0.523, p<0.009); Δ is expressed as (HPLC-LPHC)

Table S1. Macronutrients content and proportions of HPLC and LPHC diets

	HPLC diet	LPHC diet
Energy (kcal/kg)	42	42
Protein (g/kg)	2	1.1
Protein (%)	20	11
Carbohydrates (g/kg)	4.45	5.35
Carbohydrates (%)	42	51
Fat (g/kg)	1.8	1.8
Fat (%)	38	38
Protein : Carbohydrates ratio	0.44	0.20

HPLC: high-protein, low-carbohydrate; LPHC: low-protein, high carbohydrate

Table S2. Food items included in HPLC and LPHC diets

	Groups	Food	Nutritional values per 100g of food
Breakfast	Dairy products	Milk	116 kcal
		Yogurt	78 kcal
	Fruits	Seasonal fruit (Orange or apple or pear)	67 kcal
	Grain (cereal)	Bread	210 kcal
		Cereal grains	231 kcal
	Sweet product, sugars	Apricot jam	26 kcal
	Lean meats and poultry	Sliced turkey	121 kcal
	Fats	Butter	74 kcal
Lunch	Vegetables and legumes (raw)	Grated carrot	32 kcal
	Fish	White fish fillet	154 kcal
	Grain (cereal)	Steamed rice	133 kcal
	Vegetables and legumes/beans (cooked)	Mixed vegetables (onion, carrot, red and yellow bell pepper)	117 kcal
	Dairy products	Unflavoured yoghurt	62 kcal
	Sweet product, sugars	Applesauce	90 kcal
		Sugars (5g)	398 kcal
Dinner	Vegetables and legumes (raw)	Coleslaw	26 kcal
	Lean meats and poultry	Sliced turkey	121 kcal
	Grain (cereal)	Cooked pasta	145 kcal
		bread	263 kcal
	Vegetables and legumes/beans (cooked)	French bean	27 kcal
	Dairy products	Cottage cheese	74 kcal
	Fruits	Seasonal fruit (Orange or apple or pear)	48 kcal

Table S3. Sedentary behaviors and physical activity during HPLC vs. LPHC diets (Day1-Day3)

	HPLC				LPHC			
	Mean (SD)Day 1	Mean (SD) Day 2	Mean (SD) Day 3	p-value (ES)	Mean (SD) Day 1	Mean (SD) Day 2	Mean (SD) Day 3	p-value (ES)
Time spent on SED	489.38 (35.77)	490.38 (29.57)	490.15 (31.42)	0.949 (<0.001)	487.33 (19.10)	487.83 (18.33)	488.29 (29.52)	0.936 (<0.001)
Time spent on LPA	427.75 (35.12)	427.63 (35.28)	427.98 (39.85)	0.992 (<0.001)	429.67 (41.59)	429.79 (36.99)	4329.96 (40.43)	0.993 (<0.001)
Time spent on MPA	39 (18.44)	38.96 (18.37)	38.94 (19.86)	0.999 (<0.001)	38.63 (16.82)	38.25 (18.15)	38.31 (17.60)	0.957 (<0.001)
Time spent on VPA	6.63 (3.75)	6.54 (4.31)	6.32 (4.77)	0.860 (<0.001)	7.42 (4.45)	7.38 (4.83)	7.33 (5.48)	0.995 (<0.001)
Time spent on MVPA	45.63 (20.97)	45.50 (21.34)	45.26 (23.20)	0.972 (<0.001)	46.04 (17.64)	45.63 (19.17)	45.64 (19.48)	0.976 (<0.001)

HPLC: high-protein, low-carbohydrate; LPA: light physical activity; LPHC: low-protein, high carbohydrate; MPA: moderate physical activity; MVPA: moderate to vigorous physical activity; SB: sedentary behavior; VPA: vigorous physical activity.

Table S4. Comparison of sleep outcomes during PRE-intervention night between HPLC and LPHC diets

	HPLC	LPHC	p-value (ES)
	Mean (SD)	Mean (SD)	
TST (min)	423 (24.00)	426 (24.60)	0.386 (0.05)
REM (min)	108 (21.60)	109 (22.10)	0.458 (0.03)
REM (%)	25.60 (4.94)	25.70 (5.43)	0.790 (0.01)
N1 (min)	30.3 (5.33)	29.90 (5.05)	0.773 (0.03)
N1 (%)	7.17 (1.31)	7.05 (1.28)	0.406 (0.06)
N2 (min)	197 (21.10)	198 (23.20)	0.473 (0.06)
N2 (%)	46.70 (6.07)	46.70 (5.85)	0.856 (0.01)
N3 (min)	88 (37.80)	88.70 (40.40)	0.747 (0.001)
N3 (%)	20.60 (8.27)	20.60 (8.88)	0.922 (0.02)
SE (%)	88.70 (3.58)	89 (3.23)	0.197 (0.03)
SOL (min)	15.50 (8.57)	15.80 (7.78)	0.567 (0.06)
WASO (min)	38.50 (13.80)	36.40 (12.00)	0.128 (0.07)
REM Latency (min)	97.20 (19.90)	97 (18.80)	0.886 (0.02)
Cortical arousals (events/h)	7.15 (3.94)	7.43 (4.25)	0.303 (0.03)

HPLC: high-protein, low-carbohydrate; LPHC: low-protein, high carbohydrate; REM: rapid-eye movement; SE: sleep efficiency; SOL: sleep onset latency; TST: total sleep time; WASO: wake after sleep onset