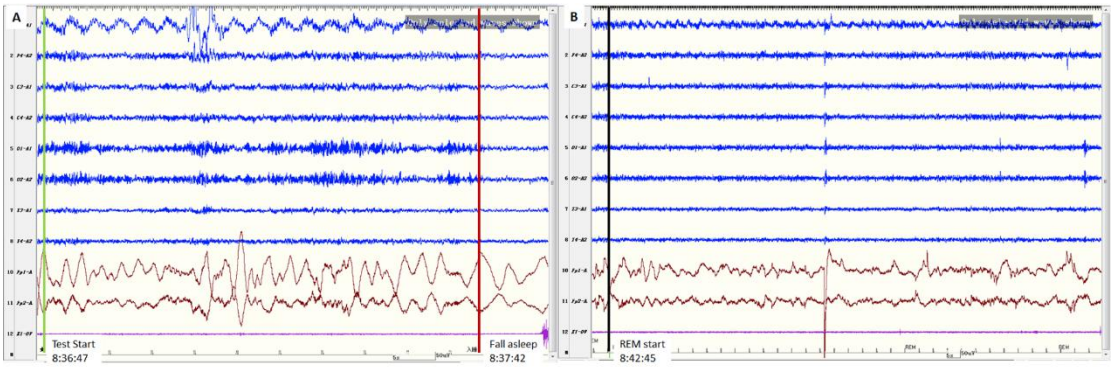
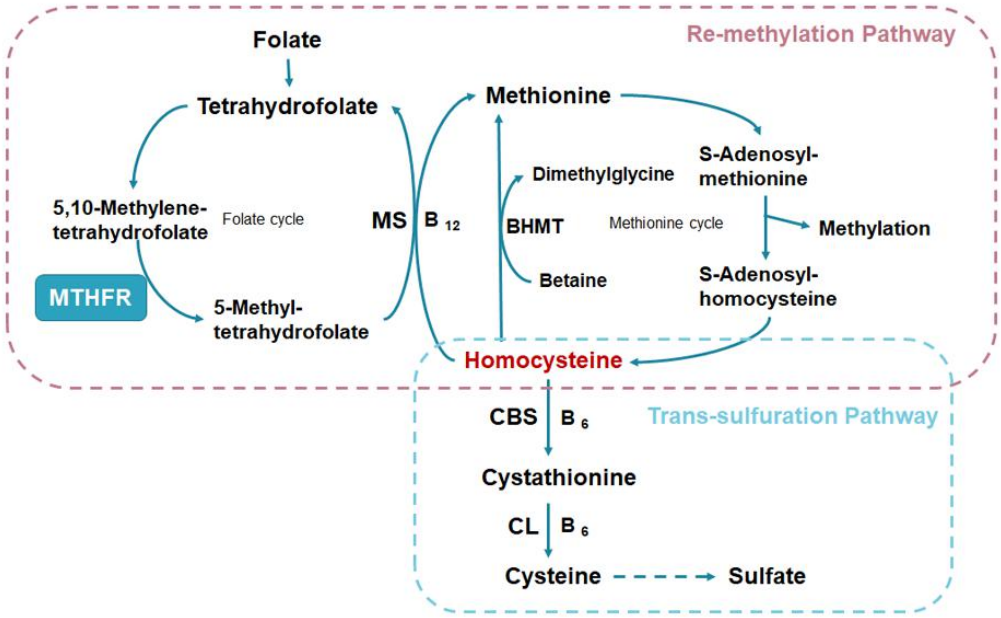


Supplemental Figure 1: Electroencephalography of one nap during MSLT. The blue and brown waves represent electroencephalography and electrooculogram, respectively. **(A)** The waveforms of the sleeping process during one nap of the MSLT. The green vertical line indicates the start of the test, while the red vertical line marks the time of falling asleep, which is characterized by α-rhythm disintegration. The time interval between the two lines, also named sleep latency, is only 55 s (much <8 min). **(B)** The typical waveforms during REM sleep. The black vertical line represents the start of REM, about 5 min from the time of falling asleep (<15 min), which indicates SOREMP. MSLT: Multiple sleep latency test; REM: Rapid eye movement; SOREMP: Sleep-onset rapid eye movement period.



Supplemental Figure 2: Schematic illustration of the metabolic pathways of homocysteine. The illustration shows the metabolic pathways of homocysteine, which mainly include the remethylation pathway (in the pink dotted frame) and the transsulfuration pathway (in the blue

dotted frame). The remethylation pathway involves the folate cycle and methionine cycle, which can supply methyl to methyl acceptors and participate in a series of essential physiological activities, such as the synthesis of deoxyribonucleic acid. Homocysteine can also be converted to cystathionine and then cysteine *via* the transsulfuration pathway. Both pathways involve various substrates and are catalyzed by a series of enzymes and coenzymes. MTHFR is one of the key enzymes in the folate cycle, and its deficiency is currently the most common cause of hyperhomocysteinemia. Vitamin B_{12} and vitamin B_6 are important coenzymes in the metabolic pathways of homocysteine, while betaine also promotes the transformation from homocysteine to methionine. In theory, supplementation with these substances will accelerate the metabolism of homocysteine and alleviate hyperhomocysteinemia. B_{12}: Vitamin B_{12}; B_6: Vitamin B_6; BHMT: Betaine-homocysteine methyltransferase; CBS: Cystathionine-β-synthase; CL: Cystathionine-γ-lyase; MS: Methionine synthase; MTHFR: 5,10-Methylenetetrahydrofolate reductase.