Jet lag: What's light got to do with it?

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Jet lag is a circadian disruption disorder that results in memory loss and extreme sleepiness, which influence our ability complete essential daily tasks (1-4). How jet lag affects memory and circadian-driven activity under different daylengths experienced throughout the year by human travelers is unknown. Published evidence have indicated that different daylengths influence the circadian organization of the SCN and we hypothesize by that light encoded by the circadian clock differentially regulates jet lag recovery in a day length-dependent manner (5). Current approaches to treat jet lag aim to quicken the adjustment of the circadian clock to the new time zone by administering sleeping pills or light therapy treatments (6-10). The effectiveness of jet lag therapies is questionable because jet lag is experienced in many types of day lengths, year-round. Our study in mice uncovered that recovery from jet lag depends on day length. We also observed jet lag related memory loss in specific daylengths. The deficits in jet lag recovery and memory loss was recovered to normal levels with the used of light exposure as it related to the specific day length in which jet lag was experienced. These data strongly indicate the contribution of day length and the acute effects of light should be key considerations for developing more effective treatments for jet lag in humans.

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