Journal of Research Administration
Society of Research Administrators International

A NARRATIVE REVIEW ON POWER NAP – A PRACTICE THAT HAS AGED LIKE FINE WINE

Dr. Sayantan Patra
Assistant Professor, West Bengal University of Health Sciences, West Bengal, India

Dr. Reetoja Das
Senior Resident, Regional Institute of Ophthalmology, Medical College and Hospital, Kolkata, India

Sima Patra (Bhandari)
Principal and Professor, Prashanta Kamar Nursing Institute for Male, Kolkata, India

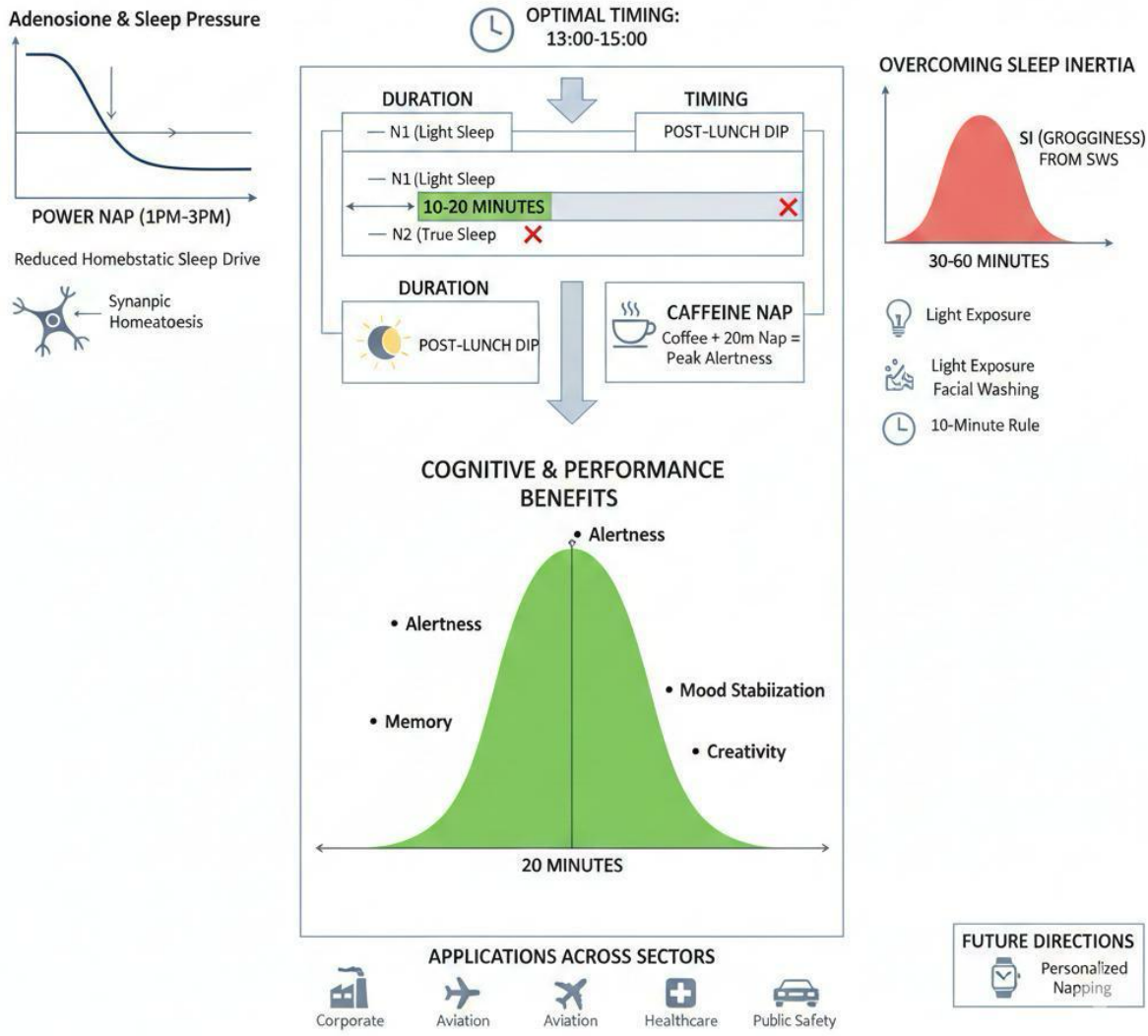
Dr. Soumya Suvra Patra
Resident, Nassau University of Medical Sciences, East Meadow, New York, United States of America

Abstract
Power naps, brief daytime sleep sessions up to an hour, have been practiced since ancient times and are increasingly recognized for their cognitive and physical benefits. Recent studies demonstrate that a 30-minute afternoon nap improves cognitive function, memory, and mood, with benefits lasting up to 4 hours. The optimal nap duration and effectiveness vary among individuals and profession-based subgroups. In athletes, naps enhance physical performance and reduce fatigue. The mechanisms underlying these benefits involve clearance of adenosine accumulation, rejuvenation effects of early NREM sleep stages, and optimal circadian rhythm regulation. However, frequent or prolonged napping can have adverse health effects, particularly in older adults. This review discusses the science behind power naps, their benefits, and potential risks, highlighting the need for personalized nap strategies.

Keywords: Sleep, good sleep habits, N1 and N2 sleep stages, power naps, day time naps, afternoon siesta.

GRAPHICAL ABSTRACT

© 2026 The Authors



1. INTRODUCTION

Brief day time sleep sessions up to an hour or "power nap", a term coined in 1998 by Dr. James B. Maas is increasingly being discussed about in popular culture. Historically numerous references for this practice exist, with accounts dating back to the Egyptian civilisation where workers in the pyramids were allocated time for recreational afternoon naps. In India, afternoon naps have been an age-old tradition, especially in eastern parts of the country, still practiced in niche locales. Similar practices are also prevalent in the modern millennium among certain Greco-Roman populations. Islamic historical texts dating back to the middle ages also describe a similar practice. The practice of afternoon naps underwent a paradigm shift with the advent of modernity, particularly the Industrial Revolution in the late 18th century and consequently fell out of favour, especially among the working populations. However, the practice has endured, especially among primary school going children and older adults. Contemporary examples among prominent personalities include Albert Einstein, Margaret Thatcher, Winston Churchill and Salvador Dali, among others. Mega-corporates like Google and Nike are actively promoting power naps both

© 2026 The Authors

within and outside workplaces. Commercialised designated quiet areas for power naps exist and are only expected to expand in the not-so-distant future. [1]

2. SLEEP SCIENCE – HOW POWER NAPS FIGURE IN THE DAILY SCHEDULE?

Sleep as a physiological phenomenon remains fundamental to functioning among both vertebrates and to a lesser extent, invertebrates. Mammalian sleep is conventionally characterised by closed eyes, reduced responsiveness to extrinsic sensory stimuli and alteration (for the most part reduced) of muscular tone usually in a position of recumbence. Sleep disorders, characterised by alteration of these elements, almost invariably cause reduced quality of repose and at least some functional limitation - varying degrees of neurocognitive deficits in attention, executive functioning and memory. [2] The role of day-time naps in the wider milieu of sleep patterns or disorders and its potential benefits are currently being scientifically explored. [3]

Circadian rhythm is defined as a cycle of brain and neuro-hormonal activity that occurs during a fixed duration in all mammals. The cyclical nature of physiological neuro-hormonal changes approximates diurnal physiological demands and the sleep cycle. Melatonin, a pineal derived neurochemical is elemental to the circadian rhythm, among other regulators. Day-time sleep cycle is not, however, solely regulated by melatonin as its secretion peaks with reduction in incident light on the retinal photoreceptors. Recent studies support a reduction in ascending reticular activating system activity (ARAS, which regulates wakefulness) in late morning and early afternoon (not necessarily directly related to melatonin fluctuations), of which the latter is more prominent. Day-time power naps are intended to address reduction in mental alacrity, related to the dip in ARAS activity, in the afternoon. [1, 3]

Brief day-time siestas lasting up to half an hour have been explored extensively during the past two decades towards measurable cognitive and physiological improvements. Afternoon naps, according to recent studies, some based on machine learning models improve self-reported mood, cognitive ability, retention (in particular declarative memory) and attention span among both students and working professionals. [4] However, the optimal duration and effectiveness among profession based sub-groups is yet to be determined or for that matter universally applicable.

Leong et al (2023) conducted a robustly structured study on benefits and effectivity of short polysomnography backed mid-afternoon naps (durations 10, 30 and 60 minutes with approximately 10 minutes for falling asleep) among a small sample (32) of young adults (between 21 and 35 years of age). 10-minute cognitive tests were delivered at baseline and multiple incremental intervals (up to 240 minutes), which also included pictorial recollection. The most positive benefits included alleviation of sleepiness for the next 4 hours, improved mood, memory encoding and moderate improvement in vigilance, in particular, after a nap duration of 30 minutes (which also benefited pictorial recognition, relational memory function, not observed in other durations). Longer naps resulted in sleep inertia lasting up to 30 minutes. Speed of mental processing was not found to be significantly different following naps. Polysomnography analysis did not reveal any association between macrostructure (30 minute sleep duration resulted in an even balance of N1, N2 and N3 non-rapid eye movement or N-REM phases) and memory benefits, thereby neutralising effects of sleep macrostructure heterogeneity. The researchers concluded a

© 2026 The Authors

30-minute nap had the best trade-off between practicability and benefit. [5] The improvement in relational memory possibly stemmed from bursts of REM sleep consequent to approximately 20% of sleep duration being N3 NREM the precursor to REM cycles. [6]

A recent meta-analysis by Boukhris et al (2024) establishes an increase in distance covered and reduced fatigue index during 5-minute shuttle run test (5MSRT) among athletes even among those who undertook a 7-9 hour regular night-time sleep. Effects of power nap on the rest of physical parameters were not conclusive due to limited nature of sources in this study. [7] In an older systematic review by Souabni et al (2021), a "diurnal" nap improved both physical (including endurance and specific skills) and cognitive (reaction times, attention and short-term memory) performance among athletes, with greater benefit observed among athletes taking replacement naps (short naps to make up for deficient night-time sleep as opposed to prophylactic naps) and longer naps (up to 90 minutes). The longer nap time (35 to 90 minutes) being beneficial for athletes has also been well proven in a narrative review by Botonis et al (2021). Similar findings have also been established in a meta-analysis by Sirohi et al (2022). [7-10]

In addition to the aforementioned cognitive improvements, day-time siestas improve emotional regulation, especially in children. Studies that establish reduction in emotional processing bias among children who take an afternoon nap exist in contemporary literature. A possible role of slow wave sleep in promoting attention allocation has also been proposed in the same study. [11]

Perhaps, in light of the above studies, a gradual shift from the prevalent eight-hour nocturnal sleep models appears probable in the not-so-distant future. [12] There is no doubt that the duration of nocturnal and day-time naps differ based on the activity an individual is expected to perform with possibly individual heterogeneity. Regardless, the beneficial effects of a short well-timed afternoon nap(s) is difficult to ignore on the face of recent scientific studies and might well call in question long held sleep practices.

3. THE SCIENCE BEHIND POWER NAP

A post-lunch or early afternoon dip in cognition is a physiological phenomenon based on the circadian rhythm and sleep homeostatic stress in humans, attributed variously to the hormonal influences and alterations of blood volume distributions. Short day-time naps improve the sustained attention span, long term memory and modulation of the autonomic response. [2]

Naps comprise mainly of NREM sleep stages (predominantly N1 and N2, as compared to N3 or slow wave sleep, SWS) in individuals above adolescent stage. NREM sleep is a low energy expenditure state with high neuronal synchronisation. NREM sleep is mainly governed by level of adenosine accumulated in the base of brain and to a lesser extent with the levels of melatonin generated in the hypothalamus (which governs the light mediated circadian rhythm). In a non-sleep deprived individual, the late afternoon naps are almost exclusively due to progressive extra-cellular adenosine accumulation which facilitates NREM sleep. Afternoon post-prandial naps are contributed by both adenosine accumulation and a natural circadian dip in alacrity, and thus, comprises varying proportions of REM sleep in addition to the usual NREM sleep (this varies mainly with the age of the individual). [6]

© 2026 The Authors

Adenosine is a product of neural glycogen metabolism in the brain. Accumulation of adenosine causes N1 an N2a receptor activation, believed to play a role in non-slow wave NREM and slow wave NREM sleep respectively. During periods of NREM sleep, the glycogen consumption reduces considerably allowing both repletion of glycogen reserves and clearance of metabolites, including adenosine. After clearance of adenosine and modulation of other factors involved in sleep (interleukin-1, tumor necrosis factor-alpha, prostaglandin D2, etc.), the physiological sleep stress/drive is relieved, resulting in improved cognition, although not all cognitive parameters are affected to the same extent. [6] Similar mechanisms are proposed to exist in the skeletal muscles as well for improved physical performance in athletes after day-time naps, although the duration of naps required is considerably longer according to contemporary literature.

Recovery naps after a period of sleep deprivation are architecturally different from usual day-time naps, which comprise mainly of N2 NREM sleep. Recovery naps have longer slow wave sleep (SWS) duration, and potentially more sleep inertia. [6] In this regard the role of delta sleep inducing peptide is as yet undefined. [13] The proportion of SWS also determines how well rested an individual feels immediately after a nap and long-term alacrity after the nap, although duration of effects may vary between individuals. Short duration of naps consisting only of N1 and N2 stages (usually limited to 10 minutes) are often associated with lower sleep inertia than longer naps which contain longer SWS durations. Longer SWS, however, result in longer duration of mental alacrity, up to a certain extent. [6] The beneficial effects on cognitive functioning and emotional regulation has already been discussed in the previous section. A simplified diagram of sleep stages and the duration of a power nap is depicted in figure 1.

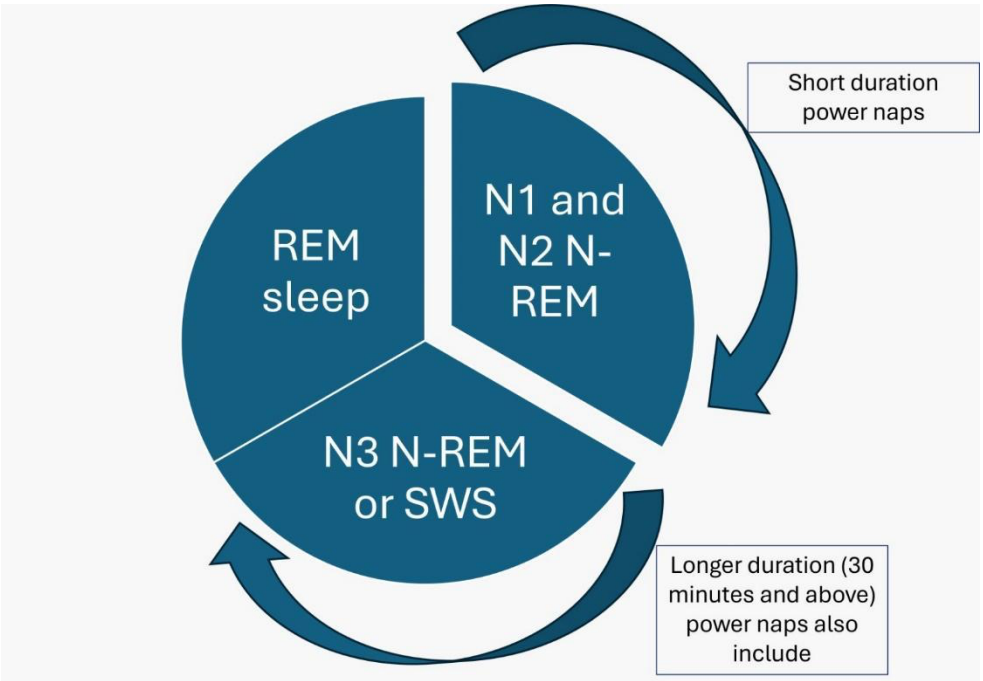


Figure 1: Simplified diagram of sleep stages and the duration of a power nap.

4. COFFEE NAPS – THE NEW "IN-THING"

© 2026 The Authors

Coffee naps is an innovative take on the traditional post-prandial or power nap. The idea behind a coffee nap is to take a high dosage of caffeine before a short siesta, such that the waking period coincides with the onset of nootropic and alacrity enhancing effects of caffeine. Scientific studies exploring the beneficial effects of the variously christened "caffeinated naps", "coffee naps" or "nappuchino" are as yet sparse. In a study by Centofanti et al (2020), beneficial effects were seen in 6 individuals who participated in a shiftwork cross-over study. Participants consumed 200 mg caffeine immediately before a 30-minute nap and were observed at 45 minutes after waking. Improved attention and reduced subjective fatigue after the nap were reported by the participants. While potentially applicable to night shift workers and night-time heavy machinery operators or drivers, larger scale scientific explorations would likely be necessary. [14, 15] The practice could also gain traction among students who need to study or work on academic projects till late into the night or early hours of the morning.

5. IS IT ALL ROSY? THE DARK SIDE OF NAPS

Frequent or habitual napping (also known as essential napping), an entity different from short post-prandial or short afternoon nap, have been attributed to adverse health outcomes, especially among older adults. The effects can be exaggerated when this is combined with longer nocturnal sleep duration. Both metabolic and cardiac issues can be aggravated by longer repose. Similarly, an association has been found between cognitive decline and long and/or frequent naps. Emerging research linking naps and inflammatory response presents an even more alarming scenario, although, as yet, the association appears to be anecdotal at best. In fact, a narrative review by Mantua et al (2017) states that until a definitive association between essential napping and its consequent health effects in the elderly can be unequivocally established, medical advice favoring frequent day-time or essential naps will remain a point of contention. [6]

6. CONCLUSION

Afternoon naps have been practiced since the duration of recorded history. The importance of naps and its scientific basis have been anecdotal and informal until the recent reawakening of scientific interest. Because of the potential implications, a structured afternoon nap time for the entire community might not be a practical suggestion, as certain public services are conventionally perpetually needed. The applicability to normal office spaces and academic institutions, however, need due consideration. Staggered nap times and the emerging concept of coffee naps for people working late is likely to become common practice in the future towards boosting both personal and group productivity and individual morale.

NOTE: The abstract and graphical abstract has been compiled using MetaAI and Google Gemini 3.0 respectively, both generative large language models (LLMs), with input being the text of the manuscript. No other generative AI assistance was sought during the compilation of this manuscript.

REFERENCES

[1] George AS, George ASH, Shahul A. The Science and Timing of Power Naps: Investigating the cognitive and physical benefits of brief daytime sleep. Zenodo (CERN European Organization for Nuclear Research) 2024. https://doi.org/10.5281/zenodo.10673171.

© 2026 The Authors

[2] Ru T, Qian L, Chen Q, Sun H, Zhou G. Effects of an afternoon nap on sustained attention and working memory: The role of physiological arousal and sleep variables. International Journal of Psychophysiology 2022;179:21–9. https://doi.org/10.1016/j.ijpsycho.2022.06.013.

[3] What is a power nap and how it benefits you? - Nap Wisdom. Nap Wisdom 2025. https://napwisdom.com/power-nap-benefits.

[4] Sathe NY, Nayak NDAA. Impact of power Naps on cognitive performance and learning Efficiency: A Data-Driven Study. The Voice of Creative Research 2025; 7: 392–6. https://doi.org/10.53032/tvcr/2025.v7n2.48.

[5] Leong RLF, Lau T, Dicom AR, Teo TB, Ong JL, Chee MWL. Influence of mid-afternoon nap duration and sleep parameters on memory encoding, mood, processing speed, and vigilance. SLEEP 2023;46. https://doi.org/10.1093/sleep/zsad025.

[6] Mantua J, Spencer RMC. Exploring the nap paradox: are mid-day sleep bouts a friend or foe? Sleep Medicine 2017;37:88–97. https://doi.org/10.1016/j.sleep.2017.01.019.

[7] Boukhris O, Zghal F, Trabelsi K, Suppiah H, Ammar A, Jahrami H, et al. The impact of a 40-min nap on neuromuscular fatigue profile and recovery following the 5-m shuttle run test. Journal of Sleep Research 2023;33:e14052. https://doi.org/10.1111/jsr.14052.

[8] Souabni M, Hammouda O, Romdhani M, Trabelsi K, Ammar A, Driss T. Benefits of daytime napping opportunity on physical and cognitive performances in physically active participants: a Systematic review. Sports Medicine 2021;51:2115–46. https://doi.org/10.1007/s40279-021-01482-1.

[9] Botonis PG, Koutouvakis N, Toubekis AG. The impact of daytime napping on athletic performance – A narrative review. Scandinavian Journal of Medicine and Science in Sports 2021;31:2164–77. https://doi.org/10.1111/sms.14060.

[10] Sirohi P, Khan MH, Sharma S, Nuhmani S, Muslem WHA, Abualait T. A systematic review of effects of daytime napping strategies on sports performance in physically active individuals with and without partial-sleep deprivation. PeerJ 2022; 10: e14460. https://doi.org/10.7717/peerj.14460.

[11] Cremone A, McDermott JM, Spencer RMC. Naps enhance executive attention in Preschool-Aged children. Journal of Pediatric Psychology 2017;42:837–45. https://doi.org/10.1093/jpepsy/jsx048.

[12] Sleep. Hachette Book Group 2025. https://www.hachettebookgroup.com/titles/nick-littlehales/sleep/9780738234625/.

[13] Microsoft. (2026). *CoPilot* (Standard CoPilot) [Generative AI]. https://www.bing.com/copilotsearch?q=delta+sleep+inducing+peptide&form=CSBRAND

[14] Centofanti S, Banks S, Coussens S, Gray D, Munro E, Nielsen J, et al. A pilot study investigating the impact of a caffeine-nap on alertness during a simulated night shift. Chronobiology International 2020;37:1469–73. https://doi.org/10.1080/07420528.2020.1804922.

© 2026 The Authors

[15] Summer JV. Power Nap. Sleep Foundation 2025. https://www.sleepfoundation.org/sleep-hygiene/power-nap.

ACKNOWLEDGEMENTS: Microsoft, Google, Meta and Apple software ecosystems. Generative AI as mentioned in notes section. Figure 1 was drawn by the author SP. Made on a personal computer using Intel and NVIDIA hardware using Windows 11 operating system.

© 2026 The Authors