The Bedtime Sleep Guide

How 90 minute sleep cycles work, bedtime tables for every wake up time, how much sleep each age needs and a 14 day plan to steady your routine.

BedtimeSleepCalculator.com
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What is inside

This guide goes with the free Bedtime Calculator on BedtimeSleepCalculator.com. It explains the ideas behind the times the calculator gives you, so that you can adjust them to your own night.

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How to use it

- Pick the time you must wake up. Keep it the same every day, including weekends.
- Use the table on page 4 or the online calculator to find a bedtime that ends your sleep at the end of a cycle.
- Treat every time as a starting point. Real cycles vary from about 70 to 120 minutes, so adjust by how you feel after seven to ten days.

Important: this guide is general education, not medical advice, and it has not been medically reviewed. If you have ongoing trouble sleeping, loud snoring with breathing pauses or heavy daytime sleepiness, speak to a doctor.

How sleep cycles work

During the night the brain moves through repeating cycles made of light sleep, deep sleep and rapid eye movement (REM) sleep. The pattern was first described in the 1950s by Aserinsky and Kleitman, who recorded eye movements during sleep (Science, 1953). An average cycle lasts about 90 minutes, which is why calculators count in blocks of 90 minutes.

Stage	What happens	Where it sits in the night
Light sleep (N1, N2)	Body relaxes, heart rate and breathing slow, easy to wake	Makes up much of the night in every cycle
Deep sleep (N3)	Slowest brain waves, hardest to wake from	More in the first half of the night
REM sleep	Vivid dreams, active brain, relaxed muscles	Longer periods in the second half of the night

Why wake up at the end of a cycle

Waking from deep sleep often brings grogginess, called sleep inertia, which can last from a few minutes to half an hour. Waking from lighter sleep tends to feel easier. Counting back in whole cycles aims to place your alarm near a lighter stage. This is a helpful rule of thumb, not a guarantee, because cycle length differs between people and from night to night.

The simple formula

Bedtime = wake up time minus (number of cycles x 90 minutes) minus the time you need to fall asleep. Most adults take about 10 to 20 minutes to fall asleep, so the calculator uses 15 minutes by default. Five cycles (7.5 hours) suits many adults, six cycles (9 hours) suits people who need more, and four cycles (6 hours) is better kept as an occasional fallback.

Sleep length matters more than the maths

The American Academy of Sleep Medicine and the Sleep Research Society recommend that adults sleep at least 7 hours a night on a regular basis (Watson et al., 2015). Use cycles to choose the time, and use how you feel in daytime to check whether the amount is right.

Bedtime table by wake up time

Each time counts back whole 90 minute cycles from your wake up time and adds 15 minutes to fall asleep. If you usually take longer or shorter to fall asleep, shift the time by the difference.

Wake up	6 cycles (9 h)	5 cycles (7.5 h)	4 cycles (6 h)
5:00 AM	7:45 PM	9:15 PM	10:45 PM
5:30 AM	8:15 PM	9:45 PM	11:15 PM
6:00 AM	8:45 PM	10:15 PM	11:45 PM
6:30 AM	9:15 PM	10:45 PM	12:15 AM
7:00 AM	9:45 PM	11:15 PM	12:45 AM
7:30 AM	10:15 PM	11:45 PM	1:15 AM
8:00 AM	10:45 PM	12:15 AM	1:45 AM
8:30 AM	11:15 PM	12:45 AM	2:15 AM
9:00 AM	11:45 PM	1:15 AM	2:45 AM

Reading the table

- Go to bed at the time shown and try to be asleep about 15 minutes later.
- If you cannot keep to a time, choose the next row up or down rather than a time in between.
- On nights when you are late, a shorter plan with fewer cycles can be better than a long night that ends mid cycle.
- Use the live calculator on the site to change the fall asleep time and age range.

Example: if you must wake at 6:30 AM, five cycles give a 10:45 PM bedtime. Six cycles give 9:15 PM and four cycles give 12:15 AM.

How much sleep each age needs

The ranges below come from the National Sleep Foundation review of sleep duration (Hirshkowitz et al., Sleep Health, 2015) and the American Academy of Sleep Medicine consensus statement on children (Paruthi et al., 2016). They are ranges for groups of people, so your own need can sit inside or just outside them.

Age group	Recommended range per 24 hours
Newborn, 0 to 3 months	14 to 17 hours (NSF)
Infant, 4 to 11 months	12 to 15 hours (NSF); 12 to 16 hours (AASM, includes naps)
Toddler, 1 to 2 years	11 to 14 hours (NSF); 11 to 14 hours (AASM, includes naps)
Preschool, 3 to 5 years	10 to 13 hours (NSF and AASM, includes naps)
School age, 6 to 13 years	9 to 11 hours (NSF); 9 to 12 hours (AASM)
Teenager, 14 to 17 years	8 to 10 hours (NSF and AASM)
Young adult, 18 to 25 years	7 to 9 hours (NSF)
Adult, 26 to 64 years	7 to 9 hours (NSF); at least 7 hours (AASM and SRS)
Older adult, 65 plus	7 to 8 hours (NSF)

Notes

- Newborns and infants do not follow 90 minute adult cycles. Their cycles are shorter, so use age pages and a paediatrician for babies.
- Teenagers often feel sleepy later in the evening and need to wake later, which makes early school starts hard.
- Adults who need more than 9 hours and still feel unrefreshed should mention it to a doctor.

Seven habits that steady your sleep

These habits are common advice from sleep clinicians. None is a cure, and each one works best when you keep it for a couple of weeks.

1. Keep a steady wake time

The most useful single habit. Wake within about an hour of the same time on all seven days, then set bedtime by cycles.

2. Get light in the morning

Time outdoors after waking helps set your body clock. On dark mornings a bright daylight lamp can help.

3. Dim the evening

Lower lights and put screens away about an hour before bed so that your body gets a clear signal that night has started.

4. Watch caffeine

Caffeine can stay active for many hours. Many people sleep better if the last coffee, tea or energy drink is at least eight hours before bed.

5. Go easy on alcohol late

Alcohol may help you fall asleep, but it tends to fragment sleep later in the night.

6. Cool, dark, quiet bedroom

Many sleep organisations suggest about 16 to 19 degrees Celsius. In hot places aim for as cool as is practical, with a fan or air conditioner on a steady setting.

7. Use the bed for sleep

If you lie awake for a long time, get up, do something calm in dim light, and return when sleepy.

Naps and waking up groggy

A short nap can lift alertness without taking much from the night. Longer naps carry a greater chance of sleep inertia because you may wake from deep sleep.

Nap length	Best use	Watch out for
10 to 20 minutes	A quick boost in the early afternoon	Set an alarm so that you do not drift into deep sleep
30 minutes	Occasional use when very tired	Grogginess for some people on waking
About 90 minutes	Full cycle nap when you are short of sleep, for example before a night shift	Can make it harder to fall asleep that night if taken late

Rules of thumb

- Nap before about 3 PM if you want to keep a normal bedtime.
- If you struggle to fall asleep at night, shorten or drop the nap.
- If you feel an unstoppable need to nap every day, speak to a doctor.

Sleep inertia: if you feel groggy after waking, give yourself 15 to 30 minutes, get light, drink water and avoid making big decisions straight away. It usually passes in that time.

Shift work and travel

Working at night or crossing time zones pushes against the body clock, which is tuned to daylight. The goal is to reduce the gap, not to be perfect.

Shift work

- Keep a regular sleep block on workdays, even if the time is unusual.
- Wear sunglasses on the way home after a night shift to avoid strong morning light.
- Make the bedroom very dark, and use earplugs and an eye mask if needed.
- Plan a nap, about 20 minutes or a full 90 minute cycle, before a long night shift.

Travel and jet lag

- Before a trip, move bedtime by 30 to 60 minutes a day toward the destination time if you can.
- Get outdoor light at times that match local morning on arrival.
- After a long flight, a short nap of up to 30 minutes is better than a long afternoon sleep.
- Eastward travel usually feels harder than westward travel because it asks you to fall asleep earlier.

Use the Travel Sleep Planner and the Late Night Recovery Calculator on the site for step by step times.

Ramadan and seasonal changes

During Ramadan the day is organised around the pre dawn meal and the evening meal, so sleep often splits into two parts. The aim is enough total sleep, with a steady wake time where possible.

A simple split sleep pattern

- Sleep a main block after the late evening prayers or after the evening meal.
- Wake for the pre dawn meal and prayer, then sleep again after the morning routine if your day allows.
- Add a short nap of 10 to 20 minutes in the afternoon if you can.
- Keep caffeine for the early evening and keep it away from the late night meal.

Ramadan moves about 10 to 11 days earlier through the calendar each year, so it falls in different seasons over time. The site has pages for Ramadan in winter, spring, summer and autumn with different daylight patterns.

Seasonal light

Day length changes with latitude and season. Near the equator it barely moves. At higher latitudes it can swing by many hours between June and December. Keep your wake time steady, get light early in the day and use curtains that block light if the evening stays bright.

Latitude	Longest day (about)	Shortest day (about)
0 degrees	12 h 05 min	12 h 05 min
25 degrees	13 h 40 min	10 h 35 min
40 degrees	15 h 00 min	9 h 20 min
55 degrees	17 h 20 min	7 h 10 min

Daylight values are calculated from latitude for sunrise to sunset on the solstices and rounded to the nearest 5 minutes. Local cloud and terrain will change what you see.

14 day plan, questions and sources

Days	Focus
1 to 3	Fix one wake time. Take the bedtime from the table on page 4.
4 to 6	Add 10 minutes of outdoor morning light.
7 to 9	Move the last caffeine at least eight hours before bed.
10 to 12	Dim lights and put screens away one hour before bed.
13 to 14	Review: how do you feel at 11 AM and 3 PM? Adjust bedtime by 15 minutes if needed.

Common questions

Is 90 minutes exact? No. It is an average. Cycles run from about 70 to 120 minutes.

Is six hours enough? For most adults it is below the recommended 7 hours. Use it as an occasional fallback only.

When should I see a doctor? If problems last more than a few weeks, you snore loudly with pauses in breathing, or you feel very sleepy in the day.

Sources

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