

Fatigue Risk Management Info sheet:

Why do some people prefer mornings, and others prefer late nights?



Why read this?

Do you like to go to bed early and wake up early, or do you prefer to go to bed and wake up late? Reading this information sheet will help you to understand your genetic preference for sleep timing, known as your circadian type, and the benefits of trying to match your work hours and lifestyle to your type.

Are you a morning or an evening type?

Genetics determines the colour of our eyes, our height and the timing of our body clock.

The body clock is a cluster of cells in the brain that ensures that all our body systems vary in 24-hour cycles, known as circadian rhythms. The body clock ensures the body is prepared for activity during the day and for sleep at night.

Some people, referred to as morning types, have a body clock with early timings and they prefer to sleep and wake relatively early. Evening types have a body clock with later timings and these people prefer going to sleep and waking relatively late.

Whether you are a morning, or an evening type, is known as your 'circadian type' or 'chronotype'.

Approximately:

- 27% of people are definite morning types
- 35% are moderate morning types,
- 30% are moderate evening types and
- 8% are definite evening types¹.

If you are a morning type, your body clock (Figure 1 – top) wakes you up early in the morning:

- 4am to 5am if you are a definite morning type
- 5am to 6:30 am if you are a moderate morning type.

You start to feel sleepy early at night:

- 9pm to 9:30 pm for definite morning types
- 9:30pm to 10:45pm for moderate morning types

The body clock of evening types (Figure 1 – bottom) promotes sleep until relatively late in the morning:

- 10am to 11:30 am for definite evening types
- 8:30am to 10am for moderate evening types

Definite evening types don't start sleep until 2am to 3am.

Moderate evening types don't start sleep until 12:45am– 2am.

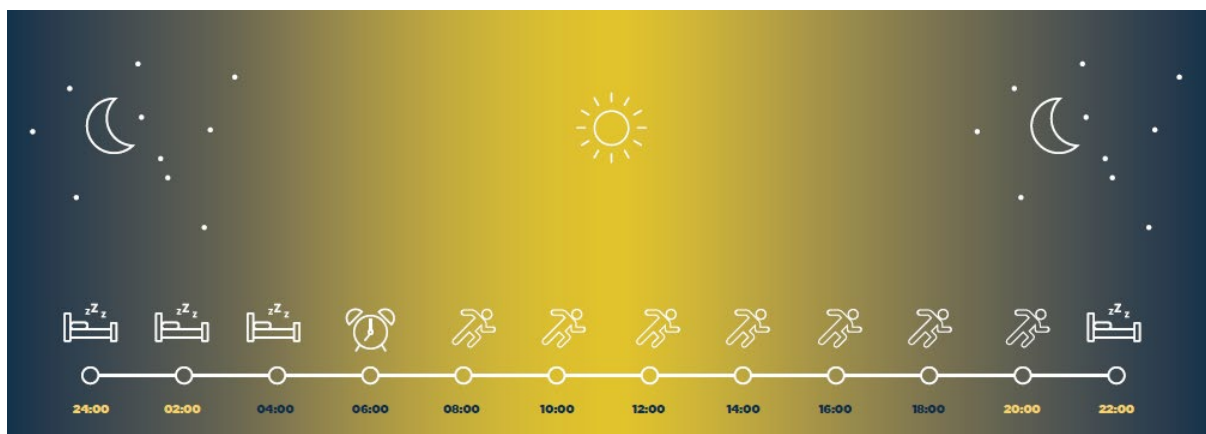


Figure 1. Moderate morning (above) and evening (below) types: the timing of sleep and activity.

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Circadian type varies with age

Our circadian type changes in a predictable manner across our lifespan. Our individual circadian type is most distinct between the ages of 25 and 35 years. During adolescence (10 - 19 years old) we all gradually drift towards being more of an evening type, with a peak in lateness at around 19 years of age. We then all slowly drift towards being more morning type, peaking in old age, this is why our grandparents go to bed so early. Compared to women, men have a more changeable circadian type, indicating that extreme morning and evening types are more frequent in men than women. Before the age of 40, women are relatively more morning type than men, and women aged over 40 years old are relatively more evening type².

How our circadian type interacts with standard office work hours

The standard 9-5 Monday to Friday work week is ideal for morning types because their body clock prepares them to fall asleep early at night and to be active early in the morning. When an alarm goes at 7am on a workday, morning types are already awake, feeling active and have had adequate sleep.

In contrast, at 7am an evening type is still asleep and is more tempted to reach for the snooze button because they went to sleep late. Even when evening types arrive at work their body clock is still urging them to feel sleepy.

On the weekend, as evening types prefer doing activities in the evening or late at night, they are usually exposed to artificial light at night. Light helps the body clock to differentiate between day and night or, in other words, the time to be awake and sleepy respectively.

Exposure to light in the evening pushes the body clock to an even later time, which is further prompted by the tendency of evening types to sleep late into the morning on the weekend. As a result, evening types can find it difficult to cope with a standard work week and experience social jetlag. Social jetlag occurs when the timing of our sleep is not matched with that of our body clock. The symptoms of social jetlag are the same as the jetlag we experience when travelling across time zones and include fatigue and irritability.



Circadian type and shift work

Research shows that morning types cope better with shifts that start early, while evening types cope better with late and night shifts. Evening types find it easier to sleep in before starting a night shift and naturally tend to stay active until later at night. Morning types find night shifts particularly challenging because most of the shift, for example 10pm to 6am, overlaps with when they would ideally be asleep³. The mismatch between working shifts and the circadian type can in some cases lead to shift work sleep disorder⁴, which is defined as a reduction of total sleep time (1 to 4 hours of sleep per 24-hour period), excessive sleepiness, and impaired work performance in a shift worker.

How to limit the mismatch between your circadian type and work schedule

If you are unsure of your circadian type, you can take a test online by clicking on the link below.

<http://www.cet-surveys.com/index.php?sid=61524&newtest=Y&lang=en>

Based on your circadian type, where possible, try and make complementary choices about your work hours and how to spend your time off. For example, if you are a morning type, do not volunteer to work the night shift. On the other hand, if you are an evening type and want to volunteer for overtime, shifts that finish late would be a good choice. The opportunity to work flexible work hours can enable evening types to adjust their work timings so that they can be more alert and efficient at work. Researchers have shown experimentally that matching shift schedules to circadian type increases sleep duration by an average of 1 hour and reduces social jetlag⁵.

Of course, many of us have to work hours that do not match our circadian type. If you are a morning type who has to work late shifts, heavy curtains in your bedroom can help you to try and avoid exposure to sunlight in the early morning and to sleep later. If you are an evening type working shifts that start early, try to avoid caffeine and bright light in the evening. Using electronic devices such as smartphones should be also avoided at least two hours before you go to bed because they emit bright light that increases alertness.

If you are an evening type and struggling with social jetlag and want to be able to go to sleep earlier, research has shown that a camping trip in the countryside is beneficial. When we go camping and are exposed to bright light all day, and there is a lack of electrical light at night, our circadian rhythms are re-set and we go to bed earlier and sleep longer⁶.

To summarise

Being aware of our circadian type enables us to make choices about our lifestyle and, where possible, work schedule to limit social jetlag⁷. Although our circadian type is, in part, genetically determined, cues in the environment, e.g. daylight exposure, can help us adjust to an earlier or later time.

What should I read next?

You can read more about how to achieve change in the information sheets 'How to adjust my daily patterns of light exposure, meals and exercise to improve sleep'⁸ and 'How to change your sleep habits in order to get more sleep'⁹.

About the author

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Dr Cristina Ruscitto is a Senior Researcher at Baines Simmons. She specialises in the psycho-behavioural predictors of jet lag and fatigue in the aviation sector. Her role involves fatigue management training, the development of fatigue surveys and survey analysis, the scientific study of roster patterns to quantify fatigue risk as well as writing evidence-based recommendations to improve sleep in different operational settings. Cristina is a Chartered member of the British Psychological Society and an Associate Fellow of the Higher Education Academy.

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Sarah Booth is a Research Manager at Baines Simmons. A specialist in human performance in the aviation and aerospace environments, Sarah has worked with aviation operators to develop and implement Fatigue Risk Management Systems (FRMS) across multiple regulatory environments. A regular speaker at both academic and industry conferences, Sarah is also a trainer, delivering to operators in the implementation of Fatigue Risk Management, as well as courses in the use of biomathematical modelling.

For further information on our Fatigue Risk Management Research, Training and Consultancy services contact + 44 (0) 203 805 7792, hello@bainessimmons.com

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