

INSOMNIA MANAGEMENT - 6

Bright Light Therapy

All living things have a biological clock that is influenced by the cycle of light and darkness (day and night). In humans, the light enters the retina of the eyes and stimulates nerve impulses, which travels along a pathway to the location in the brain that governs the circadian rhythms (daily rhythms).

Many functions such as sleep patterns, body temperature, hormonal secretion (release) and body metabolism change from high to low and back to high again every 24 hours. The biological clock controls the timing of the circadian rhythms.

*If the circadian rhythm is slow (i.e. longer than 24 hours), you may find that you do not feel sleepy and cannot go to sleep until very late at night and then wake up late morning. This is **Delayed Sleep Phase Syndrome**, often experienced by young adults and adolescents.*

*If the circadian rhythm is quick (i.e. shorter than 24 hours), you will fall asleep early in the evening and then wake very early in the morning. Many older people report this problem. This is **Advanced Sleep Phase Syndrome**.*

Delayed Sleep Phase Syndrome

Morning Bright Light Therapy

Research has found that feeling sleepy and the desire to sleep is enhanced by an increase in the release of a hormone called melatonin, which then leads to a decrease in body temperature.

When the circadian rhythm is longer than normal the release of melatonin and the changes in body temperature will not match the usual pattern of sleep at night and awake during the day. For example you may not fall asleep until 2am and find it very difficult to wake up until 9am.

The release of melatonin and the drop in body temperature to its lowest level does not happen until much later in the evening. This is why you have trouble getting to sleep until late in the night and usually find it difficult to wake and get up early in the morning. During the day you may also experience tiredness and fatigue.

When there is no need to rise early in the morning, such as on weekends you will probably sleep late into the day. This condition is far more common amongst younger people than people aged over 60 years. Generally, people with a delayed circadian rhythm have no trouble maintaining sleep.

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Can the cycle be changed?

YES!

It is possible to adjust your circadian rhythm to an earlier schedule through exposure to bright light early in the morning. This is Morning Bright Light Therapy. The aim of this therapy is to synchronise the day and night cycle with the melatonin and body temperature cycle.

Exposure to light during early morning between 6am and 9am results in melatonin levels quickly dropping (the production of melatonin is very low during daylight), and the body temperature rises.

Exposure to light in the early morning will begin to advance your circadian rhythm. That evening the increased release of melatonin and drop in body temperature will begin to occur earlier, making you feel sleepy earlier in the evening.

Morning Bright Light Therapy Procedure

This is what you do...

Step 1

Maintain a regular wake-up time even on weekends.

Step 2

Expose your vision to bright sunlight shortly after sunrise, between the hours of 6am and 9am. On a clear sunny day exposure for 20 minutes may be sufficient but generally aim for 30 to 60 minutes (time will vary depending on cloud cover and personal need).

Look into a sunlit environment or the blue sky. DO NOT look directly at the sun. It may be useful to schedule some form of morning exercise (eg walking the dog, gardening), outside in the sunshine. Do not wear sunglasses.

Step 3

Avoid bright light in the evening so the body does not believe it is daytime.

What will happen?

If you suffer from Delayed Sleep Phase Syndrome then Morning Bright Light Therapy will work for you. Improvement in getting to sleep should occur within two to four days. It is likely you will need to continue this routine for a month to stabilise your new earlier sleep-wake cycle. You can then see if you are able to continue the earlier schedule without light therapy. If not, continue with the treatment.

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Advanced Sleep Phase Syndrome

As you get older, your circadian rhythm becomes shorter than the 24 hours. This causes the body temperature cycle to speed up so that it drops earlier in the night. This makes you go to sleep earlier in the evening and then wake up much too early in the morning (eg you may fall asleep at 8pm then wake at 4am).

As the circadian rhythm shortens the difference in our body temperature between day and night also lessens. This leads to lighter night sleep and you may wake more often, particularly in the very early hours of the morning.

Advanced Sleep Phase Syndrome does not only relate to the elderly. Other factors such as shift work, jet lag, and prolonged illness may alter the circadian rhythm.

Evening Bright Light Therapy Procedure

Can the cycle be changed?

YES!

To some extent, it is possible to reverse the effects on sleep through Evening Bright Light Therapy.

Exposure to bright light and exercise in the evening delays and strengthens the circadian rhythm so that the drop in body temperature is delayed to a more appropriate time. The exposure to sunlight in the late afternoon or early evening will also delay the increased release of melatonin until later in the evening. This results in a delay in your final wake-up time and early morning awakenings will become less frequent.

Older people often find that evening light exposure needs to be included permanently into their lifestyle.

This is what you do...

Step 1

Develop a habit of spending 30 to 60 minutes outdoors late in the day or early evening. In the spring and summer, simply going outside in the sunlight is best. The time will vary depending on cloud cover and personal need. During winter, your doctor may refer you to a sleep clinic to obtain a light box. Exposure to the light box from 8pm to 10pm can be effective. The length of exposure will depend on how strong the light is. Even the light from a very bright desk lamp will be of some value.

Step 2

Avoid morning sunlight or other bright light within one to two hours after waking.

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Step 3

Do some light exercise early in the evening such as walking or stretching for 20 to 30 minutes. Exercise raises your body temperature and causes a drop in melatonin and improved sleep four to six hours later. Avoid strenuous exercise early in the morning.

What will happen?

If you suffer from Advanced Sleep Phase Syndrome then light therapy will work for you. Improvement in sleep maintenance and delay in final wake up time should appear within two to four days. It is likely you will need to continue treatment for a month to stabilise your new later sleep-wake cycle. Then see if you can continue your altered schedule without light therapy, if not continue the treatment.