RE-TIMER™

Training Support

August 2020

1. About Re-Timer

RE-TIMER™

Light therapy is the natural way to manage your circadian rhythm.
Since 1987, world-renowned sleep psychologists at Flinders University have studied the effects of light on the human body clock. Professor Leon Lack and Dr. Helen Wright developed this wearable green-blue light therapy device to help people manage their sleep.

Re-Timer is University developed and scientifically proven to re-time your body clock.
Re-Timer emits a green-blue light that is UV-free and has been independently tested for eye safety to the international standard CEI IEC 62471. Green-blue light is the most effective at influencing your sleep, and our intensity range balances high efficacy with safety.

Watch TV, eat a meal, or grab your favourite reading material as you use Re-Timer.
Re-Timer is worn while you are awake, in the morning or evening, depending on how you wish to influence your sleep. A typical use schedule is 7 days for 30-50 minutes each day.

Re-Timer delivers light from below your eyes for maximum performance.
The Re-Timer design avoids light blockage from your brow and maintains the optimum distance between the glasses and your eyes.

https://www.re-timer.com/the-science/specifications/

Specifications	Details
Weight	75gm (2.64 ounces)
Size	One size fits all
Battery	Rechargable Li-ion polymer battery. Up to 6 hours battery life
Warranty	1 year

Re-Timer is produced in South Australia to the highest standards in quality control and sold in more than 40 countries around the world.

Sleep clinics around the world use Re-Timer.

"I see many people with body clock problems which can be readily managed with light therapy. Their ease of use and portability make them an excellent option…"
Dr. Marcus McMahon, Respiratory & Sleep Medicine Physician

2. Why Light Therapy Works

RE-TIMER™

Light therapy is a natural solution to change when you sleep and wake.

If you are unable to fall back to sleep after waking early in the morning (advanced sleep phase) or have difficulty falling asleep at the beginning of the night (delayed sleep phase) Re-Timer can help you change your sleep.

When your eyes detect bright light, your body responds by signaling your brain to be awake and alert. This process also helps your body to understand when it's time to sleep. Re-Timer light therapy glasses use light to help you maintain a consistent sleep/wake rhythm.

How does light therapy change your sleep?

Our levels of melatonin, a hormone produced in our brain, vary over a 24-hour cycle and increase at night causing us to feel sleepy. Modern lifestyles and other factors interfere with this natural cycle.

Light exposure regulates the body clock. It is possible to adjust your body clock to an earlier or later schedule through repeated exposure to bright light, appropriately timed in the morning or evening.

The light suppresses the body's production of melatonin, enabling us to change the time we feel tired and therefore change our sleep.

Use our sleep calculator to create a customised schedule for your sleep.

https://www.re-timer.com/the-product/sleep-calculator/

Green-blue light has been proven to be effective at re-timing the body clock and suppressing the production of melatonin (Lack et al. 2004)

Need a morning boost?
Adjust your body clock to an earlier schedule through repeated exposure to bright light in the morning.

Want to be more of a night owl?
The most effective way to re-time your body clock to a later time is by obtaining bright light visual stimulation in the evening.

3. Body clock sleep patterns

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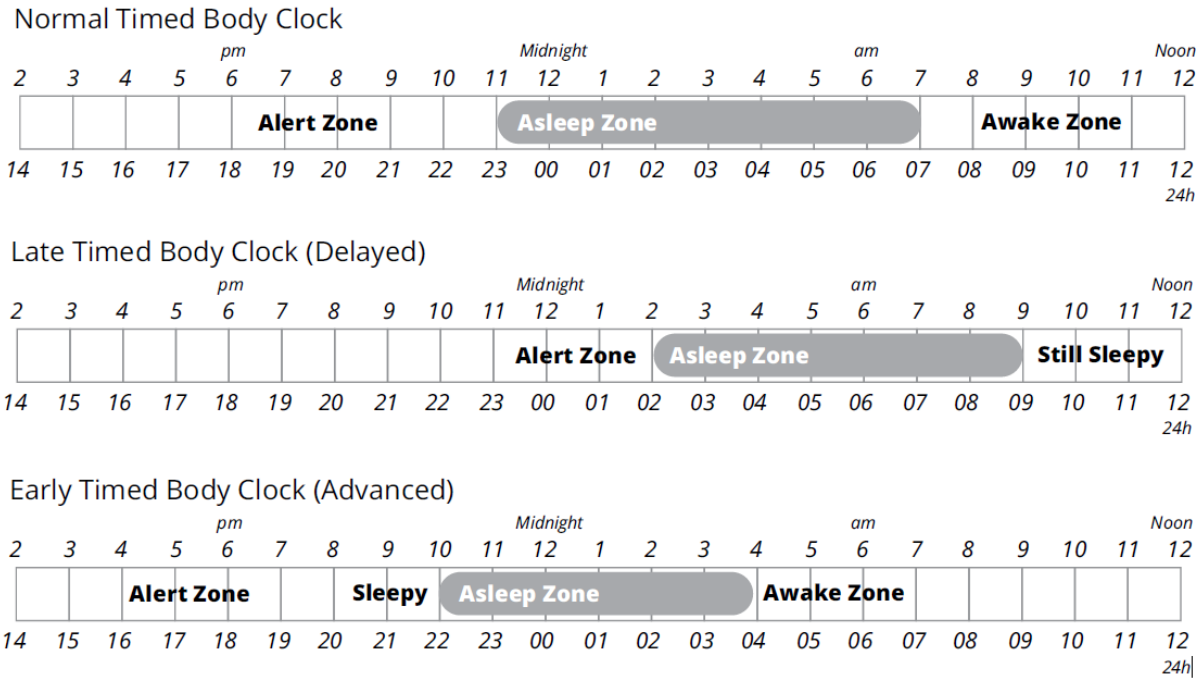
Graphical representation of the sleep patterns of a normally timed, late timed, and early timed body clock



4. Advanced Sleep Phase

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Advanced sleep rhythms are characterised by early evening sleepiness or an inability to remain awake until bedtime – an "early bird" circadian clock. This may be accompanied by waking earlier than desired in the morning.

The most effective way to re-time your body clock to a later time is by obtaining bright light visual stimulation in the evening.

If you have an early timed body clock, you may fall asleep easily, but wake too early in the morning and be unable to fall back to sleep. You sleep well in the first part of the night, but wake in your 'awake zone' in the early hours of the morning.

Wearing Re-Timer in the evening can reduce tiredness, delay sleep until later in the evening and therefore assist waking later in the morning.

The objective of wearing Re-Timer in this situation is to move your sleep time later. It's very important in this situation to avoid bright light in the mornings.

Use the sleep calculator on Re-Timer.com to create a customised schedule for wearing Re-Timer before bedtime. Re-Timer should be worn for 30-50 minutes per day at the nominated time.

https://www.re-timer.com/the-product/sleep-calculator/

The sleep calculator on Re-Timer.com helps you create a personalised schedule for wearing Re-Timer based on how you'd like to shift your sleep.

Below is a sleep schedule specifically designed to help a person treat Advanced Sleep Phase.

In this example, current sleep time is 10pm, current wake time is 4.30am. This person would like to change their wake time to 6.30am.

Date	Wear Re-Timer at
Day 1	9:00pm
Day 2	9:30pm
Day 3	10:00pm
Day 4	10:30pm
Day 5	11:00pm
Day 6	11.30pm
Day 7	12:00am

5. Delayed Sleep Phase

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Delayed sleep phase syndrome (DSPS) is a disorder in which a person's sleep is delayed by two hours or more beyond what is considered an acceptable or conventional bedtime.

Delayed sleep causes difficulty in being able to wake at a desired time in the morning.

Delayed sleep rhythms are characterised by an inability to sleep until very late in the evening, despite going to bed at a conventional time. This may be accompanied by waking late in the mroning or a feeling of tiredness or grogginess when having to wake for work or other commitments.

Wearing Re-Timer in the morning can help reduce tiredness and signal the brain to be awake and alert.

This process contributes to the patient feeling more alert earlier and therefore tired earlier in the evening. The objective of wearing Re-Timer in this situation is to bring the sleep time forward.

Use the sleep calculator on Re-Timer.com to create a customised schedule for wearing Re-Timer in the morning. Re-Timer should be worn for 30-50 minutes per day at the nominated time.

https://www.re-timer.com/the-product/sleep-calculator/

The sleep calculator on Re-Timer.com helps you create a personalised schedule for wearing Re-Timer based on how you'd like to shift your sleep.

Below is a sleep schedule specifically designed to help a person treat **Delayed Sleep Phase**.
In this example, current sleep time is midnight, and current wake time is 6.00am. This person would like to change their sleep time to 10.00pm.

Date	Wear Re-timer at
Day 1	7:00am
Day 2	6:30am
Day 3	6:00am
Day 4	5:30am
Day 5	5:00am
Day 6	4.30am
Day 7	4:00am

6. Jet Lag

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Re-Timer uses light to naturally adjust your body clock to a new time zone

Jet lag is caused by a misalignment between your sleep rhythm (internal body clock) and your destination time. When you travel across time zones, your body doesn't know whether to be awake or asleep. This causes you to feel jet lagged.

If you're travelling east, you will need to wear Re-Timer in the morning

When travelling east, it's harder to fall asleep at a conventional bedtime. Using bright light therapy in the morning will help you quickly adjust your sleep to the new time zone.

If you're travelling west, you will need to wear Re-timer in the evening

When travelling west, you will often feel tired too early. You can experience interrupted sleep, waking throughout the night and trouble remaining asleep. Using bright light therapy in the evening will help you quickly adjust to a conventional sleeping pattern.

You will need to start using Re-Timer a few days before you travel, so remember to create your Re-Timer travel plan before your trip.

Use our jet lag calculator to create a customised schedule for your travel plans

https://www.re-timer.com/benefits-for/jet-lag/

Get the most from your time away when you travel. Make sure you're awake and alert in your new time zone as quickly as possible.

Elite athletes use Re-Timer to help with a hectic travel schedule.

"Re-Timer has really helped me to prepare and adjust to the time zones through the competition season. Re-Timer helped me get ahead of the game and be ready to perform at my best"

Danielle Scott, Sydney
Sochi Olympic Aerial Ski Champion

6. Jet lag – SYD to LAX

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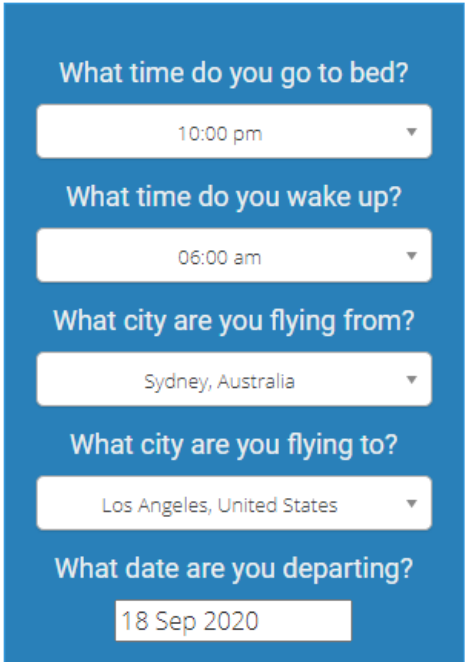

Undertake these activities while in Sydney (Sydney time)

Date	Time	Activity
15 Sep 20	06:00am to 06:50am	Wear Re-Timer
16 Sep 20	05:00am to 05:50am	Wear Re-Timer
17 Sep 20	04:00am to 04:50am	Wear Re-Timer

Undertake these activities in Los Angeles (Los Angeles time)

Date	Time	Activity
18 Sep 20	02:00am to 08:00 am	Avoid Light
18 Sep 20	08:00am to 08:50 am	Wear Re-Timer
19 Sep 20	01:00am to 07:00 am	Avoid Light
19 Sep 20	07:00am to 07:50 am	Wear Re-Timer
20 Sep 20	06:00am to 06:50 am	Wear Re-Timer
21 Sep 20	06:00am to 06:50 am	Wear Re-Timer

Use the Jet Lag calculator on Re-Timer.com for more detailed schedules

https://www.re-timer.com/the-product/jet-lag-calculator/

6. Jet lag – LAX to SYD

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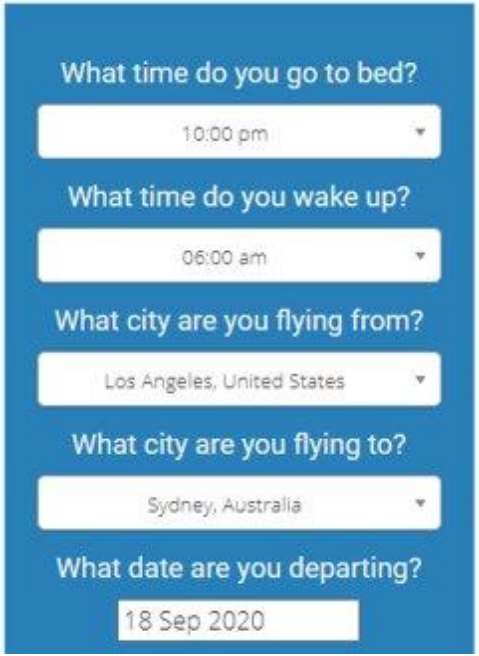

Undertake these activities while in Los Angeles (Los Angeles time)

Date	Time	Activity
14 Sep 20	09:00pm to 09:50pm	Wear Re-Timer
15 Sep 20	10:00pm to 10:50pm	Wear Re-Timer
16 Sep 20	11:00pm to 11:50pm	Wear Re-Timer
18 Sep 20	12:00am to 12:50am	Wear Re-Timer

Undertake these activities in Sydney (Sydney time)

Date	Time	Activity
20 Sep 20	08:00pm to 08:50 pm	Wear Re-Timer
21 Sep 20	09:00pm to 09:50 pm	Wear Re-Timer

Use the Jet Lag calculator on Re-Timer.com for more detailed schedules

https://www.re-timer.com/the-product/jet-lag-calculator/

7. Shift Work

RE-TIMER™

Re-Timer can help you achieve a better sleep routine around your shift work for an improved work/life balance

Sudden changes to your sleep patterns from shift work can leave you feeling permanently jet lagged. Re-Timer can be used to begin delaying your sleep time in preparation for night shift, help you stay awake at work and enable you to wake at more conventional times on your days off.

Re-Timer is worn for between 30 – 50 minutes at specific times of the day to adjust your sleep to your current shift

There is no easy solution for the negative consequences from a work/sleep schedule being out of sync with your circadian rhythm. We recommend wearing Re-Timer before bedtime on the two nights before your first night shift. This will help your body to "delay" or adjust to night shift.

Shift workers can contact Re-Timer to receive a customised schedule based on their specific roster.

Email support@re-timer.com for assistance.

Shift work survival is possible with Re-Timer. Return to optimal performance with bright light therapy.

Please use trial and error when implementing a light therapy schedule to assist with shift work – light therapy times will vary depending on whether the person is a night owl, or morning person (read about Advanced Sleep Phase and Delayed Sleep Phase for more information)

Re-Timer helps shift workers create balance between work and life

"After 20 years as a shift worker in Hospitality, always suffering fatigue, my Re-Timer glasses have significantly changed my work/life balance. I have more energy and focus when on night shift and do not lose my first day off to sleeping all day."
Stewart Leo Cartmell, Perth
Shift Worker

8. Seasonal Affective Disorder

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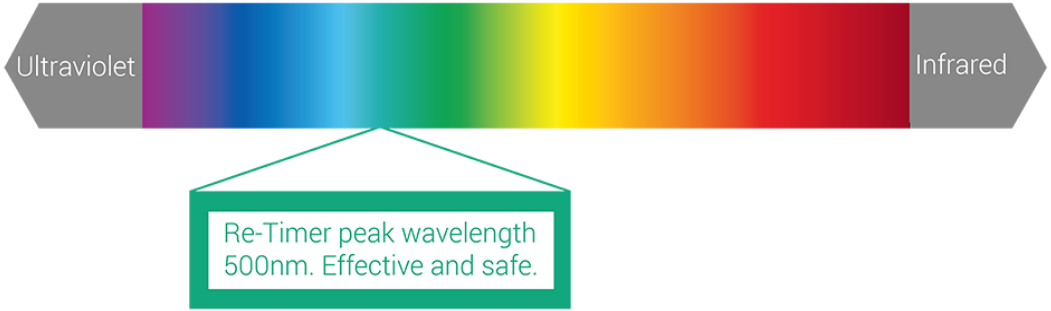
Seasonal Affective Disorder (SAD) is a low mood related to shorter days and reduced sunlight exposure during winter months. Symptoms can include loss of energy, weight gain and difficulty concentrating.

Humans have a biological clock that is influenced by the cycle of light and dark (day and night) to govern our circadian rhythms. This includes sleep patterns, feelings of alertness and sleepiness, our body temperature, hormonal secretion and body metabolism.

Using bright light therapy is the natural way to positively affect your mood and leave you feeling more energised.

Between the hours of 6am – 9am (when the sun would normally rise), 30 to 60 minutes of visual exposure to bright light using Re-Timer Light Therapy Glasses will help users keep an ideal circadian rhythm. In this case, it is also important to keep light exposure in the evening to a minimum.



Re-Timer is a TGA approved medical device to treat Seasonal Affective Disorder in Europe and Australia.

Please use trial and error when implementing a light therapy schedule to treat SAD – light therapy times will vary depending on whether the person is a night owl, or morning person (read about Advanced Sleep Phase and Delayed Sleep Phase for more information)

Re-Timer uses green-blue light, the most effective colour proven to beat the winter blues

"I have suffered with SAD and Re-Timer has completely turned this around. I can enjoy winter and not worry about my mood and energy levels. I also use Re-Timer to regulate my sleep and wake me up in the morning. The results are outstanding."
Kirsty Jeffree
Adelaide, Australia

Thank you

RE-TIMER™

Setting Up Your Re-Timer - Charging

Follow these steps to charge your device:

1. Plug the charging cable into the charging port of your Re-Timer (A, Diagram 1)
2. Plug the opposite end of the charging cable into either your computer's USB port or a USB wall adapter (not supplied)

As the battery charges, the orange LED Battery Indication Light will light up on the display (B, Diagram 2). This orange light will remain illuminated until the battery is full. If the battery is fully charged the indication panel will remain blank.

When the battery is fully charged it contains enough power to provide up to 5 hours of battery life. When your Re-Timer is low on battery power the battery indication light will flash red B, Diagram 2).

Warning: You must not use the device whilst it is charging

Note: Should you misplace the USB cable supplied with the Re-Timer please obtain a 1000mm long 'USB2 AM-BM Mini-USB' type cable.

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Diagram 1: Port for charging cable

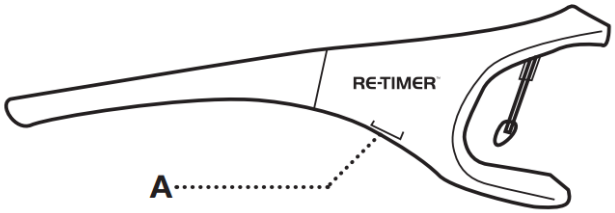
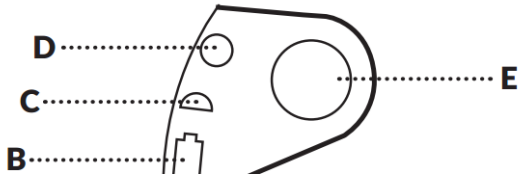


Diagram 2: Indication panel



Setting Up Your Re-Timer - Operating

Turning the Re-Timer on and selecting the light intensity settings

Before you place the Re-Timer on your head, turn it on by pressing the control button (E, diagram 2) once. This will turn its lights on to the half-brightness setting. If you prefer the full brightness setting, press the control button a second time. You only need to press the button for a moment.

You can see which brightness setting you are using by looking at the control panel. The low brightness indicator (C, Diagram 2) will light up when the device is in low brightness mode. The high brightness indicator will light up when the device is in high brightness mode (D, Diagram 2).

Note: The high brightness setting will achieve superior results compared to the low brightness setting

The human eye cannot perceive the difference in brightness between the low and high settings. However, the output of each setting is very different.

RE-TIMER™

Diagram 1: Port for charging cable

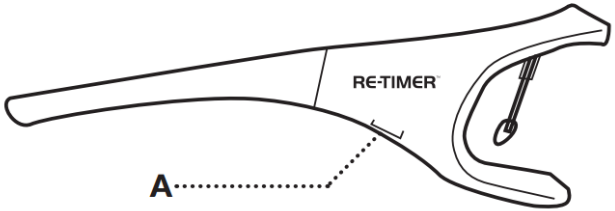
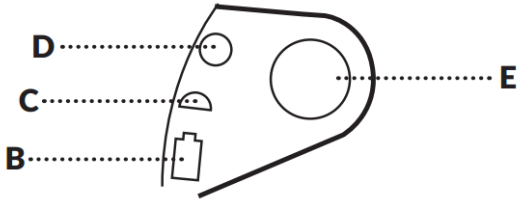


Diagram 2: Indication panel



Setting Up Your Re-Timer - Operating

Adjusting Re-Timer

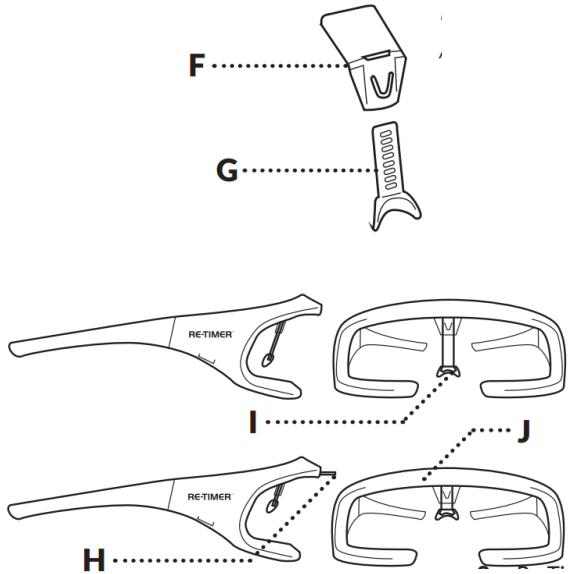
Once you have turned your Re-Timer on and selected your preferred brightness setting, place it on your head. To wear reading glasses while you use your device, put your reading glasses on fist, then the Re-Timer. The adjustable nose-piece (Diagram 3) can sit either behind or in front of your reading glasses.

Once the Re-Timer is on your head you can make small adjustments. To move the device closer to or further away from your head slide the top section of the nosepiece (F, Diagram 3) in and out of the frame (H, Diagram 3).

The height of the Re-Timer can be adjusted by the lower portion of the nose-piece (G, Diagram 3). This slides up and down and can be used to accommodate your reading glasses. You can select a low position (J, Diagram 3) or a high position (I, Diagram 3). Adjust the device until it is comfortable.

Tip: Adjust the nose-piece until the light is centred on your eyes. You may use a mirror to assist in aligning the light with your eyes.

Diagram 3:
Adjustable nose piece



Contraindications

Research has shown light therapy to be safe. However, please check with your doctor first if any of the following apply:

- You have sensitivity to light (photosensitivity). Or you have a condition that makes your skin especially sensitive to light. This product operates at a rate of 115 – 314 hertz.
- You are taking medication which may cause photosensitivity
- You have or have had any eye disease such as, but not limited to, glaucoma or retinal disorders such as macular degeneration
- You have been diagnosed with Bipolar disorder
- Research shows that a small percentage of the population experience side effects when using light therapy. These side effects may include headache, dry mouth, eye strain, nausea and hyperactivity. These side effects can usually be resolved by simply stopping use of the device
- Do not use this product in situations where the light might compromise your ability or the ability of others to perform essential tasks such as driving.

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Important

These guidelines are not medical directions for treating any condition. Medical diagnosis can only be performed by a registered health care professional.

If your doctor has suggested using light therapy, please follow their instructions and discuss any effects with them.

Safety

- Do not use on children younger than 13 years of age
- Do not use the device whilst battery is charging
- Keep the unit away from water and damp
- Use indoors only
- Do not attempt to remove the battery
- Recharge the battery using the USB cable provided
- Do not attempt to service any part of the unit. This could result in electric shock, burns, and/or fire
- Stop using this device immediately if the lenses above the light source (light emitting diodes) are cracked or missing.
- Do not strain or bend the device's arms
- Avoid contact between the device and chemicals (such as hairspray)

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Important

The Re-Timer conforms to the electromagnetic compatability standard for medical devices. It is unlikely to cause interference and affect other electrical or electronic device in its vicinity. The Re-Timer can, however, be affected by interference by radio transmitting equipment, mobile phones and other electrical or electronic equipment. Such equipment should be put into service according to the EMC information provided in the User Manual. If interference does occur, simply move the Re-Timer away from the source of interference.

Safety

- Do not operate this device in temperatures below +5°C / 41°F or above +40°C / 104°F with a relative humidity range of 15% to 93% non-condensing. Batteries can overheat, causing fire or bursting
- Mains to USB Power Adaptor must be compliant to relevant local standards for Electrical Safety Isolation. Use of a noncompliant power source could result in electric shock, burns and/or fire
- Never use damaged or worn cords. This could result in electric shock, burns, and/or fire
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure
- Keep out of reach of children

Research Behind Re-Timer

RE-TIMER™

Wright HR, Lack LC & Partridge KJ, 'Light emitting diodes can be used to phase delay the melatonin rhythm', Journal of Pineal Research, 2001, 31:350–355.

Objective: The aim of this study was to compare the effect of a portable light source with that of a conventional light box in suppressing nocturnal salivary melatonin and phase shifting dim light melatonin onset (DLMO), a phase marker of the circadian system [Lewy and Sack 1989].

Method: Two portable light sources, comprising light-emitting diodes (LEDs) of two different wavelengths, were compared to a standard light box in suppressing and phase shifting nocturnal salivary melatonin. All light sources were equated for illuminance of 2000 lux. Sixty-six volunteers participated in the two-day study and were randomly allocated to one of four conditions: light box, white LED, blue-green LED, or no light control group. Light was administered to the experimental groups from midnight to 02.00 on the first night.

Half-hourly saliva samples were collected from 19.00 to 02.00 on night 1 and until 01.00 on night 2. Per cent melatonin suppression on night 1 and dim light melatonin onset (DLMO) for each night were calculated.

Conclusion:

The experimental groups showed significant melatonin suppression during light stimulation, with the blue-green LEDs producing the greatest (70%) suppression.

There was no significant difference between the light box at 63% and white LED at 50% suppression. Similarly, the blue-green LED had a significantly greater DLMO delay of 42 minutes and there was no difference between the light box of 23 minutes and the white LED of 22 minutes. These data suggest the portable LED light source is an effective way of delivering light to phase shift the melatonin rhythm, with the blue-green LED being the more effective of the two LEDs.

Click on the link below for full research article and view following slide for visual representation of melatonin concentration

https://onlinelibrary.wiley.com/doi/full/10.1046/j.1600-079X.2003.00108.x?sid=nlm%3Apubmed

Research Behind Re-Timer

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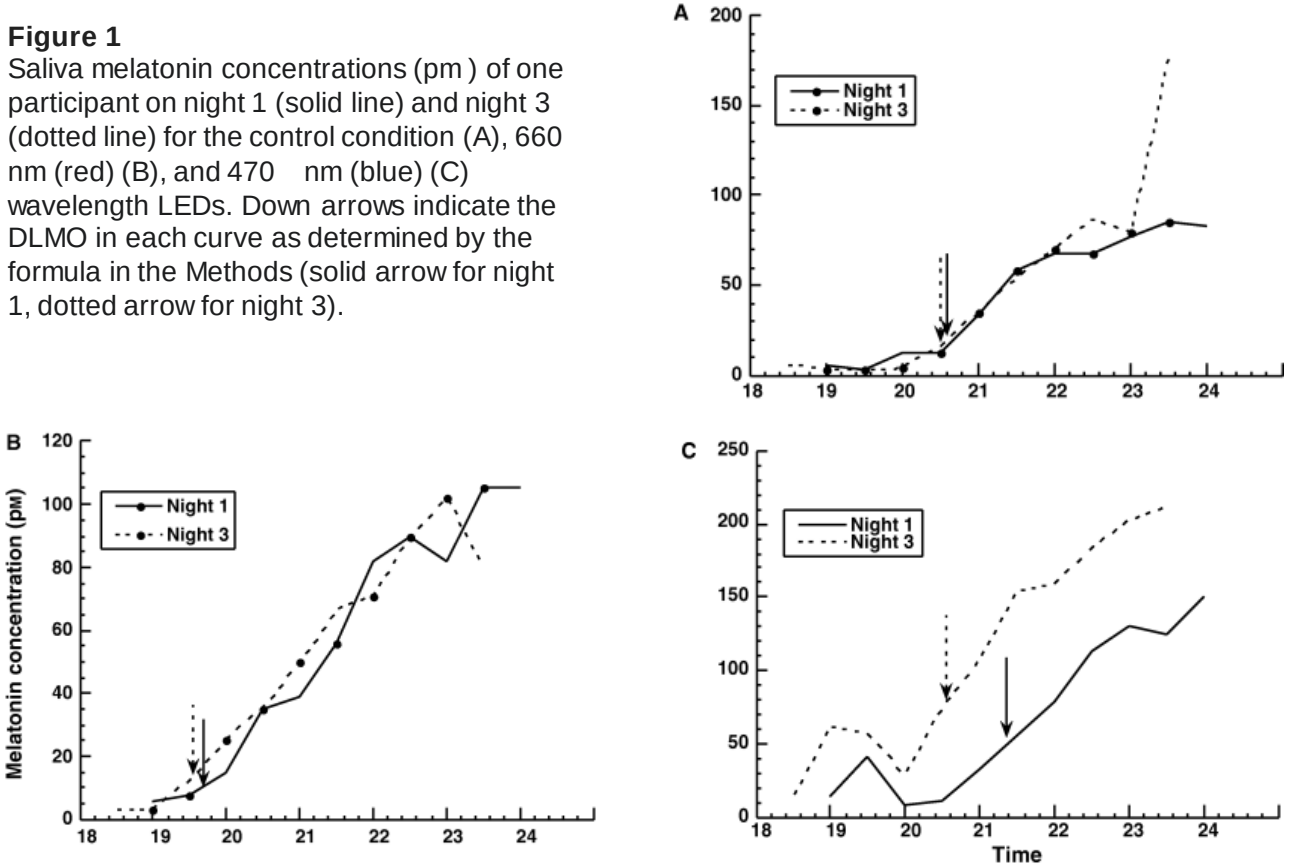
Figure 1
Saliva melatonin concentrations (pm) of one participant on night 1 (solid line) and night 3 (dotted line) for the control condition (A), 660 nm (red) (B), and 470 nm (blue) (C) wavelength LEDs. Down arrows indicate the DLMO in each curve as determined by the formula in the Methods (solid arrow for night 1, dotted arrow for night 3).



Research Behind Re-Timer

RE-TIMER™

Wright HR, Lack LC, 'Effect of light wavelength on suppression and phase delay of the melatonin rhythm', Chronobiology International, 2001 Sept., 18 (5): 801–8

Objective: Different wavelengths of light were compared for melatonin suppression and phase shifting of the salivary melatonin rhythm. The wavelengths compared were 660 nm (red), 595 nm (amber), 525 nm (green), 497 nm (blue/green), and 470 nm (blue).

Method: Volunteers were administered with light-emitting diodes equated for irradiance of 130 muW/cm2. Fifteen volunteers participated in all five wavelength conditions and a no light control condition, with each condition conducted over two consecutive evenings. Half-hourly saliva samples were collected from 19.00 to 02.00 on night 1 and until 01.00 on night 2. Light was administered for the experimental conditions on the first night only from midnight to 02.00.

Conclusion:

Percentage melatonin suppression on night 1 and dim light melatonin onset (DLMO) for each night were calculated.

The shorter wavelengths of 470, 497, and 525 nm showed the greatest melatonin suppression – 65% to 81%.

The shorter wavelengths also showed the greatest DLMO delay on night 2 – ranging from 27 to 36 minutes. The results were consistent with the involvement of a scotopic mechanism in the regulation of circadian phase.

Click on the link below for full research article and view following slide for visual representation of melatonin suppression

https://www.tandfonline.com/doi/full/10.1081/cbi-100107515

Research Behind Re-Timer

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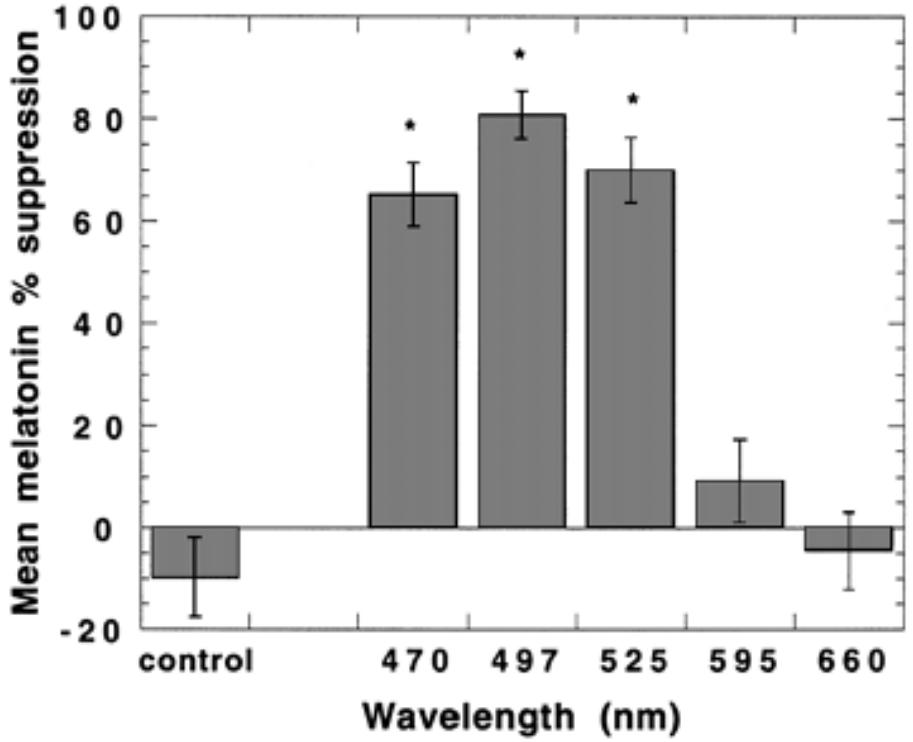
Figure 2
Mean melatonin percentage suppression and standard error bars for the no-light control condition and each light condition. *Significantly different from control, 595-nm, and 660-nm conditions.



Research Behind Re-Timer

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Lack, L, Bramwell, T, Wright, H & Kemp, K, 'Morning blue light can advance the melatonin rhythm in mild delayed sleep phase syndrome', Sleep and Biological Rhythms 2007, 5: 78–80

Objective: We investigated the effectiveness of morning blue light in advancing the sleep and melatonin rhythm of individuals with mild delayed sleep phase syndrome.

Method: The 18 participants were randomly allocated to a light or control group. Wake-up times were gradually advanced to 06.00 over a week, during which the light group also received two hours of blue light immediately after waking. During the treatment week that followed, the blue light group was exposed to two hours of blue light each morning, starting immediately after waking up. The portable light source comprised blue light LEDs (470 nm peak wavelength with irradiance of 65 μW/ cm2) attached to the lower rims of spectacle frames.

Conclusion:

The blue light group showed a significant 2.53-h advance of dim light melatonin onset, compared to no change in the control group.

However, neither group had a significant advance of sleep times following treatment. Effective delayed sleep phase syndrome treatment may require adjunct behavioral instructions.

Click on the link below for full research article and view following slide for visual representation of dim light melatonin onset

https://onlinelibrary.wiley.com/doi/full/10.1111/j.1479-8425.2006.00250.x

Research Behind Re-Timer

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Figure 3
The mean dim light melatonin onset pre- and post-treatment for the light (solid line) and control (dotted line) groups.