

Sleep Stack Guide

This is a complimentary copy of the Examine.com Sleep Stack Guide.



Medical Disclaimer

This guide is a general health-related information product intended for adults over the age of 18.

This guide is for educational purposes only. It does not constitute medical advice. Please consult a medical or health professional before you begin any exercise, nutrition, or supplementation program, or if you have questions about your health.

If you choose to engage in any activity or use any product mentioned in this guide, you do so of your own free will, and you knowingly and voluntarily accept the risks.

While we mention major known interactions, it is possible for any supplement to interact with other supplements, as well as with foods and pharmaceuticals. Therefore, it is important to consult a medical professional prior to using any supplement mentioned in this guide.

Specific study results mentioned in this guide should not be considered representative of typical results. Individual results do vary.

Keep in mind that not all supplements contain the exact compounds and amounts listed on the label. Always investigate supplement companies, as well as the supplement itself, before purchasing anything. Also note that, more than isolated compounds, herbs can have variability from batch to batch, which can alter their efficacy and safety.

For evidence supporting the claims mentioned in this guide, please visit [Examine.com](https://www.Examine.com).

Table of Contents

02	<u>Medical Disclaimer</u>
04	<u>How to Use This Guide</u>
06	<u>Core Supplements</u>
08	<u>Primary Options</u>
10	<u>Secondary Options</u>
13	<u>Inadvisable Supplements</u>
14	<u>Assembling Your Stack</u>
16	<u>FAQ</u>
18	<u>Precautions and Troubleshooting</u>

How to Use This Guide

The team at Examine.com has been publishing research on nutrition and supplementation since March 2011. In that time, we've learned a great deal about supplements, especially how they can work together to help you with your health goals.

This stack guide will help you figure out which supplements can help you reach your desired goals, and which can hinder you or just waste your money.

The following four sections present information on supplements that are relevant to **sleep**:

- Core Supplements
- Primary Options
- Secondary Options
- Inadvisable Supplements

Core supplements are the supplements most likely to help, while having little to no side effects. They tend to have better research backing than the other supplements.

Primary options may provide substantial benefit, but only in the right context. A primary option is not for everyone, but if you read the entry and find that you meet the criteria, consider adding the supplement to your stack.

Secondary options form another group of potentially beneficial supplements, but with less evidence for their effects. They could work or be a waste of money. Keep them in mind, but think twice before incorporating them into your stack.

Inadvisable supplements have either been shown to be ineffective, marketing claims notwithstanding, or are considered too risky. Do not add them to your stack. At best, they will be a waste of money; at worst, they can cause you harm.

Now that you have been presented with various supplements worthy of your interest, the time has come to combine them based on your objective. We will guide you in **assembling your stack**.

Then comes the FAQ , in which we cover common questions that may arise when assembling your stack.

Lastly, we include information onprecautions and troubleshooting.

With all this combined, you should be able to identify and assemble the supplement stack best suited for your objectives.

Core Supplements

Magnesium

Why it's a core supplement

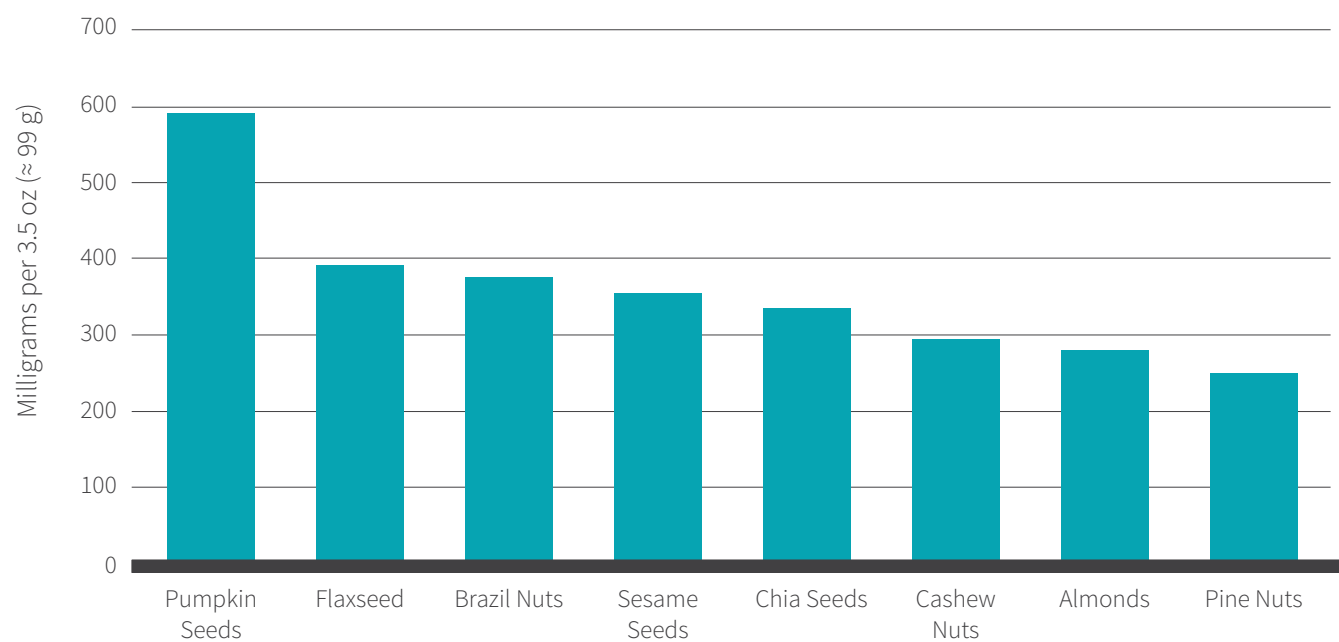
Magnesium (Mg) is a dietary mineral that plays an important role in the brain. A deficiency can result in abnormal neuronal excitations leading to impaired sleep. Magnesium is lost through sweat, so deficiencies are more common in athletes, but they are not unknown in the general population.

Magnesium is a core supplement because it is cheap, safe, and provides a variety of health benefits. Supplementing magnesium is recommended prior to adding other compounds to the sleep stack, in case impaired sleep is due to a magnesium deficiency.

How to take it

A diet comprising magnesium-rich foods (such as fish, nuts, beans, and green leafy vegetables) renders supplementation unnecessary, at least for the purpose of improving sleep. In case of magnesium deficiency, adding or increasing [dietary sources of magnesium](#) should be the first option, but in the absence of practical ways of doing so, supplementation can be used.

Figure 1: Magnesium Content (mg) of Seeds and Nuts



Low dietary magnesium can impact sleep quality. Nuts and seeds are a great source of magnesium. Incorporating some of the above foods into your diet can help ensure sufficient magnesium intake.

Commonly supplemented forms of magnesium include magnesium gluconate, diglycinate, and citrate. To increase absorption, magnesium gluconate should be taken with a meal, while other forms of magnesium can also be taken on an empty stomach. Because of its low bioavailability, magnesium oxide can cause intestinal discomfort and diarrhea; it is therefore not recommended for supplementation.

The standard dose is 200 mg of elemental magnesium once a day, though up to 350 mg can be used. Because magnesium might have a sedative effect, it is often supplemented before bed.

Avoid taking magnesium, [calcium](#), [zinc](#), and [iron](#) at the same time in combinations of 800+ mg, since high amounts of these minerals will compete for absorption and limit the overall effectiveness of supplementation. Magnesium may also impair the absorption of antibiotics, notably those in the tetracycline class (e.g. doxycycline) and quinolone class (e.g. ciprofloxacin), so take magnesium and antibiotics at least six hours apart.

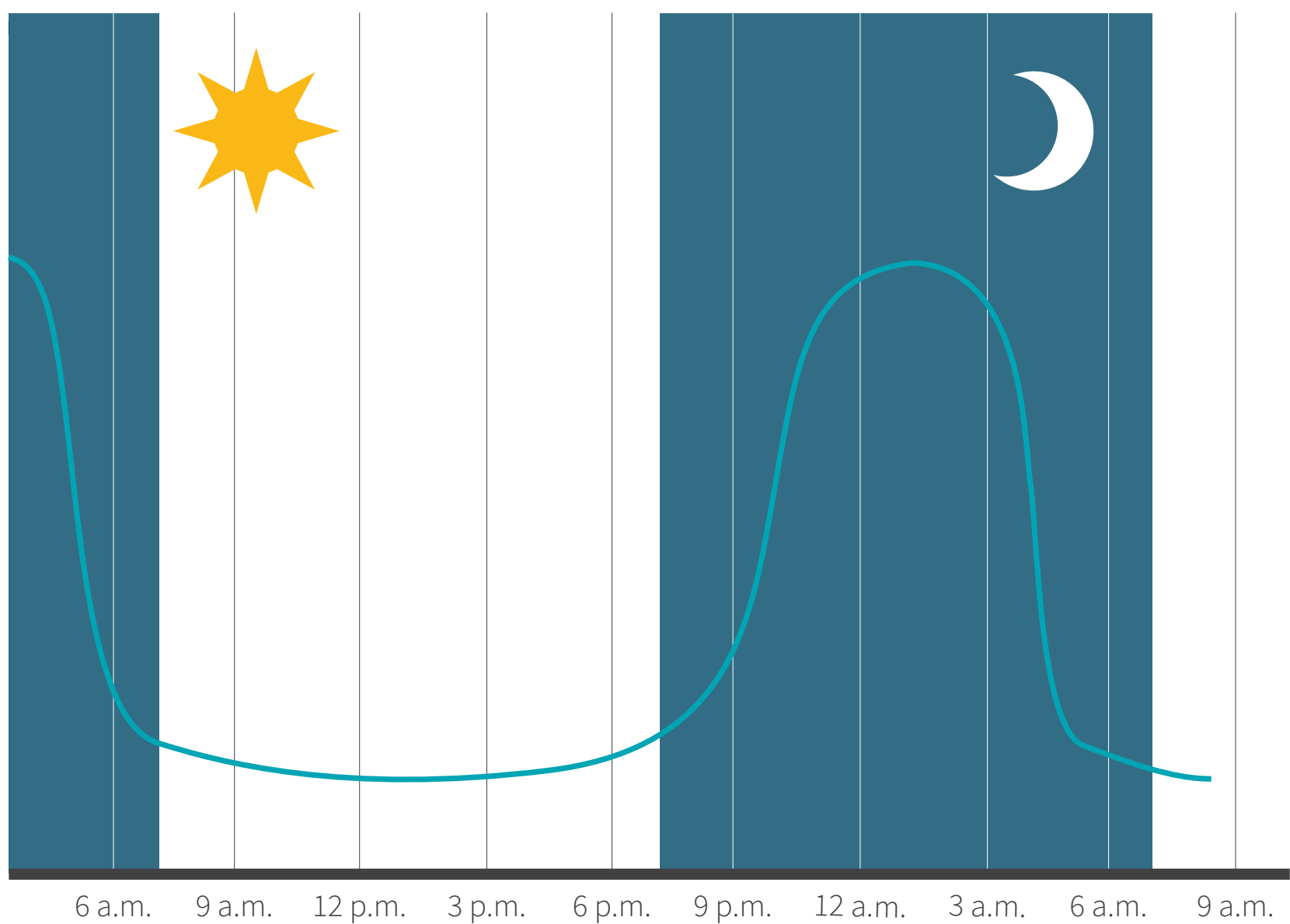
Primary Options

Melatonin

Why it's a primary option

Melatonin is a hormone involved in the circadian rhythm (which dictates sleeping and waking cycles). As you wake up in the morning, melatonin levels go down, while at night, or if you dim the lights, melatonin production increases.

Figure 2: Natural Melatonin Variations Throughout the Day



Melatonin is not a core supplement because it does not benefit sleep quality; it can only decrease the time it takes to fall asleep. If you fall asleep easily, you do not need to supplement melatonin.

How to take it

Take 0.5 mg (500 mcg) half an hour before bed. Increase by 0.5 mg each week until you find the lowest effective dose that works. Do not take more than 5 mg. Time-release melatonin may be more effective at sustaining sleep throughout the night.

Lavender

Why it's a primary option

Lavender (*Lavandula*) is traditionally used in aromatherapy for its relaxing scent. Because of the difficulty of blinding aromatherapy studies, a lot of the evidence for lavender's effects stems from lower-quality studies, but newer studies have examined oral supplementation to treat anxiety.

Intrusive thoughts can increase the time it takes to fall asleep; lavender can ease anxiety and reduce those intrusive thoughts. Lavender can also improve sleep *quality*, though more research is needed to determine the mechanism behind this effect. Likewise, more research is needed to confirm if lavender and [lemon balm](#) are indeed synergistic.

Because anxiety is prevalent in younger women, anxiety treatments are often taken along with contraceptive pills. One study has shown that lavender doesn't interact with a type of estrogen-based birth control: ethinyl estradiol with levonorgestrel.

How to take it

Take 80 mg of Silexan, a lavender oil preparation standardized for the active component linalool at 25–46% of total weight, 30–45 minutes before bed. After two weeks, if no benefit has been observed, the dose can be increased to 160 mg (this is the *maximum dose*).

Lavender oil is also used in aromatherapy — burned as a candle, heated, placed in a vaporizer, or added to a hot bath. The number of variables (product concentration, proximity of the user to the source, size of the room ...) makes recommending dosages exceedingly difficult, but studies have used at least thirty minutes of exposure in a well-ventilated room either at night or in the afternoon.

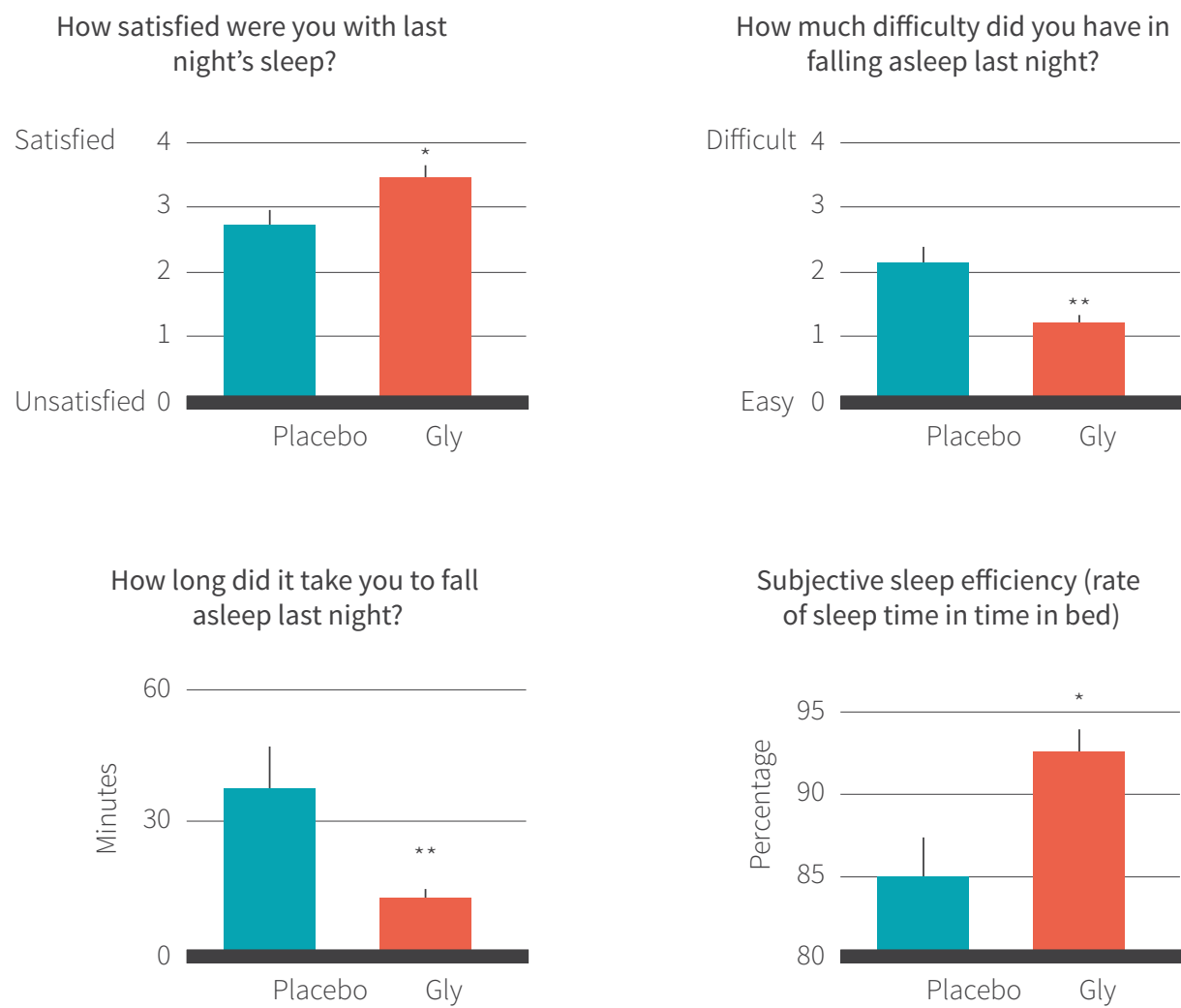
Secondary Options

Glycine

Why it's a secondary option

Studies on glycine have not found supplementation to improve sleep quality or reduce the amount of time it takes to fall asleep, but participants reported feeling significantly more rested the following morning.

Figure 3: Effects of Glycine on Subjective Sleep Quality



While some studies have shown improvements on the perception of sleep quality with glycine supplementation, most of these studies have been over a very short period of time.

Source: Yamadera et al. *Sleep and Biological Rhythms*. 2007.

Though glycine does not provide the health benefits that result from improved sleep quality, the perception of having had a good night's sleep makes for a comfortable and energetic morning. Plus, glycine is cheap and safe, making it a viable supplement option.

However, studies on glycine have all been short term (four days or less), and anecdotal reports suggest that benefits wear off. Therefore, glycine is probably best used intermittently.

How to take it

Take 3 g of glycine 30–60 minutes before sleep. Glycine is usually taken with food, but further research is needed to determine how important mealtime supplementation really is. If eating too close to bedtime disrupts your sleep, take glycine on an empty stomach instead.

Glycine can be purchased as pills but is cheaper as bulk powder. The powder should be mixed with water and tastes very sweet.

Valerian

Why it's a secondary option

The root of valerian (*Valeriana officinalis*) was one of the first sleep aids on the market. Like glycine, it seems to improve subjective reports on sleep and mood (well-being, alertness) the morning after supplementation.

Valerian is one of the best-researched sleep aids, second only to melatonin, yet how it influences sleep on a neural level is still uncertain. Moreover, like St. John's Wort, it interacts with the enzyme CYP3A4 and so with many drugs, both psychoactive and otherwise.

How to take it

Take a capsule or prepare an infusion 30–60 minutes before bed. While infusions are difficult to dose due to variations in steeping, look for capsules that contain 450 mg of a valerian extract standardized for 0.8–1% valerenic acids.

Lemon Balm

Why it's a secondary option

Lemon balm (*Melissa officinalis*) is a light sedative. Like [lavender](#), with which it may be synergistic, lemon balm can reduce the time it takes to fall asleep.

Unlike benzodiazepines, lemon balm is not potent enough to have addictive or habit-forming properties. Nevertheless, any supplement with a sedative effect can disrupt working memory and reduce attention span. Do not drive or operate heavy machinery after taking lemon balm or any other supplement with a sedative effect. Do not take lemon balm during the day.

How to take it

Take 300–1,200 mg of lemon balm 30–60 minutes before bed. Start with 300 mg; ramp up to 600 mg over the course of a week if no lower dose proves effective. Only take a dose larger than 600 mg if it provides noticeably greater benefits.

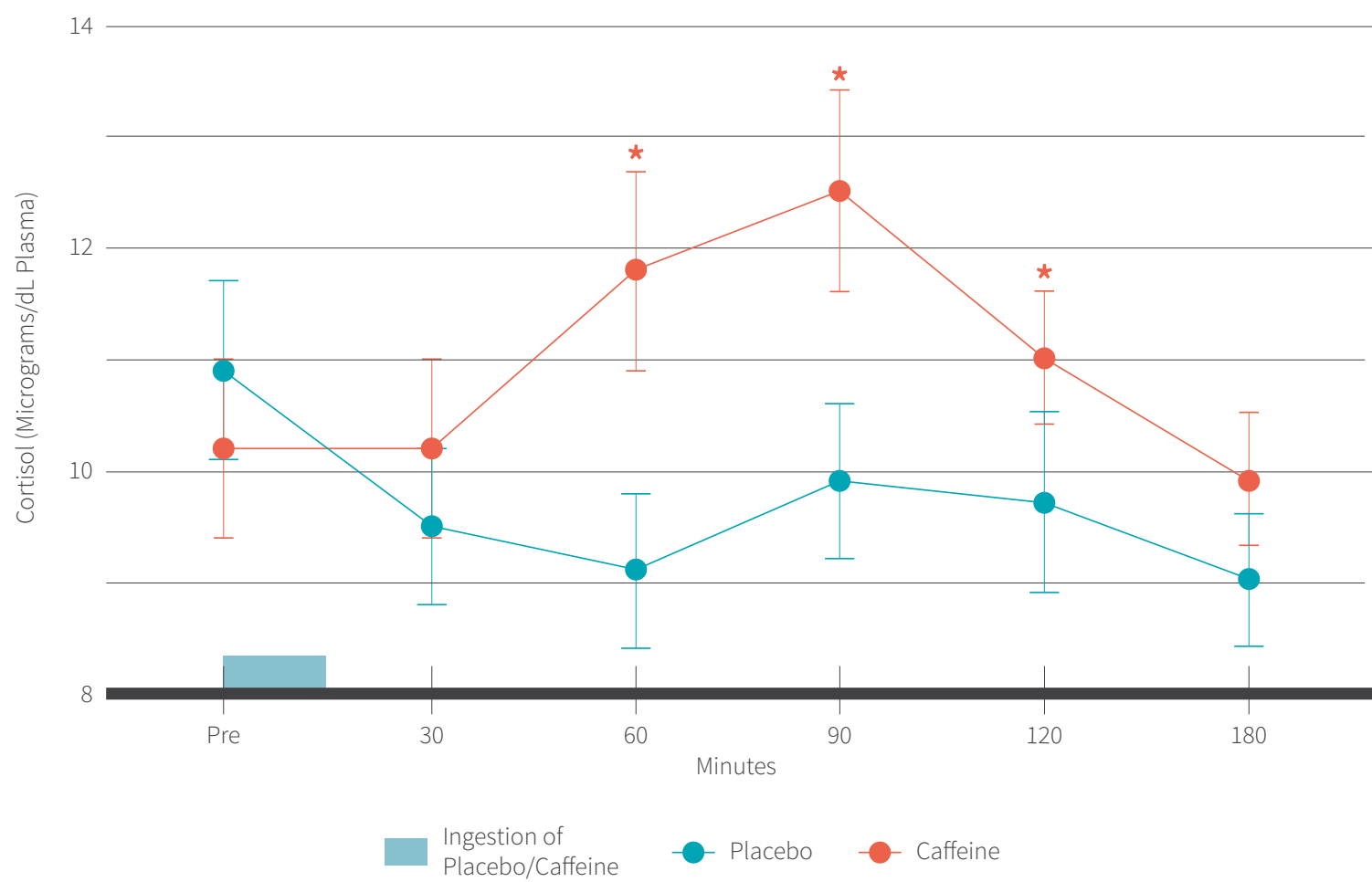
Lemon balm is also used in aromatherapy, but studies tend to examine oral supplementation because it is a more reliable delivery method.

Inadvisable Supplements

Caffeine

People with a caffeine tolerance may still be able to fall asleep after ingesting caffeine, but this stimulant will still negatively affect sleep quality. Caffeine should not be consumed before sleep even by the most veteran coffee drinkers. While some studies suggest that caffeine paired with 15-minute “power naps” can benefit alertness more than caffeine or nap alone, this benefit does not extend to longer sleep durations.

Figure 4: Effects of Caffeine on Cortisol Levels



Source: Lovallo et al. *Pharmacol Biochem Behav.* 1996 Nov.

Assembling Your Stack

Incorporating Core Supplements

This stack contains only one core supplement: [magnesium](#). Eating a variety of healthy foods like leafy green vegetables, nuts, and fish will provide enough magnesium to make supplementation unnecessary.

If your diet does not provide you with enough magnesium and you cannot modify it so it does, a bedtime dose of 200–350 mg of magnesium (in a form such as citrate, gluconate, or diglycinate) will alleviate a deficiency. Magnesium oxide, the cheapest form of magnesium, is associated with intestinal distress and is thus not recommended.

If you elect to supplement magnesium, do so for a couple of weeks before you consider adding one of the following options.

Incorporating Options

For people with anxiety and intrusive thoughts

After supplementing [magnesium](#) for two weeks, to eliminate the possibility of your sleep disorder being caused by a magnesium deficiency, add [lavender](#) (starting with 80 mg of Silexan per day, working up to 160 mg/day over the course of a week if no lower dose proves effective) and [lemon balm](#) (starting with 300 mg/day, working up to 600 mg/day over the course of a week if no lower dose proves effective). All three supplements can be taken in one dose (half an hour before bed) or two (one in the afternoon, the other in the evening).

For people who don't have trouble falling asleep but never feel rested in the morning

Take the core [magnesium](#) (200–350 mg) daily. Prior to days when you most need to feel rested, add [glycine](#) (3 g) or [valerian](#) (450 mg of an extract standardized for 0.8–1% valerenic acids) 30–60 minutes before bed.

For people who take a long time to fall asleep

Supplement [magnesium](#) first, to ascertain that your sleep disorder is not caused by a magnesium deficiency. If falling asleep is still a problem after two weeks, add [melatonin](#): 0.5 mg (500 mcg) half an hour before bed. You can increase by 0.5 mg each week until you find the lowest effective dose that works, but do not exceed 5 mg (5,000 mcg).

This stack can also alleviate jet lag.

FAQ

Can I add to my stack a supplement not covered in this guide?

Supplement your current stack for a few weeks before attempting any change. Talk to your doctor and [research each potential new addition](#) in advance. Check for known negative interactions with other supplements in your current stack, but also for synergies. If two supplements are synergistic or additive in their effects, you might want to use lower doses for each.

Can I modify the recommended doses?

If a supplement has a recommended dosage range, stay within that range. If a supplement has a precise recommended dose, stay within 10% of that dose. Taking more than the advised dose could be counterproductive or even dangerous.

Do I take supplements with or without food? In the daytime or the evening?

Certain supplements have strong evidence for how and when to best to take them, which we have noted where applicable. For many supplements, this research is either mixed or absent. It is always a good idea to start with a low dose of a supplement, so as to minimize the harm of taking it during the day (e.g. tiredness) or in the evening (e.g. insomnia).

Keep in mind that taking a supplement with food does not mean that all foods will have the same effect on its absorption, digestion, or metabolism. The most basic example is fat-soluble vitamins, which will absorb better with a small meal containing fat than a large meal containing little to no fat.

What if I fall into more than one category?

The sleep stack is simpler than other Examine.com stacks. When the time comes to [incorporate options](#), if you happen to fall into multiple categories, feel free to combine supplements.

What's the difference between elemental magnesium and other kinds of magnesium?

“Elemental magnesium” refers to the weight of magnesium by itself, separately from the compound bound to it to facilitate absorption. For instance, consuming 500 mg of magnesium gluconate means consuming 27

mg of elemental magnesium. ***Product labels display the elemental amount.***
On a label, “27 mg of magnesium (as magnesium gluconate)” means 27 mg of elemental magnesium (and 473 mg of gluconic acid).

As an athlete with a low dietary intake of magnesium, I supplemented 400 mg and experienced diarrhea. Why is that?

If magnesium is indeed the culprit, then your diarrhea was probably caused by too large a dose reaching the colon. Alternatively, it could mean that your body's levels of magnesium are in fact sufficient, making supplementation unnecessary.

In the future, split your daily dose into multiple doses. If the problem persists, reduce your daily dose to 200 mg. If you are using magnesium oxide, switch to a different form of magnesium.

Isn't lavender feminizing?

A few case studies support this hypothesis, and lavender does appear to interact with the estrogen receptors *in vitro*, but what limited animal evidence is available on the topic suggests that this effect isn't overly concerning. More importantly, human studies on generalized anxiety disorder (GAD) haven't reported any estrogenic side-effects at the doses used.

Precautions and Troubleshooting

Stack components are seldom studied together. The safest way to add supplements to your daily routine is one at a time, at least a couple of weeks apart, to better assess the effects (and side effects) of each new addition. Start at half the regular dose for a week, then slowly increase to the regular dose if you are not experiencing the desired effects.

Any supplement that can affect the brain, especially supplements with a stimulatory or sedative effect, should first be taken in a controlled situation. Do not take a dose, least of all your first dose, before events such as driving or operating heavy machinery, where impaired cognition may be a risk for your safety and the safety of others.

After taking any supplement for the purpose of improving sleep, don't check your emails, don't log onto Facebook, just relax and prepare for sleep. Blue light (produced by the sun ... as well as by most screens) can keep you awake even after you turn it off. If you need to use a computer or mobile device before bed, consider using software such as [f.lux](#), which will redden your screen light and get your body ready for sleep. Alternatively, wear blue-light-blocking glasses as soon as the sun sets. Exposure to light can reduce melatonin in your body even when you're asleep, so turn off any disrupting light before hitting the hay. Finally, minimize the noise in your bedroom, since noise can reduce sleep quality in addition to making it harder to fall asleep.

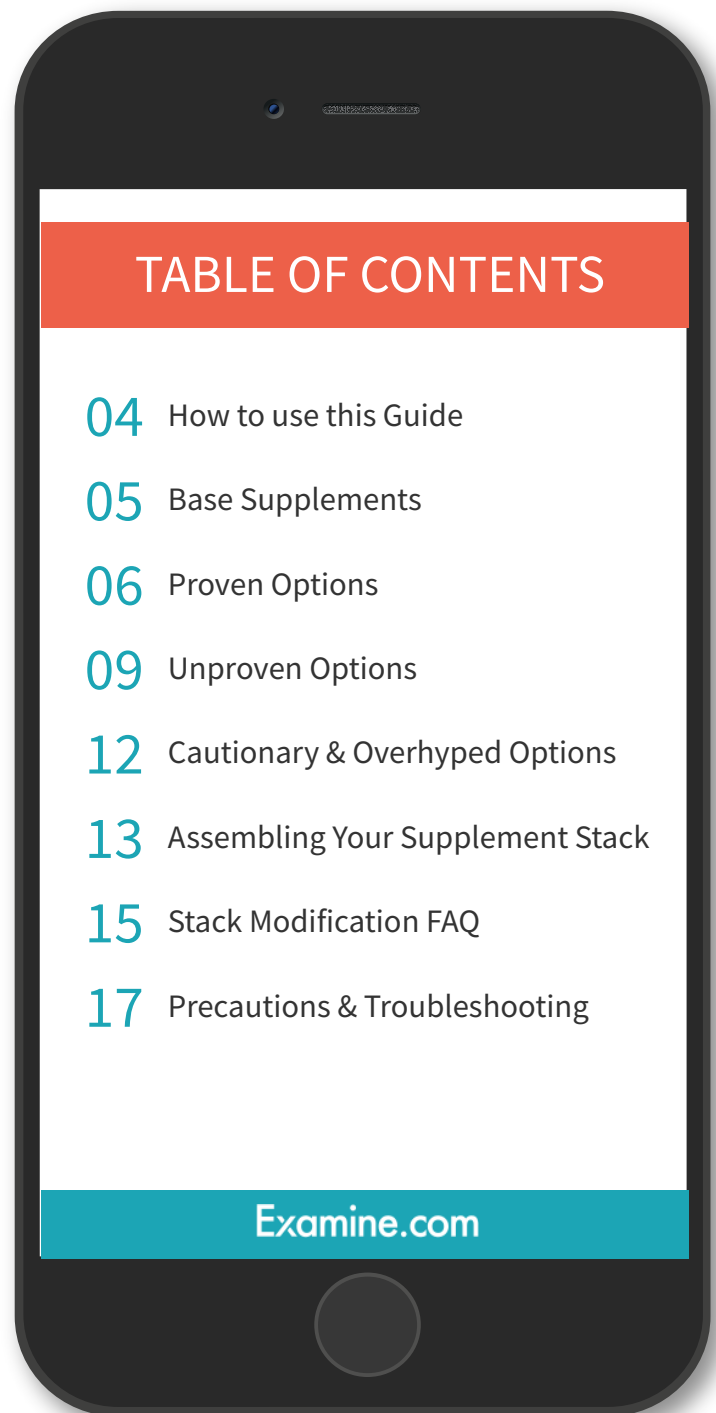
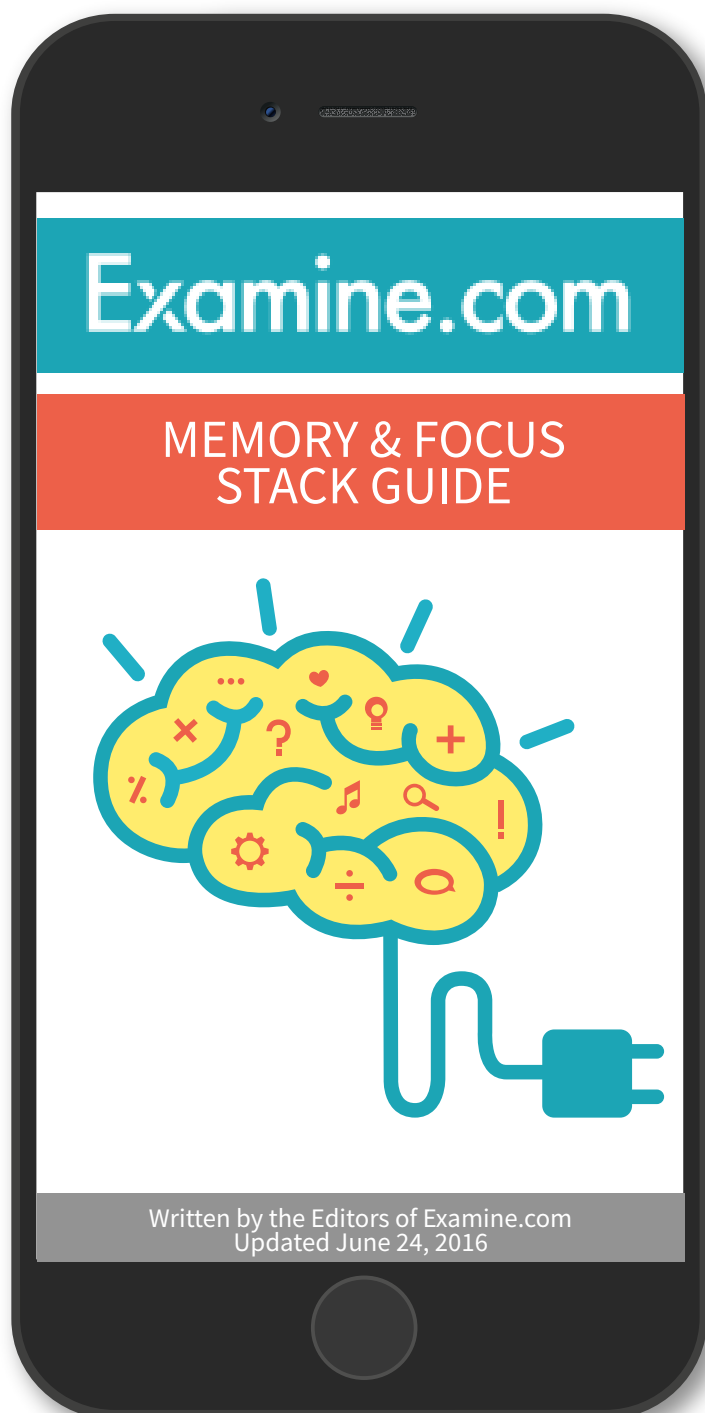
Remember that supplementation is a solution of last resort, reserved for people who cannot improve their sleep through lifestyle changes. Do not feel you have to take your stack every night, either. If, as weeks go by, the efficacy of your stack wears off, try taking it only three to five nights a week. It may take you a couple of months to determine your best stack, and a couple more to ascertain your best supplementation schedule.

Finally, pause supplementation after a month to determine if non-supplemented sleep quality has improved.

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