

Sleep Apnea

DNA Health Report

REPORT CATEGORY —



Sample Client

Report date: 15 January 2026

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DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Personal information

NAME

Sample Client

SEX AT BIRTH

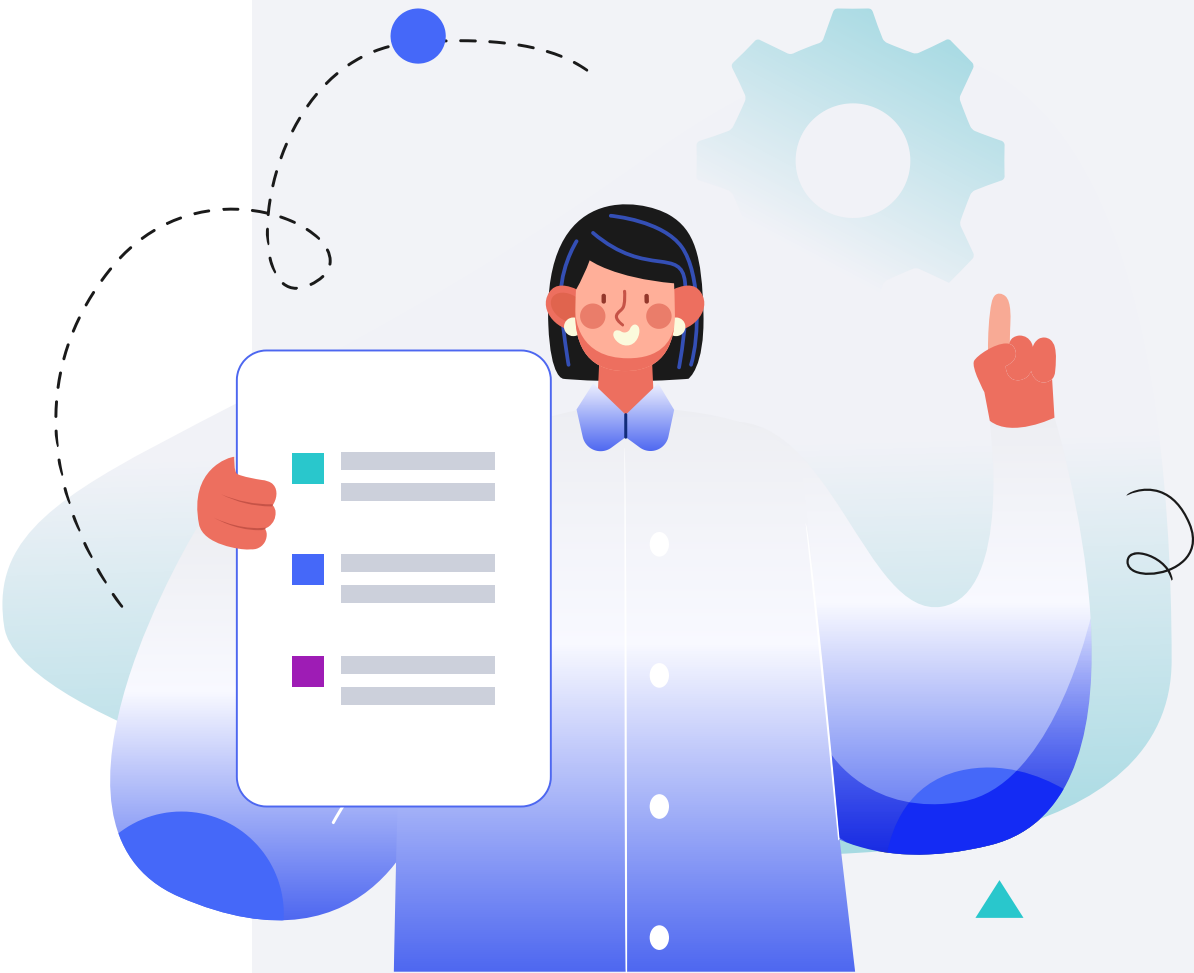
Male

HEIGHT

5ft 5" 165cm

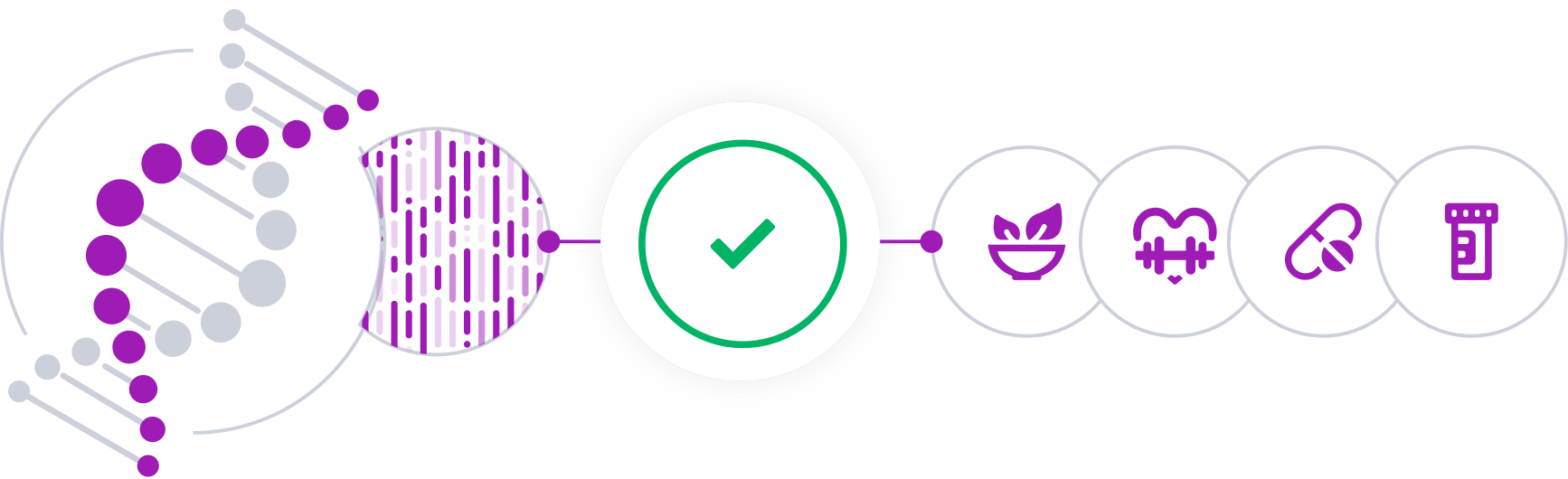
WEIGHT

137lb 62kg



How this works

Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.

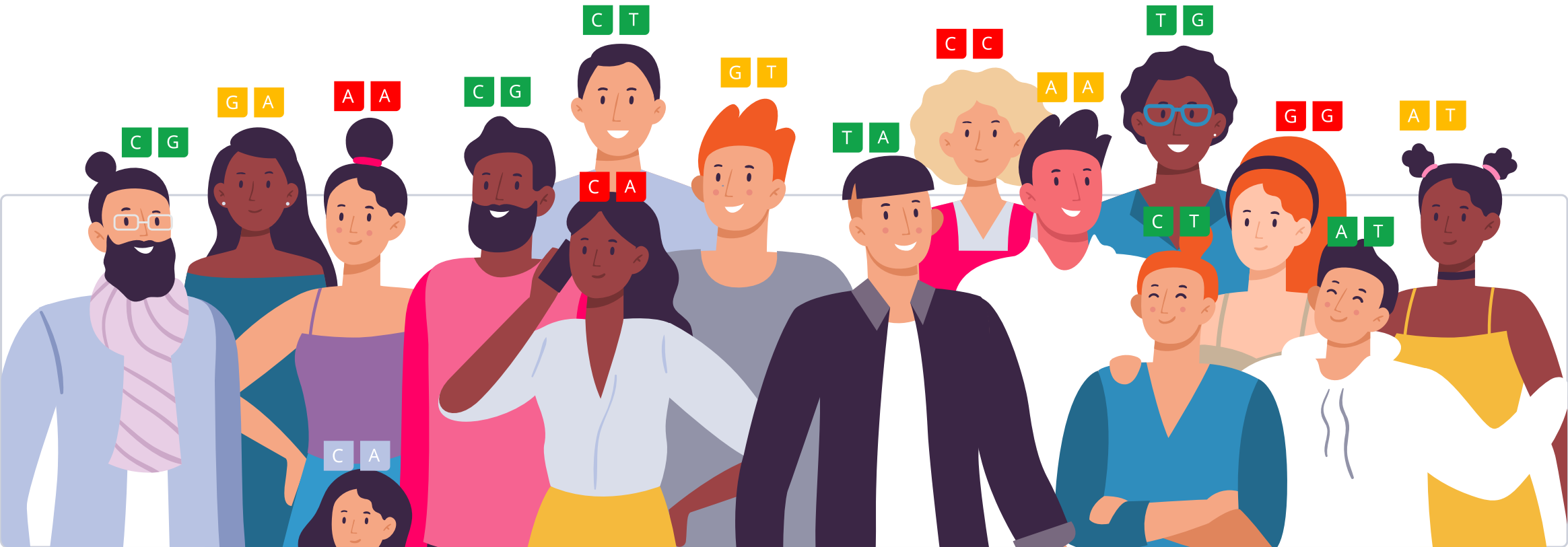


Similarly, our Trait Reports look at how your DNA influences your traits.



Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information.
We then summarize your results as a risk score or display it on a gauge.

In total, we analyze up to 83 million genetic variants.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

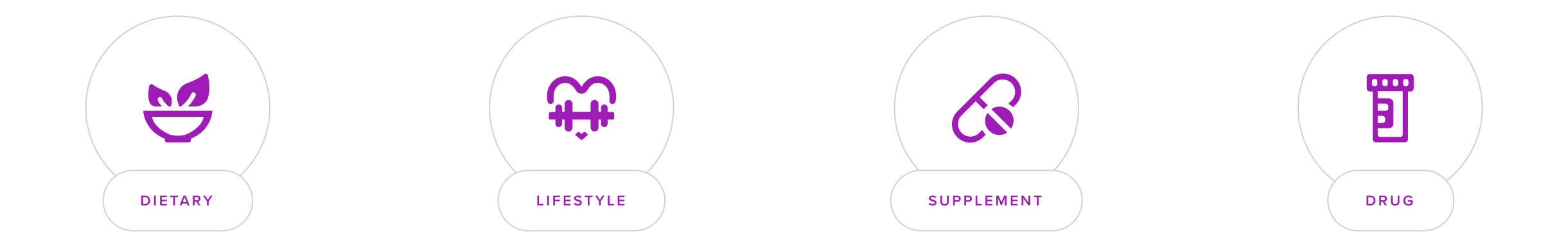
You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

- 5 / 5
- Recommendations that are considered effective and generally recommended by experts and medical bodies.
-
- 4 / 5
- Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.
-
- 3 / 5
- Recommendations that are considered possibly effective and have many studies supporting them
-
- 2 / 5
- Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.
-
- 1 / 5
- Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.
-
- 0 / 5
- No evidence in humans.

Genotype-specific Evidence

- High-quality
- Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).
- Medium-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).
- Low-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).
- Indirect
- A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).
- In theory
- A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

Sleep apnea is a disorder that interrupts your breathing while you sleep. Types of sleep apnea include [\[R\]](#):

- **Obstructive sleep apnea**, in which throat and tongue muscles relax, allowing the soft tissue to block the airway
- **Central sleep apnea**, in which the brain doesn't send proper signals to the muscles that control breathing
- **Complex sleep apnea syndrome**, which is a combination of the first two types

Obstructive sleep apnea is the most common type. It may affect up to **14% of men and 5% of women** in the United States [\[R\]](#), [\[R\]](#).

One of the most common causes of obstructive sleep apnea is obesity. Extra weight puts pressure on the upper airways [\[R\]](#), [\[R\]](#).

Snoring, especially if interrupted by periods of silence, can be a sign of sleep apnea. However, many people who snore don't have sleep apnea. Other signs and symptoms include [\[R\]](#):

- Daytime sleepiness
- Sudden awakenings with gasping or choking
- Waking up with a dry mouth or sore throat
- Morning headache
- Concentration and mood problems
- Decreased sex drive

Genetic predisposition to apnea may also be causally associated with an increased risk of heart failure, high blood pressure, and atrial fibrillation [\[R\]](#).

A person with sleep apnea might wake up dozens of times to restore normal breathing. However, by morning, they don't usually remember it. Someone you share a bed with is more likely to notice your sleep apnea.

Left untreated, sleep apnea can have a major impact on your life. It can affect your health, quality of life, and driving safety [\[R\]](#), [\[R\]](#).

Some lifestyle changes may help with milder cases. These include [\[R\]](#):

- **Losing weight if you're overweight**
- Exercising
- Avoiding smoking and alcohol
- Addressing nasal congestion
- Not sleeping on your back

For moderate to severe cases, a doctor may recommend medical treatment. This usually includes using a device that can help you breathe normally during the night. Some cases may require surgery [\[R\]](#).

Genetics of Sleep Apnea

Key Takeaways:

- About 10-40% of differences in people's chances of developing sleep apnea may be due to genetics.
- Other important risk factors include being male, older, overweight, nasal congestion issues, a smoker, and drinking alcohol.
- If you are at high genetic risk, be aware of symptoms indicating sleep apnea, and take action on those risk factors you can control.
- Click the **next steps** tab for relevant labs.

Sleep apnea is a disorder that interrupts your breathing while you sleep. A person with sleep apnea might wake up dozens of times to restore normal breathing, leading to daytime sleepiness. Left untreated, sleep apnea can affect your health, quality of life, and driving safety [\[R\]](#), [\[R\]](#).

About 10-40% of differences in people's chances of developing sleep apnea may be due to genetics. Genes involved in sleep apnea may influence [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- **Weight**
- Upper airway structure
- Sleep duration and quality

However, keep in mind that genetics is just one of many risk factors, along with [\[R\]](#):

- Male sex
- Older age
- Excess weight
- Nasal congestion
- Smoking
- Drinking alcohol



MORE LIKELY

More likely to have sleep apnea based on 1,227,186 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
FOXP2	rs1006437246	GG
LMX1A	rs140743827	GG
GPR83	rs116791765	TT
LAX1	rs116133558	CC
NRG1	rs10097555	GA
ARRB1	rs35329661	CC
RGMA	rs148024591	CC
/	rs11610782	GG
FTO	rs11075985	CC
RGS18	rs11588454	CT
LRATD1	rs2033354	TT
UBE3A	rs72699765	GG
PLCB1	rs2743173	CT
SLC35F3	rs75108997	GG
YIPF5	rs111942351	AA
CAMK1D	rs185932673	CC
SLC35F3	rs75108997	GG
SERTAD2	rs999944	GG
/	rs11074782	CC
TDRD15	rs11897825	GG
TDRD15	rs11897825	GG
NEDD1	rs10507084	CC
FTO	rs9937053	GG
TSPAN18	rs74472562	CC

GENE	SNP	GENOTYPE
INSIG2	rs4849682	CC

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You’ll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

DOSAGE		DOSAGE			
1	Airflow Devices	2	Continuous Positive Airway Pressure (CPAP)		
3	Hyperbaric Oxygen Therapy	90 minutes	4	Avoid Sleeping on Your Back	
5	Exercise At Least One Hour a Day	1 hour	6	Mandibular Advancement Devices (MADs)	
7	Airway Muscle Training	30 minutes	8	Acupuncture	1 hour
9	Transcutaneous Electrical Nerve Stimulation (TENS)	30 minutes	10	Maintain Optimal Vitamin D Levels	1000 iu
11	Avoid Meals 3-4 Hours Before Bedtime		12	Aerobic Exercise (Cardio)	1 hour
13	N-acetylcysteine (NAC)	600 mg	14	Bed Head Elevation	
15	Compression Stockings		16	Yoga	30 minutes
17	Mouth Taping		18	Limit Copper Intake	
19	Progressive Muscle Relaxation	10 minutes	20	Mediterranean Diet	
21	Maintain a Regular Meal Schedule		22	Myofunctional Therapy with Myofascial Release	10 minutes
23	Avoid Refined Sugar		24	Avoid Large Meals	
25	Limit Salt Intake		26	Melatonin	500 mcg
27	Limit Meat Intake		28	Dietary Omega-3 Fatty Acids	

1



Airflow Devices

IMPACT

5 / 5

EVIDENCE

5 / 5

How to implement

Use an airflow device, such as a continuous positive airway pressure (CPAP) machine, every night during sleep. Ensure the device is properly fitted and calibrated according to the instructions provided by a healthcare professional. Regular maintenance, including cleaning and replacing filters as recommended by the manufacturer, is essential for effectiveness.

Description

Airflow devices help keep the airway open while you sleep. They include Positive Airway Pressure (PAP) machines and oral devices (mouthpieces).

Airflow devices help keep the airway open while you sleep. They include [\[R\]](#):

- **Positive Airway Pressure (PAP) machines:** a mask worn over the nose and/or mouth that blows air into your airway
- **Oral devices:** a mouthpiece that prevents the throat from being blocked by the tongue or jaw

A doctor can help you determine if an airflow device is right for you.

How it helps

Positive Airway Pressure (PAP) devices are the primary treatment for sleep apnea. In those with the condition, they may [\[R, R, R\]](#):

- Decrease the number of sleep apnea episodes
- Improve sleep quality
- Reduce daytime sleepiness
- Lower blood pressure

Continuous PAP (CPAP) machines are the most common option. However, some may find them uncomfortable or difficult to use. Work with your doctor to ensure that machine settings and mask fit are the best for you [\[R, R\]](#).

Even with adjustments, some may still dislike using CPAP machines regularly. Doctors may suggest alternative options, such as oral devices [\[R, R, R, R, R\]](#).

Like PAP machines, oral devices may also help reduce the number of sleep apnea episodes and improve sleep quality [\[R, R, R\]](#).

Continuous Positive Airway Pressure (CPAP)

IMPACT

5 / 5

EVIDENCE

5 / 5

How to implement

Use the CPAP machine every night while sleeping, making sure the mask fits comfortably but securely over your nose, mouth, or both, depending on the mask type. The machine should be turned on before you go to sleep and only turned off upon waking. Continuous use throughout the night, every night, is essential for the therapy to be effective in treating conditions such as sleep apnea.

Description

CPAP therapy is a treatment for obstructive sleep apnea that involves using a machine to deliver a continuous stream of air pressure to keep the airway open during sleep. It helps individuals with sleep apnea breathe more easily during the night, improving sleep quality and reducing the risk of associated health problems.

How it helps

Continuous PAP (CPAP) machines are Positive Airway Pressure (PAP) devices. They are the most common option in primary treatment for sleep apnea. PAP devices may [R, R, R]:

- Decrease the number of sleep apnea episodes
- Improve sleep quality
- Reduce daytime sleepiness
- Lower blood pressure

However, some people may find CPAP machines uncomfortable or difficult to use. Work with your doctor to ensure that machine settings and mask fit are the best for you. Doctors may also suggest alternative options, such as oral devices [\[R, R, R, R, R, R, R\]](#).

3



Hyperbaric Oxygen Therapy

IMPACT4 / 5

EVIDENCE4 / 5

How to implement

Schedule and attend sessions in a hyperbaric oxygen therapy chamber as your doctor prescribes, typically for about 60 to 90 minutes per session. The exact number of sessions required can vary based on the condition being treated, but it often ranges from 20 to 40 sessions, which may be conducted daily or a few times a week.

TYPICAL STARTING DOSE

90 minutes

Description

Hyperbaric oxygen therapy increases the amount of oxygen in the blood and tissues, which can help to improve circulation, reduce inflammation, and promote healing.

How it helps

A meta-analysis of 14 studies and 359 patients concluded that oxygen therapy significantly improves oxygen saturation in patients with obstructive sleep apnea but may increase the duration of apnea-hypopnea events. Two meta-analyses (the largest one with 27 studies) found that oxygen therapy improves apnea-hypopnea index less than CPAP and increases SpO2 as effectively in patients with obstructive sleep apnea [\[R, R, R\]](#).

Hyperbaric oxygen therapy may help by improving oxygen supply to the brain during sleep, reducing episodes of paused and shallow breathing.

Please note: Hyperbaric oxygen therapy is a potentially dangerous procedure that should only be performed under medical supervision. People with pneumothorax or congestive heart failure are at especially high risk of adverse effects. Because highly concentrated oxygen can easily catch on fire, avoid potential fire sources around hyperbaric oxygen chambers, oxygen gas cylinders, tanks, and concentrators [\[R, R\]](#).

4



Avoid Sleeping on Your Back

IMPACT

3 / 5

EVIDENCE

4 / 5

How to implement

Start by choosing a sleep position on your side or stomach rather than your back. Consider using a body or side pillow to maintain the position throughout the night. Try to make this a consistent habit every night to get accustomed to the new sleeping position.

Description

For individuals prone to snoring or sleep apnea, avoiding sleeping on the back can improve nighttime breathing and reduce the risk of sleep disturbances. Sleeping in positions that maintain open airways supports better sleep quality and overall restfulness.

Some people tend to sleep on their back, but this position may make it harder to breathe properly. Methods that prevent people from sleeping on their back (positional therapy) may help with sleep apnea [\[R, R\]](#).

Some tips to keep you from sleeping on your back include [\[R, R, R, R\]](#):

- Using a device that vibrates or makes a noise when you roll onto your back
- Wearing a vest with bumpers on the back
- Using pillows that physically block you from rolling onto your back
- Attaching a tennis ball to the back of your shirt

How it helps

In comparison to sleeping on your side, sleeping on your back may increase the number of sleep apnea episodes. This is because it may cause the tongue and soft tissue at the back of the mouth to droop and block the airway [\[R, R\]](#).

For people who have sleep apnea when sleeping on their back, sleeping in a different position may help [\[R, R, R, R\]](#):

- Decrease the number of sleep apnea episodes
- Increase total sleep time

5



Exercise At Least One Hour a Day

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Dedicate a minimum of 60 minutes to moderate-intensity activities such as brisk walking, swimming, or cycling. Do this most days of the week, aiming for at least 5 days to optimize benefits.

TYPICAL STARTING DOSE

1 hour

Description

[Exercise](#) can do wonders for your health. It can help you lose weight, improve your heart health, boost your mood, and more [\[R\]](#).

There are many ways you can be active. You can walk, run, swim, dance, or play team sports. **Everything counts, and it's never too late to start!**

Try to get at least **60 minutes of moderate physical activity on most days**, including walking. **Getting a mix of cardio (min 150 min/day) and strength training (min 2 times a week) may be optimal.**

How it helps

In people with sleep apnea, exercise may help [\[R, R, R, R, R, R, R\]](#):

- Decrease the number of sleep apnea episodes
- Reduce daytime sleepiness
- Improve sleep quality

6



Mandibular Advancement Devices (MADs)

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Wear a mandibular advancement device (MAD) during sleep every night. Start by having a dentist or sleep specialist customize the device to fit your mouth accurately. It may take a few weeks to adjust to the sensation of the device, but consistent nightly use is crucial for effectiveness in treating conditions like sleep apnea.

Description

Mandibular advancement devices (MADs) are dental appliances used to treat snoring and sleep apnea by repositioning the lower jaw to improve airflow during sleep. They can help individuals with these conditions achieve better sleep quality and reduce nighttime breathing disturbances.

How it helps

A clinical trial assessed the effectiveness of a mandibular advancement device in people with obstructive sleep apnea. The results showed improvements in several measures, including the apnea-hypopnea index, oxygen saturation, arousal index, and sleep efficiency. The study concluded that MADs reduce apnea symptoms and improve sleep quality in people with obstructive sleep apnea syndrome [\[R\]](#).

A systematic review of randomized controlled trials investigating different designs of MADs in reducing the apnea-hypopnea index and improving oxygen saturation in people with obstructive sleep apnea found that certain designs, particularly mono-bloc MADs, were more effective than others. This study highlighted the variability in the effectiveness of different MAD designs but confirmed the overall beneficial impact of MADs in treating sleep apnea [\[R\]](#).

7



Airway Muscle Training

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Perform airway muscle training exercises daily for at least 30 minutes. This can involve using specific devices designed to resist airflow in and out, thereby strengthening the respiratory muscles, or practicing breathing exercises that focus on inhaling and exhaling against resistance. Consistency is key, so aim to integrate this practice into your daily routine for ongoing respiratory health.

TYPICAL STARTING DOSE

30 minutes

Description

Airway muscle training is exercise that builds strength in the throat and tongue muscles. This can involve anything from controlled breathing to singing long notes. People use airway muscle training to improve sleep apnea, respiratory conditions, and exercise performance.

Airway muscle training is exercise that builds strength in the throat and tongue muscles. This can involve anything from controlled breathing to singing long notes. People use airway muscle training to improve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Sleep apnea
- Respiratory conditions like COPD
- Exercise performance

How it helps

Airway muscle training may help decrease the number of sleep apnea episodes. It may also improve sleep quality, daytime sleepiness, and snoring. Helpful forms include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- **Myofunctional therapy** (a combination of mouth and throat exercises)
- Playing wind instruments
- Singing

Airway training may help by improving the strength and function of mouth and throat muscles. This helps keep the airways open during sleep [\[R\]](#).

8



Acupuncture

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Visit a licensed acupuncturist for a session, typically lasting between 30 to 60 minutes, once or twice a week. Depending on your specific condition, a course of treatment might range from a few weeks to several months.

TYPICAL STARTING DOSE

1 hour

Description

Acupuncture is a part of traditional Chinese medicine. It involves inserting thin needles at specific points on the body. People use it to relieve pain and allergies, as well as reduce nausea and improve sleep.

[Acupuncture](#) is a part of traditional Chinese medicine. It involves **inserting thin needles at specific points on the body**. People use it to [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Relieve pain
- Improve sleep quality
- Relieve allergies
- Reduce nausea

How it helps

A meta-analysis of 9 trials and 584 people concluded that acupuncture may improve apnea-hypopnea and sleepiness, especially in moderate or severe cases (AHI 16~30, or more than 30 times per hour) [\[R\]](#).

9



Transcutaneous Electrical Nerve Stimulation (TENS)

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Apply TENS unit electrode pads around the area in pain; begin with the device set to a low setting and gradually increase intensity to a comfortable level. Use the device for 15-30 minutes per session for pain relief, and it can be used multiple times a day as needed.

TYPICAL STARTING DOSE

30 minutes

Description

TENS is a therapy that uses low-level electrical currents to relieve pain by stimulating the nerves. It's commonly used as a non-invasive method to manage various types of pain, such as musculoskeletal pain or chronic pain conditions.

How it helps

TENS applied on the upper airway dilator muscles may reduce the apnea-hypopnea index in patients with sleep apnea. However, it may not improve other parameters or quality of life [\[R\]](#).

10



Maintain Optimal Vitamin D Levels

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Check your vitamin D levels, they should ideally be in the 30-66 ng/mL range. If your levels are lower than that, take a vitamin D supplement, 1000-4000 IU daily, to reach an optimal range.

TYPICAL STARTING DOSE

1000 iu

Description

Vitamin D, often referred to as the "sunshine vitamin," can be synthesized by the skin when exposed to sunlight, as well as being found in fish, eggs, and fortified milk. It helps regulate calcium absorption, promoting strong bones and a healthy immune system. Vitamin D deficiency can lead to conditions like rickets in children and osteoporosis in adults.

Your body needs [vitamin D](#) for strong bones. Vitamin D also plays a role in [\[R\]](#):

- Mood
- Immunity
- Heart health
- Blood sugar control

[Sunlight](#) is our main source of vitamin D. Experts recommend getting at least **5-15 minutes of midday sun, 2-3 times per week**. People with darker skin and those living at high latitudes may need longer periods of sun exposure [\[R\]](#), [\[R\]](#).

Foods like fish, eggs, and fortified milk provide small amounts of vitamin D. **People lacking vitamin D should consider taking a supplement** [\[R\]](#).

How it helps

People with obstructive sleep apnea may have lower vitamin D levels and a higher prevalence of vitamin D deficiency [\[R\]](#), [\[R\]](#), [\[R\]](#).

In a small placebo-controlled trial of 19 patients with this condition, vitamin D3 supplementation increased vitamin D levels while lowering LDL cholesterol and Lp-PLA2 levels [\[R\]](#).

Please note: *Experts recommend getting 600-800 IU of vitamin D per day. Medical bodies recommend against taking more than 4,000 IU per day* [\[R\]](#).

11



Avoid Meals 3-4 Hours Before Bedtime

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Finish your last meal of the day at least 3 to 4 hours before you go to sleep. For example, if you usually go to bed at 10 pm, aim to have dinner no later than 6 pm to 7 pm.

Description

Avoiding meals, especially heavy meals, close to bedtime can help prevent digestive discomfort, indigestion, and disrupted sleep patterns. Opting for lighter evening meals promotes better digestion and overall sleep quality.

How it helps

A study found that late meal timing was associated with worse sleep patterns, increased sleep latency, and greater apnea severity compared to early meal timing. Large meals, particularly in the evening, are linked to increased arousal and sleep fragmentation, which may exacerbate sleep apnea symptoms [\[R\]](#).

Eating or drinking less than one hour before bedtime is associated with longer sleep duration but also with increased odds of wakefulness after sleep onset (WASO). This suggests that while eating close to bedtime might extend total sleep time, it may lead to less efficient sleep, potentially impacting conditions like sleep apnea [\[R\]](#).

12

Aerobic Exercise (Cardio)

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Engage in at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity activity each week. Distribute this time over at least 3 days per week, avoiding consecutive days of vigorous exercise to allow for recovery.

TYPICAL STARTING DOSE

1 hour

Description

Engaging in regular aerobic exercise, such as running, swimming, or cycling, offers numerous health benefits, including improved cardiovascular fitness, weight management, and mood enhancement. It supports overall physical and mental well-being while reducing the risk of chronic diseases.

Cardio, short for cardiovascular exercise, is any type of physical activity that temporarily increases your heart rate. Examples include **running, cycling, swimming, and brisk walking**.

Regular cardio exercise has many benefits for your overall health. It can help lower your risk of heart disease and diabetes, support weight loss, and improve your mood and energy levels. To get the most out of cardio, try to do it for at **least 30 minutes, 3-5 times a week**.

Interval training is a type of cardio that combines periods of high-intensity training with brief rest periods.

How it helps

Regular aerobic exercise can improve sleep quality by strengthening your respiratory system and reducing obstructive sleep apnea symptoms. It aids in weight loss, which can help eliminate some of the excess tissues in the throat that might be causing sleep apnea.

Two meta-analyses (the largest one with 9 trials and 444 patients) concluded that exercise training **decreases the apnea/hypopnea index, Epworth sleepiness scale, and BMI, while increasing minimum oxygen saturation and VO2 peak** in patients with obstructive sleep apnea. The combination of **aerobic and strength training was most effective** [\[R\]](#), [\[R\]](#).

13



N-acetylcysteine (NAC)

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Take 600 mg of N-Acetylcysteine (NAC) supplement daily with water. It can be taken at any time of the day, but try to take it at the same time each day for best results.

TYPICAL STARTING DOSE
600 mg

Description

NAC is a supplement that contains a form of the amino acid cysteine, a protein building block that your body uses to make the antioxidant glutathione. It is used for its potential antioxidant properties and its ability to support lung, gut, and mental health.

[N-acetylcysteine](#) (NAC) is converted to cysteine in the body. Cysteine is a protein building block (amino acid) that helps make the antioxidant glutathione [\[R\]](#).

People take NAC to potentially support [\[R\]](#), [\[R\]](#):

- Mental health
- Ovarian health and pregnancy outcomes
- Lung health
- Gut health

How it helps

N-acetylcysteine (NAC) may improve sleep quality while decreasing the number of apnea episodes and optimum CPAP pressure in 3 studies of 168 adults [\[R\]](#), [\[R\]](#), [\[R\]](#).

14



Bed Head Elevation

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Elevate the head of your bed by 6 to 8 inches using blocks or wedges under the bedposts or a foam wedge under the mattress. Maintain this setup continuously every night during sleep to mitigate symptoms related to GERD or acid reflux.

Description

Elevating the head of the bed or using pillows to raise the upper body while sleeping can alleviate symptoms of acid reflux or gastroesophageal reflux disease (GERD). It helps prevent stomach acid from flowing back into the esophagus, promoting better sleep and reducing discomfort.

How it helps

A study found that a mild degree of bed head elevation (7.5°) decreased the apnea-hypopnea index (AHI) and increased minimum oxygen saturation, which are crucial measures of sleep apnea severity [R].

Another study evaluated the effectiveness of a 30° elevation of the head and trunk in improving upper airway obstructions in OSA people. It reported reduced upper airway collapses and improved apnea/hypopnea events and nightly respiratory outcomes [R].

15



Compression Stockings

IMPACT

1 / 5

EVIDENCE

2 / 5

How to implement

Wear compression stockings during the day, especially when you expect to be sitting or standing for long periods. They should be put on before getting out of bed in the morning and removed before going to bed at night. Ensure they are the correct size and compression level as advised by a healthcare professional.

Description

Compression stockings are often worn to improve blood circulation in the legs and reduce the risk of conditions like varicose veins and deep vein thrombosis. They can be beneficial for individuals who spend long periods sitting or standing and those with certain medical conditions that affect blood flow.

How it helps

A meta-analysis of 4 studies found that the apnea-hypopnea index of the overall study group was significantly lower after using compression stockings. They were especially helpful in patients with fluid overload [R].

Compression stockings may help by improving circulation and reducing fluid accumulation in the legs. This reduction in fluid buildup can decrease nocturnal rostral fluid shift, a phenomenon where fluid shifts towards the neck when lying down.

16



Yoga

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice yoga for at least 20 to 30 minutes a day, most days of the week. Choose a style that matches your fitness level and goals, and consider attending a class or using online resources to guide your practice.

TYPICAL STARTING DOSE

30 minutes

Description

Yoga is a mind-body practice that combines physical postures, breathing exercises, and meditation. It enhances flexibility, strength, and mental well-being and is used for stress reduction, relaxation, and overall health improvement.

[Yoga](#) combines breathing, stretching, and relaxation techniques. Practicing yoga may help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Reduce [stress](#)
- Improve fitness
- Lower blood pressure and heart rate
- Manage pain

How it helps

In a non-placebo-controlled trial of 37 obese patients with obstructive sleep apnea, a yoga intervention reduced apnea severity [\[R\]](#).

17



Mouth Taping

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Before going to bed, ensure your lips and the skin around your mouth are clean and dry. Take a small piece of hypoallergenic tape designed specifically for mouth taping, and gently place it over your lips to secure them together. This should be done nightly, as part of your bedtime routine.

Description

Mouth taping may help with sleep apnea by keeping your airway open. It may also help with snoring and dry mouth.

How it helps

Mouth taping promotes nasal breathing, reducing snoring and interruptions in sleep caused by sleep apnea. This can improve the quality of your sleep and reduce the symptoms of sleep apnea.

Nasal breathing reduces the propensity to sleep apnea compared to oral breathing according to a non-placebo-controlled trial of 12 healthy volunteers. In a non-placebo-controlled trial of 20 mouth breeders with mild OSA, mouth-taping during sleep for 1 week improved snoring and the severity of sleep apnea. Intermittent mouth puffing predicted lack of improvement of severe OSA after mouth-taping in a non-placebo-controlled trial of 71 participants. However, using a dental prosthesis to produce obligatory nasal breathing failed to reduce snoring or sleep apnea in a non-placebo-controlled trial of 14 healthy volunteers [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

18



Limit Copper Intake

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Do not include copper supplements in your daily vitamin or supplement routine. Check the labels of any multivitamins or dietary supplements you are currently taking to ensure they do not contain copper. Ideally, you should also check copper levels in your tap water. If they are excessive, consider using a reliable water filter or drinking spring water.

Description

Taking too many copper supplements can cause a copper overdose in your body. This can be harmful, leading to issues like stomach pain, nausea, and even heart problems. For healthy individuals, the amount of copper obtained through a balanced diet is usually enough without needing supplementation. It's vital to maintain the natural balance of minerals in the body for good health.

Contaminated tap water can also be a source of excess copper.

How it helps

One study noted that people with obstructive sleep apnea (OSA) exhibited higher plasma concentrations of copper, among other trace minerals. This suggests a potential relationship between copper levels and the severity of OSA, possibly due to oxidative damage and the body's inflammatory response, rather than copper supplementation causing sleep apnea [\[R\]](#).

Genetically higher copper levels may increase the risk of sleep apnea [\[R\]](#).

19



Progressive Muscle Relaxation

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Set aside at least 10-15 minutes daily in a quiet, comfortable spot where you won't be disturbed. Start by tensing the muscles in your feet for 5 seconds, then relax for 30 seconds, and progressively work your way up through the major muscle groups of your body, tensing then relaxing each for 5 and 30 seconds respectively.

TYPICAL STARTING DOSE

10 minutes

Description

Progressive Muscle Relaxation is a relaxation technique involving the systematic tensing and releasing of muscle groups to reduce muscle tension, stress, and anxiety. Regular practice can lead to improved physical and mental relaxation.

Progressive muscle relaxation is a relaxation technique focused on releasing muscle tension. In this technique, you focus on tensing and relaxing different parts of your body, one after the other, to relieve stress [R](#), [R](#)].

It is common to start with the toes and slowly work your way up to the neck and head. Try to focus on a single muscle group at a time (for example, the calf muscles). Tense these muscles for 5-10 seconds, then relax for 20-30 seconds before moving on to the next muscle group [R](#), [R](#)].

How it helps

Progressive muscle relaxation can help relieve physical tension contributing to sleep apnea by guiding you to gradually tense and then relax different muscle groups, promoting relaxation and better sleep. It also aids in controlling your breathing pace which helps reduce the episodes.

In a non-placebo-controlled trial of 152 patients with obstructive sleep apnea, practicing progressive muscle relaxation for 8 weeks improved CPAP adherence, daytime sleepiness, and sleep quality. Its combination with patients' education also improved anxiety and depression [R](#)].

20



Mediterranean Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate a variety of primarily plant-based foods, such as fruits, vegetables, whole grains, nuts, and legumes, into every meal. Choose healthy fats, like olive oil, over saturated fats and consume fish and poultry at least twice a week. Limit red meat to a few times a month and include a moderate amount of dairy products. Opt for water and red wine in moderation as your beverages.

Description

The [Mediterranean diet](#) is based on the traditional cuisine from the Mediterranean regions. It moderates the intake of red meat and dairy, while being rich in fruits and vegetables, whole grains, and healthy fats ([olive oil](#)).

The [Mediterranean diet](#) focuses on traditional cuisine from the Mediterranean regions. It’s rich in [\[R\]](#):

- [Olive oil](#)
- Fruits and vegetables
- Whole grains
- Nuts and seeds
- Fish

This type of diet may **reduce inflammation and protect the brain and heart** [\[R, R, R, R\]](#).

Limited intake of animal products, saturated fat, and refined sugar likely contribute to the health benefits of the Mediterranean diet [\[R\]](#).

How it helps

In a non-placebo-controlled trial of 187 patients with sleep apnea, adopting a Mediterranean weight-loss diet reduced apnea severity, improved cardiometabolic health, and lowered oxidative and inflammatory markers [\[R, R, R, R\]](#).

A study of 269 newly diagnosed patients associated adherence to a Mediterranean diet with reduced insomnia rates [\[R\]](#).

21



Maintain a Regular Meal Schedule

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Eat your meals at the same times each day, for instance, breakfast at 7 AM, lunch at 12 PM, and dinner at 6 PM. Stick to this schedule every day, including weekends, to help regulate your body's internal clock and improve digestion.

Description

Maintaining a regular meal schedule helps regulate blood sugar levels, supports digestion, and promotes a healthy metabolism. Consistency in meal timing can contribute to overall energy balance and long-term weight management.

Blood sugar ([glucose](#)) is the body’s main source of energy. It increases after a meal. Skipping meals may reduce this energy supply and lead to [\[R\]](#), [\[R\]](#):

- Poor cognitive performance
- Headaches

A regular meal schedule means eating the same number of meals at about the same times every day. Doing so may help [\[R\]](#), [\[R\]](#):

- Balance the internal clock
- Maintain a healthy body weight
- Support healthy cholesterol levels
- Prevent migraines

How it helps

irregular meal timing, especially late meals, may affect sleep patterns and increase the severity of sleep apnea. Adhering to a regular meal schedule may help align the body's circadian rhythms, improving sleep quality and potentially reducing sleep apnea symptoms [\[R\]](#).

22



Myofunctional Therapy with Myofascial Release

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Attend myofunctional therapy sessions with a qualified therapist once a week for at least 6 months. Additionally, practice myofascial release exercises at home as instructed by your therapist daily for 10-15 minutes to enhance the benefits.

TYPICAL STARTING DOSE

10 minutes

Description

Myofunctional therapy with myofascial release can help to improve sleep apnea by reducing the obstruction of the airway and improving the function of the muscles involved in breathing. This can lead to a better quality of sleep and a reduction in daytime fatigue.

How it helps

Myofunctional therapy strengthens the tongue and facial muscles, which can prevent night-time airway blockages, a problem in sleep apnea. Myofascial release relieves tissue tension, promoting better muscle function and improved breathing during sleep.

In a non-placebo-controlled trial of 28 patients with mild obstructive sleep apnea, oro-facial myofunctional therapy combined with myofascial release improved sleep quality [\[R\]](#).

23



Avoid Refined Sugar

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Eliminate foods and beverages high in refined sugars, such as sodas, candies, pastries, and white bread, from your diet. Replace them with natural sugars found in fruits and whole grains. Implement this change immediately and maintain it indefinitely for long-term health benefits.

Description

Reducing the consumption of refined sugar and high-sugar foods can help prevent dental problems, manage blood sugar levels, and support weight management.

How it helps

Consuming refined sugars can lead to weight gain, a major contributor to sleep apnea. Reducing intake can help manage or reduce body weight, potentially decreasing the severity of sleep apnea symptoms.

24



Avoid Large Meals

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Divide your daily food intake into smaller portions spread out over five to six times a day instead of having three large meals. Ensure that each portion is balanced and includes a variety of nutrients. This means having breakfast, a mid-morning snack, lunch, an afternoon snack, dinner, and possibly a light evening snack, depending on your caloric needs.

Description

Eating smaller, more frequent meals may help prevent overeating. This involves eating the same number of meals at about the same times every day. Doing so may help with issues like blood pressure, body weight, cholesterol levels, and migraines.

Eating smaller, more frequent meals may help prevent overeating. One way to do this is to keep a regular meal schedule. This involves eating the same number of meals at about the same times every day. Doing so may help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Manage blood pressure
- Balance the internal clock
- Maintain a healthy body weight
- Support healthy cholesterol levels
- Prevent migraines

How it helps

Eating large meals, especially close to bedtime, can increase the risk of acid reflux, which can worsen sleep apnea symptoms. Smaller meals help prevent this and can improve sleep quality.

25



Limit Salt Intake

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Reduce your daily salt intake to less than 2,300 milligrams (mg), equivalent to about one teaspoon of table salt. This includes all salt consumed, whether added during cooking, at the table, or present in processed and ready-to-eat foods.

Description

Limiting salt intake involves lowering the amount of sodium in the diet, which can help lower blood pressure and reduce the risk of heart disease. It often involves avoiding processed and other high-sodium foods such as cured meats, soups and sauces, and various pickled foods.

Your body needs a certain amount of sodium to function. For example, it helps support your blood pressure. This sodium usually comes from [salt](#). However, eating too much salt is linked to an increased risk of stroke and heart disease [\[R, R\]](#).

Foods higher in salt include [\[R, R, R\]](#):

- Prepared soups, broths, gravies, and sauces
- Fermented or pickled foods (such as pickles, soy sauce, olives, and [capers](#))
- Cured meats and sausages (such as bacon, salt pork, and salami)
- Cheese (such as Roquefort and Parmesan)

Try to limit your daily intake to 1 teaspoon of salt (2,400 mg of sodium) [\[R\]](#).

How it helps

High salt intake can lead to fluid retention, which can increase the risk of airway obstruction during sleep. Lowering salt consumption can decrease fluid retention, potentially reducing the severity of sleep apnea episodes.

26



Melatonin

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 500 mcg of melatonin orally, about 30 minutes before bedtime, to help with sleep. It can be taken daily as needed.

TYPICAL STARTING DOSE

500 mcg

Description

Melatonin is a natural hormone produced by the pineal gland in the brain that helps regulate the sleep-wake cycle. It plays a crucial role in promoting sleep onset and maintaining a consistent sleep pattern, making it a commonly used supplement for managing sleep disorders and jet lag.

[Melatonin](#) is an important sleep hormone. Bright light at night may prevent your body from making enough melatonin [\[R, R, R\]](#).

Your body makes melatonin on its own. However, some people take melatonin supplements to help them sleep. It may help with jet lag in particular [\[R, R, R\]](#).

How it helps

Melatonin is a hormone that regulates sleep-wake cycles. It can help with sleep apnea by potentially improving sleep quality and reducing the time it takes to fall asleep. Since sleep apnea disrupts normal sleep patterns, melatonin might help in managing the body's internal clock, contributing to more regular breathing patterns during sleep.

27



Limit Meat Intake

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Substitute red and processed meats with plant-based proteins, such as beans, lentils, and tofu, for at least two meals per week. Gradually increase the number of meat-free meals by incorporating more fruits, vegetables, and whole grains into your diet daily.

Description

Limiting meat intake involves consuming fewer animal-based products, often as part of a plant-based diet. This dietary choice can provide health benefits such as lower cholesterol levels, reduced risk of certain chronic diseases, and a decreased environmental footprint.

Proteins, fats, and carbs are macronutrients. You need these nutrients in large (‘macro’) amounts. They provide your body with the energy it needs to function properly [\[R\]](#).

You should choose high-quality foods that give you the “best” version of each macronutrient. For example, too much saturated fat and protein from certain animal sources may increase the risk of heart disease and infertility [\[R, R, R\]](#).

Consider replacing red meat with other high-protein foods, such as [\[R, R\]](#):

- Eggs
- Fish
- Soy
- Beans

How it helps

Reducing meat intake, especially red and processed meats, can decrease the risk of obesity and associated health issues like sleep apnea. A lower meat consumption is often associated with a higher intake of plant-based foods, which can promote a healthy weight and reduce the pressure on the respiratory system during sleep.

28



Dietary Omega-3 Fatty Acids

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate foods high in omega-3 fatty acids into your diet daily. This includes eating fish such as salmon, mackerel, and sardines at least twice a week. Alternatively, include a tablespoon of flaxseed oil or chia seeds in your daily diet.

Description

[Omega-3 fatty acids](#) are some of the healthiest fats we can eat. They help lower inflammation and protect the heart, brain, and eyes. Our bodies produce less omega-3s than we need for optimal health, so it's important to get enough through food or supplements [\[R\]](#), [\[R\]](#), [\[R\]](#).

There are three major types of omega-3s: ALA, EPA, and DHA. **EPA and DHA are vital for mental and heart health** [\[R\]](#), [\[R\]](#), [\[R\]](#).

Fatty fish are rich in EPA and DHA. They include [\[R\]](#):

- Salmon
- Tuna
- Herring
- Sardines

For optimal health, try to get at least **two servings of fatty fish per week**. Fish oil supplements are available for those who don't eat fish regularly [\[R\]](#).

How it helps

Omega-3 fatty acids can help reduce inflammation in the body, including the airways. Reducing inflammation may help decrease the occurrence of sleep apnea episodes by promoting clearer airways during sleep.

Remember, your genes only tell one important part of your health story!

Now that you've seen your DNA-based results for this health topic, let's take a look at other contributing factors.

Your lab results are impacted by the combined effect of your genes, environment and lifestyle.

Lab tests will give you the best picture of your current health status, while your genes provide insight into your health predispositions and which recommendations are best for you.

