

Tics

DNA Health Report

REPORT CATEGORIES —



NERVE HEALTH



MENTAL HEALTH

Sample Client

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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

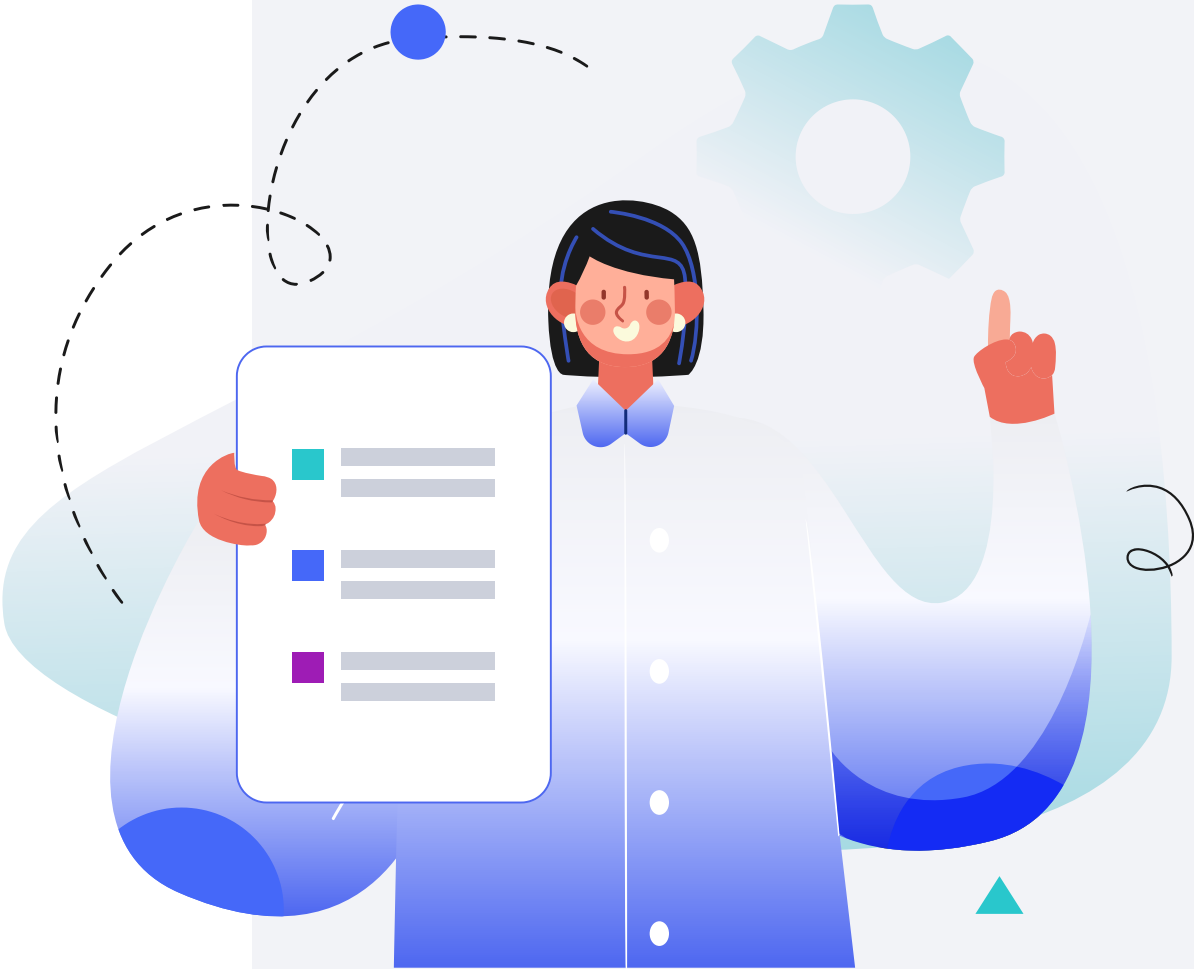
Male

HEIGHT

5ft 5" 165cm

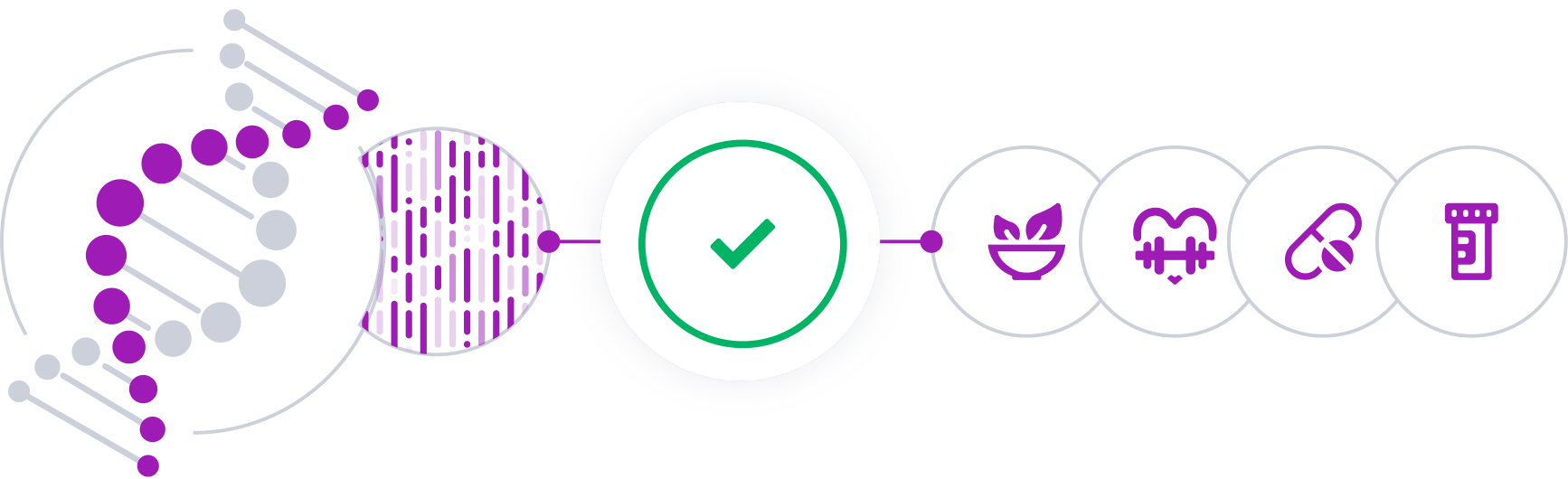
WEIGHT

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.

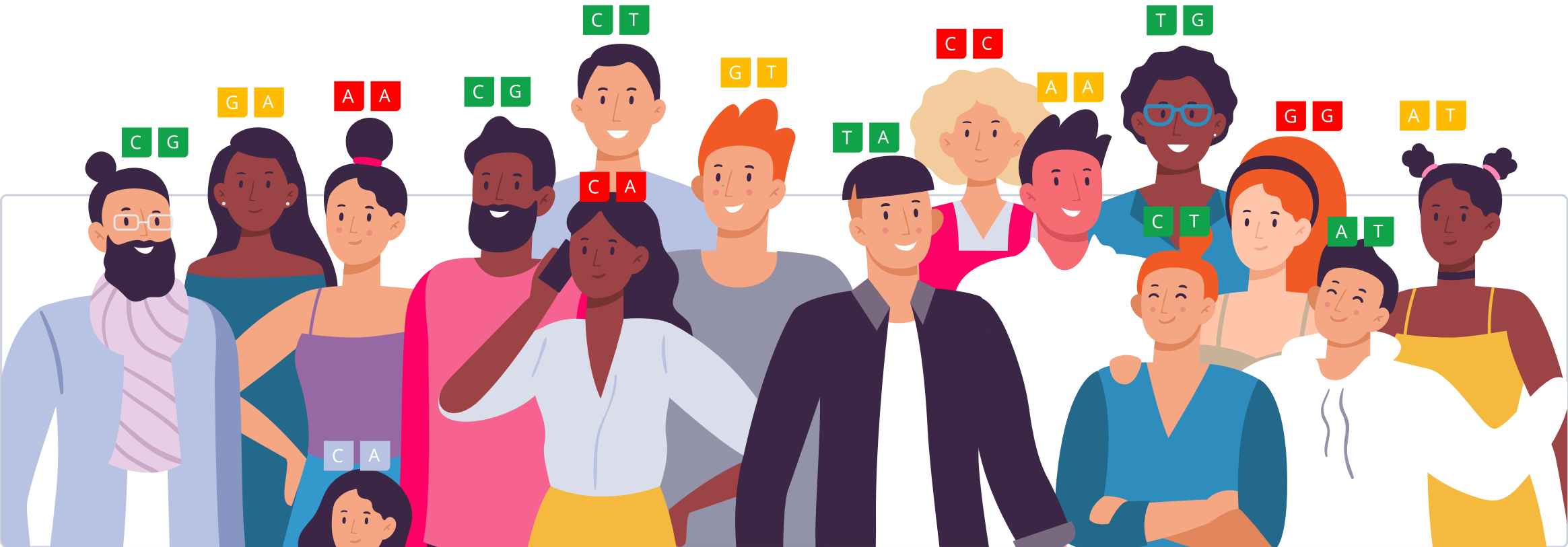


Similarly, our Trait Reports look at how your DNA influences your traits.



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

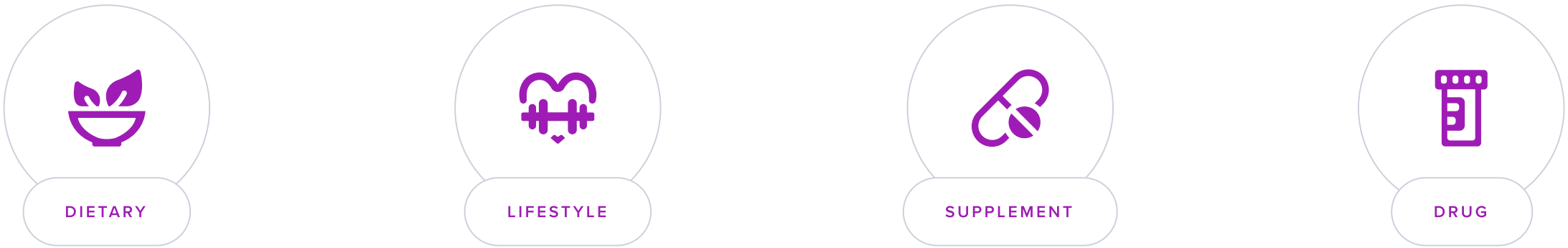
You have 2 risk alleles

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

Tics are sudden, brief, repetitive movements (motor tics) or vocalizations (vocal tics). They are involuntary and uncontrollable, and can be significantly disruptive to daily life. Motor tics include movements like eye blinking, grimacing, shoulder shrugging, or head jerking. Vocal tics include sounds like throat clearing, sniffing, grunting, or using inappropriate or obscene words (*coprolalia*).

Tic disorders are health conditions characterized by the presence of tics. The main types are:

- Transient tic disorder: This involves tics lasting for less than a year.
- Chronic tic disorder: Involves tics persisting for more than a year.
- Tourette Syndrome: The most severe type, characterized by both motor and vocal tics that have been present for at least a year.

Risk Factors and Management

Risk factors for tic disorders include [\[R\]](#):

- **Genetics:** A family history of tic disorders or Tourette syndrome increases the risk.
- **Sex:** Males are more commonly affected than females.
- **Age:** Symptoms typically appear in childhood, often around the age of 5-7.
- **Other disorders:** Associated conditions include ADHD and OCD.

There is a strong genetic component in many tic disorders, particularly Tourette syndrome. The exact genes involved are not yet fully understood, but family studies suggest a hereditary pattern.

There is no known way to prevent tic disorders. However, early intervention can help manage symptoms and reduce the impact on the individual's quality of life. Awareness and understanding of the condition are also crucial to reduce stigma and support those affected.

Similarly, there is no cure for tic disorders. Treatment is aimed at controlling tics that interfere with everyday activities and functioning, and includes [\[R\]](#):

- **Behavioral therapy:** Habit reversal training and other behavioral techniques.
- **Medications:** Neuroleptics, alpha-adrenergic agonists, or other medications may be used to manage severe tics.
- **Education and support:** Educating the family and patient about the condition and counseling can be beneficial.
- **Deep brain stimulation:** This technique involves implanting a battery-operated medical device in the brain to deliver electrical stimulation to targeted areas that control movement. It might help in case of severe tics that don't respond to other treatments.



TYPICAL LIKELIHOOD

Typical likelihood of tic disorders based on 463 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
OTUD1	rs191044310	TT
CSMD3	rs117648881	GG
FAM76B	rs11021169	GG
/	rs9393366	AA
POLR3B	rs6539267	TT
XYLT1	rs74772983	AA
CLN5	rs11149058	TT
TSPYL5	rs117780640	CC
AGA	rs4047771	AA
TSHR	rs66489957	TT
CYLC2	rs10990268	TC
LMO3	rs10846381	TT
TMEM200B	rs6670211	CC
CCDC66	rs6445765	CC
SGPP2	rs1865896	GG
CD276	rs4886520	CC
ANKRD18A	rs10973956	AC
RUNX1T1	rs72673503	GA
TRPC4	rs6563569	CT
FANCL	rs35881094	GT
MPHOSPH9	rs1619561	CG
ZFYVE28	rs73205493	TC
/	rs1906252	CA
FANCL	rs2708146	AG

GENE	SNP	GENOTYPE
PHEX	rs5951698	A
RBMS1	rs13407215	CC
NMRK1	rs72734943	GG
TENM2	rs147208935	CC
NARS2	rs17137210	TT
MUC16	rs150975336	CC
LSAMP	rs149183310	AA
SAXO2	rs66904072	AA
ATP9A	rs55797066	TT
COL27A1	rs7868992	AA
ARPP21	rs73070160	CC
TMEM106B	rs769111	GG
ADGRA3	rs61792199	AA
PICALM	rs621942	CC
NECTIN1	rs4271390	CC
TXNL1	rs12959570	AA
CYLC2	rs7848024	GG
FPR3	rs12459560	GG
CHMP2B	rs4988462	CC
CAMTA1	rs7524258	CC
/	rs859980	TT
FLT3	rs2504235	GG

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	Cognitive-Behavioral Therapy (CBT)	2	Repetitive Transcranial Magnetic Stimulation
3	Taurine500 mg	4	Occupational Therapy45 minutes
5	D-Serine	6	Speech Therapy45 minutes
7	N-acetylcysteine (NAC)1200 mg	8	Yoga30 minutes
9	Stress Management Therapy1 hour		

1



Cognitive-Behavioral Therapy (CBT)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Schedule weekly sessions with a certified cognitive-behavioral therapist for a period of 5 to 20 weeks. Engage actively in exercises assigned by your therapist both during sessions and as homework to apply CBT strategies to daily life.

Description

Cognitive-behavioral therapy (CBT) is a psychotherapeutic approach that has been effective in treating various mental health conditions by helping individuals identify and change negative thought patterns and behaviors. It is widely used for conditions like depression, anxiety, and phobias.

Psychotherapy (talk therapy) involves talking about your health with a licensed therapist. It may improve the way you react to certain experiences [\[R\]](#).

Talk therapy is a great way to improve many conditions, including [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Depression
- Anxiety disorders
- PTSD
- OCD
- Substance use disorder
- Bipolar disorder

Cognitive-behavioral therapy (CBT) is a type of talk therapy. CBT aims to change the way you think about your life and yourself. Through CBT, a therapist can help you develop healthy coping mechanisms [\[R\]](#).

How it helps

Cognitive-Behavioral Therapy (CBT) aids in managing tics by equipping individuals with coping strategies to reduce the frequency and intensity of tics. It targets maladaptive thought patterns, fostering behavioral changes essential for improved symptom control.

2



Repetitive Transcranial Magnetic Stimulation

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Attend sessions at a certified medical facility, where a healthcare professional will use a coil placed near your head to generate brief magnetic pulses. Typically, sessions occur 5 days a week for 4-6 weeks.

Description

Repetitive transcranial magnetic stimulation (rTMS) is a noninvasive procedure that stimulates the brain to improve symptoms of [R](#), [R](#):

- Depression
- Muscle disease
- Parkinson's disease

rTMS delivers several magnetic pulses through an electromagnetic coil placed on the scalp. The pulses stimulate the region of the brain involved in mood and depression [R](#), [R](#).

This technique is used in people who don’t respond to standard care. rTMS is generally painless and safe when performed by trained professionals [R](#), [R](#).

How it helps

Repetitive Transcranial Magnetic Stimulation (rTMS) may help reduce the frequency and severity of tics by modulating the neural circuits involved in motor and vocal control. This non-invasive approach targets specific brain regions, potentially leading to improved regulation of tic symptoms in individuals with Tourette Syndrome.

3



Taurine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1-4 g of taurine supplement daily, divided into two or three doses with meals for optimal absorption. It can be taken continuously, with periodic evaluations of its effects and benefits.

TYPICAL STARTING DOSE

500 mg

Description

Taurine is an amino acid found in various foods and often used in energy drinks and supplements. It plays a role in neurological and cardiovascular health and can help support energy metabolism.

[Taurine](#) is the most abundant free amino acid in humans. It's not essential, which means we can produce it. We can also get it from protein-rich foods, such as [\[R\]](#):

- Seafood
- Meat
- Dairy

Taurine is a popular additive in energy drinks and can also be taken as a supplement [\[R\]](#).

Taurine plays an important role in [\[R\]](#), [\[R\]](#):

- Bile production
- Calcium metabolism

It is also well-known for its antioxidant and anti-inflammatory properties [\[R\]](#).

How it helps

In a study on 404 youngsters with tic disorders, taurine or placebo was given for 12 weeks. At week 4, no significant differences were found. At week 12, taurine group showed significantly higher improvement in tics (53.4% vs. 34.5%) with no difference in adverse reactions [\[R\]](#).

4



Occupational Therapy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Participate in occupational therapy sessions 1-2 times per week for a duration of 45-60 minutes each session. These sessions should be guided by a licensed occupational therapist who will tailor activities to your specific needs. Continue therapy for as long as recommended by your healthcare provider to achieve the best outcomes.

TYPICAL STARTING DOSE

45 minutes

Description

Occupational therapy is a healthcare profession focused on helping individuals of all ages develop or regain skills for everyday activities, improve physical and mental well-being, and enhance overall quality of life.

Occupational therapy helps people do everyday activities. A therapist teaches them new ways and methods to perform the activities. This therapy helps people adapt to issues like chronic pain. It also helps them learn to use assistive devices [\[R\]](#), [\[R\]](#).

Occupational therapy aims to help people with injury or illness. It may help with things like [\[R\]](#):

- Eating without help from others
- Taking part in leisure activities
- Doing office or school work
- Bathing and getting dressed
- Doing laundry or house cleaning

How it helps

Occupational therapy aids individuals with tics by enhancing their ability to manage everyday tasks and develop coping strategies, which can significantly improve their functional independence and overall quality of life.

5



D-Serine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take d-serine as a dietary supplement in doses ranging from 30 to 120 milligrams per kilogram of body weight per day. It is typically consumed in capsule or powder form mixed with water or another beverage. Start with the lower end of the dosage range and adjust based on tolerance and effectiveness, not exceeding the recommended maximum unless directed by a healthcare provider.

Description

D-serine is an amino acid that plays a role in brain function and may be used in supplemental form to support cognitive health.

Serine is a non-essential amino acid that we generally get from our diet through protein sources. It is key to the production of proteins, enzymes and muscle tissue. Serine is needed for the proper metabolism of fats and fatty acids. It also helps in the production of antibodies [\[R\]](#).

Serine is used as a natural moisturizing agent in some cosmetics and skin care products, as well as for certain psychiatric and neurological disorders [\[R\]](#), [\[R\]](#).

How it helps

In a study with 24 patients (21 males, ages 9-18), riluzole, D-serine, and placebo were tested for tic reduction. All groups showed improvement, but no significant differences were found, suggesting these drugs are ineffective for tic suppression [\[R\]](#).

Please note: *High doses of D-serine (120 mg/kg/day or about 8 g/day) may damage the kidneys. Make sure to consult your doctor before taking D-serine, especially if you have kidney disease [\[R\]](#).*

6



Speech Therapy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Attend speech therapy sessions with a certified speech-language pathologist for 45 to 60 minutes per session, 1-2 times per week, for a period that can range from a few months to over a year, depending on the specific needs and progress.

TYPICAL STARTING DOSE

45 minutes

Description

Speech therapy is a specialized form of therapy that focuses on improving communication skills, speech fluency, and language development in individuals with speech and language disorders, offering support for improved communication and quality of life.

Speech therapy is used to assess and treat speech and communication problems. It helps people develop the skills needed for more effective communication. It is used to treat everything from childhood speech disorders to speech impairments caused by stroke or brain injury.

Speech and language therapy (SLT) aims to improve [\[R\]](#), [\[R\]](#):

- Communication
- Eating
- Drinking
- Swallowing

These programs support children and adults who [\[R\]](#):

- Recover from a stroke or brain injury
- Have speech disorders (e.g., stuttering)
- Have swallowing or joint disorders

How it helps

Speech therapy aids individuals with tics by enhancing their communication skills, which may reduce the frustration associated with language expression and improve overall confidence. This supportive environment can help patients manage their tics more effectively during social interactions.

7



N-acetylcysteine (NAC)

IMPACT

0 / 5

EVIDENCE

0 / 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

1200 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) helps reduce tics due to its ability to modulate glutamate levels in the brain, which can influence behaviors and impulses.

8



Yoga

IMPACT

0 / 5

EVIDENCE

0 / 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

Yoga can help reduce tics by promoting relaxation and reducing anxiety and stress, which are known triggers for tics.

9



Stress Management Therapy

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Engage in stress management therapy sessions, such as cognitive-behavioral therapy (CBT), for at least 1 hour per week over a course of 8 to 12 weeks. Techniques can include mindfulness, deep breathing exercises, and identifying stressors to develop coping strategies.

TYPICAL STARTING DOSE

1 hour

Description

Stress management therapy refers to various techniques and approaches aimed at reducing and coping with stress. It can improve mental and physical well-being by helping individuals better manage the effects of stress on their health.

How it helps

Stress can worsen tics, so managing stress through therapy can reduce their frequency and severity.