

Pain

Summary Report

REPORT CATEGORY —



PAIN & FATIGUE

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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.

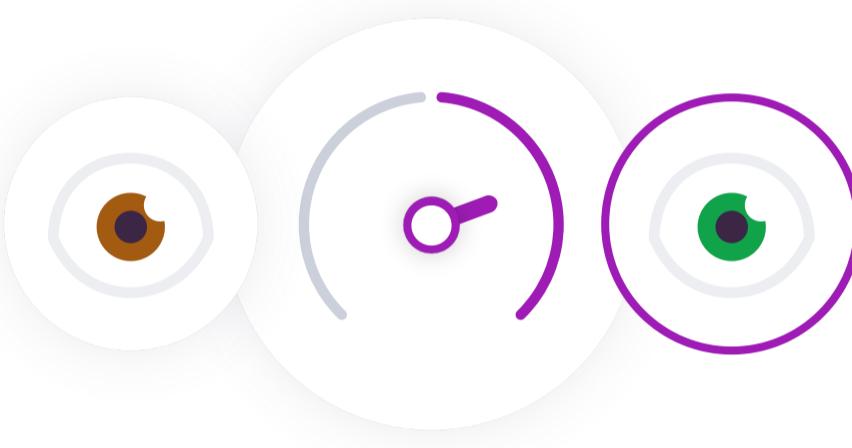


How this works

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



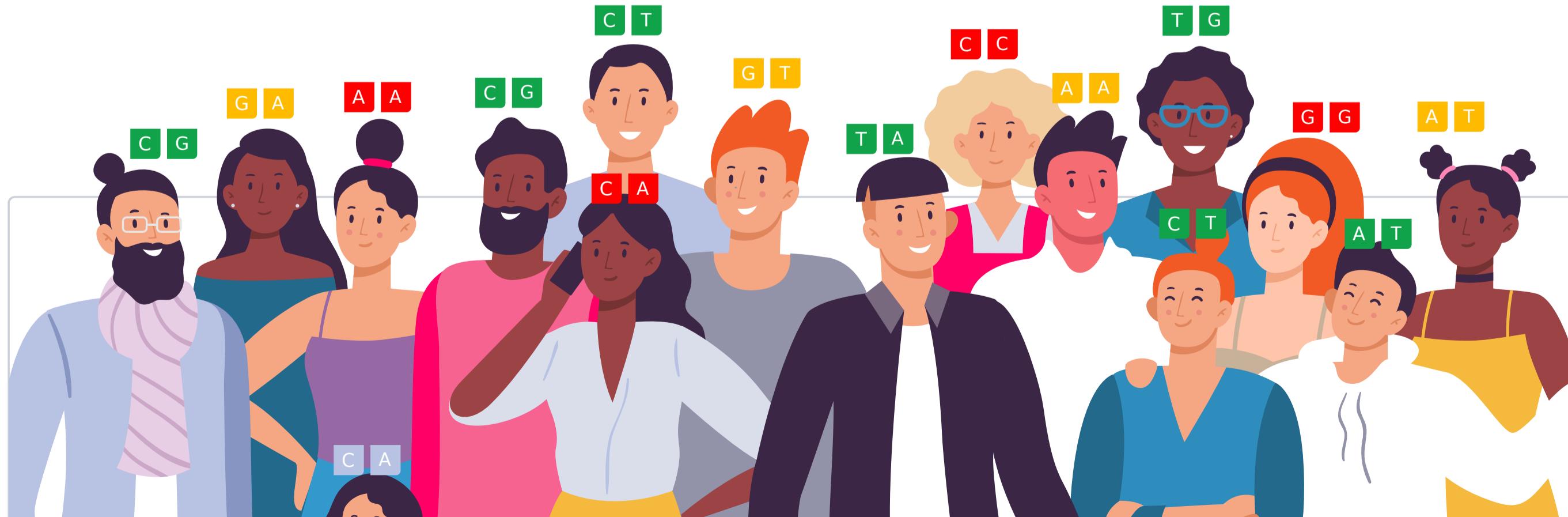
Similarly, our Trait Reports look at how your DNA influences your traits.



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

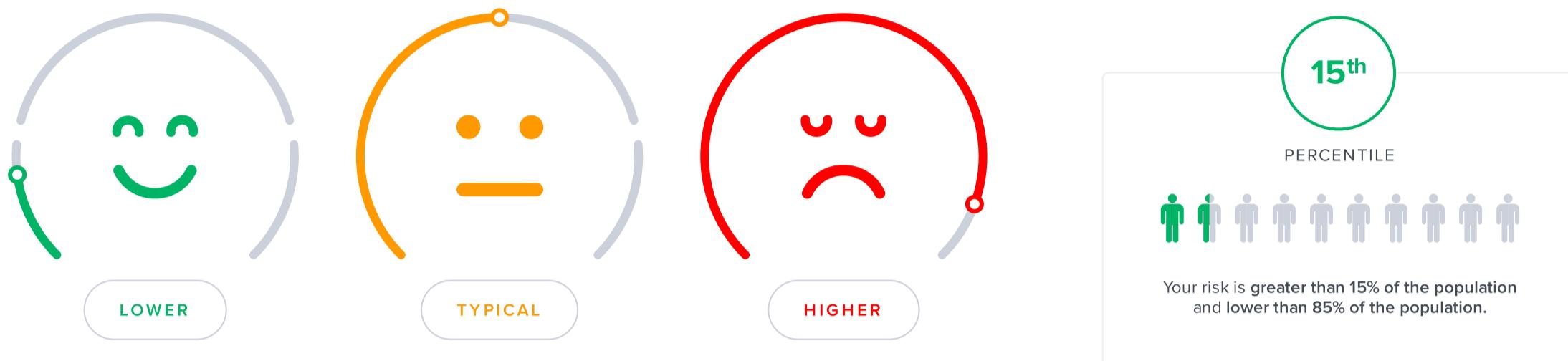
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.

Our Summary Reports combine different Wellness and Trait Reports related to a certain health topic. They give you a more complete picture about different aspects of your health and wellness.



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

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



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: diet, lifestyle, 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 strength of evidence.

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



In Summary Reports, we combine top evidence-based recommendations for different conditions.

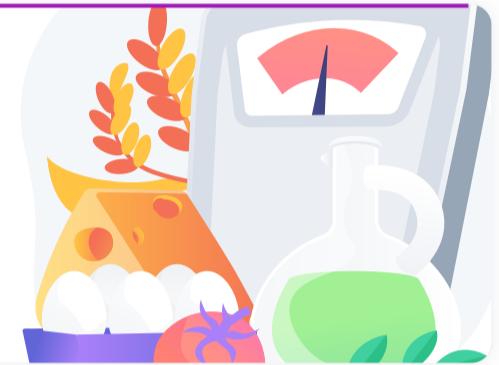
We focus on recommendations that help with more conditions included in a Summary Report.

For each recommendation, we list all conditions it may help with. We also include impact, evidence, regimen, personalized parts, and other details specific to each condition.



Recommendation

Helps with the following



Condition

IMPACT

██████ 4 / 5

EVIDENCE

██████ 4 / 5



Condition

IMPACT

██████ 4 / 5

EVIDENCE

██████ 4 / 5



Condition

IMPACT

██████ 4 / 5

EVIDENCE

██████ 4 / 5



Condition

IMPACT

██████ 4 / 5

EVIDENCE

██████ 4 / 5

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:

- The scores/gauges use the latest scientific studies. But they are not perfect and will change as the models improve.
- Not everyone with risk variants will develop a health condition.
- Genetics is not the whole story. Your health is most often a combination of genetics, lifestyle, and environmental factors. Great news, as this means that you can often change your lifestyle to lower your risk.
- Results might be more accurate for some ethnic groups than others. This depends on the studies used in each report.
- People without risk variants can also develop health conditions.
- It's important to work with your doctor to better understand your risks. Our reports do not diagnose or treat any health condition. They are not a substitute for medical advice. If you're diagnosed with a certain health condition, follow your doctor's advice.

Summary

We all experience pain from time to time, from stubbing a toe to hurting our knee or having a migraine attack. What makes us all different is the amount of pain we experience and how we handle it. **There are lots of reasons for that, one of which is your DNA!**

Your genetic predispositions may make you prone to chronic pain, different painful conditions, or simply affect your pain thresholds. However, these risks can also be made better or worse through diet and lifestyle.

This comprehensive report will help you examine your pain genetics and make wiser health decisions regarding:

- Chronic pain
- Headaches
- Musculoskeletal pain

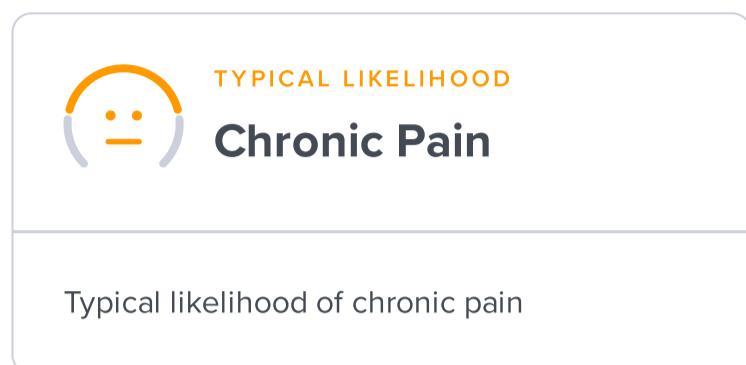
This summary report contains:

9 Genetic Results

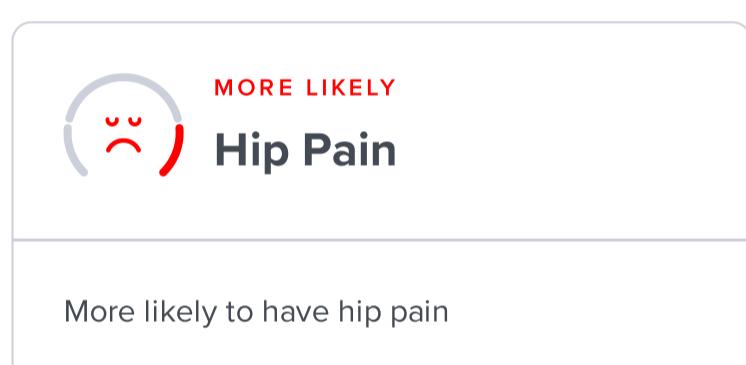
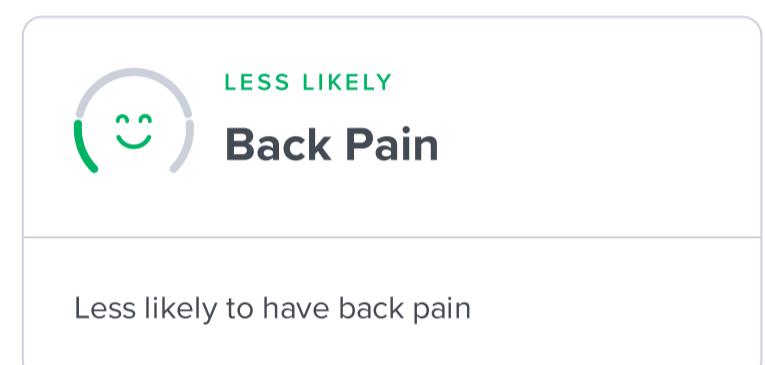
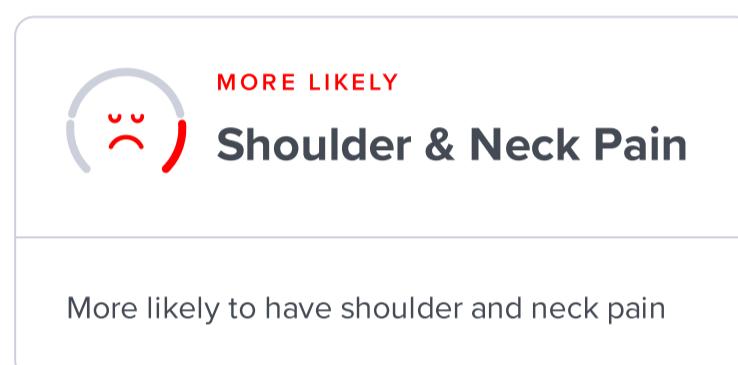
50 Recommendations

Overview of Your Results

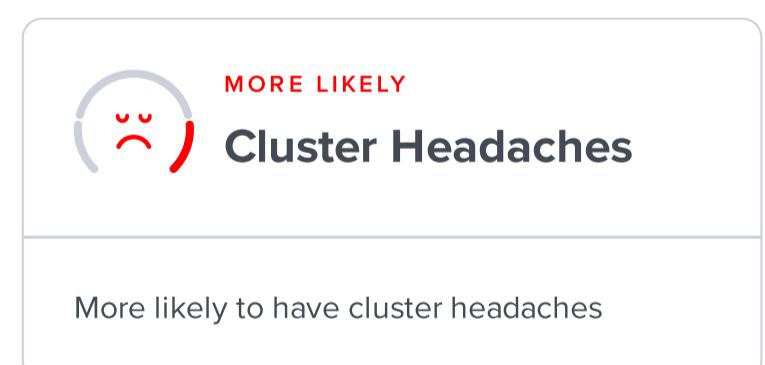
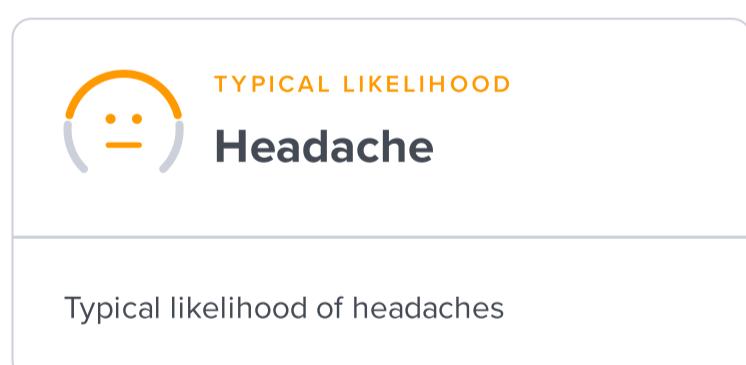
🏃 Chronic Pain



⚡ Musculoskeletal Pain



头痛 Headaches



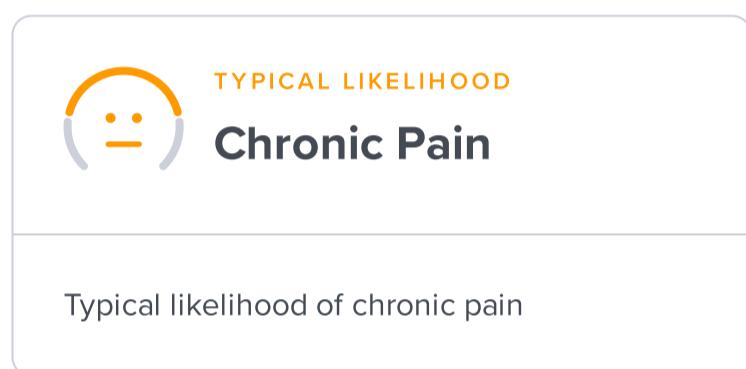
Your Results in Details



• Chronic Pain

About 1 in 5 adults in the US deal with some kind of chronic pain. It is linked to numerous issues like opioid dependence and mental health disorders. Chronic pain is a major reason for lost productivity at work and reduced quality of life.

We tend to think of chronic pain as something to worry about when we are older. While generally true, younger people can experience it from a variety of causes too. **Your genetic predispositions can have a big impact on this.** Understanding these factors can help you mitigate the risks and make smarter health decisions!



Chronic Pain

Key Takeaways:

- 1 in 5 Americans report experiencing some form of chronic pain.
- Risk factors include: being female, age, poverty, previous injury, mental health problems, and your genetics.
- Chronic pain can seriously impact quality of life, causing headaches, back and/or widespread pain.
- Variants can affect brain chemistry, nerve activity, stress, and adrenaline.

Pain is discomfort with a purpose. It tells us, loud and clear, that something is wrong [R].

There are two major types of pain [R]:

- **Acute pain** happens right after damage to the body. It can last a few seconds or up to six months, while the body heals
- **Chronic pain** can happen even when there's no damage. It can last 6 months or more and doesn't always have an obvious cause

In the United States, 1 in 5 people report having some form of chronic pain. Types of chronic pain include [R, R]:

- Lower-back pain
- Headaches
- Widespread pain
- Nerve pain

It's important to identify and manage chronic pain. **Pain can have major, lasting effects on quality of life**. It can even impact mental health [R].

Unfortunately, chronic pain is difficult to diagnose. This is because people feel and describe pain differently. For example, older people might say they're sore or uncomfortable, whereas others might say something hurts [R].

It can also be difficult to find the underlying cause, if any. A doctor may have to rule out dozens of potential causes [R].

Chronic pain is also difficult to treat. People often turn to painkillers to help manage their discomfort [R].

The most common types of pain medications are [R, R, R]:

- **NSAIDs** (like ibuprofen or naproxen). These reduce pain and inflammation.
- **Opioids** (like oxycodone, morphine, or fentanyl). These mimic the body's natural opioids. They create pleasant feelings and block pain.

Painkillers may work better for some people than others. Long-term use of opioids also comes with the risk of addiction and abuse. Thus, many people turn to alternative practices to manage pain. Acupuncture, massage, and yoga are all popular strategies [R, R, R, R, R].

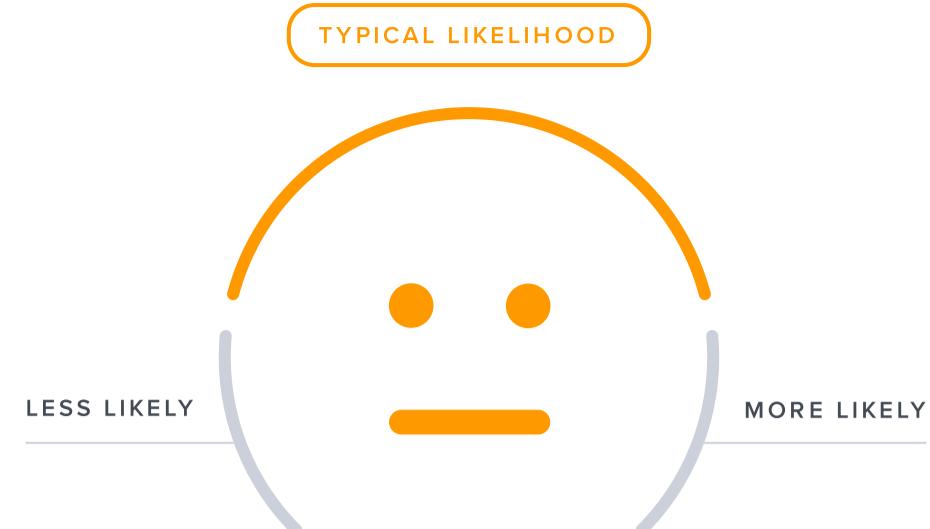
Risk factors for chronic pain include [R, R]:

- Female gender
- Older age
- Poverty
- Previous injury
- Mental health problems
- **Genetics**

Genetics plays an important role in the development of chronic pain.

Genes that contribute to pain tend to influence [R, R, R, R, R, R, R, R]:

- Brain chemistry (DRD2, HTR2A)
- Stress and adrenaline (ADRA1A, ADRB2, FKBP5)



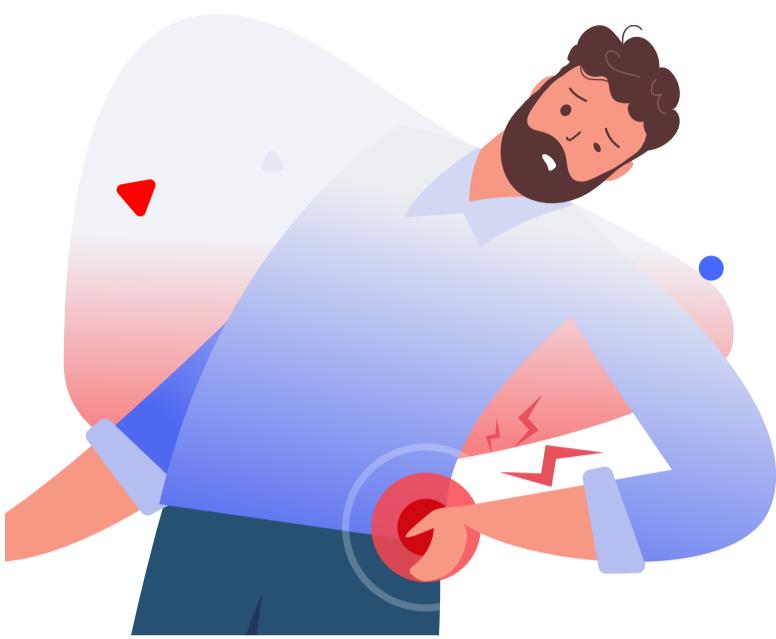
Typical likelihood of chronic pain based on 611,315 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
MICB	rs1800629	GA
SERPINA6	rs941601	CT
ANKK1	rs1800497	GA
HTR2A	rs6313	GA
COMT	rs4680	AG
MLN	rs11751591	GG
ANAPC4	rs34811474	GG
SDCCAG8	rs12071912	TT
PTP4A3	rs11786084	AA
MAML3	rs13136239	GG
SLC24A3	rs2424248	GA
SOX6	rs61883178	CA
CA10	rs11079993	TG
FAM120AOS	rs10992729	CT
UTRN	rs6926377	CA
PCCB	rs6770476	TC
FOXP2	rs12537376	AG
TRIM32	rs6478241	GA
DMRTA2	rs10888692	CG

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



Musculoskeletal Pain

Neck and wrist pain from hunching over and typing on that keyboard for too long? A demanding job is causing knee pain or recurrent back aches? **Our joints, tendons, and muscles are exposed to constant wear and tear, which can lead to various painful conditions over time.**

Your genetic predisposition may affect everything from the risk of a painful condition to how you react to and manage the pain. Use this knowledge to make smarter decisions and avoid pain more efficiently.

TYPICAL LIKELIHOOD
Joint Pain

Typical likelihood of osteoarthritis

MORE LIKELY
Shoulder & Neck Pain

More likely to have shoulder and neck pain

LESS LIKELY
Back Pain

Less likely to have back pain

MORE LIKELY
Hip Pain

More likely to have hip pain

MORE LIKELY
Knee Pain

More likely to have knee pain

Joint Pain

Key Takeaways:

- Osteoarthritis will affect the majority of people over the age of 55.
- About 50% of the differences in people's chances of getting osteoarthritis can be due to genetics.
- Risk factors include: being female, joint injury or overuse, obesity, bone deformities, diabetes, and your genetics.

Osteoarthritis tends to affect knees, hands, and hips. People with this condition may experience [R, R]:

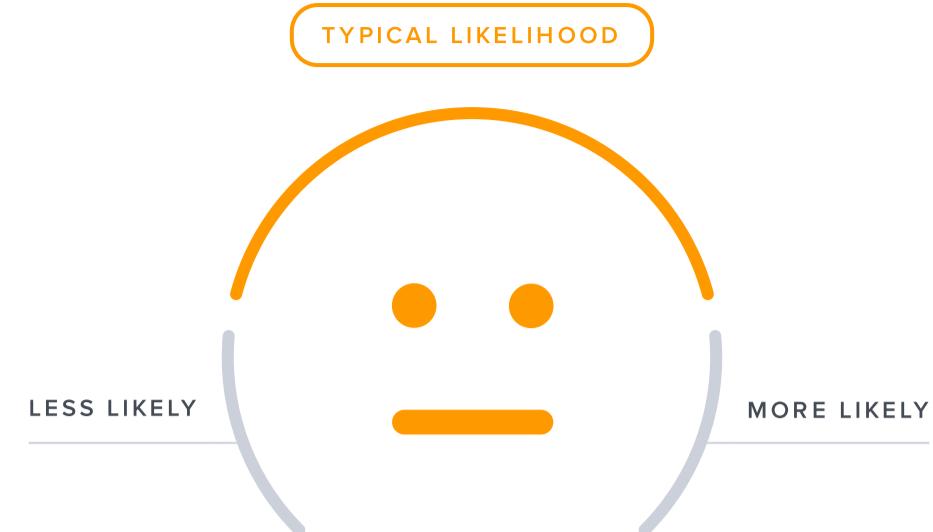
- Joint pain and stiffness
- Difficulty moving
- Weakness and balance problems

Most people with osteoarthritis are over the age of 55. In fact, older age is the number one risk factor for this condition. Other risk factors include [R, R]:

- Being a woman
- Joint injury or overuse
- Obesity
- Bone deformities
- Diabetes
- Genetics

About 50% of the differences in people's chances of getting osteoarthritis can be attributed to genetics. Genes that contribute to osteoarthritis may influence [R, R, R]:

- Collagen production in the joints ([COL2A1](#), [COL11A1](#), and [COL1A1](#))
- Inflammation ([IL1B](#), [IL4R](#), [IL17A](#), [IL17F](#) and [IL6](#))
- Activity of joint cells ([ESR1](#))
- Bone formation ([FRZB](#), [VDR](#))
- Bone strength ([IGF1](#), [TGFB1](#), [TIMP3](#), and [ADAM12](#))



Typical likelihood of osteoarthritis based on 385,825 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
COL11A1	rs2622873	TT
ICA1L	rs62182810	AA
FAM53A	rs798726	CC
ANAPC4	rs34811474	GG
ERI1	rs330050	GG
CPNE1	rs2248393	CC
RAB28	rs1913707	AA
DPEP1	rs1126464	GG
TGFB2	rs2820436	CC
SOCS2	rs2171126	TT
CDC5L	rs12154055	GG
GLIS3	rs10974438	AA
SGO1	rs62242105	GG
SRR	rs216175	AC
LYZ	rs317630	CT
HLA-DPB1	rs2856821	CT
SLC44A2	rs1560707	TG
TSKU	rs1149620	AT
SLC44A2	rs10405617	AG

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

Shoulder & Neck Pain

Key Takeaways:

- Up to 68% of differences in people's chances of having shoulder and neck pain may be due to genetics.
- Risk factors include: poor posture, prolonged sitting, poor sleep position, Injury and overuse, stress, and age.
- About 1 in 5 adults have neck and/or shoulder pain.

Your shoulders and neck are made up of many muscles, tendons, bones, and nerves in a complicated web. **An injury to any part of this system can lead to pain [R, R].**

About 1 in 5 adults struggle with shoulder or neck pain [R, R].

Most of the time, shoulder or neck pain is nothing to worry about. But sometimes it can be a symptom of a bigger problem. It can sometimes progress and even become disabling [R, R].

Many people find their lives changed by shoulder and neck pain. There is also a significant economic cost, as people may not be able to work [R].

Risk factors for shoulder and neck pain include [R, R, R, R]:

- Poor posture
- Prolonged sitting
- Poor sleep position
- Injury and overuse
- Stress
- Older age

The most common neck injury is called *whiplash*. It can cause pain, loss of mobility, and stiffness. Whiplash occurs when the neck suddenly bends back and forth. Car crashes, contact sports, or assault can all lead to whiplash [R, R].

Diagnosis and treatment of shoulder and neck pain depend on the underlying cause. Your doctor will decide on the appropriate strategy, which may include [R, R, R, R]:

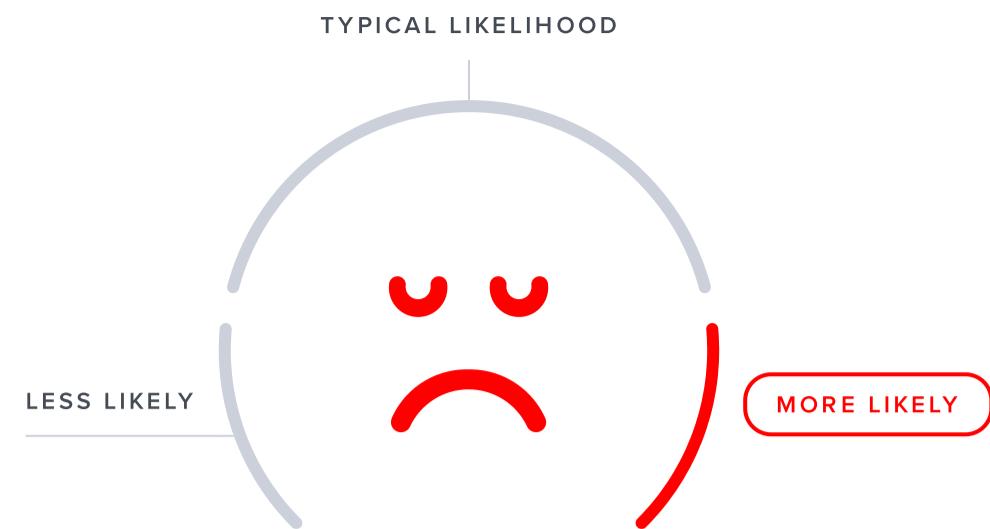
- Medication
- Physiotherapy
- Surgery

Many people also use complementary strategies to help manage shoulder and neck pain. These include [R, R, R]:

- Heat or cold packs
- Acupuncture
- Yoga
- Electrical tools like TENS units
- Chiropractic adjustment

Up to 68% of differences in people's chances of having shoulder and neck pain may be attributed to genetics. Genes that may play a role in shoulder and neck pain influence [R, R, R, R, R]:

- Brain function (FOXP2)
- Pain perception (KCNS1, GCH1, ADRB2)
- Inflammation (SLC39A8, ANXA1)



More likely to have shoulder and neck pain based on 924,669 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
CTRC	rs76827641	AA
UBE2J2	rs148734489	GG
ATAD3A	rs185493637	GG
NOC2L	rs150344285	GG
/	rs201849880	TT
RAP1GAP	rs139121331	CC
PRDM2	rs114362297	CC
EFHD2	rs60181764	CC
AJAP1	rs76062163	AA
CDK11A	rs2377229	AA
PLCH2	rs188383352	GG
VPS13D	rs564328546	TT
C1ORF127	rs9430331	GA
CDK11A	rs187812406	GG
HNRNPCL1	rs185548955	GG
KCNAB2	rs9726616	CC
GABRD	rs72636362	AA
DHRS3	rs11582380	CC
SPSB1	rs141929420	GG

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

Back Pain

Key Takeaways:

- Up to 25% of differences in people's chances of developing back pain may be attributed to genetics.
- Risk factors: injuries, health conditions, poor posture, aging, smoking, lack of fitness, overweight, your genetics.
- Symptoms include pain, increased sensitivity to pain and touch, and pain radiating beyond initial source.
- Up to 1 in 4 adults suffer from chronic lower back pain.

Back pain is extremely common. In fact, up to 1 in 4 adults suffer from chronic lower back pain. **Up to 84% of people are estimated to have back pain at some point in their lives** [R].

Back pain can be acute or chronic. Acute back pain is brief (days or weeks) and usually has a clear cause. It normally resolves on its own and is fairly easy to treat. Chronic back pain is long-lasting (months or years). The cause can be tough to determine, which makes it harder to treat. **About 1 in 5 cases of acute back pain becomes chronic** [R].

Risk factors for lower back pain include [R, R]:

- Injuries
- Health conditions
- Poor posture
- Aging
- Smoking
- Lack of fitness
- Weight gain
- **Genetics**

Back pain may come with other symptoms, such as increased sensitivity to pain and touch [R].

One type of back pain is called **sciatica**. Sciatica is pain in the lower back that radiates through the hips and down the back of the leg. It is caused by pressure on the sciatic nerve, which runs through these areas. Sciatica tends to occur on one side of the body [R, R, R].

Fortunately, mild sciatica often goes away on its own over time. However, more severe or long-lasting symptoms may need medical treatment [R].

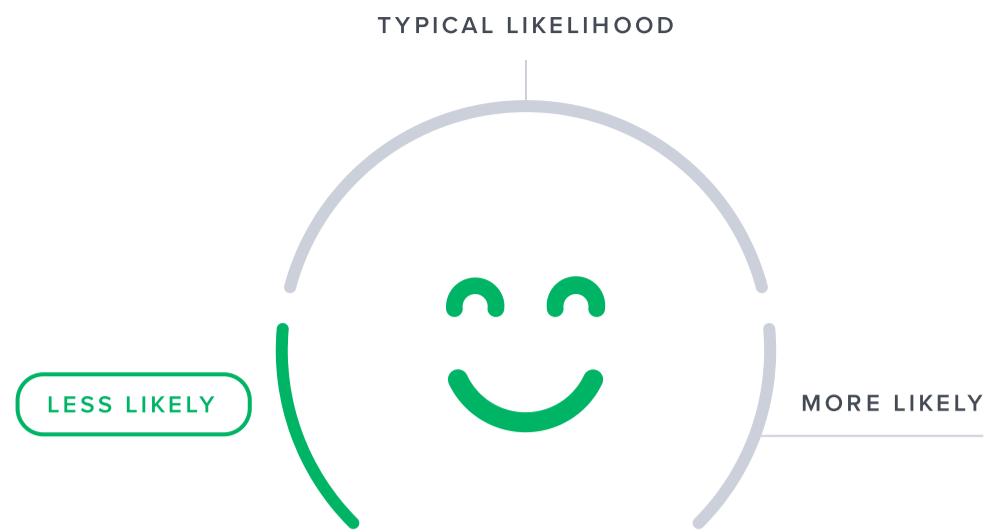
Treatment options for back pain include [R, R, R]:

- Medication
- Hot or cold packs
- Physical therapy
- Surgery

Left untreated, some types of back pain can cause further problems. For example, severe sciatica can cause permanent nerve damage [R, R].

Up to 25% of differences in people's chances of developing back pain may be attributed to genetics. Genes involved in back pain may influence [R, R, R]:

- Bone and joint development ([NFIB](#), [COL11A2](#))
- Inflammation ([HLA-DRB5](#))
- Nerve function ([MYO5A](#))



Less likely to have back pain based on 13,559 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
GSDMC	rs6651255	TT
MYC	rs7833174	TT
/	rs543634974	CC
MME	rs540690425	CC
PELO	rs13174042	TT
SOX5	rs12310519	CC
DCC	rs4384683	AA
DIS3L2	rs1453867	TT
CTSC	rs217095	TT
CCDC196	rs144740416	CC
CACNB2	rs189997399	AA
COL12A1	rs146452235	CC
ERI3	rs150678734	TT
UROS	rs186296138	GG
LRP1	rs149305474	GG
GML	rs147507753	TT
EGFR	rs145967840	CC
LRATD1	rs374707240	CC
SUCLA2	rs9652197	TT

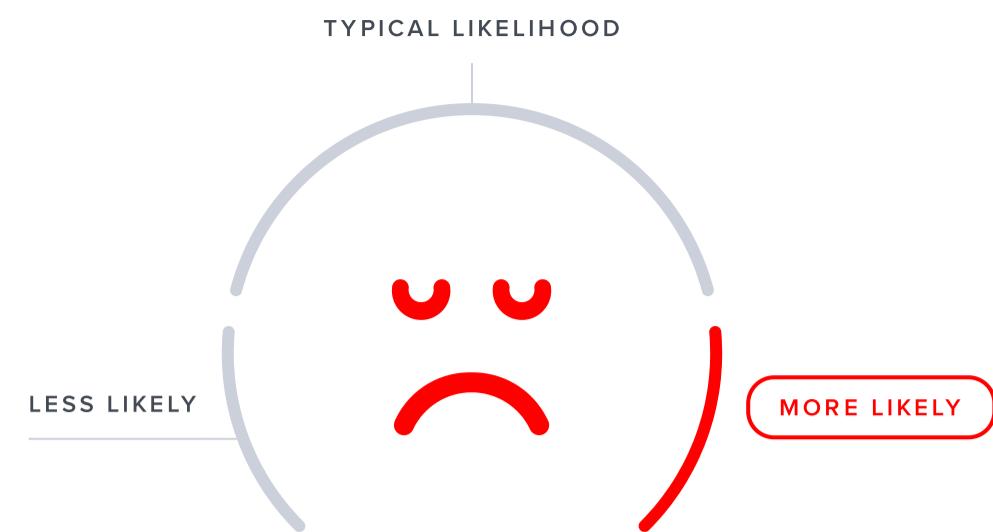
The number of "risk" variants in this table doesn't necessarily reflect your overall result.

Hip Pain

Hip pain is a common ailment with a wide variety of causes, such as arthritis, joint inflammation, or injuries. The two main types of hip pain are internal and external.

A number of factors can contribute to hip pain, including [R, R, R, R]:

- Obesity
- Older age
- Sedentary lifestyle
- Certain sports and professions
- Weak bones
- Poor diet
- **Genetics**



More likely to have hip pain based on 420,074 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
KAZN	rs549908604	AA
HIPK1	rs149055514	AA
PBX1	rs506068	CC
PGLYRP3	rs117034852	TT
SEMA4A	rs531735825	CC
FNDC7	rs181938434	GG
PGLYRP3	rs118113194	CC
KIAA1614	rs144390511	CC
KAZN	rs115204536	TT
KIF1B	rs143020152	GG
VPS13D	rs138529300	CC
ATAD3C	rs111262777	AA
FAM20B	rs138336064	TT
CTTNBP2NL	rs116671687	CC
LHX4	rs78614038	CC
MAN1A2	rs189116872	TT
MAN1A2	rs116275925	AA
SSU72	rs180728791	CC
BRINP2	rs115115964	GG

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

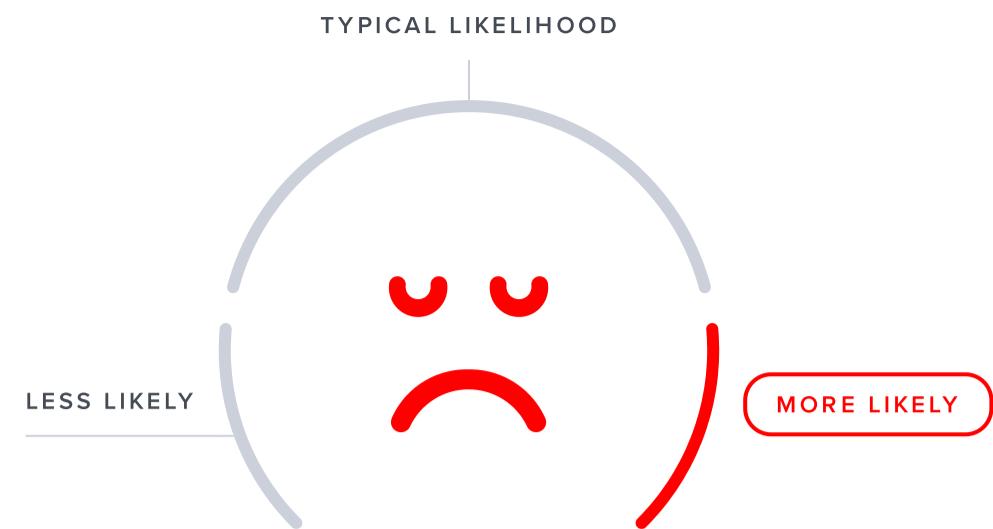
Knee Pain

Knee pain is a common complaint with many potential causes, including injuries, overuse, and arthritis.

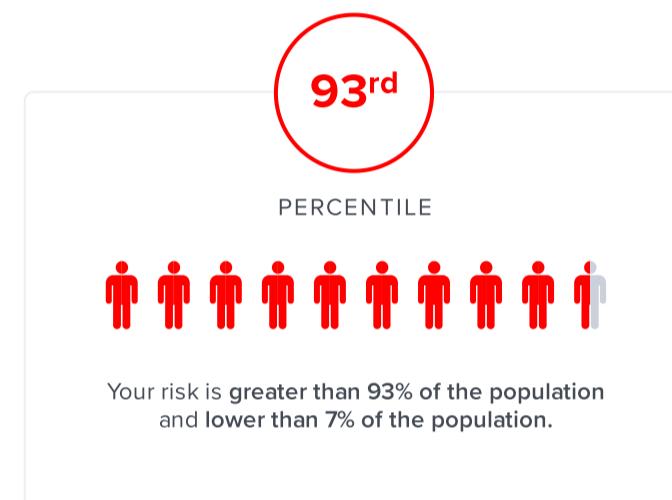
A number of factors can increase your risk of having knee pain, including [R]:

- Excess weight
- Poor flexibility and strength
- High-impact sports or occupations
- Previous injury
- Older age (for arthritis)
- Genetics

Genetics plays a role in many conditions that cause knee pain, such as injuries and osteoarthritis. Involved genes may affect inflammation, bone density, cartilage function, and more [R, R, R].



More likely to have knee pain based on 947,637 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
COL27A1	rs919642	AA
CPNE1	rs143384	GA
COL27A1	rs2808772	GA
COL11A1	rs2622873	TT
ICA1L	rs62182810	AA
BRINP3	rs72727240	TT
MAB21L3	rs79678808	AA
COQ8A	rs56339347	AA
/	rs567271467	GG
CDC42BPA	rs573881227	CC
CPNE1	rs6120946	AA
SCUBE1	rs528981060	GG
SLC39A8	rs13107325	CC
TGFB1	rs75621460	GG
TGFA	rs3771501	GG
H4C8	rs115740542	TT
ELF3	rs74136729	AA
PTPRC	rs79211001	AA
SGIP1	rs74810564	GG

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



Headaches

Headaches are one of those conditions that anyone can experience at any age. When they are more regular and more severe, like migraines, they can become a major disruptor to your quality of life.

Your genetic predispositions can affect everything related to headaches, including causes, symptoms, and best ways to soothe them.



TYPICAL LIKELIHOOD

Headache

Typical likelihood of headaches



MORE LIKELY

Migraines

More likely to have migraines



MORE LIKELY

Cluster Headaches

More likely to have cluster headaches

Headache

Key Takeaways:

- About 45% of the differences in people's chances of developing headaches may be due to genetics.
- The three types of headaches in order of occurrence are tension, migraine, and cluster.
- Primary headaches are caused by many factors, while secondary are due to things like injury, tumors, and infection.
- About 75% of Americans will experience a headache this year, and 95% in their lifetime.

Nearly everyone suffers the occasional headache. In fact, around 95% of all people get them at some point in their life [R].

Some headaches are not caused by an underlying condition. These are called *primary* headaches. The main types are [R]:

- Tension headache
- Migraine
- Cluster headache

Tension headaches are the most common. People with these headaches often feel like something tight is pressing around their head [R, R].

Migraines are the second-most common type. These aren't just headaches, and pain isn't the only symptom. People with migraines often also experience symptoms like nausea and sensitivity to light or sound [R, R].

Only about 0.1% of people get cluster headaches. They're extremely painful and short, typically lasting between 15 minutes and 3 hours. They often cause [R, R]:

- Pain on one side of the head
- Tear production
- Runny nose
- Red eyes
- Drooping eyelids
- Sweating

Headaches caused by an underlying condition are called *secondary* headaches. They can be caused by [R]:

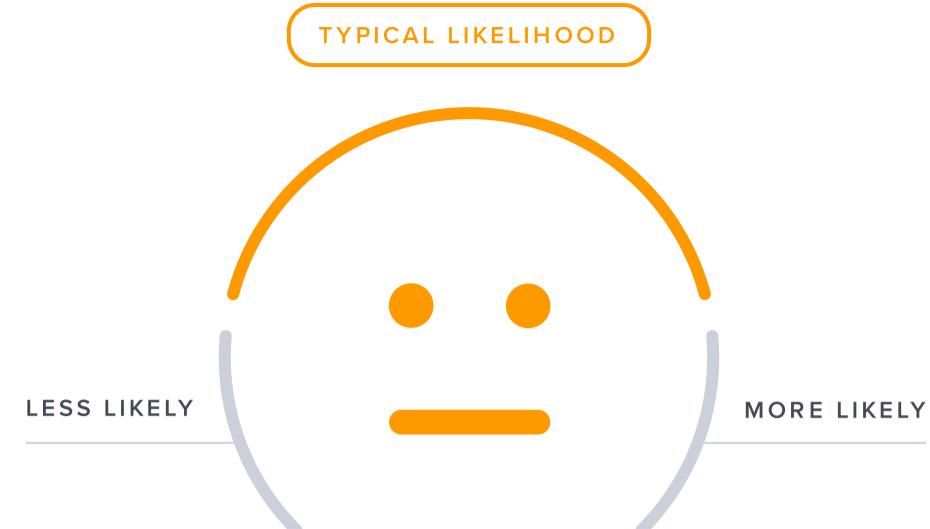
- Infection
- High blood pressure
- Nerve problems
- Head injury
- Medication overuse
- Tumors
- Stroke

Fortunately, **most headaches are mild and can be treated at home with common painkillers.** However, some may have underlying causes that require special treatment [R, R].

Around 45% of the differences in people's chances of developing headaches may be attributed to genetics. Genes involved in headaches may influence [R, R]:

- Clearance of waste from the brain (*LRP1*)
- Stress hormones (*CRHR1*)
- Brain cell function (*STAT6*)

This report focuses on headaches other than migraines. For personalized genetics-based information on migraines, check out our [Migraines Report](#).



Typical likelihood of headaches based on 439,774 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
PHACTR1	rs9349379	AA
IRAG1	rs4910165	GG
STAT6	rs11172113	TT
PRDM16	rs2651899	CC
HTR2A	rs6313	GA
TRPM8	rs10166942	CT
NAXE	rs2274316	AC
TRIM32	rs6478241	GA
BDNF	rs6265	CT
CBX3	rs76473094	CC
TGFBR3	rs10493859	CC
CHSY3	rs17635642	CC
FGF23	rs7308018	AG
DHX36	rs34097149	TT
STAT6	rs11172113	TT
PLEKHA1	rs78438709	AA
FAM216A	rs7300001	AA
BTN3A2	rs2072806	CC
PHACTR1	rs9349379	AA

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

Migraines

Key Takeaways:

- Up to 64% of differences in people's chances of developing migraine may be due to genetics.
- Risk factors include: obesity, depression, stress, being female, blood vessel issues, brain chemical imbalances, and genetics.
- Migraines can cause nausea, light and sound sensitivity, fatigue, stiff neck, dizziness, and aura effects.
- About 16% of Americans regularly have migraines.

About 16% of Americans regularly have migraines [R].

For a long time, researchers thought migraines were only caused by widening blood vessels in the brain. However, new research suggests that it's more complicated. Possible causes include [R, R]:

- Blood vessel problems
- Changes in nerve pathways linked to pain
- Imbalances in serotonin or other brain messengers

Risk factors for migraines include [R]:

- Obesity
- Depression
- Stress
- Being female

Migraines aren't just headaches, and pain isn't the only symptom. People with migraines also commonly experience [R, R]:

- Nausea
- Sensitivity to bright light or loud sounds
- Fatigue
- Neck stiffness
- Dizziness
- Aura (flashing lights, moving lines, blind spots, etc.)

Migraine attacks can last from hours to days. They can even be bad enough to cause people to miss work. In fact, migraine is one of the most common causes of disability in people under 50 years old [R, R, R].

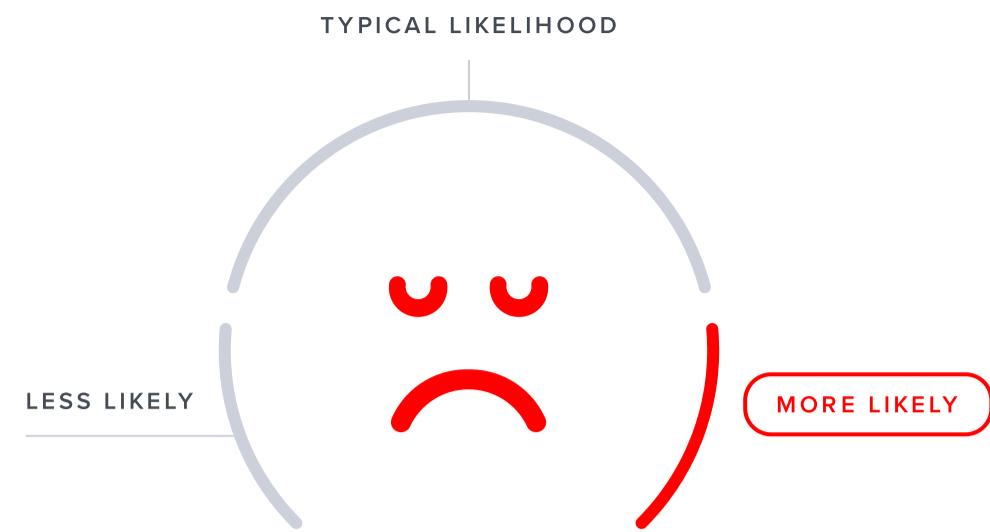
People sometimes go through periods with several migraines and then stretches with none [R].

Unfortunately, there is no "cure" for chronic, severe migraines. Instead, people with migraines are often prescribed medications to [R]:

- Relieve symptoms during an attack
- Prevent the next attack

Up to 64% of differences in people's chances of developing migraine may be attributed to genetics. Genes involved in migraine may influence [R]:

- Nerve cell activity ([COMT](#), [CACNA1A](#), [SCN1A](#))
- Sleep-wake cycles ([CLOCK](#), [CSNK1D](#))
- DNA methylation ([MTHFR](#))



More likely to have migraines based on 109,603 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
PHACTR1	rs9349379	AA
IRAG1	rs4910165	GG
STAT6	rs11172113	TT
PRDM16	rs2651899	CC
TRPM8	rs10166942	CT
NAXE	rs2274316	AC
TRIM32	rs6478241	GA
BDNF	rs6265	CT
IFT43	rs75002882	GG
DHX36	rs13078967	AA
CARF	rs138556413	CC
HPSE2	rs12260159	GG
LY6G5C	rs74434374	CC
C12ORF4	rs2160875	CC
SLC24A3	rs4814864	CC
MRPS6	rs28451064	GG
MLXIPL	rs13235543	CC
NOC3L	rs2274224	GG
ITPK1	rs11624776	AA

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

Cluster Headaches

A cluster headache is a type of severe headache with bouts of frequent attacks, known as cluster periods.

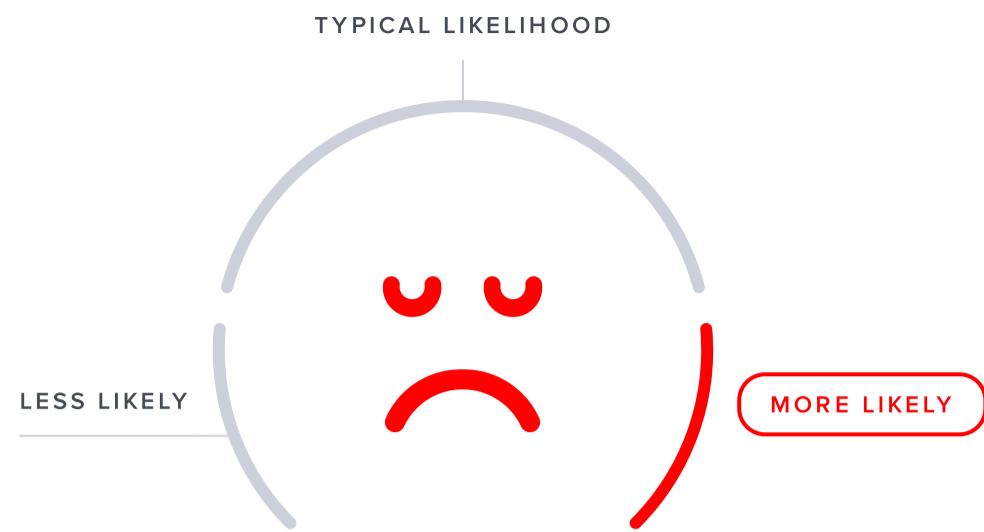
Attacks may be triggered by [R]:

- Alcohol
- High altitudes
- Bright light
- Heavy physical activity
- Heat
- Eating foods high in nitrites
- Certain medicines
- Illicit drugs like cocaine

Some of the risk factors for cluster headaches include [R]:

- Male sex
- Age 20 to 40
- Smoking
- **Genetics**

Genetics may explain about **25%** of the differences in people's odds of cluster headaches [R, R].



More likely to have cluster headaches based on 980 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SATB2	rs113658130	CC
MERTK	rs4519530	CT
ACOX3	rs532676091	CC
FAM83F	rs147178151	GG
ZFHX4	rs143338229	CC
GLIS3	rs17701298	AA
FSHR	rs150773296	GG
MPHOSPH6	rs74032638	GG
PDCD1LG2	rs56072800	CC
CASZ1	rs187005173	GG
/	rs940585704	AA
NBPF6	rs181656519	GG
ZNF536	rs192460713	GG
STK36	rs184611112	GG
ARHGAP22	rs4838415	GG
COLEC12	rs34395012	CC
/	rs56816776	GG
MADCAM1	rs3745925	CA
DUSP10	rs12121134	CC

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

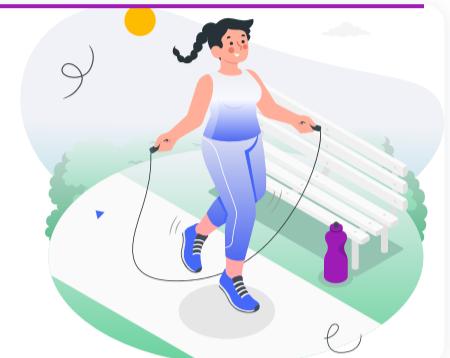
Your Recommendations

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.

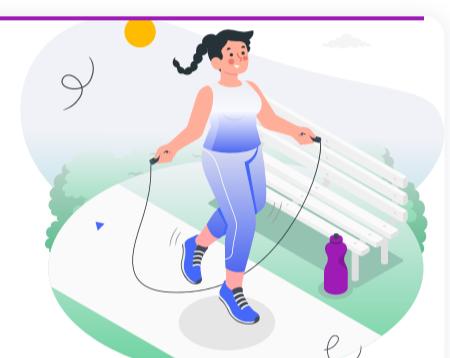
You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.



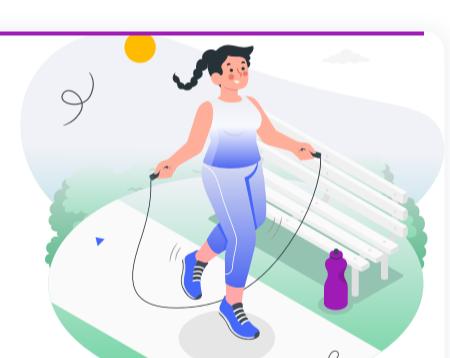
Acupuncture



Physical Therapy



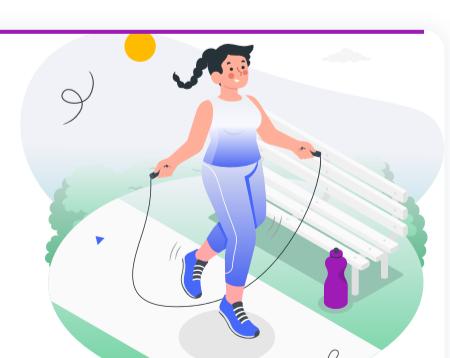
Exercise



Topical Capsaicin



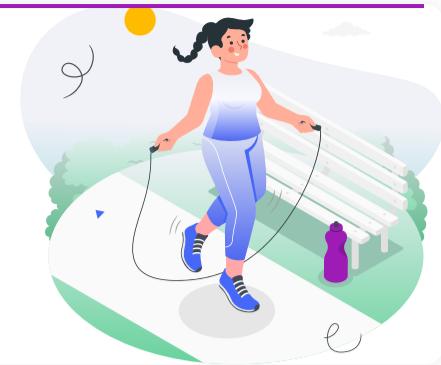
Relaxation Techniques



6



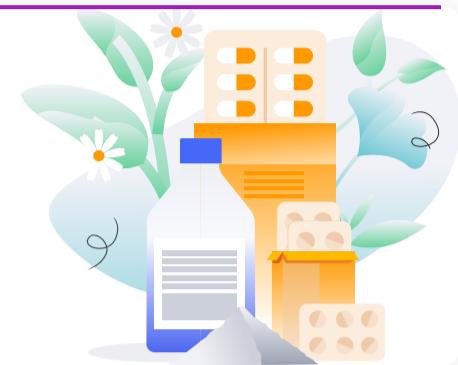
Avoid Cigarette Smoke



7



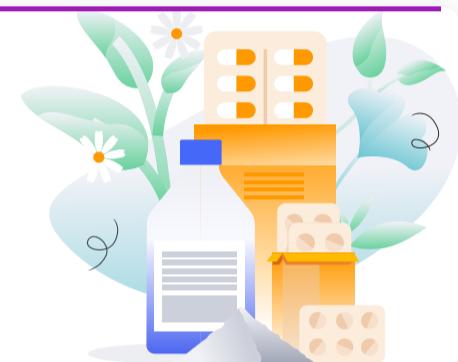
Devil's Claw



8



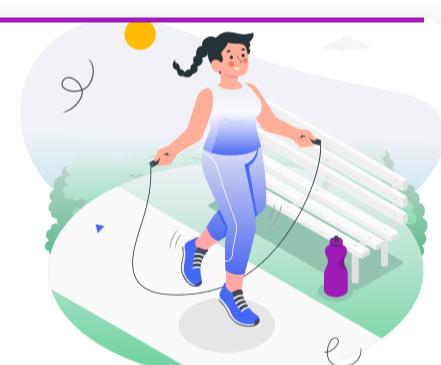
Melatonin



9



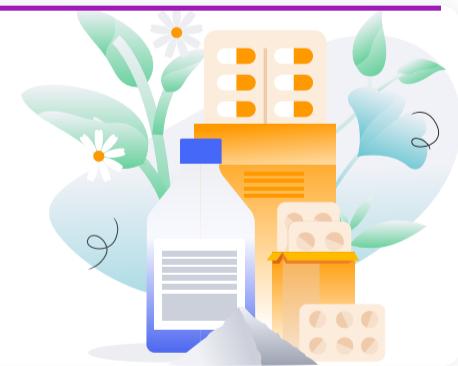
Optimize Sleep



10



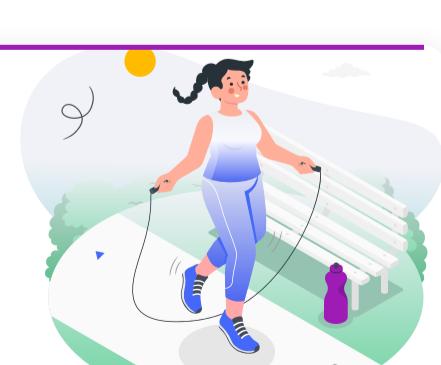
Curcumin



11



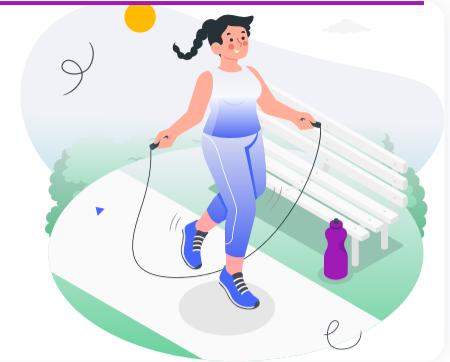
Nerve Stimulation



12



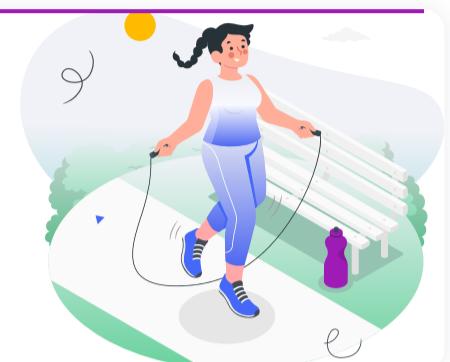
Maintain A Healthy Weight



13



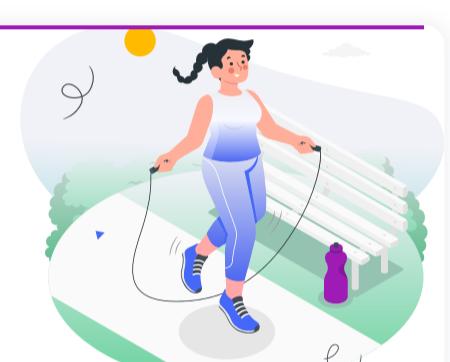
Hot and Cold Applications



14



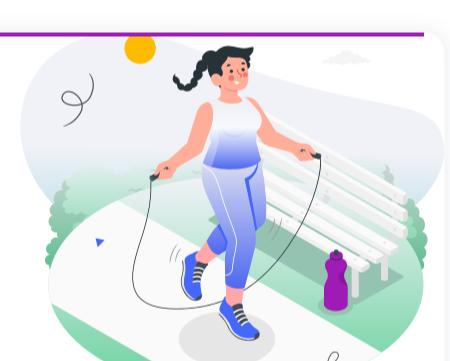
Massage



15



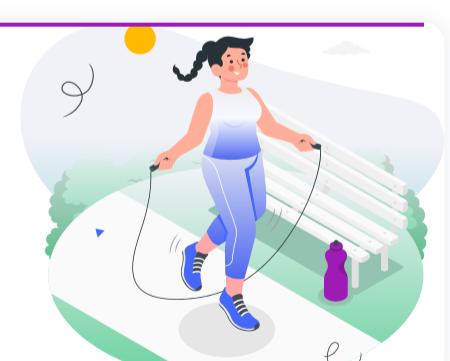
Chiropractic Adjustment



16



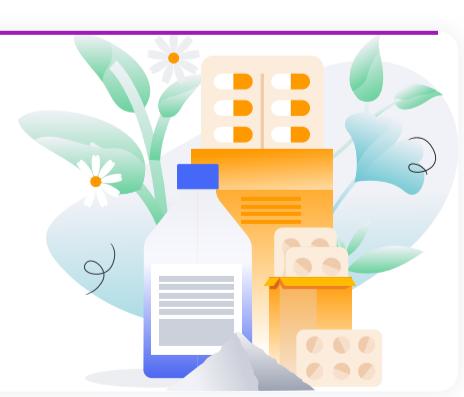
Maintain a Healthy Weight



17



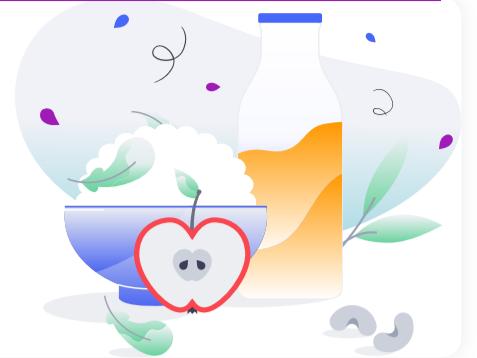
Omega-3 Fatty Acids



18



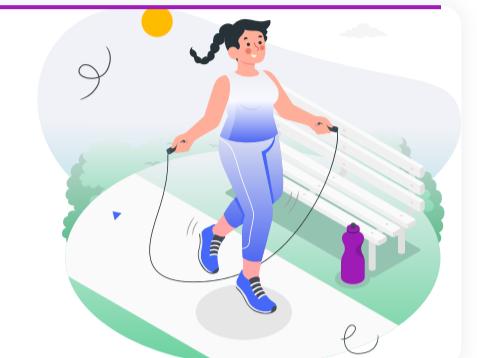
Avoid Food Triggers



19



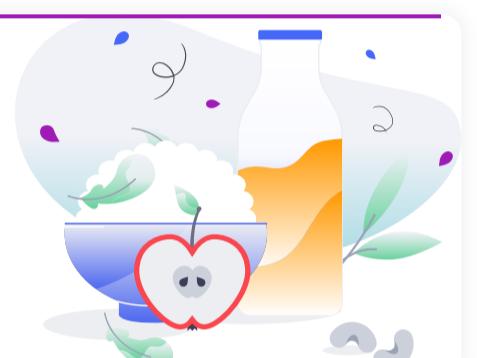
Avoid Sensory Triggers



20



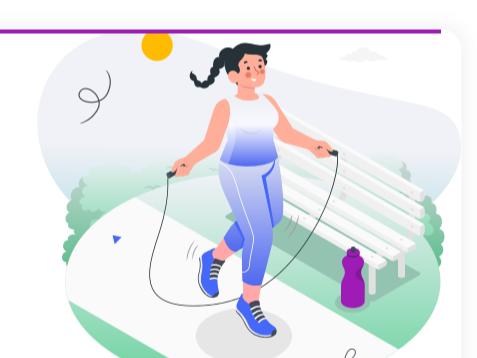
Maintain a Regular Meal Schedule



21



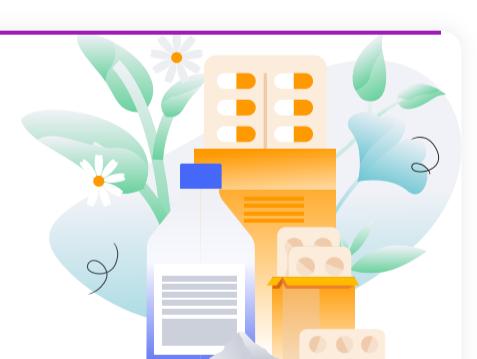
Psychotherapy



22



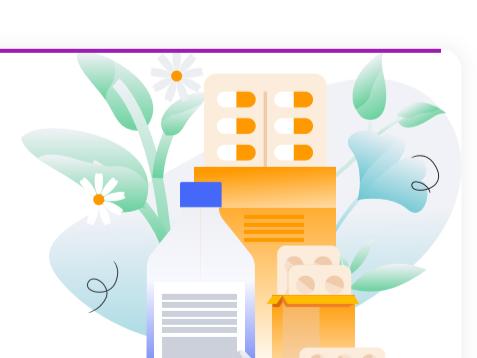
Boswellia



23



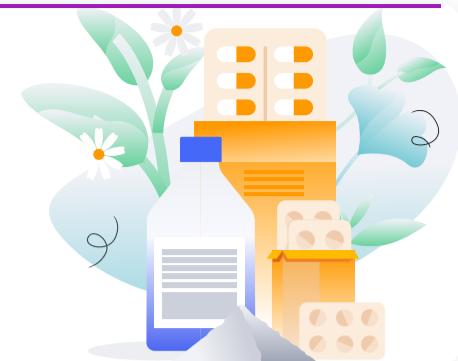
Bromelain Enzyme Blends



24



Collagen



25



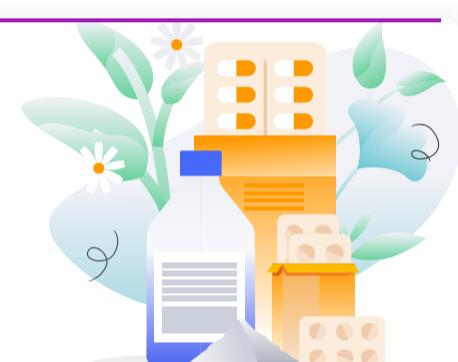
Ginger



26



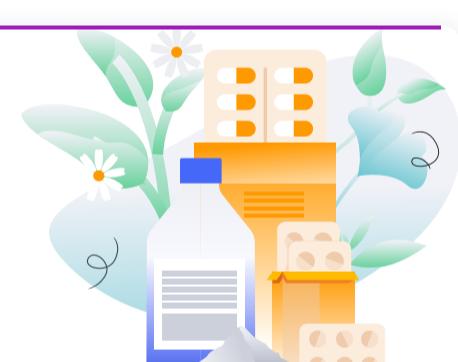
Pycnogenol



27



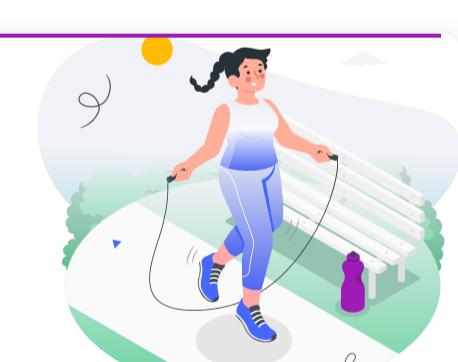
Rose Hip



28



Tai Chi



29



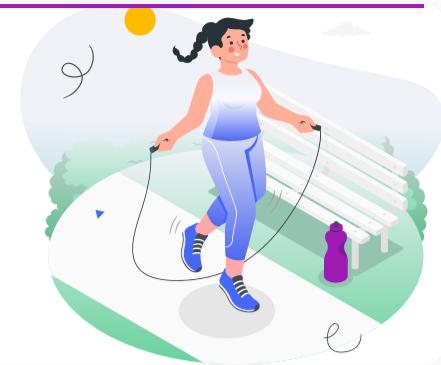
Topical Black Seed Oil



30



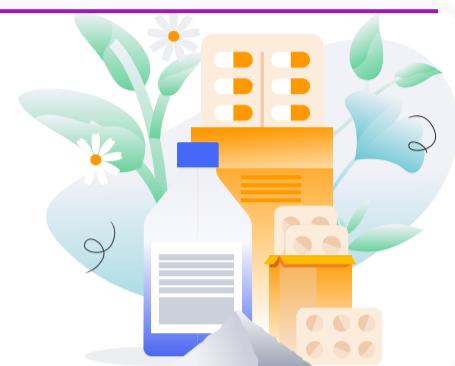
Yoga



31



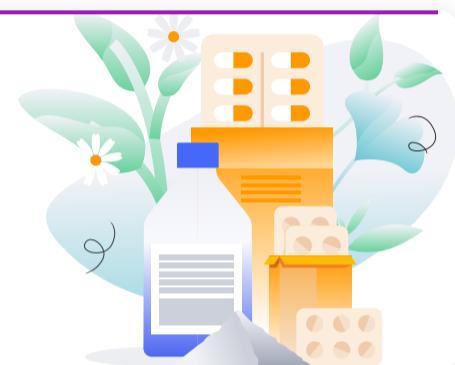
Coenzyme Q10



32



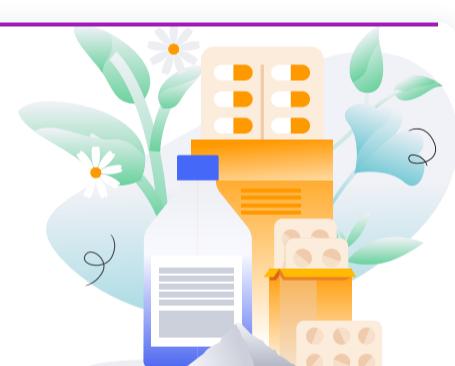
Feverfew



33



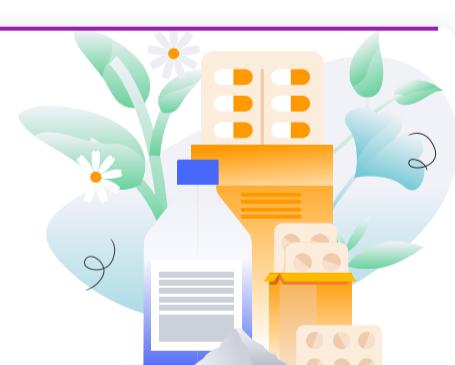
Magnesium



34



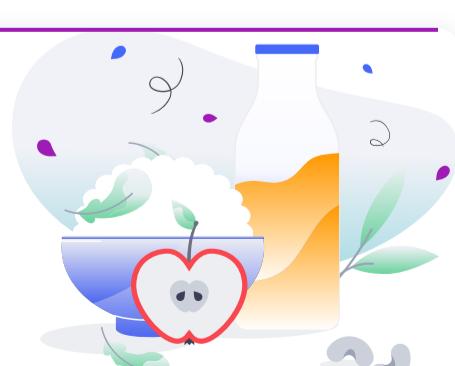
Riboflavin



35



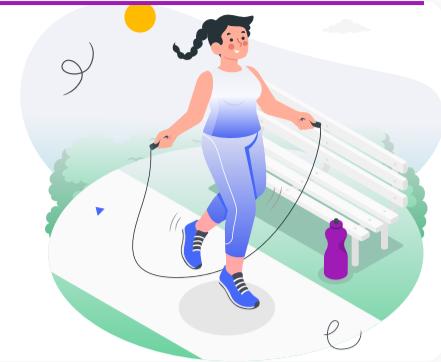
Stay Hydrated



36



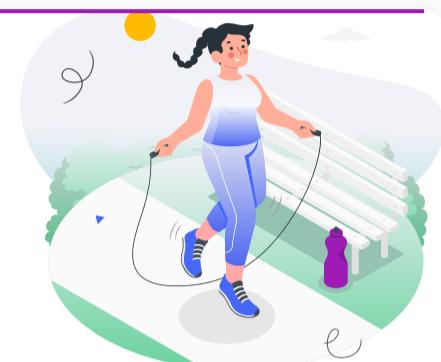
Reduce Shoulder & Neck Strain



37



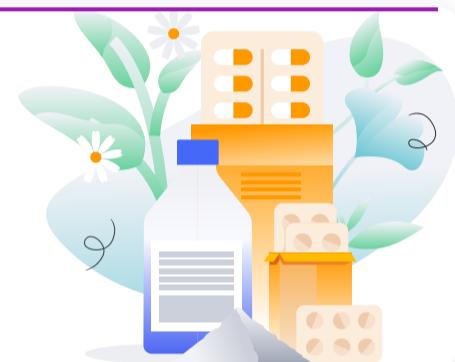
Aquatic Exercise



38



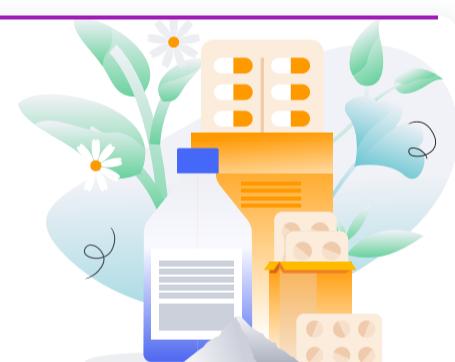
Avocado/Soybean Unsaponifiables



39



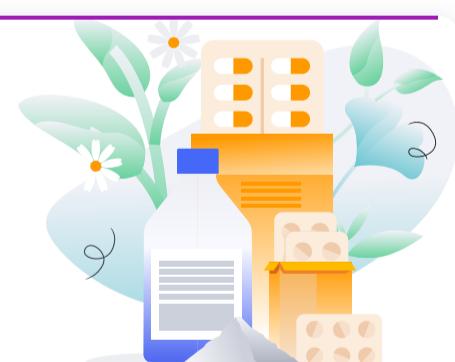
Cetyl Myristoleate (CMO)



40



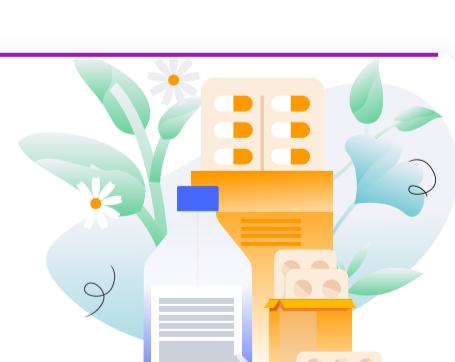
Chondroitin



41



Glucosamine



42



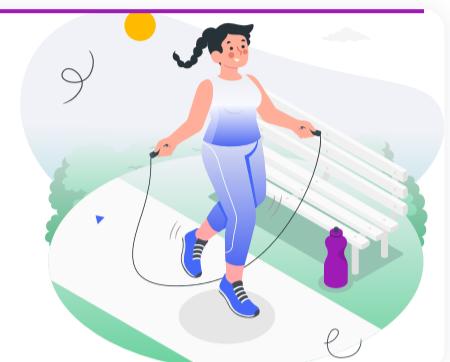
Guava



43



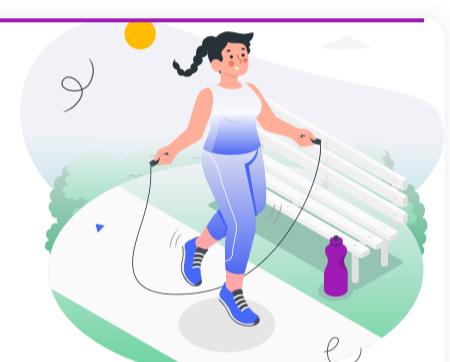
Hot and Cold Applications



44



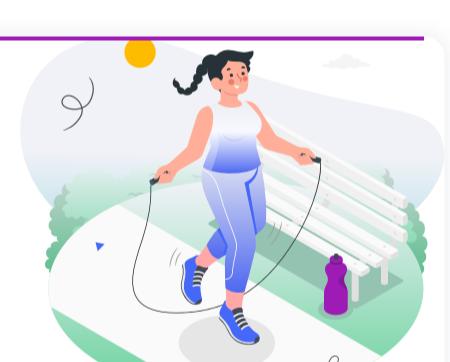
Meditation



45



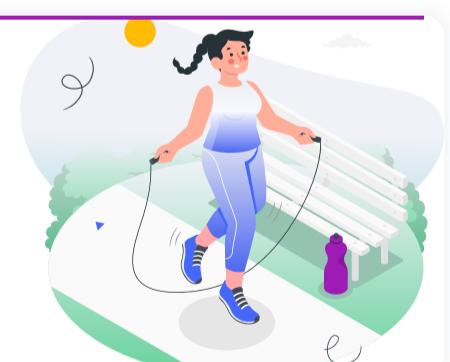
Osteopathic Manipulation



46



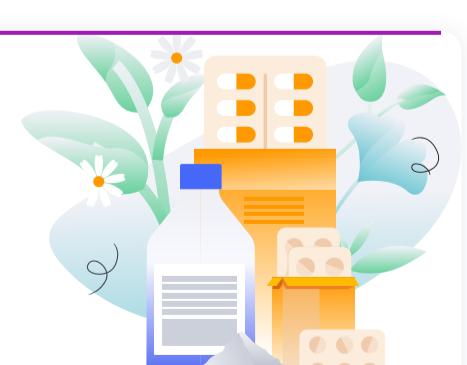
Reduce Knee Strain



47



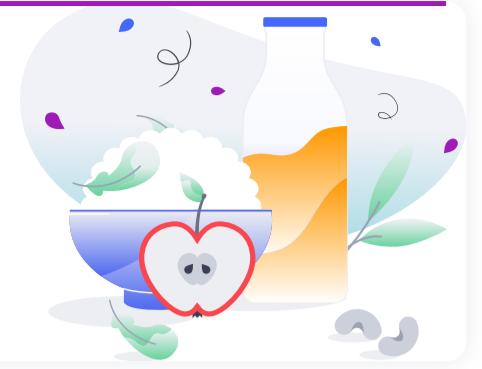
Topical Ginger



48



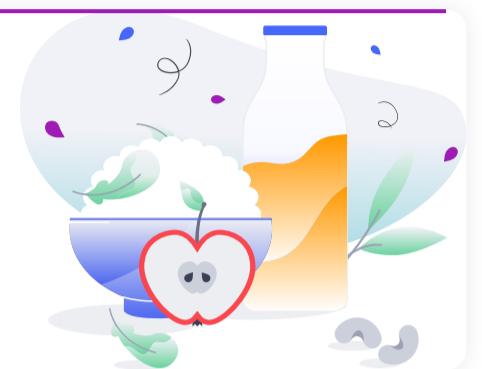
Limit Alcohol Intake



49



Olive Oil



50



Reduce Hip Strain

