

Knee Injury

DNA Health Report

REPORT CATEGORY —



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

The knee is a joint that connects the bones of the thigh and the lower leg. It allows the leg to bend and straighten, which is required to sit, squat, jump, and run. The knee is made up of [\[R\]](#):

- **Bones:** in addition to the thigh and lower leg bones, the knee includes the kneecap. This bone covers their meeting point to provide protection
- **Cartilage:** cushions and protects the bones
- **Ligaments:** connect bones and stabilize joints
- **Tendons:** connect muscles to bones

The knee is very complex and bears a great deal of stress from everyday activities. This makes it one of the most easily injured joints. The most common knee injuries include [\[R\]](#), [\[R\]](#):

- **Ligament sprains:** the ligaments become stretched or torn due to sudden twists or excessive force on the knee joint.
- **Dislocation:** the knee bones get out of place or misaligned due to severe injury or structural abnormalities.
- **Cartilage tears:** the knee cartilage is torn during sport activities or as a result of aging or arthritis.
- **Tendon injuries:** they include strains, tears, and inflammation of tendons
- **Bursitis:** inflammation and swelling of the fluid-filled sacs that cushion the knee joints from overuse or repeated kneeling.
- **Fractures:** the knee bones break due to severe trauma. The bone most commonly affected is the kneecap.

Symptoms of knee injuries depend on the type and include [\[R\]](#), [\[R\]](#):

- Pain
- Redness, swelling, and warmth to the touch
- Weakness or instability
- Popping or crunching noises
- Difficulty bending and straightening the knee

Depending on severity, treatment of knee injuries can involve [\[R\]](#), [\[R\]](#):

- Immobilization
- Strengthening and stretching exercises
- Painkillers
- Steroid injections
- Surgery

Knee Injury Genetics

PERSONALIZED TO GENES

Based on the genetic variants we looked at, you may have a typical likelihood of developing a knee injury.

Try to take preventative measures, such as stretching and strengthening your thigh muscles, to potentially decrease your risk.

The knee is a joint that connects the bones of the thigh and the lower leg. It allows the leg to bend and straighten, which is required to sit, squat, jump, and run. The knee is very complex and bears a great deal of stress from everyday activities. This makes it one of the most easily injured joints [\[R\]](#), [\[R\]](#).

Some people may be more prone to knee injuries than others. Risk factors include [\[R\]](#):

- Excess weight
- Lack of leg muscle flexibility or strength
- Practicing high-impact sports (running, basketball, soccer, hockey, skiing)
- Occupations involving frequent kneeling or squatting (construction, farming)
- Traumatic accidents (falls, motor vehicle crashes)
- **Genetics**

Depending on the type, up to 70% of differences in people’s chances of developing a knee injury may be due to genetics. Genes involved may influence [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Bone growth and development
- Ligament growth and repair
- Blood vessel development

Tips to help prevent a knee injury include [\[R\]](#):

- Maintaining a healthy weight
- Stretching and strengthening your thigh muscles
- Avoiding high-impact activities, sudden movements, and overtraining
- Wearing proper sport shoes and protective equipment



TYPICAL LIKELIHOOD

Typical likelihood of knee injuries based on 299,714 genetic variants we looked at

45th

PERCENTILE



Your risk is greater than 45% of the population and lower than 55% of the population.

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
ZC3H11B	rs112081086	AA
PRRX1	rs151077542	GG
BRINP3	rs72727240	TT
XCL1	rs148262095	GG
SPAG17	rs139101248	GG
MAB21L3	rs79678808	AA
AURKAIP1	rs138046143	TT
CDC42BPA	rs56339347	AA
NEK7	rs138440178	CC
/	rs567271467	GG
/	rs567271467	GG
FCMR	rs1800895	CC
NR5A2	rs34004246	GG
SYT2	rs145533858	CC
/	rs192853607	GG
CDC42BPA	rs573881227	CC
ZC3H11B	rs147060837	AA
/	rs146266096	CC
/	rs146266096	CC
GPR37L1	rs74136729	AA
FBLIM1	rs147500944	CC
NFIA	rs141100852	GG
ADAM30	rs114403104	TT
/	rs182678389	AA

GENE	SNP	GENOTYPE
C8B	rs183131024	CC
PTPRC	rs147390952	GG
GPR37L1	rs144718330	CC
UBE2J2	rs149229450	AA
PTPRC	rs79211001	AA
SLC2A1	rs184662808	CC
LRIG2	rs140098571	CC
ATP1B1	rs140796280	AA
UBE2J2	rs12080505	AA
LCE1F	rs115521852	GG
CRYZ	rs150404166	CC
CACHD1	rs138903474	AA
SGIP1	rs74810564	GG
FGR	rs147486286	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	Exercise At Least One Hour a Day	1 hour	2	Reduce Knee Strain	
3	Physical Therapy	30 minutes	4	Jumping	15 minutes
5	Blood Flow Restriction Training	15 minutes	6	Eccentric Exercise	
7	Yoga	30 minutes	8	Vitamin C	2000 mg
9	Low-Level Laser Therapy (LLLT)	30 seconds	10	Sleep for 7+ Hours	
11	Bromelain		12	Aquatic Exercise	1 hour
13	Pilates	30 minutes	14	Mobility Training	10 minutes
15	Avoid Lifting Heavy Objects		16	Exercise Therapy	1 hour
17	Practice Exercise Snacks	1 minutesute	18	McKenzie Method	5 minutes
19	Good Posture		20	Massage	30 minutes
21	Tai Chi	1 hour	22	Avoid High-Impact Exercise	
23	Curcumin	500 mg	24	Electroacupuncture	
25	Dietary Protein		26	Avoid Strenuous Activity	
27	Proprioceptive Training	30 minutes	28	Aquatic Therapy	30 minutes
29	Balance And Mobility Training	30 minutes	30	Chondroitin	800 mg
31	Use Cushioned Shoes		32	Flexibility Training	20 minutes

33	Core-Strengthening Exercises	20 minutes	34	Manual Joint Mobilization	30 minutes
35	Stretching	15 minutes	36	Collagen Peptides	10 g
37	Optimize Exercise	1 hour	38	Strength Training	1 hour
39	Walking	30 minutes	40	Apply Heat	15 minutes
41	Low-Intensity Exercise	1 hour	42	Methylsulfonylmethane (MSM)	1 g

1



Exercise At Least One Hour a Day

IMPACT

4 / 5

EVIDENCE

5 / 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

Exercise-based prevention programs may reduce the risk of knee injuries in athletes. These programs typically include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Core, hip, and leg strengthening exercises
- Balance training exercises
- Static stretching exercises
- Training to improve technique when jumping, landing, and changing direction

Experts recommend these programs owing to their potential benefits, little risk of harm, and minimal cost [\[R\]](#).

2



Reduce Knee Strain

IMPACT4 / 5

EVIDENCE4 / 5

How to implement

Avoid activities that put excessive stress on your knees, such as jumping and running on hard surfaces. Opt for low-impact exercises like swimming or cycling. When engaging in activities that involve knee bending, ensure proper form and use supportive footwear. Aim to strengthen your leg muscles through exercises such as leg lifts and squats, doing these 2-3 times per week.

Description

The knee bears a great deal of stress from everyday activities. This makes it one of the most easily injured joints. Reducing knee strain can be achieved by maintaining proper alignment during physical activities and incorporating strength training exercises to support the knee joint. These practices promote knee health and reduce the risk of injuries.

The knee is a very complex joint that connects the bones of the thigh and the lower leg. It allows the leg to bend and straighten, which is required to sit, squat, jump, and run [\[R\]](#).

The knee bears a great deal of stress from everyday activities. This makes it one of the most easily injured joints [\[R\]](#), [\[R\]](#).

Knee injuries usually occur during sports that involve sudden stops, aggressive twisting and pivoting of the knee, jumping, and landing. Sports most commonly associated with knee injuries include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Soccer
- Basketball
- Football
- Rugby
- Gymnastics
- Lacrosse
- Alpine skiing
- Volleyball
- Tennis
- Running
- Golf

Working an intense job that requires you to jump, pivot, or climb may increase the risk of ACL injury. On the other hand, kneeling, squatting, climbing stairs, and lifting or carrying heavy weights at work may increase the risk of meniscus tears [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

Experts recommend the following strategies to minimize the risk of knee injuries [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Being mindful of your technique when you change direction or land from a jump
- Warming up before exercise
- Wearing properly-fitting sports shoes
- Making sure your ski bindings are adjusted correctly
- Avoiding exercise on artificial turf

3

Physical Therapy

IMPACT3 / 5

EVIDENCE4 / 5

How to implement

Attend physical therapy sessions 2-3 times per week for a duration of 4-6 weeks, depending on your specific condition and the advice of your healthcare provider. Each session typically lasts about 30-60 minutes, where a licensed therapist will guide you through targeted exercises, stretches, and possibly other treatments like electrical stimulation or ultrasound therapy.

TYPICAL STARTING DOSE

30 minutes

Description

Physical therapy is a therapeutic practice focused on optimizing physical function and mobility through specialized exercises, manual techniques, and therapeutic modalities. It helps individuals recover from injuries, manage chronic conditions, and improve overall physical well-being by enhancing strength, flexibility, and pain management.

Physical therapy (physiotherapy) helps people regain or maintain their ability to move [\[R\]](#).

Physical therapy can involve [\[R\]](#):

- Joint or muscle exercises
- Corrective movements
- Massage
- Education and advice

People mainly use physical therapy to help with [\[R\]](#), [\[R\]](#):

- Pain and injury
- Stroke recovery
- Chronic health conditions
- Headaches

Mirror therapy uses a mirror placed between the arms or legs. The image of a moving arm or leg gives the illusion of normal movement in the affected one. This therapy stimulates different brain regions and aims to improve mobility [\[R\]](#).

Constraint-induced movement therapy is another type of physical therapy. It consists of restraining the healthy leg or arm to increase the use of the affected one [\[R\]](#).

How it helps

Supervised exercises prescribed by a physical therapist may help reduce pain and swelling, restore knee function, and strengthen the muscles in people with knee injuries such as ACL and meniscal tears. The use of braces to stabilize the knee may increase the odds of recovery from ACL injuries [\[R\]](#), [\[R\]](#), [\[R\]](#).

In the case of ACL injury, physical therapy may replace surgery in less severe cases and for people whose physical activity level doesn't put much stress on the knees [\[R\]](#).

People recovering from knee surgery may be prescribed exercise therapy to increase muscle strength and knee function. Bracing may not improve knee function after ACL reconstruction surgery [\[R\]](#), [\[R\]](#), [\[R\]](#).

4



Jumping

IMPACT

3 / 5

EVIDENCE

4 / 5

How to implement

Incorporate jumping exercises, such as jump squats or jumping jacks, into your fitness routine. Aim for at least 3 sessions per week, each session lasting 10-15 minutes. Ensure to have rest days in between to allow for muscle recovery.

TYPICAL STARTING DOSE

15 minutes

Description

Jumping, such as through activities like jumping jacks or trampolining, is a cardiovascular exercise that can improve heart health, strengthen muscles, and boost overall fitness. It's an effective way to increase physical activity and promote a healthy lifestyle.

How it helps

Exercise-based prevention programs may reduce the risk of knee injuries in athletes. These programs typically include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Core, hip, and leg strengthening exercises
- Balance training exercises
- Static stretching exercises
- Training to improve technique when jumping, landing, and changing direction

Experts recommend these programs owing to their potential benefits, little risk of harm, and minimal cost [\[R\]](#).

5



Blood Flow Restriction Training

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Wrap a blood flow restriction (BFR) band or cuff around the upper portion of your limbs (arms or legs) at a pressure that feels tight but not painful, aiming for a perceived tightness of 7 out of 10. Engage in low-intensity resistance training, such as lifting weights that are 20% to 30% of your one-rep max, or perform bodyweight exercises. Do this for 15-30 minutes, 2-3 times a week. Always release the bands after each exercise set to restore normal circulation.

TYPICAL STARTING DOSE

15 minutes

Description

Blood flow restriction (BFR) training is a specialized fitness and rehabilitation technique that involves applying pressure to restrict blood flow to specific muscles during exercise. This is typically achieved using cuffs or wraps placed on the limbs and then inflated to a controlled pressure. By temporarily reducing blood flow while allowing arterial inflow, BFR training creates a unique physiological response. It induces metabolic stress and muscle fatigue, leading to muscle growth and strength gains, even with lighter weights.

BFR is widely used in rehabilitation settings to aid in the recovery of injured individuals, helping them rebuild muscle strength without overloading compromised areas. It also has applications in improving muscular endurance and may have potential cardiovascular benefits, such as lowering blood pressure and enhancing vascular function. However, it should be performed under the guidance of a trained professional, as it's not suitable for everyone and has specific safety considerations.

How it helps

Two meta-analyses highlight the benefits of BFR training in knee surgery recovery. The first one, involving 11 studies, suggests that it can enhance quadriceps muscle bulk. The second meta-analysis, with 9 studies and 273 patients, indicates that BFR training in individuals recovering from knee injuries leads to improved muscle strength and pain reduction [\[R\]](#), [\[R\]](#).

6



Eccentric Exercise

IMPACT

3 / 5

EVIDENCE

3 / 5

Description

Eccentric exercise is a type of exercise where the muscle lengthens as it contracts. It has been shown to have a number of health benefits, including increased muscle strength, improved bone density, and reduced risk of injury.

How it helps

A meta-analysis of 23 trials concluded that eccentric exercise reduces the incidence of knee injuries (by 34%) and hamstring injuries (by 46%) [\[R\]](#).

7



Yoga

IMPACT

3 / 5

EVIDENCE

3 / 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 may aid in the rehabilitation of knee injuries, especially osteoarthritis, by reducing pain, improving function, and increasing mobility. Studies demonstrate that specific yoga therapies can improve symptoms significantly more than traditional exercises. For instance, Iyengar yoga has shown notable improvements in the symptoms of osteoarthritis of the knees [\[R\]](#), [\[R\]](#).

8



Vitamin C

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Take 500-2000 mg of vitamin C supplement daily. It can be taken at any time of the day, with or without food, according to personal preference or tolerance.

TYPICAL STARTING DOSE

2000 mg

Description

[Vitamin C](#) is an essential nutrient. This means that our bodies can’t produce it on their own, so we have to get it from food or supplements [\[R\]](#).

Foods rich in Vitamin C include: [\[R\]](#)

- Citrus Fruits
- Peppers
- Brussel sprouts
- Kiwi
- Broccoli
- Tomato
- Cantaloupe
- Cauliflower
- Spinach

Vitamin C has antioxidant properties. It supports immunity, heart health, and wound healing [\[R\]](#), [\[R\]](#).

Vitamin C deficiency is called *scurvy*. In the past, many sailors suffered from it [\[R\]](#).

How it helps

Vitamin C, particularly when used in combination with other supplements, may offer benefits for tendinopathies and connective tissue injuries by [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Enhancing collagen production
- Reducing inflammation
- Improving tendon healing

9



Low-Level Laser Therapy (LLLT)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Use a low-level laser therapy device, as directed by its manual or a healthcare professional, on the affected area. Generally, treatment involves applying the laser for a specified duration, often between 30 seconds to several minutes, per treatment area. Sessions can be conducted 2-3 times per week for a period of 4-12 weeks, depending on the condition being treated and the device used.

TYPICAL STARTING DOSE

30 seconds

Description

Low-level laser therapy (LLLT), also known as photobiomodulation, is a type of light therapy that uses low-intensity lasers to promote healing. It has been shown to be effective in treating a variety of conditions, including pain, inflammation, and wound healing.

How it helps

In a randomized, double-blinded, placebo-controlled study on meniscal pathology patients, low-level laser therapy (LLLT) significantly improved knee pain compared to placebo (F = 154, p < 0.0001). Lysholm scores also improved in the LLLT group at 4 weeks (82.5 ± 4.6) and 6 months (82.2 ± 5.7) compared to placebo. LLLT may be a consideration for patients not opting for surgery [\[R\]](#).

10



Sleep for 7+ Hours

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Ensure you allocate enough time in your schedule to achieve a minimum of 7 hours of sleep each night. This might involve going to bed earlier or adjusting your evening routine to promote relaxation and make it easier to fall asleep.

Description

Optimizing sleep involves adopting healthy sleep habits and creating a sleep-conducive environment to ensure restorative and sufficient sleep duration. It supports cognitive function, mood stability, and overall physical health. Most experts recommend getting **at least 7 hours of good-quality sleep each night**.

[Sleep](#) supports your body and mind [\[R, R\]](#). More precisely, sleep helps:

- Support brain health [\[R, R\]](#)
- Maintain a healthy weight and appetite [\[R, R, R\]](#)
- Regulate blood pressure [\[R, R\]](#)
- Balance blood sugar [\[R, R\]](#)

Ways to sleep better include [\[R\]](#):

- Reducing your bright light exposure (screen time) in the evenings
- Sticking to a regular sleep schedule
- Avoiding hunger or large meals before bed
- Avoiding nicotine, caffeine, and alcohol before bed
- Maintaining a sleep area that’s cool, dark, and quiet

How it helps

High-quality sleep supports the body's natural healing processes, important for recovery from a knee injury.

11



Bromelain

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 500mg of bromelain supplement two to three times daily, preferably with food to reduce the risk of gastrointestinal discomfort. It is recommended to use for short-term relief, typically not exceeding several months, unless supervised by a healthcare provider.

Description

Bromelain is an enzyme found in pineapple that may have anti-inflammatory and digestive benefits. It's often used as a dietary supplement to aid digestion and reduce swelling associated with injuries or surgery.

[Bromelain](#) is an extract from pineapples. It's rich in enzymes that break down proteins [\[R\]](#).

Bromelain may have some health benefits. People use it to [\[R\]](#):

- Maintain joint health
- Help with burns
- Support heart health

How it helps

Bromelain may help reduce swelling, bruising, healing time, and pain associated with knee injuries and surgery.

12



Aquatic Exercise

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Participate in aquatic exercise sessions, such as swimming or water aerobics, for 60 minutes, 3 to 5 times per week. Ensure the exercise intensity is moderate, allowing you to talk but not sing during the activity. Consistency over time is key, so aim to incorporate this into your weekly routine for at least 3 to 6 months to observe benefits.

TYPICAL STARTING DOSE

1 hour

Description

Aquatic exercise involves physical activity performed in water, such as swimming, water aerobics, or aquatic therapy. It is gentle on the joints, making it suitable for individuals with mobility issues, and can help improve cardiovascular fitness and muscle strength.

Aquatic exercise is any type of low-impact physical activity performed in a pool. In this type of cardio exercise, water helps the body float, which reduces gravity and makes the practice more comfortable and tolerable [\[R\]](#), [\[R\]](#).

Compared to land-based exercise, aquatic exercise may be better by [\[R\]](#):

- Reducing the stress and impact on joints
- Lowering fracture risk

Hence, it is usually **recommended for the elderly**. Aquatic exercise is also suitable for people who don't know how to swim [\[R\]](#).

How it helps

Performing exercises in water reduces the load on the knee joint due to buoyancy, allowing for gentle strengthening and mobility improvement.

13



Pilates

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Engage in Pilates exercises for at least 20-30 minutes, 3 times a week. Focus on core strength, flexibility, and mindful breathing. It is suitable for both beginners and advanced individuals, adjusting the difficulty of exercises as necessary.

TYPICAL STARTING DOSE

30 minutes

Description

Pilates is a form of exercise that focuses on strengthening the core, improving flexibility, and enhancing overall body awareness through controlled movements and breathing techniques. Its health benefits include increased core strength, improved posture, enhanced flexibility, and better balance, making it a popular choice for those seeking a holistic approach to fitness.

Pilates is a type of exercise that emphasizes proper alignment, breathing techniques, and precise movements.

It involves a series of controlled movements performed on a mat or with specialized equipment, such as a reformer or Cadillac. Pilates helps strengthen the core muscles, improve flexibility, and promote mind-body awareness.

How it helps

Pilates focuses on strengthening the core and improving alignment, which can indirectly support knee injury rehabilitation.

14



Mobility Training

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate mobility exercises into your daily routine, allocating at least 10-15 minutes each morning or evening to perform stretches and mobilizations that target all major joints and muscles in your body. Consistency is key, aim to practice mobility training daily for ongoing improvements in flexibility and joint health.

TYPICAL STARTING DOSE

10 minutes

Description

Mobility training is a form of physical therapy that focuses on improving an individual's range of motion, flexibility, and functional movement patterns. It helps enhance joint mobility, reduce the risk of injuries, and promote better physical performance in daily activities or sports.

How it helps

Training for mobility can help regain knee joint movement and prevent stiffness, improving overall joint health and recovery.

15

Avoid Lifting Heavy Objects

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Refrain from picking up items that require significant strain or exertion, typically defined as those weighing more than 25 pounds (11 kilograms), to avoid unnecessary pressure on your body. This restriction should be adhered to as long as your healthcare provider advises, which may be indefinitely for chronic conditions or for a specific recovery period following surgery or injury.

Description

Avoiding improper lifting techniques when handling heavy objects can help prevent back injuries and musculoskeletal strain. Practicing safe lifting methods and using proper equipment promotes spine and musculoskeletal health.

How it helps

Lifting heavy objects can put unnecessary strain on the knee; avoiding this helps minimize further injury and pain.

16

Exercise Therapy

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Begin by consulting with a physical therapist to assess your condition and create a personalized exercise plan. Follow the prescribed exercises consistently, focusing on areas needing improvement, such as strength, flexibility, or mobility. Start with gentle exercises, gradually increasing the intensity as you build strength. Ensure you perform the exercises correctly to avoid injury. Regularly check in with your therapist to adjust the plan based on your progress and feedback. Stay committed to the routine for the best results.

TYPICAL STARTING DOSE

1 hour

Description

Exercise therapy is a tailored approach to physical activity designed to improve mobility, strength, and overall health. It is often used to rehabilitate injuries, manage chronic conditions, and promote cardiovascular fitness.

How it helps

Exercise therapy can help to restore strength and mobility in the knee, aiding the recovery process.

17



Practice Exercise Snacks

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Integrate short bursts of physical activity, each lasting about 1 to 2 minutes, into your daily routine at least two to three times a day. These 'exercise snacks' can include activities like doing a set of stairs, rapid bodyweight exercises, pull-ups, push-ups, sit-ups, or brisk walking.

TYPICAL STARTING DOSE

1 minutesute

Description

Staying physically active is essential for maintaining overall health and well-being. **Exercise snacks** are brief, frequent bursts of physical activity integrated into daily routines, helping combat the health risks associated with prolonged sitting and sedentary behavior, such as obesity and cardiovascular issues. Examples include taking the stairs or doing quick exercises during work breaks.

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

Exercise snacks are short, quick bursts of physical activity performed throughout the day, designed to break up prolonged periods of sitting or inactivity. These brief bouts of exercise can be as short as a few minutes and are incorporated into daily routines to boost overall physical activity levels.

Exercise snacks are crucial for health because they combat the negative effects of sedentary behavior, such as prolonged sitting, which is associated with an increased risk of obesity, cardiovascular diseases, diabetes, and musculoskeletal issues. They help improve blood circulation, regulate blood sugar levels, and enhance mood and cognitive function.

Examples of exercise snacks include taking the stairs instead of the elevator, doing a few minutes of bodyweight exercises (e.g., squats or push-ups) during work breaks, or walking briskly for a few minutes after meals. These short, frequent bursts of activity contribute to a more active lifestyle and can significantly benefit overall health by reducing the risks associated with excessive sitting.

How it helps

Staying moderately active promotes circulation which helps with healing, but activities should be low-impact to avoid stressing the knee.

18



McKenzie Method

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Perform the McKenzie method exercises daily, ideally under the guidance of a certified McKenzie therapist. Begin with 5-10 minutes per session, gradually increasing as advised. Continue as long as necessary to improve symptoms, maintaining regular sessions for at least 4-6 weeks for noticeable results.

TYPICAL STARTING DOSE

5 minutes

Description

The McKenzie Method is a physical therapy approach designed to manage musculoskeletal pain, especially in the back and neck. It focuses on exercises and movements that promote pain relief and spinal health.

How it helps

The McKenzie Method of mechanical diagnosis and therapy can manage knee pain and guide rehabilitation through targeted exercises.

19



Good Posture

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Ensure your back is straight, shoulders pulled back but relaxed, and your head is aligned above your shoulders when sitting or standing. When sitting, keep your feet flat on the ground, and use a chair that supports your lower back. Do this continuously throughout the day, reminding yourself to adjust your posture whenever you notice it lapsing.

Description

Maintaining good posture helps prevent musculoskeletal problems, reduces the risk of back and neck pain, and supports overall spinal health. Proper posture can also enhance self-confidence and improve breathing and digestion.

Good posture may help lessen strain on your body. It involves keeping your head, shoulders, and hips aligned [\[R\]](#).

Forward head posture is a type of poor posture in which the head is pushed forward or tilted down toward the chest. This posture is common when using computers or smartphones [\[R\]](#).

Poor posture may lead to [\[R\]](#), [\[R\]](#):

- Muscle pain
- Headaches
- Breathing problems

How it helps

Maintaining good posture prevents additional strain on the knee by ensuring proper alignment and distribution of body weight.

20



Massage

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Schedule a massage session, ideally with a licensed therapist, for 30-60 minutes, once a week. Choose a type of massage that suits your specific needs, such as Swedish for relaxation or deep tissue for muscle tension.

TYPICAL STARTING DOSE

30 minutes

Description

Massage therapy involves the manipulation of soft tissues to relax muscles, reduce stress, and alleviate pain. It can improve circulation, promote relaxation, and provide relief from various physical and mental health concerns.

If you’ve ever had a professional [massage](#), then you probably know how much good it can do. Massages may help with [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Anxiety
- Pain
- Fatigue

Reflexology is a type of massage. It involves applying pressure to specific parts of your feet or hands. In theory, by pressing on these areas, you can relieve tension from other parts of the body [\[R\]](#).

Acupressure is a similar technique, in which pressure points are used to help with stress and pain [\[R\]](#), [\[R\]](#).

How it helps

Massage can support knee injury recovery by improving circulation, reducing muscle tension, and promoting relaxation.

21



Tai Chi

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Practice Tai Chi for 30 to 60 minutes at least twice a week. Choose a quiet, spacious area and follow along with a qualified instructor, either in person at a class or through an online video tutorial, to ensure proper technique and maximum benefit.

TYPICAL STARTING DOSE

1 hour

Description

Tai Chi is a traditional Chinese mind-body practice involving slow, flowing movements and deep breathing. It is known for its potential to reduce stress, improve balance, and enhance overall physical and mental well-being.

Tai chi involves gentle movements and breathing to strengthen and relax the mind and body. Practicing tai chi may help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Manage pain
- Improve fitness
- Increase well-being
- Improve sleep and mood

How it helps

Tai Chi promotes balance and gentle movement, which can improve knee stability and range of motion without high impact.

22



Avoid High-Impact Exercise

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Opt for low-impact activities such as swimming, cycling, or walking instead of running or jumping exercises. Engage in these alternative exercises for at least 150 minutes per week, spread out over several days to ensure rest periods between sessions.

Description

For individuals with certain medical conditions or joint issues, avoiding high-impact exercise can help prevent injuries and joint strain. Choosing lower-impact activities like swimming or cycling can provide similar cardiovascular benefits while minimizing the risk of overuse injuries.

How it helps

Avoiding high-impact activities prevents further strain on the knee, allowing it to rest and recover.

23



Curcumin

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a 500 mg curcumin supplement daily with food. To enhance absorption, take it with a meal that contains fats or oils since curcumin is fat-soluble.

TYPICAL STARTING DOSE
500 mg

Description

Curcumin is a compound found in turmeric known for its anti-inflammatory and antioxidant properties. It has been studied for its potential to reduce inflammation, support joint health, and contribute to overall well-being.

[Turmeric](#) is a yellow spice from India. It may reduce inflammation and [oxidative stress](#) [R].

The most important active compound in turmeric is **curcumin**. People use curcumin for [R, R, R, R, R, R]:

- Joint pain
- Hay fever
- Mood
- High blood sugar
- Gut health
- Liver health

How it helps

Curcumin has anti-inflammatory properties that could be beneficial in managing knee injury inflammation.

24



Electroacupuncture

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Attend electroacupuncture sessions twice a week for a minimum of five weeks. Each session, conducted by a certified practitioner, involves the application of small electric currents through acupuncture needles inserted at specific points on the body.

Description

Electroacupuncture combines traditional acupuncture with electrical stimulation, potentially offering pain relief, improved circulation, and enhanced muscle function. It's used in complementary medicine to address various health concerns and promote overall well-being.

How it helps

Electroacupuncture can reduce pain and inflammation, promoting knee recovery by stimulating nerves and increasing endorphin release.

25



Dietary Protein

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Include a variety of protein sources such as meat, fish, eggs, dairy, beans, and nuts in your diet every day, aiming for at least 0.8 grams of protein per kilogram of body weight. For more active individuals or those looking to build muscle, increase intake to 1.2 to 2.0 grams per kilogram of body weight daily, spread out over all meals to maximize absorption.

Description

Protein is essential for building and repairing tissues, supporting muscle growth, and maintaining overall bodily functions. Adequate protein intake is crucial for overall health and well-being.

Foods that are high in protein include:

- Eggs
- Nuts
- Beef
- Chicken
- Fish
- Yogurt
- Tofu
- Pork
- Cottage cheese

How it helps

Adequate protein intake is crucial for tissue repair and muscle maintenance around the injured knee.

26



Avoid Strenuous Activity

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Refrain from participating in high-intensity physical activities such as running, heavy weightlifting, and high-impact sports. Opt instead for low-impact exercises like walking, swimming, or yoga. It's important to listen to your body's signals and rest as needed, avoiding these strenuous activities until advised otherwise by a health professional.

Description

Avoiding strenuous physical activity in certain medical conditions or during illness can help prevent injury and promote better recovery. It allows the body to conserve energy and supports the healing process.

Strenuous activity is physical activity that requires a lot of effort. Exercise done at 70-85% of a person’s heart rate is considered strenuous. Examples include [\[R\]](#):

- Running, cycling, or swimming at high speed
- Running or hiking uphill
- Jumping rope
- Single tennis
- Sports that involve a lot of running (soccer, basketball, hockey, etc.)

On the other hand, strenuous daily activities include [\[R\]](#):

- Lifting and carrying heavy objects
- Gardening with heavy digging
- Shoveling snow
- Fast dancing

How it helps

Steering clear of strenuous activity helps prevent additional knee damage and gives the body a chance to heal.

27

Proprioceptive Training

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate proprioceptive training into your fitness routine three times a week, using exercises such as standing on one foot, using a balance board, or participating in yoga or Tai Chi sessions. Each session should last for about 15 to 30 minutes, focusing on controlled, balanced movements to improve body awareness and stability.

TYPICAL STARTING DOSE

30 minutes

Description

Proprioceptive training involves exercises and activities that enhance proprioception, the sense of body position and movement in space. It helps improve balance, coordination, and body awareness, making it beneficial for injury prevention and rehabilitation.

How it helps

Proprioceptive training involves exercises to improve balance and body position awareness, allowing you to move efficiently without injury. For knee injuries, this training can strengthen the muscles around your knee, improving stability and reducing risk of future injury.

28

Aquatic Therapy

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Participate in aquatic therapy sessions 2-3 times a week for at least 30 minutes. These sessions should be guided by a professional therapist who specializes in aquatic therapy, and the program should be tailored to your specific health condition and physical capabilities.

TYPICAL STARTING DOSE

30 minutes

Description

Aquatic therapy involves performing exercises and rehabilitation activities in a water environment. It is particularly beneficial for individuals recovering from injuries, surgeries, or certain medical conditions, as the buoyancy of water reduces the impact on joints, eases pain, and improves mobility and muscle strength.

How it helps

Aquatic therapy includes supervised exercises in a pool, which is beneficial for knee rehabilitation as the water's resistance helps strengthen muscles with less impact.

29



Balance And Mobility Training

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate balance and mobility exercises into your routine three to four times per week. Each session should last approximately 30 minutes and include activities such as standing on one foot, walking heel to toe, and tai chi or yoga. Start with simple exercises and gradually increase difficulty as your balance improves.

TYPICAL STARTING DOSE

30 minutes

Description

Balance and mobility training exercises, such as yoga or tai chi, can improve stability and reduce the risk of falls, particularly among older adults. These exercises enhance overall physical function.

How it helps

Balance and mobility training help restore knee function and prevent future injuries by improving proprioception and coordination.

30



Chondroitin

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 400 mg of chondroitin sulfate orally, three times a day or 800 mg once daily. This supplement regimen is typically followed for up to 6 months to support joint health.

TYPICAL STARTING DOSE

800 mg

Description

Chondroitin is often used as a supplement to support joint health and reduce the symptoms of osteoarthritis. It may help improve joint mobility and reduce discomfort in individuals with joint-related issues.

Chondroitin is a major component of cartilage. It helps keep cartilage healthy, and it provides the building blocks for the body to produce new cartilage.

People often combine chondroitin with glucosamine as supplements for joint health [\[R\]](#), [\[R\]](#).

How it helps

Chondroitin can support joint health and may slow the progression of osteoarthritis, a condition that can follow severe knee injuries.

31



Use Cushioned Shoes

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Wear shoes with cushioned soles whenever you are walking or standing, especially on hard surfaces. It is beneficial to replace them once you notice the cushioning has worn out, typically every 300 to 500 miles for runners or every six months for regular use.

Description

Cushioned shoes are footwear designed with added padding and support, commonly used to provide comfort and reduce the impact on joints and feet during walking or physical activities. They can help alleviate foot pain and discomfort, making them suitable for individuals with various foot conditions.

How it helps

Cushioned shoes can absorb impact and provide support, preventing additional strain on an injured knee.

32



Flexibility Training

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate flexibility training exercises, such as yoga or static stretching, into your routine for at least 20-30 minutes a day, three to five times a week. Focus on stretching all major muscle groups, holding each stretch for 10-30 seconds without bouncing, and breathing deeply to maximize benefits.

TYPICAL STARTING DOSE

20 minutes

Description

Flexibility training, such as yoga and stretching exercises, can improve joint range of motion, reduce the risk of injury, and promote better posture. Incorporating flexibility exercises into a fitness routine supports physical comfort and overall mobility.

How it helps

Stretching the muscles around the knee can improve flexibility, reduce stiffness, and prevent muscle imbalances which could hinder healing.

33



Core-Strengthening Exercises

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate exercises like planks, bridges, abdominal crunches, and leg lifts into your daily routine. Aim to do these exercises for 20-30 minutes, 3 times a week. Each exercise should be performed in sets of 10-15 repetitions.

TYPICAL STARTING DOSE

20 minutes

Description

Core-strengthening exercises target the muscles of the abdomen, lower back, and pelvis, helping improve posture, stability, and reduce the risk of back pain. Regular core workouts support a strong and balanced musculoskeletal system.

The core, or trunk, includes several groups of muscles in your abdomen, back, and pelvis. Keeping these muscles strong helps stabilize your body, twist and bend your back, protect your back from injuries, and enhance your overall fitness [\[R\]](#).

Some exercises that help strengthen the core include [\[R\]](#):

- Crunches
- Planks
- Bridges
- Supine toe taps
- Bird dogs

The core can also be strengthened by practicing Pilates, kettlebell training, and some types of yoga [\[R, R, R\]](#).

How it helps

Core strengthening supports the lower back and hips, providing a stable base that can alleviate undue stress on the knee.

34



Manual Joint Mobilization

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Schedule a session with a qualified physical therapist who specializes in manual joint mobilization techniques. Initially, aim for 1-2 sessions per week for a duration of 4-6 weeks. During these sessions, the therapist will apply specific hands-on techniques to move your joints through their natural range of motion, aiming to improve flexibility and decrease pain.

TYPICAL STARTING DOSE

30 minutes

Description

Manual joint mobilization is a hands-on physical therapy technique that can help improve joint function, reduce pain, and enhance mobility. It is often used by physical therapists and chiropractors to address musculoskeletal issues.

How it helps

This physical therapy technique helps to restore motion and reduce pain by gently moving the joint within its normal range.

35



Stretching

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate stretching exercises into your daily routine, dedicating at least 10-15 minutes each day. Focus on major muscle groups such as the neck, shoulders, chest, back, hips, and legs. For best results, stretch both before and after other physical activities, holding each stretch for 15-30 seconds without bouncing.

TYPICAL STARTING DOSE

15 minutes

Description

Stretching involves gently elongating the muscles to improve flexibility, reduce muscle tension, and enhance joint mobility. Regular stretching can help prevent injuries, promote better posture, and increase overall physical comfort.

Stretching is a form of physical exercise that involves moving a muscle or group of muscles to their maximum range of motion. The most common types are **dynamic** (involving movement) and **static** stretching.

Stretching can help **improve flexibility, range of motion, and posture**. It may also relieve stress, reduce muscle soreness and tension, increase blood flow, and reduce the risk of injuries.

To get the most out of stretching, try to do it regularly, breathe deeply, and ease into the stretches.

How it helps

Regular stretching improves flexibility and can alleviate tension around the knee, which might contribute to pain and restrict mobility.

36



Collagen Peptides

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 10-20 grams of collagen peptides daily, mixing the powder into a glass of water, juice, or a smoothie. It is recommended to consume this supplement on an empty stomach to improve absorption, ideally first thing in the morning or right before bedtime for a period of at least 8-12 weeks to observe beneficial effects.

TYPICAL STARTING DOSE

10 g

Description

Collagen peptides are a form of collagen that is broken down into smaller, more easily absorbed molecules. They are commonly used in supplements and skincare products for their potential to promote skin elasticity, hair strength, and nail health.

[Collagen](#) is a protein that helps build skin, bones, and joints [\[R\]](#), [\[R\]](#).

People use collagen supplements for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Joint pain
- Skin health
- Hair growth

How it helps

Collagen peptides may support the repair of the damaged connective tissue and improve knee joint health.

37



Optimize Exercise

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Engage in at least 150 minutes of moderate aerobic exercise or 75 minutes of vigorous aerobic exercise each week, along with muscle-strengthening activities on two or more days a week.

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, lift weights, dance, or play team sports. **Everything counts, and it's never too late to start!**

However, extreme exercise may contribute to heart rhythm problems, irregular periods, and more. It is important to get the right amount of physical activity to not stress your body [\[R, R, R\]](#).

How it helps

Optimized exercise strengthens the muscles around the knee, enhancing support and stability, reducing pressure on the knee joint itself. It also improves flexibility and mobility, aiding recovery and reducing risk of future injuries.

38

Strength Training

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Engage in strength training exercises, such as weight lifting or bodyweight exercises, for 60 minutes per session, 2 to 3 times per week. Ensure you work all major muscle groups and rest each muscle group for at least 48 hours before exercising it again.

TYPICAL STARTING DOSE

1 hour

Description

Strength training, also called resistance or *anaerobic* training, contracts the muscles against an external resistance for short periods of time. This helps gain muscle strength, tone, and mass. This can include activities like weight lifting, pushups, and crunches.

Strength training, also known as resistance training, is a type of physical exercise that uses resistance to build strength, anaerobic endurance, and size [R]. Some of the most common strength training methods include [R]:

- Weight lifting
- Bodyweight exercises like push-ups, pull-ups, squats, and lunges.
- Resistance bands
- Plyometrics or explosive force exercises

The benefits of strength training are numerous, and include [R]:

- Increased muscle strength
- Improved bone health
- Reduced risk of injury
- Improved balance and coordination
- Enhanced mood
- Boost metabolism

Consult with a doctor before starting any new exercise program, especially if you have any health conditions.

How it helps

Strength training helps a knee injury by strengthening the muscles surrounding your knee, which can provide added support and lessen strain on the knee joint. It also improves flexibility and balance, which can reduce the risk of future injuries.

39

Walking

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate at least 30 minutes of brisk walking into your daily routine, aiming for a minimum of five days a week. This can be done in one continuous session or broken into shorter periods, such as three 10-minute walks throughout the day.

TYPICAL STARTING DOSE

30 minutes

Description

Walking is a low-impact form of exercise that can contribute to cardiovascular fitness, weight management, and improved overall health. It is used to support physical activity goals, enhance mood, and promote better cardiovascular health.

How it helps

Walking keeps the knee joint mobile and strengthens the surrounding muscles without overloading the joint.

40

Apply Heat

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Place a warm, not hot, heating pad or a warm wet towel on the affected area for 15-20 minutes at a time. Do this several times a day, ensuring there's at least a 1-hour interval between sessions to avoid skin damage.

TYPICAL STARTING DOSE

15 minutes

Description

Applying heat, such as through heating pads or warm baths, can help relieve muscle tension and soothe pain. It is a common method for managing muscle aches, menstrual cramps, and minor injuries.

People use hot applications to relieve pain, improve blood flow, and more [\[R, R\]](#).

Types of hot applications include [\[R, R\]](#):

- Heating pads
- Hot baths
- Saunas
- Hot water bottles

How it helps

Applying heat to the knee can increase blood flow, reduce muscle tension, and promote healing by enhancing tissue elasticity.

41



Low-Intensity Exercise

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate 60 minutes of low-intensity activities, such as walking or gentle yoga, into your daily routine. Aim to do this 5 days a week to achieve the best results.

TYPICAL STARTING DOSE

1 hour

Description

Low-intensity exercise, such as walking or gentle yoga, provides numerous health benefits, including improved cardiovascular health, stress reduction, and enhanced overall fitness without the strain of high-intensity workouts.

How it helps

Low intensity exercises, such as walking or gentle cycling, maintain movement in the knee without excessive stress, promoting healing.

42



Methylsulfonylmethane (MSM)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 1 to 3 grams of Methylsulfonylmethane (MSM) per day, divided into three doses. This can be in the form of capsules or powder that is mixed with water. It is recommended to start with a lower dose to assess tolerance, then gradually increase to the desired dose over a period of 1 to 2 weeks.

TYPICAL STARTING DOSE

1 g

Description

MSM is a naturally occurring sulfur compound found in foods and used in dietary supplements. It has anti-inflammatory properties and may be used to support joint health and reduce exercise-related muscle soreness.

A molecule of MSM is broken down in the body into a sulfate (sulfur) group and two methyl groups.

The following may increase people’s needs for sulfur and methyl groups: physical activity, recovery from injuries, inflammation, infections/sickness, toxins, etc.

People also need more sulfur when taking hormones (DHEA, pregnenolone, etc.), drugs (Aspirin, Tylenol, NSAIDs, birth control, etc.) or supplements (flavonoids & polyphenols - resveratrol, quercetin, curcumin, etc.) that undergo sulfation.

How it helps

MSM may help to reduce pain and inflammation in the joints including the knee.

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.

