SelfDecode™

ACL Injury

DNA Health Report

REPORT CATEGORY

INJURIES

Sample Client

Report date: 15 January 2026

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Personal information

NAME

Sample Client

SEX AT BIRTH

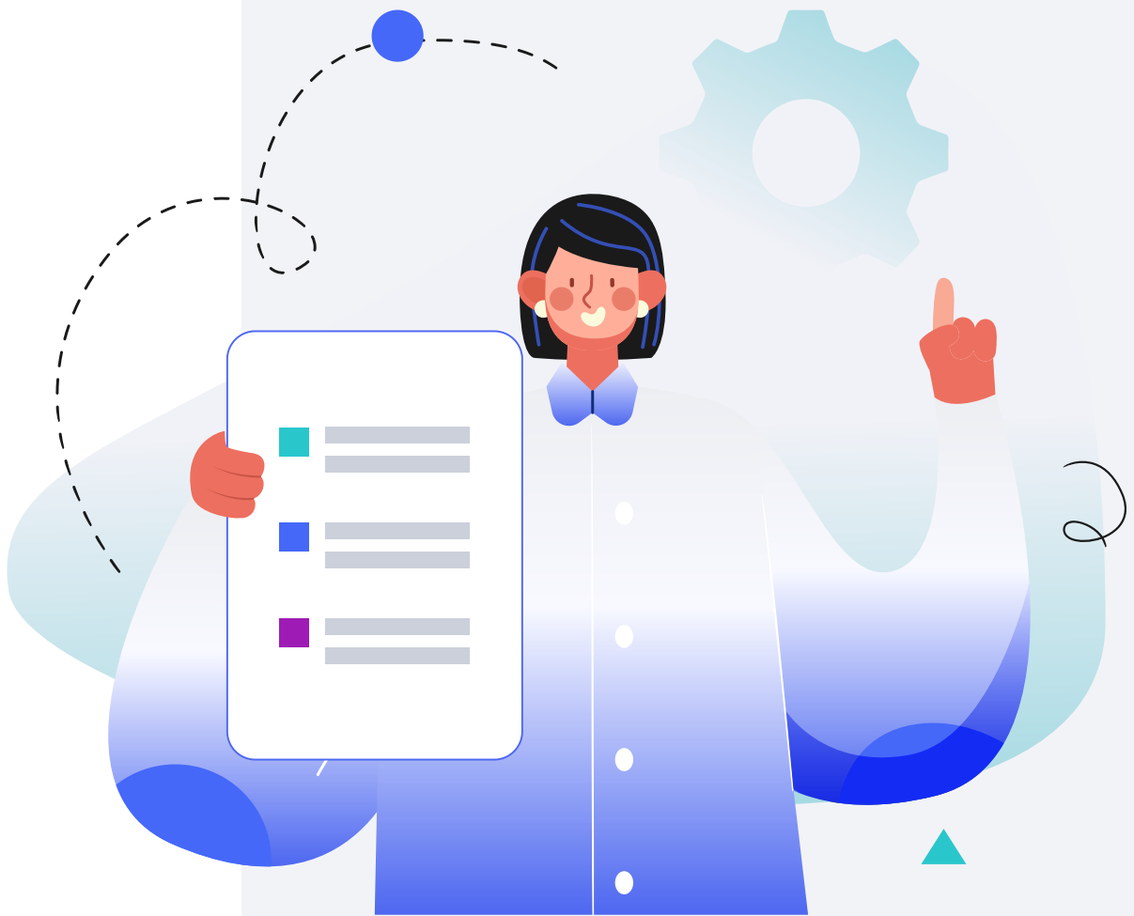
Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg

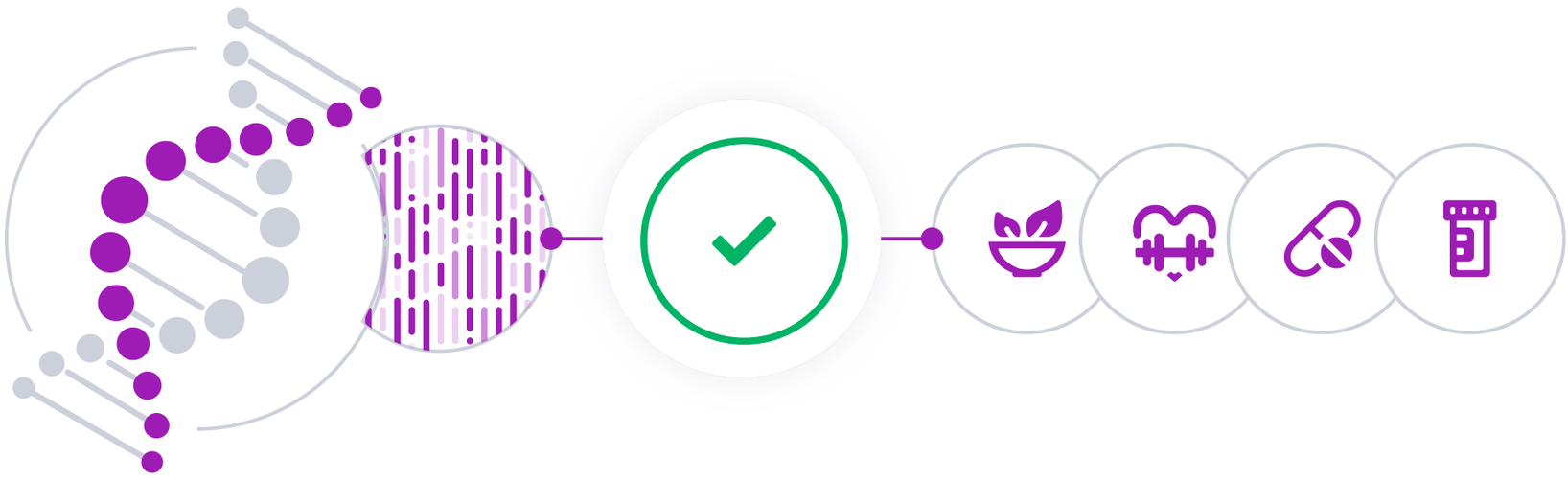


DISCLAIMER

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

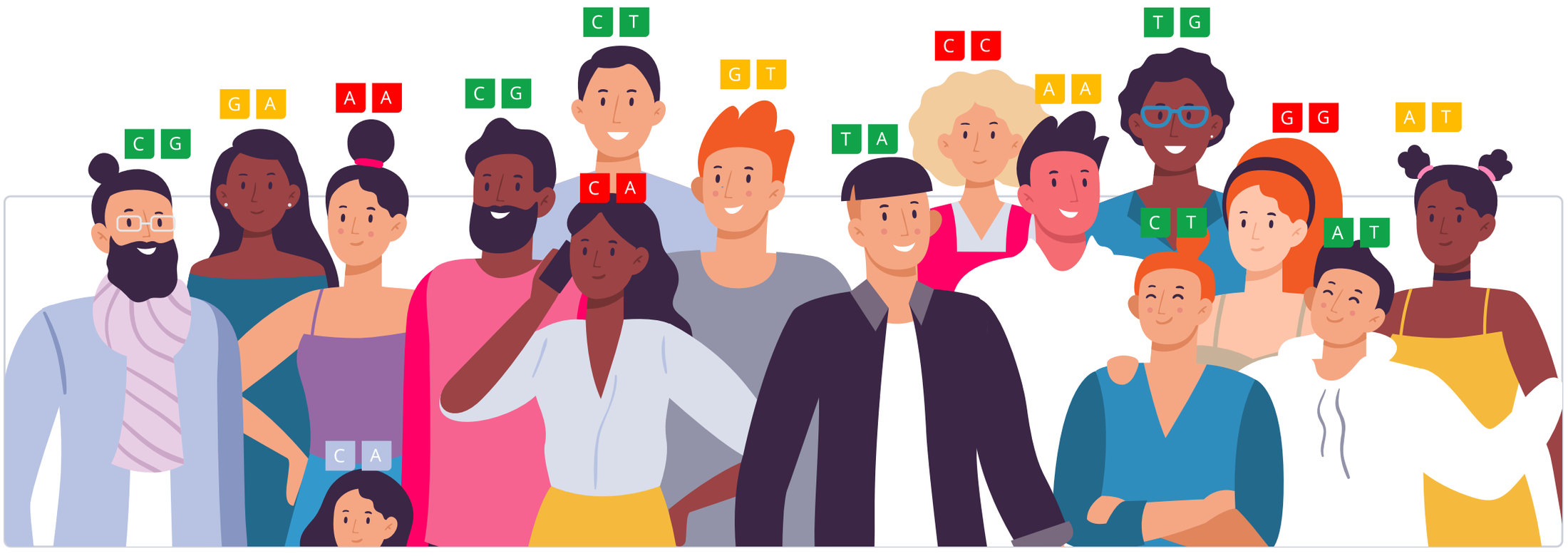
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



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.

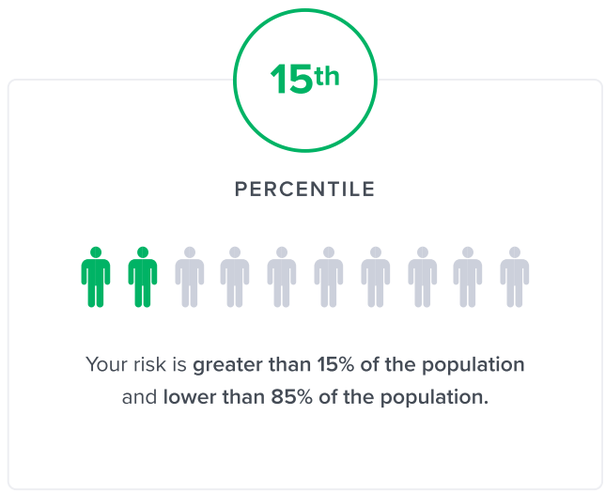
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



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.

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.



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, afew 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 **anterior cruciate ligament** (**ACL**) is a strong band of tissue that connects the bone in your thigh to the bone in your shin. It helps stabilize the knee [R, R, R].

Damage to the ACL may cause it to tear partially or completely. This is also known as a partial or complete ACL sprain [R, R, R].

ACL injuries are very common. There are about **100K-200K cases every year** in the US alone [R].

An ACL injury can occur if the knee moves suddenly or awkwardly. It can also occur if the side of your knee gets hit very hard [R, R, R].

Symptoms of an ACL injury can include [R, R, R]:

- Knee pain and swelling
- A “popping” sound or sensation
- Difficulty or inability to do certain movements
- Instability or buckling of the knee when trying to walk

Risk Factors and Treatment

PERSONALIZED TO GENES

Based on your genetics, you may be prone to an ACL injury.

Here are some tips to prevent an ACL injury:

- Maintain a healthy weight
- Stretch your leg muscles (quadriceps, hamstrings, glutes and calves)
- Strengthen your leg muscles with strength and endurance training
- Warm up properly and ease into the movements
- Avoid high-impact activities, sudden movements, and overtraining
- Avoid exercising on artificial turf
- Wear proper sport shoes and protective equipment (e.g., a knee brace)

However, keep in mind that your lifestyle and the environment may also influence your likelihood of an ACL injury.

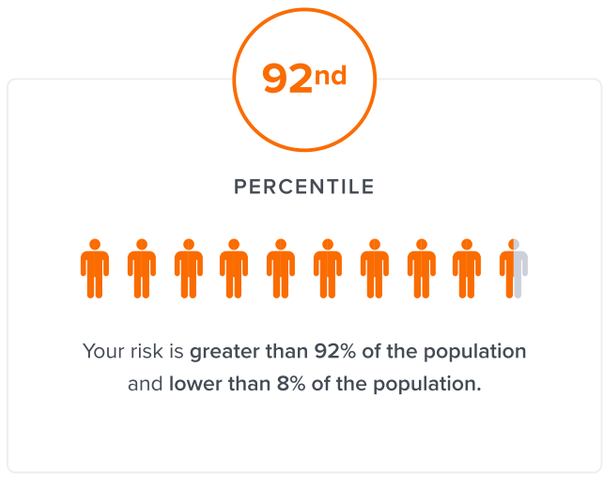
The **anterior cruciate ligament** (**ACL**) is a strong band of tissue that connects the bone in your thigh to the bone in your shin. It helps stabilize the knee. Damage to the ACL may cause it to tear partially or completely. An ACL tear can occur if the knee moves suddenly or awkwardly. It can also occur if the side of your knee gets hit very hard [R, R, R].

An ACL injury is most likely to occur during exercise. For example, taking part in soccer, football, basketball, and skiing may increase the risk. Other risk factors include [R, R, R]:

- Female sex
- Not warming up before exercising
- Using improper form during exercise
- Wearing improper sports equipment
- Exercising on artificial turf
- Working an intense job that requires you to jump, pivot, or climb

MORE LIKELY

More likely to tear an ACL based on 71,152 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
SOAT1	rs113435565	CA
MALRD1	rs118010763	TT
MGMT	rs112031232	AA
HSPG2	rs190446136	CC
MYOM3	rs140568949	AA
DOCK7	rs138219207	CC
AHCTF1	rs184856290	GG
PLXNA2	rs61813824	AA
SGMS1	rs151045759	CC
ARHGAP20	rs9704284	GG
PFKP	rs12413610	TT
NBPF3	rs7524699	CC
UBE2J2	rs61766282	GT
DPP6	rs4067493	CC
/	rs11960097	TT
ST6GALNAC3	rs289694	CC
IGSF21	rs9660827	CC
TCERG1L	rs2663012	CC
OR2T2	rs28693711	TT
OR2M4	rs191269595	GG
TNFSF18	rs2143185	TT
LBR	rs146324110	TT
DNAH14	rs12116987	TT

- **Genetics**

In fact, up to **70%** of differences in people's likelihood of tearing an ACL may be due to genetics [R, R].

Treatment for a partial ACL tear includes the "RICE" method [R, R]:

- **R**esting
- **I**cing the knee
- **C**ompressing the knee
- **E**levating the leg

Physical therapy and wearing a brace or using a crutch may also help. In more severe cases, surgery may be required [R].

GENE	SNP	GENOTYPE
SHTN1	rs142967392	TT
CADM1	rs61899165	CC
SLC22A15	rs7540316	CC
DNAH14	rs12127872	CC
USP6NL	rs76172007	GG
HSPA14	rs17155523	AA
TACC2	rs61873773	CC
CRYZ	rs147331170	TT
ADGRL2	rs114426845	AA
NCAM1	rs59568652	GG
VAV3	rs138238287	CC
ARHGAP12	rs79526796	GG
DAB1	rs852794	GG
/	rs116845747	TT
NTPCR	rs8179359	GG
/	rs114694655	TT

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
1	Exercise At Least One Hour a Day	1 hour
2	Reduce Knee Strain	
3	Jumping	15 minutes
4	Physical Therapy	30 minutes
5	Blood Flow Restriction Training	15 minutes
6	Cold Applications	15 minutes
7	Vitamin C	2000 mg
8	Backward Walking	10 minutes
9	Pilates	30 minutes
10	Stability Training	30 minutes
11	Core-Strengthening Exercises	20 minutes
12	Exercise Therapy	1 hour
13	Low-Intensity Exercise	1 hour
14	Dietary Protein	
15	Strength Training	1 hour
16	Balance And Mobility Training	30 minutes
17	Flexibility Training	20 minutes
18	Electrical Stimulation	20 minutes
19	Aquatic Therapy	30 minutes
20	Stretching	15 minutes
21	Manual Therapy	
22	Proprioceptive Training	30 minutes
23	Compression Therapy	
24	Aquatic Exercise	1 hour

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 injury prevention programs may reduce the risk of ACL injuries in athletes. These programs typically include [R, R, R, R, R, R]:

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

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

2

Reduce Knee Strain

IMPACT 4 / 5

EVIDENCE 4 / 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 ACL 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

However it may be practically impossible for athletes to eliminate the risk completely.

3

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 injury prevention programs may reduce the risk of ACL injuries in athletes. These programs typically include [R, R, R, R, R, R]:

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

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

4

Physical Therapy

IMPACT 3 / 5

EVIDENCE 4 / 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

Experts recommend physical therapy instead of surgery in less severe cases and for people whose physical activity level doesn't put much stress on the knees [R].

Supervised exercises prescribed by a physical therapist may help reduce pain and swelling, restore knee function, and strengthen the muscles. The use of braces to stabilize the knee may increase the odds of recovery [R, R].

People recovering from ACL reconstruction surgery may be prescribed exercise therapy to increase muscle strength and knee function [R].

Conversely, bracing may not improve knee function after ACL reconstruction surgery [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

Multiple systematic reviews suggest that BFR training, particularly with low loads, can enhance quadriceps strength, increase cross-sectional area, and alleviate knee joint pain in individuals undergoing ACL reconstruction. Three reviews (the largest one with 10 studies) support these positive outcomes. However, a separate systematic review of 6 studies found inconsistent results regarding the effectiveness of this technique [R, R, R, R].

6

Cold Applications

IMPACT 2 / 5

EVIDENCE 3 / 5

How to implement

Apply a cold pack or a bag of frozen peas wrapped in a towel to the affected area for 15-20 minutes, every 2-3 hours during the first 48 hours of experiencing pain or swelling.

TYPICAL STARTING DOSE

15 minutes

Description

Cold applications, such as ice packs, can help reduce inflammation, alleviate pain, and promote muscle recovery after injuries or intense physical activity. Applying cold can provide temporary relief from discomfort and support the body's natural healing processes.

People use cold applications to relieve pain, reduce inflammation, and more [R, R].

Types of cold applications include [R, R]:

- Ice packs
- Ice baths
- Cryotherapy

How it helps

Cold application may reduce pain after ACL reconstruction surgery. However, it may have no effect on other outcomes such as knee function or drainage [R, R].

7

Vitamin C

IMPACT 2 / 5

EVIDENCE 2 / 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

8

Backward Walking

IMPACT 2 / 5

EVIDENCE 2 / 5

How to implement

Engage in backward walking for 10-15 minutes daily, preferably in a safe, obstacle-free environment to minimize the risk of falls. This can be done in a straight line or in a loop. Ensure to start slowly to maintain balance and gradually increase your pace as you become more comfortable with the movement.

TYPICAL STARTING DOSE

10 minutes

Description

Backward walking, also known as retro walking, can provide unique benefits for balance, coordination, and muscle engagement compared to forward walking. It's used as a form of exercise to improve motor skills and lower-body strength.

How it helps

A meta-analysis of 21 studies and 635 participants found that adding backward walking to conventional treatment improves gait parameters and muscle strength in people with anterior cruciate ligament [R].

9

Pilates

IMPACT 1 / 5

EVIDENCE 1 / 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

In a non-placebo-controlled trial of 50 participants with ACL injury, practicing Pilates 3x/week for 12 weeks increased quadriceps strength [R].

Pilates strengthens the muscles surrounding the knee, which adds stability and can limit further ACL injury. It also improves flexibility, balance and body awareness, which could help prevent awkward, injury-causing movements.

10

Stability Training

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Integrate stability exercises into your workout routine 2-3 times per week. These exercises include activities such as using a stability ball, performing balance exercises on a balance board, or doing body-weight exercises that focus on balance and core strength, such as planks and single-leg stands. Spend approximately 20-30 minutes per session focusing on these exercises.

TYPICAL STARTING DOSE

30 minutes

Description

Stability training is a form of exercise that focuses on enhancing core strength and balance through targeted movements and exercises, often incorporating equipment like stability balls, balance boards, or resistance bands. It helps improve overall stability and posture while reducing the risk of falls and injury.

How it helps

In a study of 26 male athletes post-ACL surgery, those who did eight weeks of core stability exercises before team training had improved core endurance, hip strength, knee angle, and reduced knee valgus angle during single-leg landing compared to controls [R].

Stability training strengthens the muscles around the knee, which can help maintain knee stability and prevent further injury to the ACL.

11

Core-Strengthening Exercises

IMPACT 1 / 5

EVIDENCE 1 / 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

In a non-placebo-controlled trial of 29 female soccer players, practicing pelvic and core strength training for 8 weeks improved ACL injury risk factors and vertical drop jump performance [R].

Core-strengthening exercises enhance stability in your knee joint, which is pivotal for ACL injury recovery. Furthermore, they fortify muscles around the knee, reducing strain on the ACL and preventing further injury.

12

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

Structured exercise therapy can help rebuild strength and mobility in the knee joint, which is essential for recovery post-ACL injury.

13

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 maintain joint mobility and muscular activation while preventing excessive strain on the ACL.

14

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

Protein is essential for tissue repair and muscle strength, both of which are critical during the recovery from an ACL injury.

15

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

Strengthening the muscles around the knee helps support the joint, reducing the load on the ACL and facilitating recovery.

16

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

This training can aid in the restoration of stability and proprioception, which are often compromised after an ACL injury.

17

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

Improving flexibility can help restore the range of motion and reduce the risk of further injury.

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Electrical Stimulation

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Use an electrical stimulation device on the targeted area of your body for 20-30 minutes each day. Consult with a healthcare provider to determine the most appropriate intensity and frequency settings for your specific condition.

TYPICAL STARTING DOSE

20 minutes

Description

Electrical stimulation, such as TENS (Transcutaneous Electrical Nerve Stimulation), is used in physical therapy to relieve pain and promote muscle relaxation. It can be a non-invasive method for managing certain types of pain and enhancing muscle recovery.

How it helps

Electrical stimulation can help maintain muscle strength and minimize atrophy in the affected leg during the recovery period.

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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 provides a low-impact environment to facilitate rehabilitation and can help improve muscle strength and joint function without overloading the ACL.

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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

Stretching the muscles surrounding the knee joint can increase flexibility and aid in recovery.

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Manual Therapy

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Schedule a session with a certified manual therapist, such as a physical therapist or chiropractor, once a week for at least 3 to 6 weeks. During these sessions, allow the therapist to apply hands-on techniques to manipulate muscles and joints aiming to improve mobility and reduce pain.

Description

Manual therapy encompasses various hands-on techniques used by healthcare professionals, including physical therapists and massage therapists, to alleviate pain, improve mobility, and promote overall musculoskeletal health. It can be effective for addressing a wide range of conditions, from muscle tension to joint disorders.

How it helps

Manual therapy techniques such as massage and joint mobilization can improve knee joint function and alleviate pain.

22

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

Enhancing proprioception can help restore knee stability and prevent re-injury.

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Compression Therapy

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Wear compression stockings or sleeves daily, especially during long periods of standing or sitting. Choose a compression level appropriate for your condition (mild, moderate, or high), as advised by a healthcare professional. Start wearing them in the morning before swelling occurs and keep them on until bedtime.

Description

Compression therapy involves wearing specialized garments that apply pressure to the limbs, promoting better circulation and reducing swelling. It is commonly used to manage conditions like venous disorders and can help alleviate symptoms, improve vascular health, and enhance overall well-being.

In compression therapy, different methods are used to apply pressure to the legs. These methods include [R]:

- Bandages
- Wraps
- Compression stockings
- Pneumatic pressure devices

Compression therapy supports blood flow. It may help [R, R, R]:

- Prevent blood clots and deep vein thrombosis (DVT)
- Reduce some kinds of swelling
- Reduce symptoms of restless legs syndrome

How it helps

Compression can minimize swelling and provide support to the injured knee, potentially reducing discomfort and enhancing stability.

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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

Exercising in water supports the body and reduces stress on the ACL, which can help improve mobility and strength during recovery.

Next Steps

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

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.