

Tennis Elbow

DNA Health Report

REPORT CATEGORY —



INJURIES

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

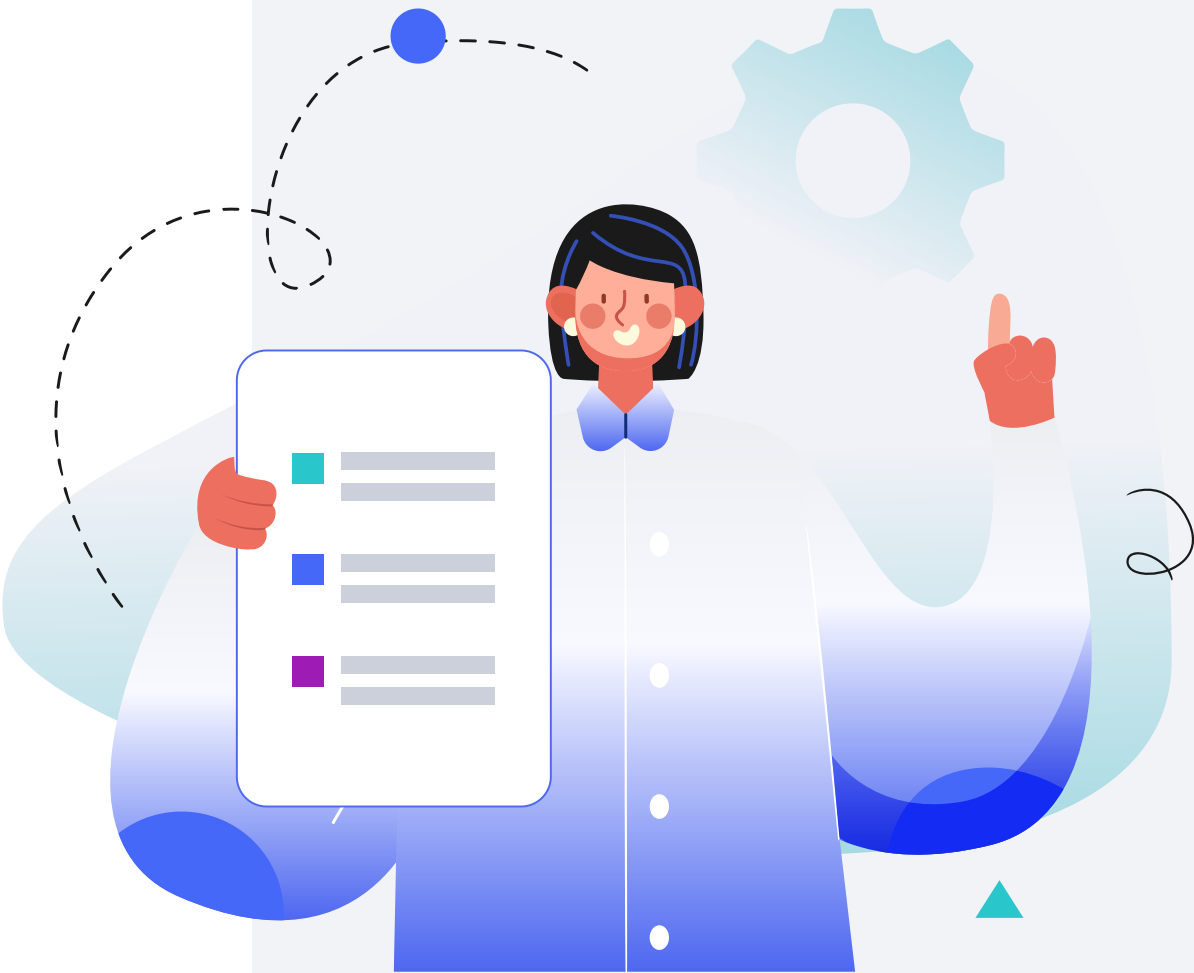
Male

HEIGHT

5ft 5" 165cm

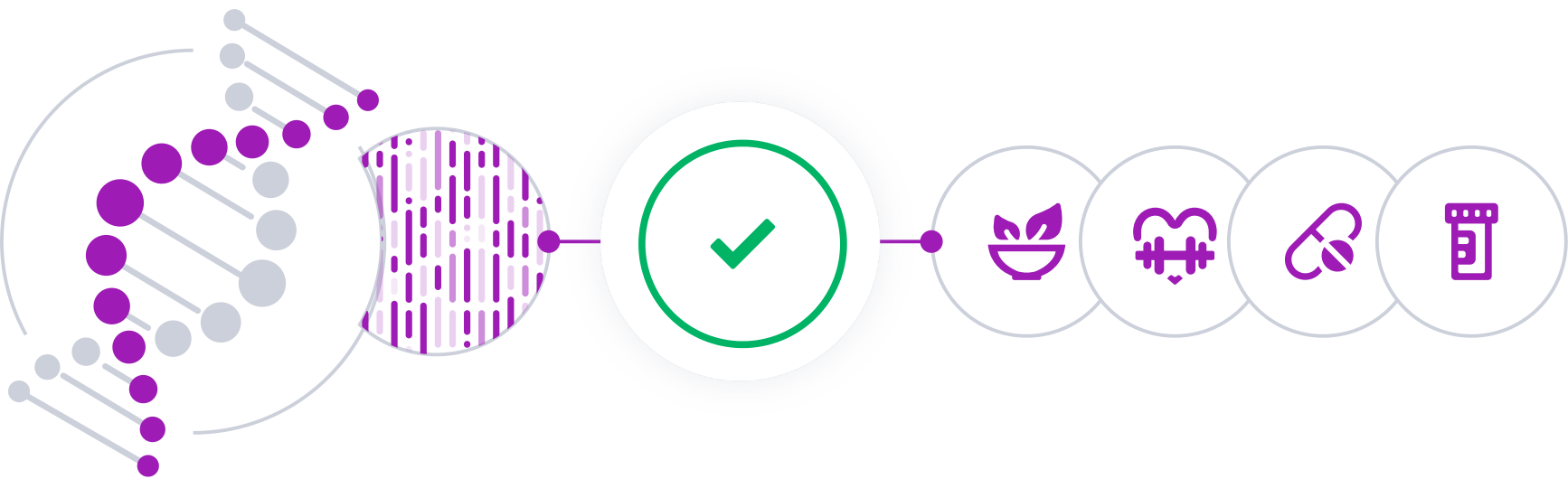
WEIGHT

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.

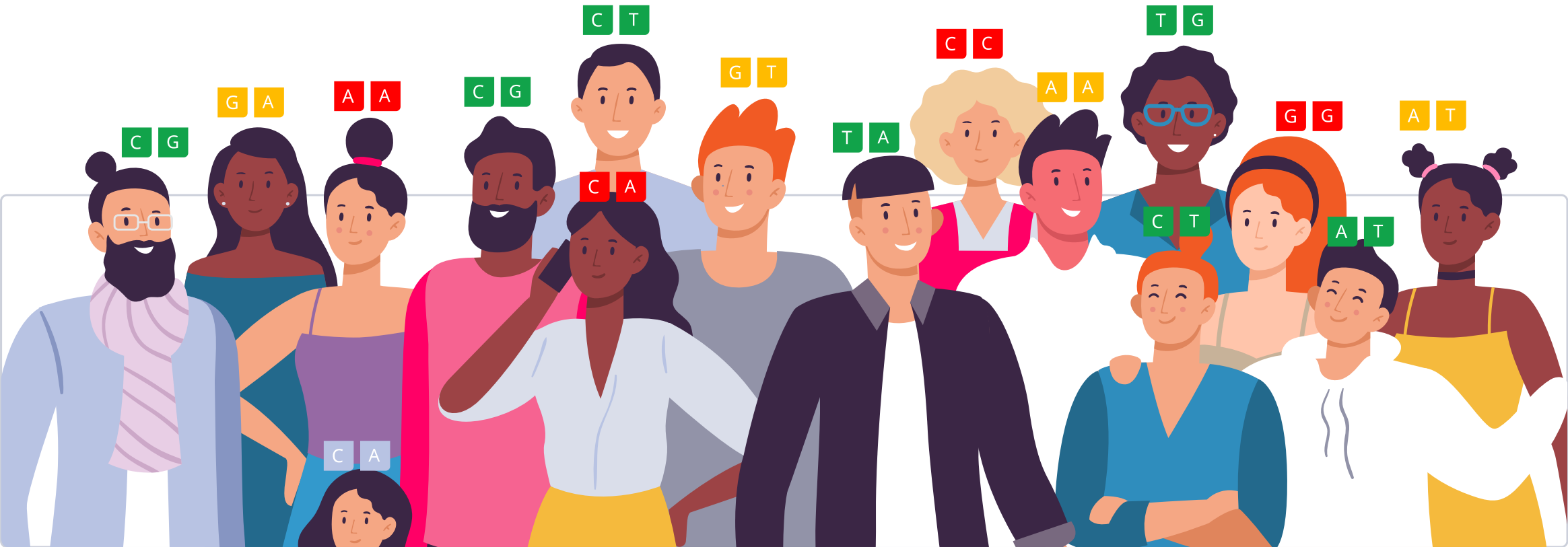


Similarly, our Trait Reports look at how your DNA influences your traits.



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

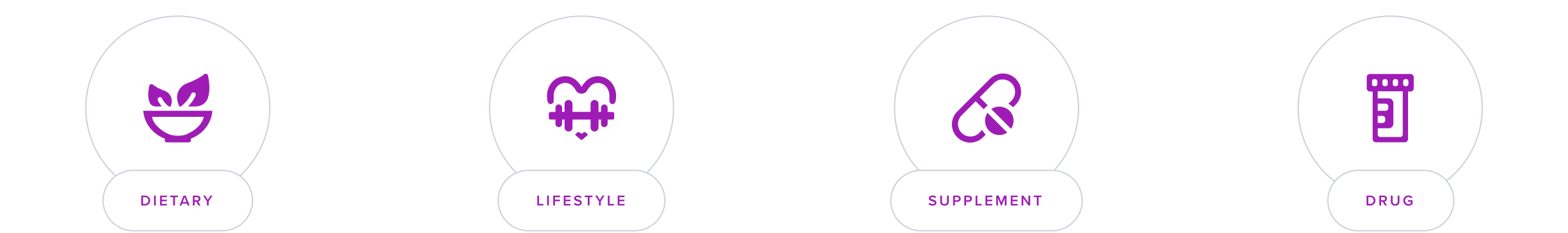
You have 2 risk alleles

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

Tennis elbow, medically known as lateral epicondylitis, is a painful condition resulting from overuse of the tendons in the elbow. It arises when the tendons that join the forearm muscles on the outside of the elbow become inflamed.

The condition is especially common among tennis players, but you can get it even if you've never been near a tennis court!

Symptoms of tennis elbow include:

- Pain and tenderness: Mostly on the outside of the elbow, which can also radiate down the forearm.
- Stiffness: Especially in the morning or after prolonged periods of rest.
- Weakness in the forearm.
- Numbness or tingling: These can extend into one or more fingers, usually the ring and little fingers.

Risk Factors and Treatment

Several factors might increase your risk of developing tennis elbow:

- **Age:** It's most common in adults between 30 and 50.
- **Occupation:** Jobs that involve repetitive motions of the wrist and arm, such as painters, plumbers, and cooks, can lead to this condition.
- **Certain sports:** Participating in racket sports increases your risk of tennis elbow, especially if you employ poor stroke technique.
- **Genetics:** Some people might have a genetic predisposition that makes their tendons more susceptible to injuries from repetitive actions.

Managing tennis elbow involves rest, physical therapy, pain-relieving medications, and sometimes even surgery for severe cases. Preventive strategies include proper equipment use, strengthening exercises, and proper technique in activities involving repetitive arm movements.



LESS LIKELY

Less likely to have tennis elbow based on 1,670 genetic variants we looked at



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	Reduce Tendon Strain	2	Exercise Therapy1 hour
3	Shock Wave Therapy	4	Vitamin C2000 mg
5	Manual Therapy	6	Wrist Splints
7	Low-Level Laser Therapy (LLLT)30 seconds	8	Stretching15 minutes
9	Low-Intensity Pulsed Ultrasound	10	Deep Friction Massage
11	Good Posture	12	Strength Training1 hour
13	Eccentric Exercise	14	Physical Therapy30 minutes
15	Acupuncture1 hour	16	Blood Flow Restriction Training15 minutes
17	Myofascial Release5 minutes	18	Avoid High-Impact Exercise
19	Collagen (Non-Hydrolyzed)5 g	20	Tai Chi1 hour
21	Cryotherapy	22	Alpha-Ketoglutarate (AKG)1 g
23	Glycine3 g	24	Deep Heat Topicals
25	Vibration Therapy20 minutes	26	Methylsulfonylmethane (MSM)1 g

1



Reduce Tendon Strain

IMPACT

5 / 5

EVIDENCE

5 / 5

How to implement

To reduce tendon strain, modify your daily activities to avoid motions that cause discomfort or pain. If you engage in repetitive tasks or sports, take regular breaks, approximately every 30 minutes, to rest or gently stretch the affected tendon. Additionally, ensure to properly warm up before any physical activity and cool down afterwards.

Description

Repetitive or intense strain on the tendons of the upper and lower limbs can cause their inflammation or breakdown. Reducing tendon strain entails avoiding repetitive movements or overuse of specific muscles and tendons, which can help prevent injuries such as tendinitis and support overall musculoskeletal health.

Repetitive or intense strain on the tendons of the upper and lower limbs can cause their inflammation or breakdown. Certain sports, especially if practiced using improper technique or equipment, are most commonly associated with tendon injuries. These include [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Baseball
- Basketball
- Bowling
- Golf
- Running
- Swimming
- Tennis
- Gymnastics

On the other hand, tendon injuries can also occur in the workplace. Works involving repetitive movements, awkward positions, forced movements, using vibrating tools, and overhead reaching may lead to tendon injuries. Examples of tasks that increase the risk include [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Gardening
- Lifting
- Landscaping
- Painting
- Scrubbing
- Shoveling
- Typing
- Woodworking

Working on a chair, keyboard, or desktop that are positioned incorrectly for your height, arm length, and the tasks may also lead to tendon injuries [\[R\]](#), [\[R\]](#).

How it helps

Tendon inflammation is more common in people whose jobs involve [\[R\]](#):

- Repetitive motions
- Awkward positions
- Frequent overhead reaching
- Vibration
- Forceful exertion

You may be more likely to develop tendon inflammation if you participate in certain sports that involve repetitive motions, especially if your technique isn't optimal. This can occur with [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Baseball
- Basketball
- Bowling
- Golf

- Running
- Swimming
- Tennis

Experts recommend reducing strain to prevent tendon inflammation. Strategies that may help include [\[R\]](#), [\[R\]](#):

- Limiting repetitive activities, especially if performed for long periods of time
- Making sure the workplace is ergonomically adjusted
- Stretching and strengthening the muscles
- Alternating high-impact sports with low-impact ones (e.g., alternating running with walking)
- Avoiding exercising on hard, uneven, or slippery surfaces
- Using proper equipment (e.g., well-fitting, cushioned running shoes)
- Slowly increasing the intensity of the activity

2



Exercise Therapy

IMPACT

4 / 5

EVIDENCE

4 / 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

Experts say exercise therapy is the most effective strategy to improve pain, physical function, and quality of life in people with tendon injuries, including tendon inflammation. Exercise therapy may help with inflammation of the [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Achilles tendon [\[R\]](#), [\[R\]](#), [\[R\]](#)
- Rotator cuff [\[R\]](#), [\[R\]](#), [\[R\]](#)
- Lateral elbow tendons [\[R\]](#), [\[R\]](#)
- Kneecap [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#)
- Glutes [\[R\]](#)

3



Shock Wave Therapy

IMPACT

2 / 5

EVIDENCE

4 / 5

How to implement

Schedule and attend sessions for extracorporeal shock wave therapy (ESWT) with a qualified healthcare provider. Typically, treatments may involve 1 to 3 sessions a week over a span of 3 to 4 weeks, depending on the condition being treated and the severity of symptoms.

Description

Extracorporeal shockwave therapy is a medical treatment that uses shockwaves to stimulate healing and reduce pain in various musculoskeletal conditions. It is often used for conditions such as plantar fasciitis and tendinitis.

In extracorporeal shockwave therapy, sound waves are emitted and passed through parts of the body. Doctors use it to help reduce pain and stimulate tissue recovery in people [\[R\]](#), [\[R\]](#).

How it helps

[Two meta-analyses \(the largest one with 12 studies and 1104 participants\)](#) found **little effectiveness** of extracorporeal shock wave therapy **at improving pain and grip strength** in people with tennis elbow. However, it was **more effective when radial, in people with symptoms for over 6 months, and at short follow-up** [\[R\]](#), [\[R\]](#).

In contrast, a [meta-analysis of 13 studies and 1035 participants](#) concluded that extracorporeal shock wave therapy **improves pain and grip strength**. Another [meta-analysis of 9 studies](#) found that people **acquire 50% pain reduction** better with this technique than with the placebo [\[R\]](#), [\[R\]](#).

A [meta-analysis of 5 trials](#) concluded that extracorporeal shock wave therapy **improves VAS scores and grip strength better than ultrasonics** [\[R\]](#).

When **compared to corticosteroid injection**, extracorporeal shock wave therapy is **more effective at improving VAS score and grip strength** according to [2 meta-analyses \(the largest one with 40 trials\)](#). However, another meta-analysis (9 trials and 1006 participants) found extracorporeal shock wave therapy **of little effectiveness** and concluded that **corticosteroid injection was more effective at reducing pain** [\[R\]](#), [\[R\]](#), [\[R\]](#).

4



Vitamin C

IMPACT

2 / 5

EVIDENCE

3 / 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

Some studies observed the above benefits for tennis elbow in particular [\[R\]](#), [\[R\]](#).

5

Manual Therapy

IMPACT

2 / 5

EVIDENCE

3 / 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 appears to be beneficial for improving symptoms related to tennis elbow, including pain reduction and increased grip strength. Here are the key findings:

1. A meta-analysis of 20 studies shows joint mobilizations, especially mobilization with movement and Mill's manipulation, effectively improve pain and grip strength in people with tennis elbow [\[R\]](#).
2. A combination of Mulligan mobilization (a type of manual therapy) with ultrasound therapy and exercise showed improved outcomes such as pain relief and grip strength compared to ultrasound therapy alone for patients with tennis elbow [\[R\]](#).
3. The effectiveness of Cyriax manual therapy (another manual therapy technique) versus Muscle Energy Technique showed that both techniques are equally effective in decreasing pain, functional disability, and increasing grip strength in subjects with tennis elbow [\[R\]](#).
4. Manual mobilization with movement (MWM) has been specifically noted to help decrease pain and improve the strength of individuals with chronic lateral epicondylitis, a condition commonly known as tennis elbow [\[R\]](#).

6



Wrist Splints

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Wear wrist splints during the night while sleeping and during activities that aggravate your wrist pain, such as typing or driving. It is recommended to continuously use these splints for several weeks to notice improvement in symptoms.

Description

Wrist splints are orthopedic devices worn on the wrist to support and immobilize it. They are used for conditions like carpal tunnel syndrome to reduce pain and inflammation by limiting wrist movement.

A wrist splint or brace is a type of soft cast used to hold the hand and wrist in a neutral position. It is used to promote healing and prevent further injury [\[R\]](#).

How it helps

A study evaluated the effects of a new spiral hand-forearm splint that restricts wrist and forearm movement on people with tennis elbow. The results showed pain relief and improved function and grip force after 4 weeks. This suggests that restriction of certain movements may improve tennis elbow symptoms [\[R\]](#).

Another study compared the effects of short-duration wrist joint splinting combined with physical therapy to physical therapy alone for managing tennis elbow. The group that used the wrist splints showed improvements in pain intensity and other outcomes such as wrist flexion, wrist extension ROM, and grip strength compared to the group receiving only physical therapy [\[R\]](#).

7



Low-Level Laser Therapy (LLLT)

IMPACT2 / 5

EVIDENCE2 / 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

LLLT may help tennis elbow by promoting healing and reducing inflammation in the affected area. It works by utilizing specific wavelengths of light to penetrate damaged tissues, stimulating cellular metabolism and promoting tissue repair.

A systematic review of 13 RCTs (730 patients, including some with poor prognosis) on LLLT for lateral elbow tendinopathy (tennis elbow) found that LLLT, especially with 904 nm lasers, led to significant pain relief (WMD 10.2 mm) and global improvement (RR 1.36). Trials targeting acupuncture points or using wavelengths 820, 830, and 1064 nm showed negative results. In a subgroup using 904 nm and 632 nm lasers, direct irradiation at tendon insertions resulted in greater pain relief (WMD 17.2 mm and 14.0 mm, RR 1.53 for 904 nm). Doses ranged from 0.5 to 7.2 Joules, and secondary outcomes like grip strength and pain threshold also showed significant improvements [\[R\]](#).

8

Stretching

IMPACT2 / 5

EVIDENCE2 / 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

A study compared the effectiveness of deep friction massage versus stretching of wrist extensor muscles in people with tennis elbow. It found that stretching exercises improved the range of motion (ROM) of wrist flexion and extension, as well as handgrip strength, which is beneficial for the management of tennis elbow [R].

Another study found that stretching reduced symptoms at all follow-ups. The study emphasized the continuous symptom reduction and improvement in range-of-motion measurements, supporting stretching as a successful long-term management strategy for tennis elbow [R].

9



Low-Intensity Pulsed Ultrasound

IMPACT

2 / 5

EVIDENCE

2 / 5

Description

Low-Intensity Pulsed Ultrasound (LIPUS) is a non-invasive therapeutic modality that utilizes sound waves to promote healing in various body tissues. Unlike traditional ultrasound therapy, which is continuous and used primarily for diagnostic purposes, LIPUS delivers pulsed waves at lower intensities, making it suitable for stimulating biological processes without causing thermal damage.

People mainly use LIPUS to treat non-union fractures where the bones fail to heal naturally after a break. LIPUS may also help with:

- Orthodontic treatments
- Periodontal tissue regeneration
- Wounds
- Spinal cord injuries

How it helps

Ultrasound therapy has shown some benefit in treating tennis elbow by reducing pain and improving function. However, it is less effective than treatments like local steroid injections or radial shockwave therapy. Studies comparing these methods found that ultrasound therapy led to moderate improvements, while alternative treatments provided quicker and more significant relief and functional improvements [R, R].

When directly compared with other modalities like pulsed electromagnetic field (PEMF) therapy or TENS, ultrasound was found to be similarly effective or slightly less effective in some measures of pain relief and functional improvement [R, R].

A combination of Mulligan mobilization (a manual therapy approach) with ultrasound therapy is more effective in increasing and speeding up recovery compared to ultrasound therapy alone [R].

10



Deep Friction Massage

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Schedule an appointment with a skilled physiotherapist experienced in deep friction massage. The therapist will begin with a brief assessment to identify the specific muscle or tendon requiring treatment. During the session, they will apply targeted pressure using their fingers, thumbs, or elbows directly across the affected tissue. The movement is slow and precise, designed to penetrate deeply without sliding on the skin. Throughout the process, the therapist will adjust the pressure based on feedback to ensure effectiveness while maintaining comfort. The technique focuses on breaking down scar tissue and promoting healing in the targeted area.

Description

Deep friction massage is a specific technique within the field of therapeutic massage that targets muscle and tendon injuries. It is designed to promote healing by increasing blood flow and breaking down scar tissue. The massage applies pressure across the grain of muscles and tendons, using deep, penetrating movements. This method is particularly beneficial for chronic muscular pain, tendinitis, and areas with dense scar tissue, helping to restore mobility and relieve discomfort.

How it helps

Deep friction massage (DFM) is a therapeutic technique used to treat tendinopathies. Here's what the research says about its efficacy:

- A study found that deep friction massage (DFM) induces an immediate reduction in pain intensity upon palpation in athletes with patellar tendinopathy, regardless of the pressure applied during the DFM application. This suggests that DFM can be effective in reducing pain associated with tendinopathy in the short term [\[R\]](#).
- A study compared deep friction massage to cortisone injections for treating lateral epicondylitis (tennis elbow) and found that at 6-month follow-up, only patients in the deep friction massage group demonstrated significant improvement in all outcome measures, including pain score, function, and grip strength. This suggests that DFM may offer long-term benefits for tendinopathy treatment compared to cortisone injections [\[R\]](#).
- A study compared the effects of a combination of modalities and transverse friction massage to iontophoresis for infrapatellar tendinitis treatment. It found **limited benefits** of DFM [\[R\]](#).

11



Good Posture

IMPACT

2 / 5

EVIDENCE

2 / 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 reduces unnecessary strain on tendons, which can aid in the prevention of injuries like tennis elbow. These injuries are more common in people whose jobs involve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Repetitive motions
- Awkward positions
- Vibration
- Forceful exertion

Most importantly, you may be more likely to develop tennis elbow if you participate in certain sports that involve repetitive motions, especially if your technique isn't optimal. **Besides tennis, those sports include other racquet sports, bowling, and baseball.**

12

Strength Training

IMPACT2 / 5

EVIDENCE2 / 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

A study comparing eccentric and concentric graded exercise for chronic tennis elbow found that eccentric exercise (involving lowering a weight) was more effective than concentric exercise (involving lifting a weight). The eccentric exercise group experienced a faster regression of pain and a greater increase in muscle strength [R].

Another study highlighted the benefits of exercise in managing chronic tennis elbow. It demonstrated that patients who followed an exercise regimen improved pain and muscle strength compared to those who did not engage in a structured exercise program. This suggests the general efficacy of exercise, including strength training, in improving outcomes for tennis elbow [R].

13

Eccentric Exercise

IMPACT

2 / 5

EVIDENCE

2 / 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

Meta-analyses across various studies indicate that eccentric exercise is more effective than concentric exercise, stretching, splinting, frictions, and ultrasound for improving pain, function, and patient satisfaction in chronic tendinopathy [\[R\]](#).

14



Physical Therapy

IMPACT

2 / 5

EVIDENCE

2 / 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

A study found that deep friction massage and stretching of the wrist extensor muscles, as part of a physical therapy regimen, significantly improved range of motion (ROM) and handgrip strength in patients with tennis elbow. This indicates the effectiveness of physical therapy techniques in managing the condition [\[R\]](#).

A survey of UK clinical practice revealed that 81% of healthcare professionals recommended exercise-based physiotherapy as the first-line intervention for tennis elbow. This highlights the widespread clinical endorsement of physical therapy for this condition [\[R\]](#).

Research comparing a combination of Mulligan mobilization and ultrasound therapy to ultrasound therapy alone, followed by a progressive exercise program, showed significant improvement in pain and grip strength. This study emphasizes the added benefits of combining manual therapy with conventional treatments in physical therapy for enhancing recovery in tennis elbow [\[R\]](#).

15



Acupuncture

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

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

TYPICAL STARTING DOSE

1 hour

Description

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

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

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

How it helps

Acupuncture may relieve pain from tennis elbow. However, its effects may be short-lived and the quality of the evidence is low [\[R\]](#), [\[R\]](#).

Please note: *Acupuncture is safe for most people. However, it may come with extra risks for pregnant women, people with pacemakers, and people with bleeding disorders. Consult your doctor or a licensed acupuncturist for more information* [\[R\]](#).

16



Blood Flow Restriction Training

IMPACT

1 / 5

EVIDENCE

1 / 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

In a placebo-controlled trial of 46 patients with lateral elbow tendinopathy, low-load resistance training with BFR for 12 weeks improved pain intensity, pain-free grip strength ratio, and odds of recovery [\[R\]](#).

17



Myofascial Release

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate myofascial release into your routine by using tools like foam rollers or massage balls, focusing on tense areas for about 5-20 minutes daily. You can also seek professional myofascial release therapy sessions, which typically last about 30-60 minutes, 1-2 times per week for targeted treatment.

TYPICAL STARTING DOSE

5 minutes

Description

Myofascial release is a type of massage therapy that can help to improve range of motion, reduce pain, and increase circulation. It can also help to improve posture and reduce stress.

How it helps

Myofascial release can help treat tennis elbow by stretching and loosening the fascia, a connective tissue that can cause pain when it becomes tight or inflamed. This supports better blood circulation and reduces inflammation in the affected area, thus easing the symptoms of tennis elbow.

In a placebo-controlled trial of 68 computer professionals with tennis elbow (lateral epicondylitis), myofascial release (12 sessions over 4 weeks) reduced pain and disability by 78.7% [\[R\]](#).

18



Avoid High-Impact Exercise

IMPACT

1 / 5

EVIDENCE

1 / 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

Tennis elbow often results from microtrauma caused by repeated forceful activities. High-impact forces during exercises, such as those occurring during improper tennis backhands or other racket sports, may overload the extensor muscles attached to the lateral epicondyle of the elbow, leading to tennis elbow [\[R\]](#).

The vibrations and shock transmitted through the arm during high-impact activities can contribute to the onset of tennis elbow. High and repetitive impacts can exacerbate the strain on the elbow's tendons and muscles, particularly if the equipment used (like tennis rackets) does not effectively absorb shock [\[R\]](#).

19



Collagen (Non-Hydrolyzed)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 5 grams of non-hydrolyzed collagen supplement daily. You can mix it with a beverage of your choice, such as water or juice, for easier consumption.

TYPICAL STARTING DOSE

5 g

Description

Collagen is a protein that plays a crucial role in maintaining skin, joint, and connective tissue health. Collagen supplements are believed to support skin elasticity, joint mobility, and overall skin and joint 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

Non-hydrolyzed collagen could support the repair of collagen in pathologic tissues involved in tennis elbow, which is characterized by angio-fibroblastic tendinosis rather than inflammation [\[R\]](#).

20



Tai Chi

IMPACT

1 / 5

EVIDENCE

1 / 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 offers gentle movements that can improve circulation and flexibility, aiding tendon recovery. While there is no direct evidence specifically addressing the effectiveness of tai chi for tendinopathies, this technique has beneficial effects on various musculoskeletal and chronic pain conditions, which may indirectly suggest its potential utility for managing pain and improving physical function in individuals with tendinopathies [\[R\]](#), [\[R\]](#), [\[R\]](#).

21



Cryotherapy

IMPACT

1 / 5

EVIDENCE

1 / 5

Description

Cryotherapy involves brief exposure to extremely cold temperatures in a controlled chamber. It is used to reduce inflammation, alleviate muscle soreness, and promote recovery in athletes and individuals seeking pain relief.

How it helps

A study investigated the effects of local cryotherapy on tennis elbow, finding that it reduced pain and decreased the intake of painkillers. The study noted improvements in physical activity following treatments, highlighting cryotherapy's role in pain management and functional recovery for people with tennis elbow [\[R\]](#).

22



Alpha-Ketoglutarate (AKG)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take alpha-ketoglutarate (AKG) as a dietary supplement in a dose of approximately 1-2g per day, preferably with meals to aid in its absorption. The exact dosage may vary based on the specific product and individual health needs, so it's important to follow the label instructions or consult a healthcare provider for personalized advice. This supplementation can be ongoing, with periodic evaluations to assess its effects on your health.

TYPICAL STARTING DOSE

1 g

Description

Alpha-ketoglutarate (AKG) is a key molecule in the Krebs cycle, crucial for energy production in cells. It plays a role in amino acid synthesis and nitrogen transport. In supplement form, it's claimed to improve athletic performance and support recovery, but the scientific evidence for these benefits is limited.

How it helps

Alpha-ketoglutarate enhances bone formation. It regulates the synthesis of [collagen](#) possibly by increasing the number of molecules available for synthesis. Collagen is a major component of tendons.

Additionally, AKG may assist in reducing inflammation and oxidative stress in tendons, which are common causes of tendonitis and other tendon disorders.

23



Glycine

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 3 to 5 grams of glycine supplement per day with water, preferably before bedtime for sleep improvement or spread throughout the day for general health benefits. Continue indefinitely as needed, but consult a healthcare provider for long-term use beyond three months.

TYPICAL STARTING DOSE

3 g

Description

Glycine is an amino acid that may have calming and anti-inflammatory effects, potentially benefiting sleep quality and joint health.

If you can't get enough glycine from food sources, glycine supplements are available. Daily doses of up to **6 g** have been safely used for up to **4 weeks**. Consult your doctor before supplementing.

How it helps

Here's how glycine may be beneficial:

- Anti-Inflammatory Effects.** Glycine is known for its anti-inflammatory properties, and glycine may help reduce the inflammatory response.
- Collagen Production.** Glycine is an essential component of collagen. By promoting collagen synthesis, glycine may help in the repair and strengthening of damaged tissues.
- Tissue Repair.** Glycine is involved in metabolic processes including tissue repair and regeneration. It may facilitate the healing of damaged tendon tissue in tennis elbow.

It's important to note that while glycine may have potential benefits for tennis elbow, it should be considered as part of a comprehensive treatment plan.

24



Deep Heat Topicals

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Apply a thin layer of a deep heat topical cream or gel to the affected area, ensuring to cover it completely without excessively thick application. Gently massage it into the skin until it is fully absorbed. This should be done up to three times daily, especially before bedtime or after showers when the skin can absorb the treatment more efficiently. Avoid applying it on open wounds or sensitive areas such as the eyes and mouth.

Description

Deep heating topical creams are over-the-counter or prescription products designed to provide localized relief from muscle pain, stiffness, and soreness. These creams typically contain active ingredients like menthol, capsaicin, or salicylates, which create a warming or heating sensation when applied to the skin. The sensation is meant to increase blood flow to the area and promote relaxation of the muscles, helping to alleviate discomfort. Deep heating creams are commonly used for conditions such as muscle strains, arthritis, and sports-related injuries.

How it helps

Deep heating topicals can help with tennis elbow (lateral epicondylitis) in several ways:

- Pain Relief.** These topicals create a warming sensation on the skin, which can help alleviate pain associated with tennis elbow.
- Increased Blood Flow.** Deep-heating topicals can promote increased blood flow to the affected area. Improved circulation may aid in the healing process by delivering oxygen and nutrients to damaged tissues and removing waste products more efficiently.
- Muscle Relaxation.** The warmth generated by these topicals can help relax the muscles and reduce muscle tension around the elbow joint. This can be particularly beneficial for individuals with tight or overworked forearm muscles.
- Anti-Inflammatory Effects.** Some deep-heating topicals may contain anti-inflammatory ingredients that can help reduce inflammation in the affected area.
- Enhanced Penetration.** The heat from these topicals may enhance the absorption of active ingredients into the skin and deeper tissues, potentially increasing their effectiveness in addressing the underlying issues contributing to tennis elbow.

25



Vibration Therapy

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

To implement vibration therapy as a lifestyle recommendation, stand, sit, or lay on a machine with a vibrating platform for about 10 to 20 minutes a day. This should be done 3 to 5 times a week for optimal results. Make sure to start with a lower intensity and gradually increase it as your body adapts.

TYPICAL STARTING DOSE

20 minutes

Description

Vibration therapy is a therapeutic approach that involves the use of mechanical vibrations or oscillations, typically delivered through a specialized device or platform. It is used for various purposes, including:

1. Rehabilitation: Vibration therapy is often used in physical therapy and rehabilitation settings to improve muscle strength, flexibility, and coordination. Vibrations stimulate muscle contractions and help with muscle recovery.

2. Fitness and training: Some athletes and fitness enthusiasts use vibration platforms or devices as part of their training regimen. It is believed to enhance muscle performance and reduce the risk of injury.

3. Pain management: Vibration therapy may offer pain relief for individuals with chronic pain conditions, such as lower back pain or osteoarthritis. The vibrations can help reduce pain sensations.

4. Increased circulation: Vibrations can stimulate blood flow and lymphatic drainage, which may have benefits for overall circulation and potentially aid in injury recovery.

5. Balance and proprioception: Vibration therapy can improve balance and proprioception (awareness of body position) by challenging the neuromuscular system.

6. Relaxation and stress reduction: Some people find that vibration therapy provides relaxation and stress relief.

Vibration therapy can be administered using various devices, such as vibrating platforms, handheld devices, or foam rollers equipped with vibrating mechanisms. It is important to note that while vibration therapy may offer benefits, it should be used under the guidance of a qualified healthcare professional or trainer to ensure safety and effectiveness, especially for individuals with certain medical conditions.

How it helps

Vibration therapy may help with tennis elbow (lateral epicondylitis) by promoting circulation, reducing muscle tension, and alleviating pain. When applied to the affected area, vibrations stimulate blood flow, which can aid in the healing process and reduce inflammation.

Additionally, the vibrations may relax tense muscles and improve tissue flexibility. This therapy can also provide pain relief by disrupting pain signals sent to the brain. However, its effectiveness may vary from person to person, and it should be used as part of a comprehensive treatment plan, which may include rest, physical therapy, and anti-inflammatory measures, for the best results. Consult with a healthcare professional for personalized guidance on using vibration therapy for tennis elbow.

However, a study found that it does not help with tennis elbow [\[R\]](#).

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Methylnitrosocysteine (MSM)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 1 to 3 grams of Methylnitrosocysteine (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

While scientific research on its specific effects on tennis elbow is limited, some people use MSM for its potential benefits, which include:

- Anti-Inflammatory Properties.** MSM is believed to have anti-inflammatory properties, which may help reduce the inflammation and pain associated with tennis elbow.
- Pain Relief.** MSM may provide pain relief by reducing nerve impulses that transmit pain signals.
- Improved Joint Health.** Some users report that MSM helps improve joint health and flexibility, which can be beneficial for conditions like tennis elbow.
- Enhanced Healing.** MSM is thought to promote tissue repair and may aid in the healing of damaged tendons and ligaments, which are common in tennis elbow.

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 Lifestyle Assessments

Ever heard of the term Nature vs. Nurture?

The thing is, both DNA and environment play a role in determining your health risks. The following assessments shows how much of an impact your lifestyle, environment and medical history are having on your health risks.

LIFESTYLE

You have a **reduced risk** of tennis elbow based on the answers you provided.

Your Lifestyle Risk

Low

Decreased

Average

Increased

High

Factors impacting your risk:

What is your sex?	Increasing Risk	!
Male		
Do you have a job that requires you to do physically demanding or repetitive work?	Decreasing Risk	✓
No		
Do you smoke tobacco?	Decreasing Risk	✓
No, never		
Have you ever been diagnosed with diabetes?	Decreasing Risk	✓
No		
Do you work in manual labor?	Decreasing Risk	✓
No		

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