

Lymph Fluid Retention

Biohacker Report

REPORT CATEGORY —



INFLAMMATION &
AUTOIMMUNITY

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

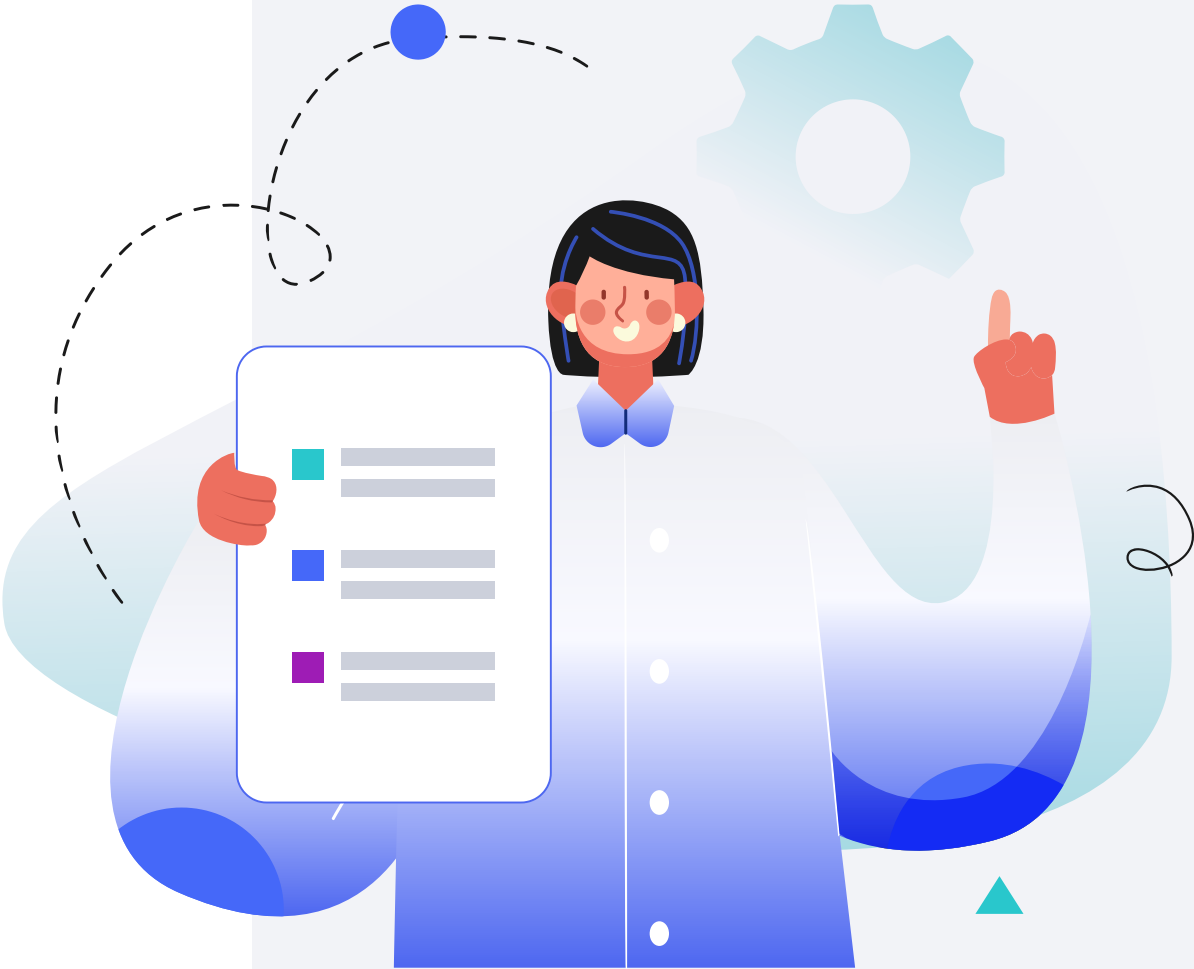
Male

HEIGHT

5ft 5" 165cm

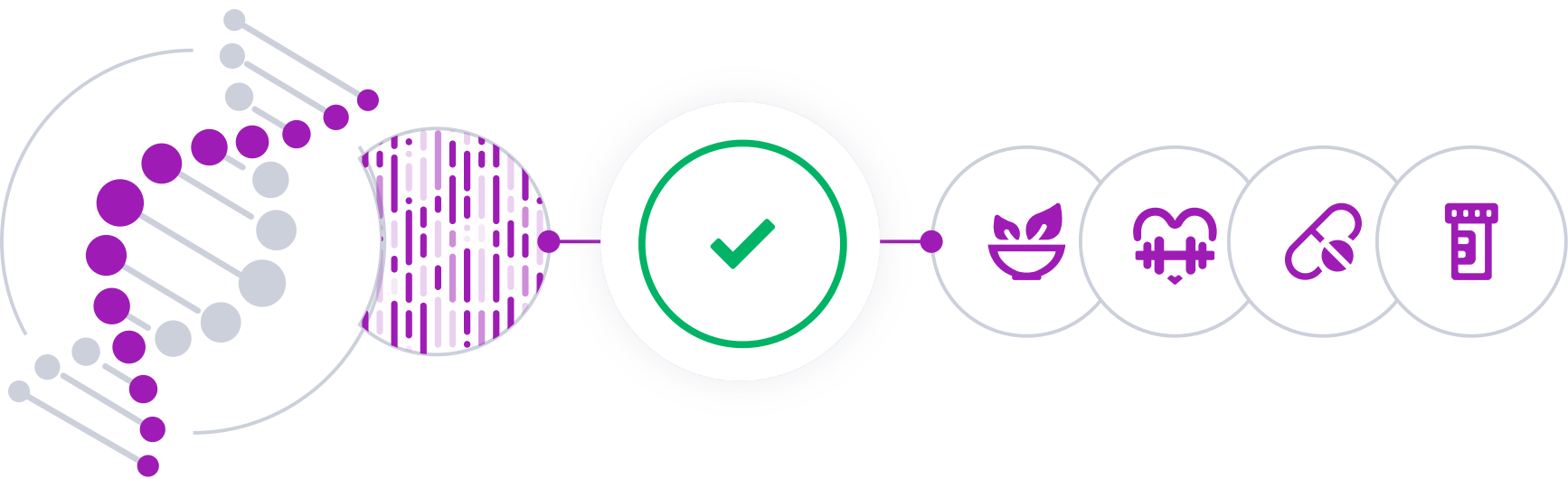
WEIGHT

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

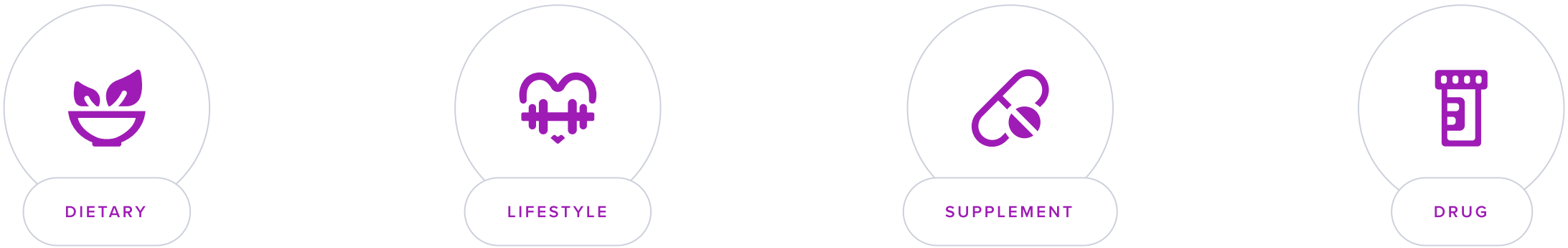
You have 2 risk alleles

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

Lymphedema is a chronic condition characterized by the buildup of protein-rich lymphatic fluid in the interstitial tissue. It can result from congenital malformations of the lymphatic system (primary lymphedema) or damage to or removal of lymph nodes and lymphatic vessels (secondary lymphedema). Secondary lymphedema is commonly associated with cancer treatments, such as surgery or radiation therapy [R].

The primary symptom of lymphedema is **swelling in part of the body, usually in the arms or legs**. Other symptoms can include [R]:

- A feeling of heaviness or tightness
- Restricted range of motion
- Recurring infections
- Hardening and thickening of the skin (fibrosis)
- Discomfort or pain

Primary lymphedema can be caused by:

- **Congenital conditions** such as Milroy's disease (congenital lymphedema) and lymphedema praecox, which may manifest at birth or during puberty, respectively.
- **Hereditary lymphedema**, also known as Milroy's disease, caused by mutations in the *FLT4* gene.

In turn, potential causes of secondary lymphedema include [R]:

- **Cancer cell growth** that blocks lymph vessels
- **Radiation treatment** for cancer that causes scarring and inflammation of lymph nodes or vessels
- **Cancer surgery** that removes lymph nodes
- **Infection with tropical parasites** (threadlike worms) that clog the lymph nodes

Moreover, the following factors further increase the risk of developing lymphedema:

- Older age
- Excess weight
- Rheumatoid or psoriatic arthritis

Complications and Treatment

Lymphedema may lead to the following complications [\[R\]](#):

- Skin infections (cellulitis)
- Sepsis
- Leakage through the skin or blistering
- Skin thickening or hardening
- A rare form of soft tissue cancer

Effective management of lymphedema involves controlling swelling and preventing complications. Treatment options include [\[R\]](#):

- **Compression therapy** such as sleeves or stockings to help maintain fluid flow.
- **Manual lymph drainage**, a specialized form of massage that helps stimulate the lymphatic system and drain excess fluid.
- **Pneumatic compression** using a sleeve worn over the affected limb that connects to a pump that periodically inflates, providing pressure to support lymph fluid drainage.
- **Exercise** to aid in lymph fluid drainage and improve mobility.
- Maintaining excellent **skin hygiene and care** to prevent infections, such as cellulitis.
- In severe cases, **surgical procedures** like lymph node transplant, lymphaticovenous bypass, or liposuction might be considered.



MORE LIKELY

More likely to have lymphedema based on 11,890 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
NRP2	rs849530	AC
ALOX5	rs4987105	CT
SCGB3A1	rs10464063	TC
NRP2	rs849563	TT
TLR4	rs4986791	CC
MTHFSD	rs34221221	TT
TNF	rs1800629	GG
NRP2	rs114144673	CC
MTHFSD	rs1035550	GG

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

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

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

DOSAGE		DOSAGE	
1	Avoid Lifting Heavy Objects	2	Low-Level Laser Therapy (LLLT)30 seconds
3	Avoid Strenuous Activity	4	Pneumatic Compression Devices (PCDs)1 hour
5	Aquatic Exercise1 hour	6	Manual Lymphatic Drainage
7	Compression Stockings	8	Connective tissue massage
9	Compression Therapy		

1



Avoid Lifting Heavy Objects

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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

Description

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

How it helps

Avoiding heavy lifting reduces the risk of additional strain on the lymphatic system, which can exacerbate lymph fluid retention and lymphedema. This proactive approach helps maintain lymphatic function and minimizes discomfort associated with the condition.

2



Low-Level Laser Therapy (LLLT)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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

TYPICAL STARTING DOSE

30 seconds

Description

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

How it helps

Low-level laser therapy (LLLT) may help alleviate lymph fluid retention by promoting lymphatic circulation and reducing inflammation, thereby enhancing fluid drainage and supporting tissue healing.

3



Avoid Strenuous Activity

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

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

Description

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

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

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

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

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

How it helps

Avoiding strenuous activity helps manage lymph fluid retention by minimizing physical strain, which can exacerbate lymphedema symptoms. This approach reduces the risk of injury and helps maintain optimal lymphatic function, promoting better fluid drainage and recovery.

4



Pneumatic Compression Devices (PCDs)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Use the pneumatic compression device on the affected limb(s) for 1-2 hours daily. Simply wrap the sleeve around your limb, secure it, and allow the machine to inflate and deflate the sleeve to improve circulation. Repeat this process daily for at least 3 months to assess effectiveness.

TYPICAL STARTING DOSE

1 hour

Description

Pneumatic compression devices are medical devices that use air pressure to improve blood circulation in the limbs. These devices typically consist of inflatable cuffs that are wrapped around the affected limb and inflate and deflate rhythmically, helping to facilitate the movement of blood and lymphatic fluids, reduce swelling, and enhance overall circulation in the treated area.They are commonly used to alleviate conditions like lymphedema and deep vein thrombosis, promoting better vascular health and reducing the risk of complications.

How it helps

Pneumatic compression devices enhance lymphatic drainage by using controlled air pressure to stimulate fluid movement, thereby reducing swelling associated with lymph fluid retention. This rhythmic inflation and deflation improves blood circulation, promoting better vascular health in the affected limbs.

5



Aquatic Exercise

IMPACT

1 / 5

EVIDENCE

1 / 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

Aquatic exercise aids in lymph fluid retention by leveraging hydrostatic pressure to enhance lymphatic circulation and facilitate fluid drainage, while its low-impact nature minimizes strain on the body, encouraging consistent activity without exacerbating symptoms.

6



Manual Lymphatic Drainage

IMPACT

1 / 5

EVIDENCE

1 / 5

Description

Manual lymphatic drainage is a gentle massage technique that stimulates the lymphatic system to remove waste and toxins from bodily tissues. It involves light, rhythmic strokes to encourage the movement of lymph fluids around the body [\[R\]](#).

It's especially helpful for reducing swelling, detoxification, and boosting the immune system, making it a go-to option for post-surgery recovery or lymphedema management.

How it helps

Manual lymphatic drainage enhances lymphatic circulation, facilitating the removal of excess interstitial fluid. This process decreases swelling and discomfort associated with lymph fluid retention, improving overall tissue health and comfort.

7



Compression Stockings

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Wear compression stockings during the day, especially when you expect to be sitting or standing for long periods. They should be put on before getting out of bed in the morning and removed before going to bed at night. Ensure they are the correct size and compression level as advised by a healthcare professional.

Description

Compression stockings are often worn to improve blood circulation in the legs and reduce the risk of conditions like varicose veins and deep vein thrombosis. They can be beneficial for individuals who spend long periods sitting or standing and those with certain medical conditions that affect blood flow.

How it helps

Compression stockings help manage lymph fluid retention by applying graduated pressure to the limbs, facilitating lymphatic drainage and reducing swelling. This intervention enhances circulation and promotes tissue recovery, crucial in the treatment of lymphedema.

8



Connective tissue massage

IMPACT

1 / 5

EVIDENCE

1 / 5

Description

Connective tissue massage focuses on the layers of connective tissues surrounding muscles, bones, and joints. The technique involves firm, flowing strokes to help release tension, reduce pain, and improve flexibility [\[R\]](#).

It's particularly beneficial for those with chronic pain or stiffness, aiming to restore body movement and alleviate discomfort by targeting deeper layers of tissue.

How it helps

Connective tissue massage therapy aids in alleviating muscular tension and improving circulation, which can facilitate lymphatic flow. By promoting relaxation and reducing tightness in the surrounding tissues, this therapy can help mitigate symptoms associated with lymph fluid retention.

9



Compression Therapy

IMPACT

1 / 5

EVIDENCE

1 / 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 therapy aids in lymph fluid retention by applying consistent pressure to the affected areas, which enhances lymphatic drainage and diminishes swelling. This mechanism alleviates discomfort and promotes healthier fluid dynamics in tissues.