

**MEDICAL-ITALIA**

medical division



**EME**

Electronic Medical Equipment

# **PRESSURE FIELDS**

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### Lymphatic system

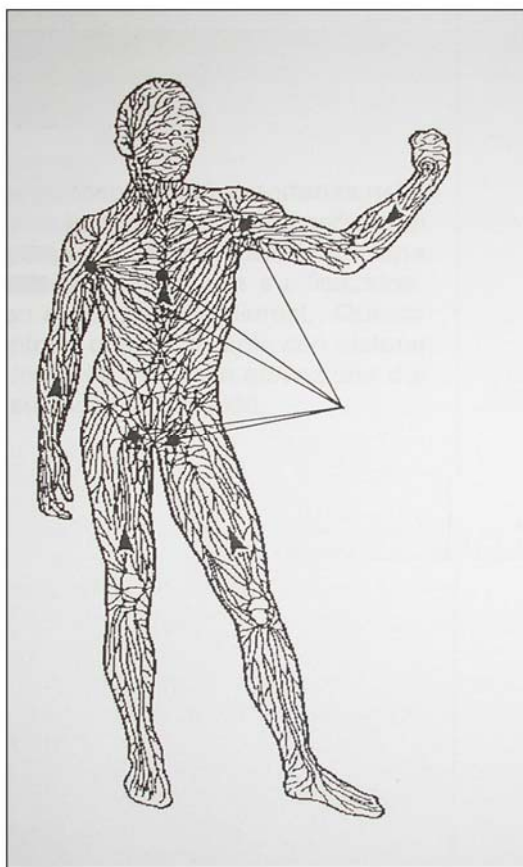
The lymphatic system basically serves to maintain correct tissular water balance: its purpose is to purify the lymph from substances it has “collected” in the periphery before putting it back into circulation ready to carry out its function.

This action tends to take place particularly where, for a number of different reasons, tissues experience excessive liquid stasis.

The lymphatic system is structurally similar to the better-known venous system, following its development along peripheral canals and collector “centres” located at various levels.

The lymphatic vessels of the lower limb are divided into superficial and deep vessels. The former run along the surface and originate from a rich lymphatic network distributed on the plantar and dorsal surfaces of the foot; the latter follow the deep blood vessels and collect the lymph coming from lower limb muscles and bones.

The superficial lymphatic vessels flow into the inguinal lymph nodes that are situated on the surface near the inguinal fold. Along their journey the deep lymphatic vessels meet the anterior tibial lymph node, situated in the front upper leg and the lymph nodes of the popliteal space (4 - 5 in number) positioned on the rear of the knee.



*Points of greatest lymphatic node concentration (elbows, knees and along the neck are of smaller entity). The arrows indicate the direction of the lymphatic flow.*

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They then reach the deep inguinal lymph nodes that are situated deep in the inguen region. The superficial inguinal lymph nodes (18 - 20 in number) receive the superficial lymphatic vessels of the lower limb and also the superficial lymphatic vessels of the buttocks, perineum, anus, external genital organs and lower part of the abdomen.

The deep inguinal lymph nodes (2 - 3 in number) not only receive the deep lymphatic popliteal vessels but also a large part of those coming from the superficial inguinal lymph nodes. The largest of these lymph nodes, known as the Cloquet lymph node, is situated deeper and higher up than the others and extends into the abdominal cavity.

### **Principal groups of lower limb lymph nodes**

These lymphonodal centres of the lower limbs are of great importance in the functionality of the whole system in so far as they have the double function of collecting tanks and purifiers of the lymph coming from the lower limbs.

The lymph remains within these centres for the time necessary for it to be filtrated and purified before it is returned to the renal system causing an increase in diuresis.

This increase, often evident after pressure system therapy (massage, presso-therapy), is a confirmation of the activation of the mechanisms belonging to the lymphatic system in the lower limb tissues.

### **General notions of lymphatic circulation**

#### **CASLEY-SMITH pump**

The lymphatic circulation is both a system that intervenes in “over full” conditions and a means of rapid protein and colloid absorption.

In fact, thanks to the lymphatic system plasmatic proteinous molecules, large or insoluble molecules that cannot otherwise be absorbed by the venous system, are returned into the hematic circulation.

The molecules pass through the capillary membrane in inverse proportion to their weight: the quota of the albumins in lymph has a lower molecule weight than that of the globulin.

Obviously variations in capillary permeability, caused, for example, by an increase in intra-capillary hydrostatic pressure or by toxic-anoxic factors, lead to an increase in this passage and to modifications of the lymph flow or the composition of the same.

Clear explanations on this subject are to be found in the conclusions of Rossing:

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- The intra-vascular masses of albumin and immuno-globulin depend on the level of synthesis and the levels of fractioned catabolism;
- The ratio of intra-vascular masses to total masses depends on the levels of trans-capillary leaking and the levels of extra-vascular return;
- The levels of trans-capillary leaking are inversely connected to the molecular weights of the proteins; the trans-capillary leaking level increases with the filtration pressure in the vessels, that is to say, for losses at micro-vessel level, as is the case in diabetes mellitus;
- The extra-vascular return level is connected to lymphatic proteinous transport and is the inverse of the extra-vascular transit time. It is the same for albumin and IgG while perhaps shorter for IgM;
- The extra-vascular transit time includes a wide range of transit times: short (liver, kidneys and lungs), long (cutis and muscles with maximum extra-vascular protein deposit);
- In the majority of cases of hypoproteinemia, the intra-vascular / extra-vascular distribution of plasmatic proteins mutates in favour of the intra-vascular space;
- The pathological extra-vascular accumulation of plasmatic proteins occurs in a small number of infections and also where trans-capillary leaking increases without a corresponding increase in the lymphatic return level. This can be seen in cirrhosis with ascites, in non-treated mtxedema and in some cases of cancer, especially those with ascites hepatopitises. Extra-vascular accumulation of plasmatic proteins may sometimes occur in tumoral tissues or in post-operation wounds.

Therefore the main function of the lymphatic system is that of permitting the previously referred to molecules to penetrate the same, while preventing their exit and favouring their progress.

By means of capillary filtration proteinous molecules and water leave the hematic circulation, thus causing an accumulation of liquids osmotically linked to protein in the interstitial tissue.

The liquid imbibes the tissue, stretching the endothelial cells of the initial lymphatic vessel and further opening the inter-endothelial lymphatic junctions.

Other movements also contribute to keeping the junctions “open”:

- Muscular movements;
- Rhythmic contractions of the arterial vessels;
- Negative intra-thoracic pressure;
- Cells and other elementary corpuscles that are pushed towards the open junctions in the initial lymphatic vessel.

During their transit these corpuscles act as a sort of dilator, keeping the passage through the junction of the initial capillary lumen free.

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In the more active regions of the body, the products of cellular metabolism increase the hematic flow and capillary permeability and therefore the quantity of liquid contained in the interstitial tissue will further increase and its pressure will contribute to keeping the lymphatic capillary entry routes free.

Following this first phase there is an increase of the local pressure of the tissues caused by muscular contraction that tends to compress the initial lymphatic vessel pushing the lymph to close the intercellular junctions.

In this phase a certain quantity of water is diffused outside of the lymphatic vessel with the lymph itself being more concentrated than the interstitial liquid.

The elevated compression relaxes the system of fibrils fixed to the lymphatic endothelium. The thus compressed lymphatic vessel will obviously be reduced in terms of size and diameter with the endothelium cells being adherent and almost overlapping and the junctions hermetically closed. The third phase involves further compression on the initial lymphatic vessel pushing the lymph through the first valve, with the sudden pressure decrease causing the lymphatic vessels to once again expand and the intercellular junctions to reopen.

This mechanism is known as the “CASLEY-SMITH lymphatic pressure pump”. The intercellular junctions of the lymphatic vessels have been defined as “suction valves” and the first lymphatic valve as the “escape valve.”

The initial lymphatic vessels resemble a series of suction and pressing pumps whose function is not rigidly mechanical but rather adaptable to contingent needs.

### **The importance of pressure between the lymphatic vessel and interstitial space.**

McMaster has measured the pressure values of both the lymphatic capillary and the interstitial space and has found that:

Lymphatic capillary pressure	=	$0.7 \pm 0.3$ cm. H <sub>2</sub> O
Interstitial space pressure	=	$1.9 \pm 0.5$ cm. H <sub>2</sub> O

The pressure difference explains the direction of the flow of the liquid and proteinous molecules from the blood vessel to the interstitial tissue and then from the latter to the lymphatic capillary. The difference ( $0.3 \pm 0.5$  cm H<sub>2</sub>O) clearly shows how much pressure variation is needed to commence lymph movement.

In pathological conditions an increase of interstitial pressure will lead to a greater difference thus explaining the increase in lymph production in cases of edema.

The absorption potential variation at the “border-area” between the fundamental substance and the lymphatic capillary also plays an important role.

The propulsion of the lymph is thus due above all to the gradient generated between a greater and a lesser zone of pressure.

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Numerous other mechanisms of variable importance (which have already been mentioned) also contribute to the progression of the lymph around the lymphatic circulation.

These include the structure of the lymphatic vessel walls themselves and the uni-directional valves that also act as anti-gravitational mechanisms (together with the lymph nodes).

The speed of the progression of the lymph varies a great deal between different areas and different functional situations and can alter in the presence of obstacles blocking normal flow.

### **Evolution of a chronic EDEMA**

Chronic edema cases involve a series of chain reactions starting from an altered supply of cell oxygen and nutritional metabolites as well as alterations in the catabolite removal mechanism.

The permanence of the liquid and its molecular components in the interstice, modifications due to phlogistic processes, are by-causes that produce a chronic irritation of the connective tissue.

The mesenchyme will react by stimulating the undifferentiated elements in a fibroplastic sense leading to the formation of collagen fibrils.

The speed at which this happens will depend on the proteinous content (the higher this is the faster the process).

The fibroblast forms, via incretion, mucoproteinous materials of the collagen-precursor type with extremely polymerised presences.

At the same time the adipose tissues will become atrophic with the fibrils becoming first hypertrophic and then hyperplastic with a consequential increase of the subcutaneous stromal structure.

In this clinical case the hematic and lymphatic capillaries are further obstructed thus aggravating the condition.

### **Lower limb LYMPHEDEMAS**

This pathology starts with an increase of tension first at the feet and then at the ankle that spreads up the entire limb (initially edematous and successively hard to the touch).

It may worsen with heat, fails to improve significantly with bed rest and increases in concomitance with menstrual cycles. Over time the skin may become hyperkeratinos developing an “orange peel”-effect appearance, sometimes with lymphostatic verrucosis.

Lymphographic exams may reveal three different situations following an obstacle: aplasia, hyperplasia or hypoplasia.

Lymphedemas situated in the leg and foot are generally the anti-chamber of a more general extension along the whole limb (successively affecting the other limb).

If the lymphedema remains localised in the leg alone it may be possible to trace its cause back to an obstacle situated in the superficial collectors or popliteal lymph nodes; if it remains located in the foot then there may be an obstacle in the anterior tibial ganglion.

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Lymphedemas differ from lipedemas as the latter are softer, always bilateral, extend further upwards and are less hard to the touch (although the two cases are very closely related).

In contrast with the former two chyledemas are more easily recognisable due to their serous content that sometimes transudes a typically lactescent liquid.

Normally, phlebedemas are softish and often result in ulcerations; nevertheless they may appear in association with lymphatic stasis (inactive cellulite, ligneous edemas and other cases).

The formation of the various lymphedemas is connected to a notable series of by-causes that we have sought to exemplify on the basis of their nature and the age at which they appear:

- 1) Congenital lymphedema
- 2) Precocious or tuberal lymphedema
- 3) Pregnancy-related lymphedema
- 4) Menopause-related lymphedema
- 5) Late lymphedema

### **CONGENITAL LYMPHEDEMA**

This is generally due to a valvular aplasia, the presence of lymphatic gaps with hypoplasia, hypodermic fibrosis and scattered lymphangiectases.

It is a hard edema affecting either one or both of the limbs yet is generally not painful.

### **PRECOCIOUS LYMPHEDEMA**

This is typical in pubescent females and over time spreads along the whole limb up to the thigh joint. Many authors associate the hormonal de-compensation typical of this age group with lymphedema etiopathogenesis that affects parietal tone and causes significant saline retention with an increase of lymphatic formation (especially in the genital organ region).

Hormonal de-compensation may also be the cause of the etiopathogenesis of menopause and pregnancy-related lymphedemas.

### **LATE LYMPHEDEMA**

This is a lower limb edema that affects men and women in equal measure.

It manifests itself slowly with the appearance of a slight swelling on the foot that then spreads to one or both limbs with the inflammatory process being the manifestation of a deep latent imbalance.

Normally certain by-causes (mentioned here only briefly) can be interpreted as signs of latent congenital alterations:

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- Traumas (sometimes surgical) at both superficial and deep levels.
- Neoplasias and tumours of the lymphatic system (although rarely the case).
- Parasitoses (filariasis is one known example which is dangerous if associated with bacterial infections as this leads to elephantiasis).
- Inflammations (causing obstructions in various areas).

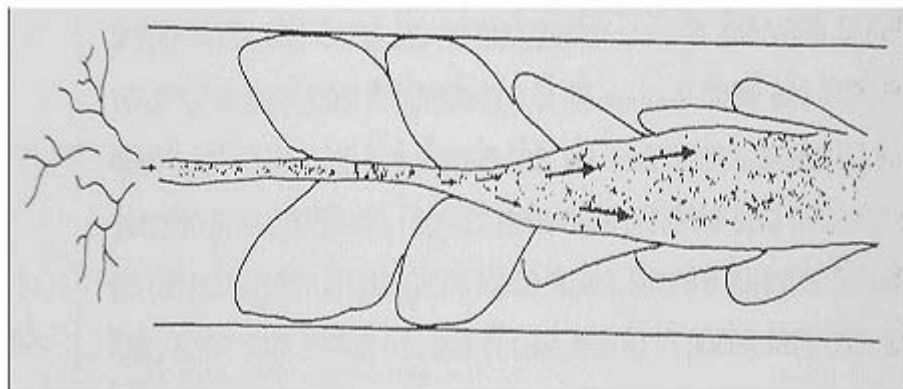
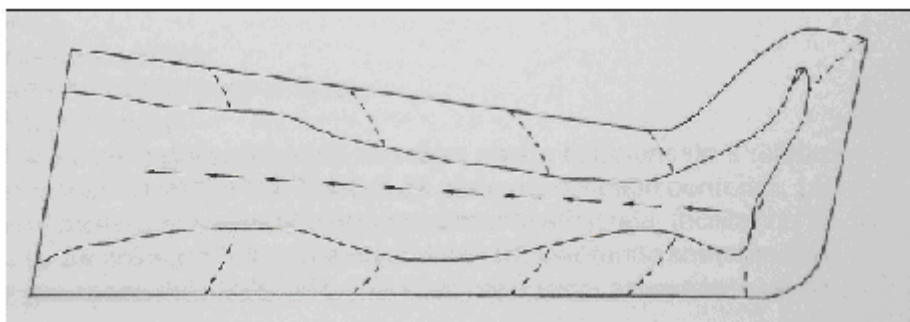
Presso-therapy can have positive effects on the majority of these edemas.

Its effective mobilizing action normalises the lymphatic system and allows for the re-absorption of the edema. Best results are achieved when the treatment is combined with suitable pharmacological therapies.

The secret of achieving good results depends on the type of leg or arm sleeve used.

It is of fundamental importance that the various pumping sectors are connected in a “herringbone” formation to prevent return flows between the empty interspaces, especially in the (quite frequent) case of deteriorated valvular systems.

The massage should be performed gently from bottom to top and should be faster in the inflating phase and slower in the deflating phase (according to the pathological condition treated). Treatments should be either daily or at intervals of 24 / 48 hours. After treatment patients will have a greater need for diuresis and therefore it is recommended that they start sessions with an empty bladder.



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**Presso-therapy**, if used correctly, allows for the normalization of both venous and lymphatic circulations, the re-absorption of teleangiectases and a considerable reduction in the dimensions of limb edemas.

According to respected authors peristaltic presso-therapy compressions modify the compactness and lymphatic drainage permeability of connective tissues, creating new internal drainage channels (known as collaterals). By fractioning the fibril tissue that developed with the stasis, the peristaltic drainage action compensates and improves the limited absorption and ascensional weakness of the collectors.

Presso-therapy can be successfully used in treating a great number of pathologies that have been summarised below in a schematic manner:

1. Lymphedema (both congenital and post-operation).
2. Flebedema with chronic venous insufficiency.
3. Varices and ulcus cruris.
4. Muscular inactivity edemas.
5. Hydro-Lipo-Dystrophy (cellulite).
6. Prevention of deep and pre / post operation venous circulation thrombosis.
7. Mastectomy lymphedema (from cancer).
8. Venous lymphatic circulation disorders.
9. Sports medicine.

Presso-therapy also helps compensate the anatomical defect of poor lymphatic absorption on the part of the peripheral collectors.

The Casley-Smith pump is suitably stimulated, facilitating the various opening and closing phases of the endothelial junctions and at the same time favouring the progression of the lymph in the first valve and then on towards successive valves.

After presso-therapy treatments patients should wear special differentiated elastic-compressive tights / bands that have a presso-therapy type action (decreasing from the extremity towards the centre) and thus keep the limb “active” until the following treatment session.

In addition, presso-therapy has proven very effective both in the preparatory phases and bio-normalisation phases before and after surgical operations on very serious cases of fibredemas and elephantiasis that do not respond to pharmacological medicines.

In these cases it has been demonstrated that the use of de-compressive presso-therapy in preparatory phases and particularly in post-operation phases makes for more rapid, safer and longer-lasting healing from the start.

Thousands of cases have been successfully treated throughout Italy with unsatisfactory results occurring on very few occasions.

### **Mastectomy lymphedema (upper limb)**

This lymphedema, today unfortunately rather frequent following a total breast carcinoma adenomatous mastectomy (and consequent radar-therapy), can be successfully treated with the de-compressive method.

Following surgical removal, however perfectly performed, there is excision of the muscular-tendinous, nervous and venous-lymphatic system apparatus, etc.

In the excised tissues it is also possible to find secondary effects of the anaesthetic with a stagnation of hemo-lymphatic material that, even if temporary, prevents the re-absorption of liquid and corpuscular substances, slowing the cicatrization of the area in question.

De-compressive presso-therapy, concentrated on the adjacent limb, stimulates and strengthens the removed lymphatic and venous system area and overloads the collateral systems seeking to substitute, as far as is possible (depending on the entity of the surgical excisions), the excised apparatus.

As described in recent anatomic tissue discoveries, there exists a “pyramid” of sub-canal and venous-lymphatic collectors (not visible with normal tests) which, when suitably stimulated, compensate for the deficiencies of the upper ducts.

The compressive / de-compressive action (when carried out as physiologically as possible) restores the venous-lymphatic system helping it to overcome surgical traumas: the earlier this is applied the quicker the trauma healing with an equally quick re-absorption of the limb edema.

Long-standing edemas should be treated with a greater number of application sessions, starting with a 20-minute treatment session every two or three days at a pressure of 0.2 Atm progressing to a week of daily treatment sessions with even higher values.

Before starting treatment (and likewise during the treatment cycle itself, purely as a precautionary measure) always check the relevant arterial pressure.

The de-compressive method, which is extremely physiological, has notable beneficial effects on the whole circulatory apparatus and many cases of lymphedemas in the presence of cardiovascular alterations, and even in the presence of ischemic cardiopathies, have been treated without inconveniences of any kind (except for the need during treatment to read the variations of pressure which, however, return to normal shortly after treatment).

Normally, depending on the case, it is possible to associate an appropriate pharmacological-based therapy with phlebotonics, fibrinolytics, antibiotics, diuretics or anti-edemigenes (taking care not to exaggerate in the case of the latter two).



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Once the causes and the state of the lymphedema have been identified it is possible to proceed with a prescription of collateral pharmacological medicine-based therapy if necessary.

Generally, in order to use presso-therapy correctly, the state of health of the superficial venous system should first be checked: in the presence of extended teleangectases and varices it is advisable to start the therapy using low pressures (0.120 / 0.160 Atm) over 20 / 30-minute treatment sessions until an evident regressive effect on the capillaries is noted.

Daily intensive therapy can then be started at 0.2Atm.

In particularly sclerotized and hard edemas it is possible to use up to 0.3 Atm of pressure, although such high pressure should only be used in indicated venous conditions.

Presso-therapy is of particular importance to female patients who, starting from puberty, experience (in over 90% of cases according to statistics) hormonal alterations that inevitably lead them to suffer from venous-lymphatic statis-related deformations (which in the majority of cases lead to hydro-lipo-fibro-dystrophic edemas).

These alterations are disorders of the lower limbs that, if not treated early on, will progressively degenerate, leading to a worsening of the functionality and shape of the lower limbs.

In the coming years presso-therapy will be increasingly available to doctors with the result that the treatment of invalidating edemas and the prevention and maintenance of healthy and correctly functioning limbs will become a reality.

While it is true that many people only turn to their doctor when biophysical alterations are already very advanced, it is also true that presso-therapy is extremely effective and easy to use making it ideal for use by general practitioners in the early stages.

### **Cellulitic edema**

The meaning of the term “cellulite” has been widely debated for many years by certain authors who pathogenetically define it as a simple localised adiposity and by others who have understood that it is something rather more complex.

It involves a hydro-lipo-fibro-dystrophy with peri-capillar edema, with an excessive polymerisation of mucopolysaccharides and a loss of elastin or, in other words, an agglomerate of fat, water, plasma and reticular fibres incorporated in connective capsules.

At the start of the pathology it is possible to observe scattered micro-nodules immersed in the fundamental gel that over time spread and join together to form cellulitic plaques.

The condition is worsened by the passing of time, the continuing presence of triggering causes and the inappropriate use of violent massages which lead to the increasingly compressed capillaries transuding additional plasma and the already overloaded lymphatic system having a reduced draining effect with the fundamental substance continuing to become denser due to colloidal increase.

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Although the numerous causes able to provoke this condition vary from one female to the next, in the majority of cases its origin is hormonal (de-compensation in puberty, giving birth, etc) and is combined with a sedentary lifestyle, circulatory system disorders, poor diet, etc.

### Therapies

Many years of experience have demonstrated that the techniques producing the best results are:

- **Ionophoresis + Electro-gymnastics + Presso-therapy**
  - Ionophoresis with depolarising substances (thiomucase, jalovis, etc), iodised substances (triiodothyraetic acid) and heparinoid substances.
  - Electro-gymnastics to favour muscle tone.
  - Presso-therapy to remove edematous thickenings and normalize the venous-lymphatic cycle.
  
- **Meso-therapy + Peristaltic presso-therapy**
  - Meso-therapy with depolarizing substances (thiomucase, etc), iodized substances (TA<sub>3</sub>, etc) and heparinoid and circulation-protecting substances.
  - Presso-therapy to remove edematous thickenings and normalize the venous-lymphatic circulation.
  
- **Meso-therapy + Biomagneto-therapy + Presso-therapy**
  - Meso-therapy for maximum in loco penetration of depolarizing, reducing and heparinoid substances, etc.
  - Biomagneto-therapy to accelerate repairing phenomena through its bio-regenerating, anti-edematous and anti-inflammatory action.
  - Presso-therapy to remove edematous thickenings and normalize the venous-lymphatic circulation.

### Muscular or trauma ischemias

Presso-therapy plays an important role in many sports medicine pathologies. In all traumas caused by violent impacts presso-therapy is able to remove the consequential edema reducing articulation unblocking times after immediate treatment.

In all cases of muscular ischemia or in cases of extreme-work muscular overload, presso-therapy allows for fast tissue liberation and the greatest possible functionality.

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For athletes practising sports involving extended periods of stress (cycling, long-distance running, etc) the systematic decongestion of toxic accumulations in the muscles is a guaranteed method of ensuring fresh efficient locomotor apparatus.

Physiological presso-therapy is not a magic wand, but rather a serious methodology that sometimes seems to perform miracles!

### **Venous circulation**

The heart is the body's main engine, pushing arterial blood out to the organism while at the same time receiving, thanks to other mechanisms functioning in an anti-gravitational sense, venous blood to be re-oxygenated, purified and nourished.

Compared to the arteries the more ramified and tortuous venous circulation has a weaker parietal constitution and a reduced elastic-muscular tone.

While the occlusion of an artery leads to death, in contrast, a similar occurrence in the venous system would result in another vein or parallel system providing venous transportation.

Veins may be superficial or deep.

Deep veins are well protected, compressed by muscular masses, have a solid and efficient valve system and are also stimulated by the pulsations of the arterial walls.

In contrast, superficial veins have weaker walls and are not protected by muscle masses but rather by a fine cutaneous layer.

They have a weaker valve system meaning that the greater power of the deep venous circulation often “overflows” into the weaker peripheral system preventing the blood from returning upwards and causing it to stagnate and deteriorate.

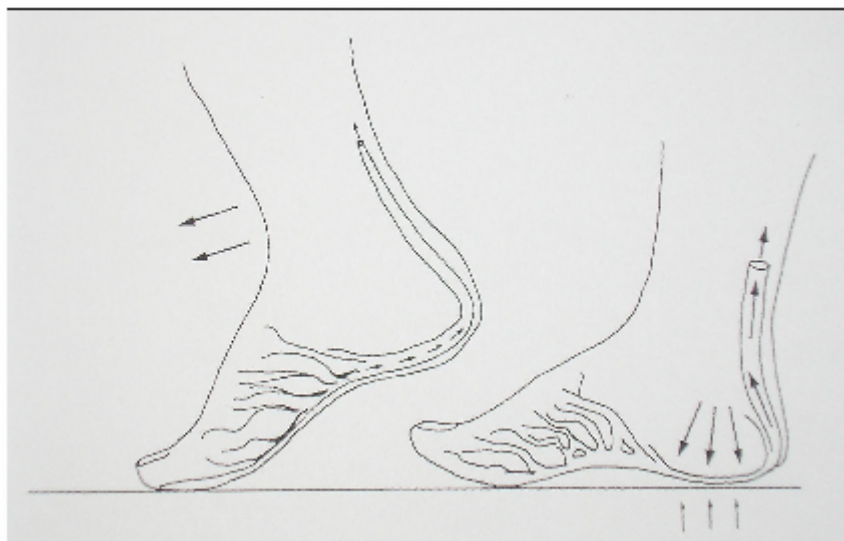
Not having a pump as such the venous system makes use of a series of mechanisms to perform the difficult task of returning the blood up to the heart.

One of these mechanisms is the foot: its lower part (venous sole) features a close-knit network of veins that are compressed and emptied with every step taken, effectively acting as a propulsor.

### **Venous insufficiency**

As Professor E. Malin, father of Italian angiology said “camminare necesse”.

Even today this varicose disorder is still unfortunately an iatrogenic disorder that is often undervalued by doctors and therefore rarely identified and treated early.



Venous disorders affect a large proportion of the population including both pensioners and active workers with recent estimates suggesting that around 90% of females suffer from this pathology (the percentage for males is much lower).

Venous insufficiency and its consequences can negatively influence working capacities, dilate working times due to the need for long pauses and forced rest, lead to early retirement and result in a rather unattractive appearance.

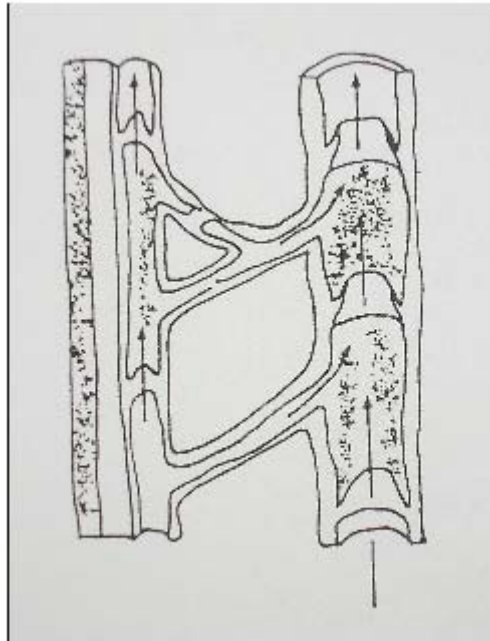
Although the numerous causes of such disorders vary from one individual to the next, they may be classified as follows :

- |                                   |                                                                                                                                                                                 |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A) Congenital</b>              | Limited elasto-compressive fibrils in the venous wall.                                                                                                                          |
| <b>B) Congenital / aggravated</b> | As above with the additional problem of a lack , or easy perishability, of valves directing the blood upwards and preventing it flowing backwards.                              |
| <b>C) Functional</b>              | Walls diverge as they are atonic and not very elastic or resistant due to limited movement, static professions or hormonal factors such as the pill, pregnancy, menopause, etc. |
| <b>D) Critical</b>                | Mixing of arterial and venous blood in the arteries (arterial-venous anastomosis).                                                                                              |

Additional systems favouring the upward return of the blood in the venous system:

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- Dilatation of the muscular masses compressing the venous walls.
- Special (swallow-tail) flow valves.
- Pulsating dilatation of the arteries.

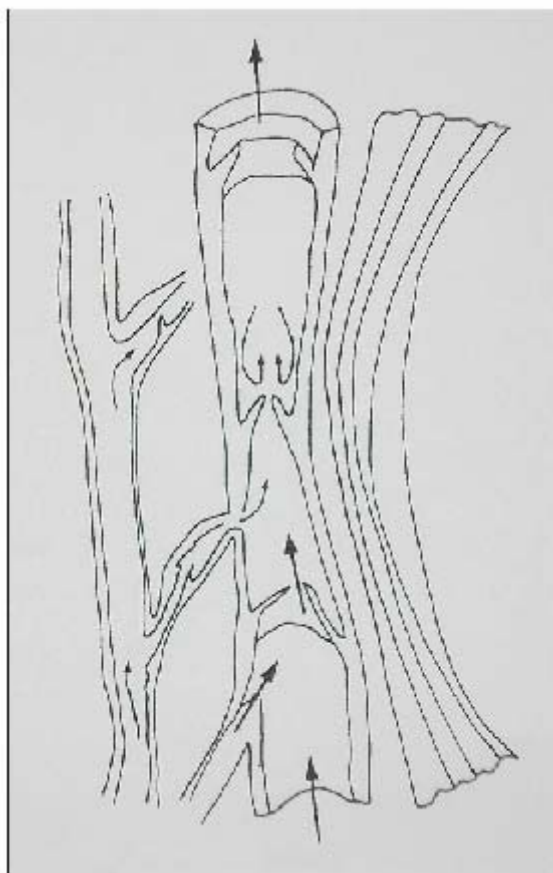


### Therapy

The European school has always favoured pharmacological and sclerosing-related therapies while its American counterpart has generally preferred extirpation.

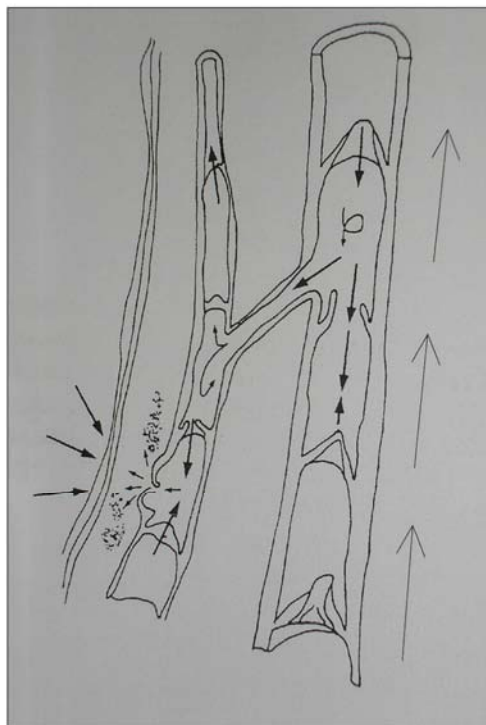
In reality, the ideal lies somewhere in the middle, as in certain cases, especially if treated early, pharmacological-related therapies are preferable, while in more serious cases surgery is often necessary.

In recent years there has been an increased interest among the medical class in venous pathologies (leading to greater study) that has resulted in the testing and perfecting of many operating techniques.



The practising doctor is the first link in the chain and whether or not s/he decides to send patients to an angiophlebologist will depend on his/her level of specific disorder-related awareness.

On the basis of a detailed check up and a series of laboratory analyses, the latter can easily prescribe the most suitable form of treatment.



It is also worth quoting the famous “Rima-Tredelemburg test” designed to locate the ostial valvular insufficiency responsible for more accentuated cases of varicosity.

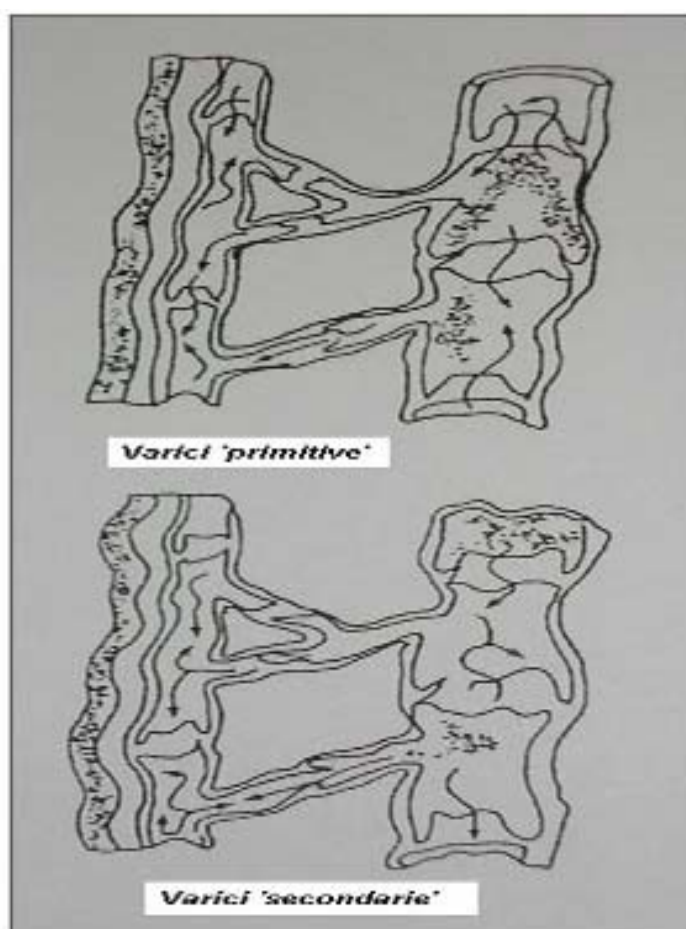
This test is performed by raising the limb in question so the veins empty quickly and then tightening a tourniquet around it (or suitably compressing the same) at the groin at the point corresponding to the upper limit of the internal saphena.

When the patient stands up and the source of compression is removed it is possible to see whether the veins fill from the bottom in an upwards direction or vice versa:

1. If filling occurs from the bottom upwards then the ostial saphenic valve is healthy;
2. If filling occurs from the top downwards it is obvious that the valve is incontinent.

With this simple method it is possible to verify the efficiency of the various other valves regulating the passages between the peripheral and superficial circulation.

Phlebographic tests involving injections of contrast liquids that show up on x-rays are used in order to identify primary varices and secondary varices caused by tumoral compression, edemigenes or phlebotic occlusions, that is to say, from deep vein coagulations.



There has also recently been a return to using ultrasound rebound techniques (as utilised in Doppler tests). The various therapies are prescribed in combination with phlebotonics, fibrinolytics, stimulating medicines and anti-inflammatory gels or products.

As was previously said, the causes of varices and capillary ectasias are numerous and the first problem from the therapeutic point of view lies in identifying the best methodology to treat the different pathological forms.

It should be remembered that the venous circulation is like a water pump, with the weight, which is greatest at the bottom, gradually decreasing in an upwards direction.

Due to well-known disturber mechanisms (wall fragility, osmosis between circulations, poor valve functioning, limited motility, etc) the ankle is the most vulnerable point, where the varicose system, once triggered, requires the greatest compensatory action.

Further up the limb the protective action should gradually decrease in so far as dilative weights and stagnations tend to be more limited.

The simplest mechanism devised in primis is the “medicated elasto-compressive leg sleeve” and the special elasto-compressive tights / bands.

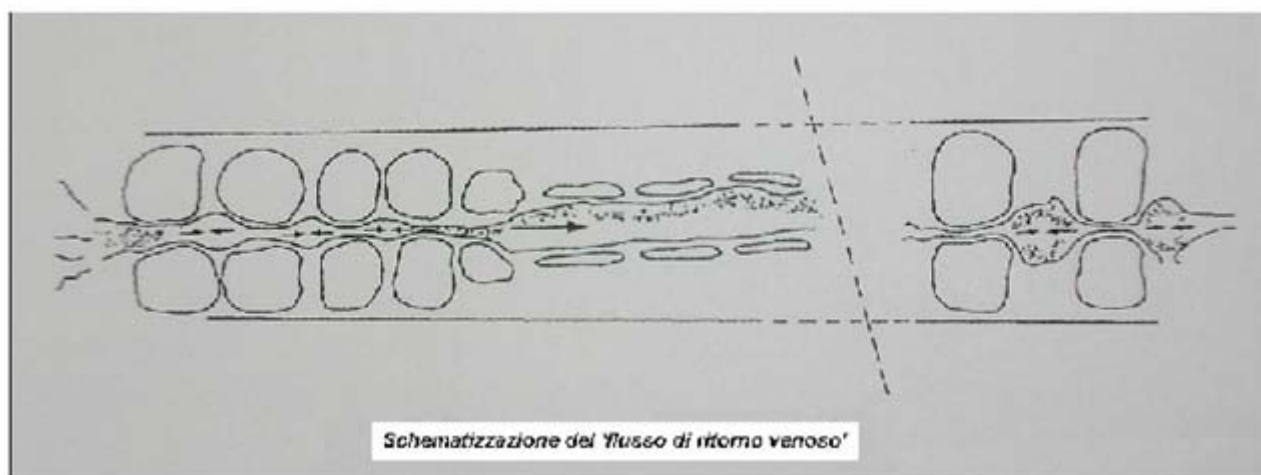
## Therapies manual – PRESSO-THERAPY

Thanks to their compressive / absorbing action and their maintenance action following surgery, the use of tights / bands together with programmed elastomers forms the best means of compensation.

The new recently developed “physiological compression” or “kit point” technique has wide applications in absorbing capillary ectasias, in normalizing deep and peripheral venous circulation and in removing stasis and venous-lymphatic edemas.

Its functioning is based principally on a graduated compressive action that allows for the normalization of the venous-lymphatic circulation, with its pressure action suppressing the various deficits caused by relevant mechanisms.

### Importance of the Kit-Point



In specific treatments of the venous and lymphatic system it is extremely important to use special “herring bone” – design leg sleeves through which pressure is gently forced.

These sleeves do not allow for the creation of interspaces in which return flows could develop (return flows, when caused by valvular insufficiency, lead to varicose disorders and the formation of teleangectases and therefore should be avoid at all costs).

### Action mechanisms of presso-therapy units.

(with reference to Pressomed series units)

These electronic units are able to emit a pressure power of over 1 Atm per sector.

Normally treatments are carried out with pressures varying from 0.001 Atm up to 0.300 Atm: only in particular cases should higher pressures be used and then always under strict medical supervision.

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The use of the special Kit Point leg or arm sleeves is extremely important in achieving optimum therapeutic results: the use of non-physiological leg sleeves may cause other disorders or problems and should be avoided.

Taking into consideration that the great majority of the female population suffers from disorders deriving from poor functioning of the venous and lymphatic circulations, it is easy to understand the wide range of use of these units that, without doubt in the coming years, will lead to presso-therapy becoming a basic standard form of treatment.

The Pressomed line is widely used in many branches of medicine, from pure phlebology to sports medicine, dermatology, geriatrics, post-surgery therapy, lymphology and neuro-endocrinology: however, its main role lies in the treatment of lymphedemas caused by venous-lymphatic disorders.

<b>Classic methodology</b>		<b>Recommended intensity</b>
<b>Lymphedemas with venous stasis</b>	Cycles of 10 applications every 48 hours with one week of rest between cycles (treatments should start after menstrual periods).	<b>130 - 170 mmHg</b>
<b>“Soft” lymphedemas</b>	Cycles of 10 applications (preferably consecutive).	<b>150 – 180 mmHg</b>
<b>“Hard” lymphedemas</b>	Cycles of 20 applications (preferably consecutive – the intensity can be increased on medical advice).	<b>170 – 200 mmHg</b>

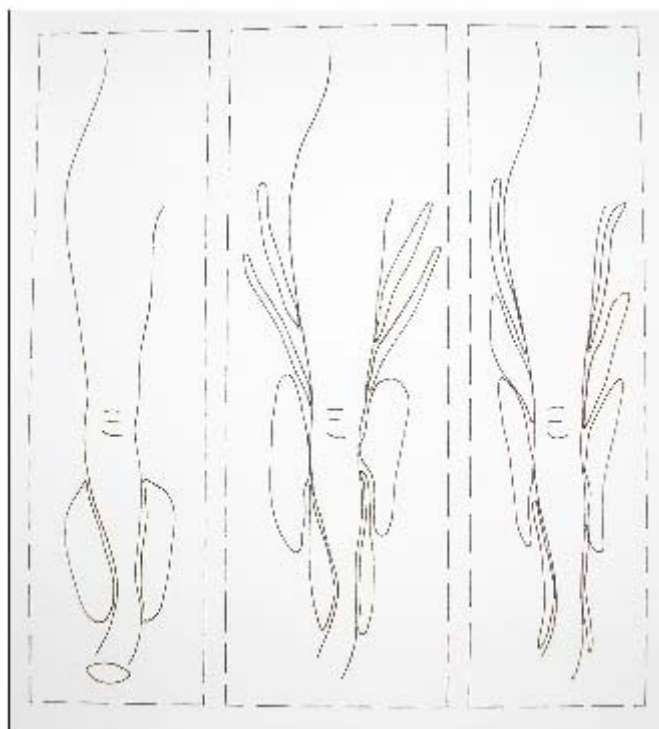
**N.B.:** Presso-therapy has no particular contra-indications although it should not be used in the presence of lymphangitis, acute phlebitis or unresolved infective cases.



Considering that both the venous system and the lymphatic system move from the bottom upwards by means of the successive compressions of their special swallow-tail valves, it is easy to understand how the overlapping pressure action of the “kit-point” leg sleeves facilitates the physiological passage of the flows and increases their draining action on obstructed tissues.

The special compression emptying takes place simultaneously on the whole circumference of the limb bound by a sector of the kit-point leg sleeve, with each sector overlapping the successive sector, while also lying beneath the previous sector.

This system has been specially designed to gently empty the limb from the bottom upwards in a continuous but very slow manner, as if two hands gripped around the limb were simultaneously “slid” up it.



### Functioning of the KIT\_POINT leg sleeve

The Pressomed series units feature a special electronic programme that starts from the venous sole and modulates the compressions in such a way that, while the lower section deflates, the one immediately above it fully inflates, and the one above the latter starts to inflate (and so on).

Only in this way is it possible to completely eliminate the risk of return flows, improve lymphatic and venous circulation and remove stasis and lymphedemas.

**NOTES :**

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