

# The pain disappeared

Floor heating system for blood circulation of the lower extremities

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The European Association for Phlebologies has conducted a study on the effect of floor heating system with low water temperature on the venous system..

About 90 patients from all over France were investigated for this study. Clinical arguments did not show any lasting effects in connection with the floor heating system with low water temperature.

For a long period of time, the floor heating system was unpopular with doctors and patients, who believed that this system was harmful for the venous circulation.

In the year 1966 an article, which was published in a magazine of the French Society for Phlebologies, for example, informed about the dangers of floor heating systems in modern buildings. However, this article also contained information on the technological progress strived for in the area of floor heating systems and the difference between various types of floor heating systems. This critical essay subsequently suggested better cooperation between the heating technology experts and doctors.

In the eighties, a new type of floor heating system was introduced in the market, which operated with a relatively lower water temperature (max. 28 °C) and could be controlled for each individual room.

The "new" floor heating systems, which are totally different from their predecessors, use pipes made of synthetic material.

Still a large number of people often fail to differentiate between the "old" and the "new" types of heating and counter opinions from the sixties are still not a thing of the past.

This was the reason for the demand that the new systems be analysed and tested by doctors.

The European Society for Phlebologies conducted a clinical survey throughout France in order to show the functional and clinical effects of floor heating systems with low water temperature on the venous system.

This study was headed by the phlebologist Dr. Ms. Scala. The basis of this floor heating system, which was analysed during this study, is a network of pipes of a synthetic material (a compound of poly ethylene, poly butane or poly propylene), in which the water is circulated at a low temperature.

The source of temperature is the unit located under the cover of the plates and is supplied

with a heat generation system (gas burner or oil burner).

The floor heating system behaves like a big heater, which radiates uniform heat from floor to the ceiling and maintains a uniform temperature in the entire room (19 or 20 °C). Since the humidity is retained, the air does not become dry.

Dr. Ms. Scala selected the patients with the help of installation engineers, who had the addresses of private individuals, companies or bodies, who had installed these floor heating systems.

84 such patients were selected for this study, who were using floor heating systems with low water temperatures either at home or at the place of work at least for one year.

The following points were taken into account from the medical point of view:

- Patients with a known family history of venous disorders and who themselves were suffering from them,
- Healthy patients, with a known family history of venous disorders,
- Healthy patients, with no family history of venous disorders,

Women, who became pregnant during this study and patients who were operated on the superficial venous system, were excluded from this study.

However patients who had undergone treatment for venous incompetence were included.

Between January and October 1995, all these patients were checked twice with an interval of 8 months in between. Clinical investigations were carried out throughout France: in the West (Rennes), in the East (Strasbourg), in the North (Caen), in the South (Bizier und Argeles) and finally in the Ile-de-France (Paris and its surrounding areas).

The first part of investigation began in January 1995. 84 selected patients were personally checked by Dr. Ms. Scala, who conducted a clinical investigation of the venous system and gave each of them a questionnaire. This contained questions like :

- Age, sex, occupation
- History of venous disorders, which were given medical as well as surgical therapies and had affected family members or the patient in question.
- Type of heating system at home and / or at the place of work.
- Number of years the patient has been using the heating system at home or at the place of

work.

The second round of investigations was carried out after 8 months in the same manner. This helped in evaluating the clinical state of these patients and their tolerance of this type of heating system.

Statistical analysis, which was done after both the rounds of investigations, gave the following results:

- Type of selected population according to the age and sex
- Most common place of installation (home or workplace)
- Incidence of clinical and organic symptoms
- Percentage of a probable change in treatment
- Comfort evaluation. The selected population comprised of 40% men and 60% women. The average age was 45, out of which the majority were employed (79%).

From the clinical point of view, 1/3rd of the cases had a venous disorder (Varices etc.) in the family.

40% of which were already treated by a phlebotomist.

Within the course of 8 months under medical supervision, the following risk factors could affect the development of venous disorders:

- Summer months (54% patients complained about this)
- Overweight (4%)
- Continuous standing (42% of the cases).

Note. Factors specific to women like consumption of contraceptive pills or pregnancy were not taken into account.

In the beginning, 83% of people had no complaints of venous disorders, 17% however complained about problems in the region of lower extremities, especially about heavy legs (20%) and pain (50%) as functional symptoms.

Certain organic symptoms were detected:

- Varicose veins (61 % of the cases)

- Varices (24% of the cases)
- Thrombosis (5% of the cases).

After eight months, changes in the development of clinical symptoms of the patients were observed, which when seen from the statistical point of view, were not so significant. The group of patients, who were treated there (Medicines for venous weakness, sclerosis) experienced a reduction in complaints like heavy legs and cramps at night by 5 %. The pain was gone.

In case of the group of patients, who had not received any treatment, improvement was noted as far as pain is concerned. However complaints like heavy legs increased.

Besides, on the basis of the statistical analysis, a geographic difference was observed (between the North and the South of France) with reference to floor heating system with lower water temperature (table 1).

Likewise, there were more complaints at the beginning of the study from the South of France than the North. However, complaints decreased after the summer months of the year. In the North the scenario was exactly opposite.

This return of symptoms is due to the cooling function of the floor, which is quasi systemic for the South.

Between the first and the second series of investigations, development of venous complaints was observed with three main tendencies:

- Stability of clinical condition (69% of the cases)
- Improvement in clinical condition (24% of the cases)
- Deterioration of clinical condition (7% of the cases).

All people questioned were happy with the floor heating system.

Clinical arguments did not show any negative effects in connection with the floor heating system with low water temperature. Since the ambient temperature (18°C), irrespective of the point selected in the room, was constant, the patients did not complain of more heat or cold under the sole of the foot. On the contrary, they spoke about a feeling of comfort.

The future belongs to such types of floor heating systems, which can be used to heat floor in the winter and cool it in summer. It must also be noted that if the temperature is reduced by one degree, power cost is reduced by 10%. This consideration is of great significance from the point of view of power conservation.

**Table 1: Development of functional and clinical symptoms**

Symptoms		Total		North-France		South-France	
		Start	End	Start	End	Start	End
		of the study	of the study	of the study	of the study	of the study	of the study
		%	%	%	%	%	%
<b>Functional</b>	Pain in the legs	16.9	4.9	16.4	6.1	18.8	0.0
	Heavy legs	51.2	50.6	45.8	47.0	75.0	66.7
	Cramps at night	15.5	8.6	13.2	6.1	25.0	20.0
<b>Clinical</b>	Leg oedema	9.6	7.4	10.4	7.6	5.3	6.7
	Thrombosis	4.9	1.3	4.5	1.5	6.3	0.0
	Varices	26.5	25.9	28.4	27.3	18.8	20.0

**Table 2: Comparison of the development of clinical symptoms in patients, who were specifically treated by a phlebotomist or were not treated at all**

Symptoms	With treatment		Without treatment	
	Start	End	Start	End
	of the study	of the study	of the study	of the study
	%	%	%	%
<b>Leg oedema</b>	4.5	2.3	13.9	13.9
<b>Thrombosis</b>	0.0	0.0	8.3	2.9
<b>Varices</b>	2.3	6.8	54.1	50.0