

biomed



**Summary of the study
concerning the lymphatic
drainage of Andullation massages**

Time-frame:

July to September 2004

Implementation:

Outpatients suffering from lymphatic congestions
were treated in a dedicated rehabilitation centre

Supervision:

Prof. Dr. phil. Roland Stutz

Approach

40 outpatients suffering from lymphatic congestions were selected to take part in a cross-sectional analysis. They were randomly distributed amongst two groups: 20 patients served as a control-group, while the remaining 20 patients were subject to actual intervention.

All patients were subject to the same treatment-plan. The difference between the two groups was that the Effect-Group (1) was subjected to a 20 minute application of the lymphatic drainage program, while the Placebo-Group (0) spent the same amount of time on a massage bed that superficially appeared to be identical to the real device. They were not informed about the supposed effect of said treatment. In the spirit of a double-blind study, the supervisor of the treatment was also not informed about the immediate effect of the placebo-mat.

Methodology

Prior to the study, the circumference of the leg, the subjective sensation of pain, the flexibility of the knee-joint, and the composition of the body were measured and combined.

Subsequently, the patients were subjected to the appropriate treatment in accordance with the randomisation-plan. Afterwards, all the parameters were remeasured.

Due to the manifold methodological approaches applicable to tests for lymphatic drainage, all possible parameters which could possibly indicate a redistribution of fluids were taken into account.

Amongst others, the flexibility of the knee-joint was tested with an isokinetic diagnosis-station, the fluid redistribution was established with an eight channel analysis device based on impedance-measuring, while the circumference of the legs was measured with a tape measure.

Subsequently, the total volume of the legs was calculated according to the Hanavan model, and finally, the subjective pain-score was registered to find any possible change.

Results

Summing up the results of the final study, the beneficial results of applying Andullation massage-programs become quite apparent in regards to the human lymphatic system - this holds especially true for those test-subjects suffering from lymphatic congestions of the lower extremities due to orthopaedic traumas and injuries as well as surgeries in these areas.

The results of the presented study proved a significant change of original figures in most tested parameters. These changes offer clear indications that the tested Andullation massage bed had a lymphatic drainage effect on test-subjects suffering from congestions in the lower extremities. Amongst the positive effects, a redistribution of fluids towards the torso, a reduction of the circumference and volume of the whole extremity-section (i.e., the legs) as well as an appropriate improvement of the flexibility of the knee-joint are particularly worth mentioning.

Age	Group 0	40,1	years
	Group 1	37,3	
Height	Group 0	179,8	cm
	Group 1	177,4	
Weight	Group 0	79,6	kg
	Group 1	76,5	
Percentage of body-fat	Group 0	20,8	%
	Group 1	18,8	

Object of the study

hhp Andullation Therapy System



Lymphatic congestions

According to the graphic representation of figure 1, it becomes quite apparent that a reduction of fluids took place in both sub-groups. The Effect-Group showed a significant reduction of body-fluids in the legs, while the change in the Placebo-Group is clearly not significant.

This illustrates the effect of Andullation massages on the lymphatic system in a most impressive manner.

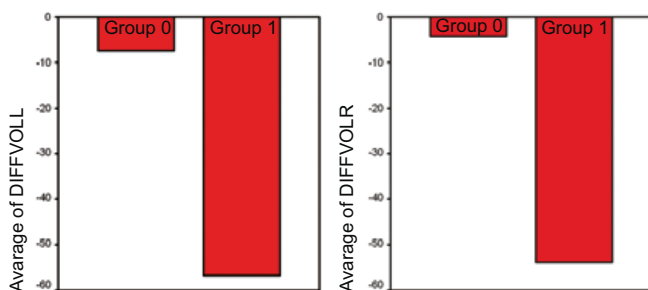


Figure 1: Graphical representation of the medians of the difference prior and after the intervention.

The tested parameters illustrate the median difference of the calculated volumes for the left leg (DIFFVOLL) and the right leg (DIFFVOLR) of the two subgroups (Group 0 - Placebo-Group, Group 1 - Effect-Group).

„Applying the lymphatic drainage program of the hhp Massage Bed to patients suffering from lymphatic congestions of the lower extremities leads to a significant reduction of the fluid volume in the afflicted leg.“

Flexibility

The reduction of fluids in the legs due to reduced circumference also fits the changes caused by the trend indicated by the body fluid analysis: Body fluids are redistributed from the legs into the torso.

The improved flexibility of the knee joint of the afflicted leg underlines the lymphatic drainage caused by the treatment; no measurable effect could be registered in the Placebo-Group (Figure 2).

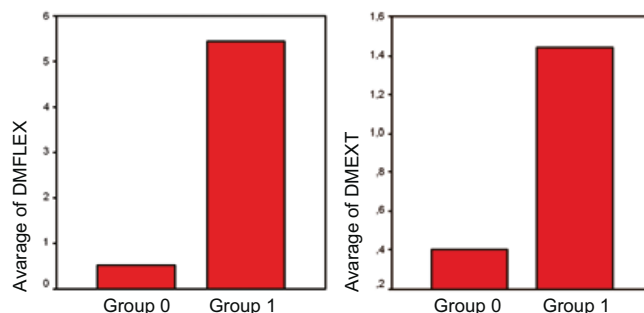


Figure 2: Graphical representation of the medians of the difference prior and after the intervention. The tested parameters illustrate the median difference of the joint flexibility in movement-plain flexion (DMFLEX) and the extension (DMEXT) of the two sub-groups (Group 0 - Placebo-Group, Group 1 - Effect-Group).

Applying the lymphatic drainage program of the hhp Massage Bed to patients suffering from lymphatic congestions of the lower extremities improves the flexibility of the knee joint.

After establishing individual differences, a distinct regulation effect due to the application of Andullation massages becomes apparent. The two graphs (figure 2) of the Placebo-Group (Group 0) illustrate no marked difference; the Effect-Group (Group 1) has a significant improvement of joint flexibility in both plains flexion (left graph) as well as extension (right graph).

This marked difference can be traced directly to the intervention of the massage bed, as no difference between the sub-groups was apparent and the only difference in the treatment-plan was said intervention.

The increased flexibility of the knee joint, especially in flexion, indicates a decongestion of the knee interior, caused by a stimulation of the lymphatic flow due to the intervention. Accordingly, a trend towards a fluid increase in the torso of test-subjects in the Effect-Group becomes apparent.

In this regard, a significant connection between the reduced pain and the increased flexibility of the knee joint towards flexion with a correlation value of $r = -.76$ becomes apparent.

Therefore, after the dissolution of the lymphatic congestions in the Effect-Group, an improved flexibility of the knee joint as well as a reduction of the pain in the joint were noted.

Reduction of Pain

A statistical evaluation of the hypothesis shows a significant reduction of pain caused by the application of the hhp Massage Bed.

The Placebo-Group regulated their sensation of pain in a similar manner, but these minor changes were not significant (Figure 3). Prior to the treatment, no difference in the subjective sensation of pain was apparent between the two groups.

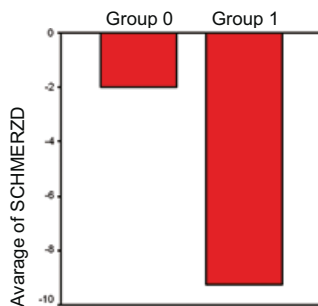


Figure 3: Graphical representation of the medians of the difference of the subjective pain-score-points. The tested parameters illustrate the median difference of the established pain-score-points prior and after the intervention of both sub-groups.

The manifold results of a stimulated lymphatic system are not really researched yet. Therefore, it could be very well the case that the Andullation hhp Massage Bed probably helps to alleviate a variety of other afflictions. Furthermore, it is suggested that the effect of Andullation on different layers of the skin should be investigated in the future. Fundamental research in this regard seems to hint at promising results.

Applying the lymphatic drainage program of the hhp Massage Bed to patients suffering from lymphatic congestions of the lower extremities will influence the sensation of pain in a positive manner.



Prof. Dr. phil. Roland Stutz
Supervisor of the Study



Berliner Straße 20 • 64372 Ober-Ramstadt
Telefon: (0 61 54)5 33 28 • Fax: (0 61 54)57 42 01
E-Mail: rolandstutz@t-online.de

研究总结谐振近红外理疗对于淋巴引流的作用

时间范围：2004 年 7 月-9 月

执行：在一个专门的康复中心治疗患淋巴阻塞的门诊患者

监督：Prof. Dr. phil. Roland Stutz

方式：

选取 40 名具有代表性的患淋巴阻塞的门诊患者进行分析。它们随机分布在两组人中：20 例作为对照组，其余 20 病人受到实际干预。

所有患者都接受相同的治疗计划。两组的不同之处在于，效果组（组 1）接受 20 分钟的淋巴引流程序的应用，而安慰剂组（组 0）花了相同的时间在按摩床上，表面看来是相同的设备。他们没有被告知所说的治疗的假设效果。本着双盲研究的精神，治疗的主管也没有被告知安慰剂垫的效果影响。

方法：

在研究之前，根据身体的组成测量腿的周长，并综合了疼痛的主观感觉和膝关节的柔韧性。随后，根据随机分布的患者进行适当的治疗计划。然后，重新测量所有参数。

年龄	组 0	40.1	岁
	组 1	37.3	
身高	组 0	179.8	厘米
	组 1	177.4	
体重	组 0	79.6	公斤
	组 1	76.5	
体内脂肪含量百分比	组 0	20.8	%
	组 1	18.8	

由于多种方法适用于淋巴引流试验，所有可能指示流体重新分布，可能参数都被考虑在内。其中，膝关节的柔韧性在诊断站等速测量，使用基于阻抗测量的八通道分析装置建立流体再分布，同时用卷尺测量腿的周长。随后，根据 Hanavan 模型计算了腿部的总容积，最后对主观疼痛评分进行了登记，以发现任何可能的变化。

结果：

总结最终研究的结果，应用谐振近红外理程序的有益结果在人体淋巴系统方面变得非常明显，这对于因骨科创伤而患有下肢淋巴阻塞的测试对象尤为明显，下肢这些区域由于骨科创伤和受伤以及手术有同样的效果。所提出的研究结果证明了大多数测试参数中原始数据的显著变化。这些变化提供了明确的结果，即经测试的谐振近红外理疗设备对患有下肢淋巴阻塞的受试者具有淋巴引流作用。在积极效果中，液体向躯干的重新分配，整个肢体部分（即腿部）的周长和体积的减少以及膝关节柔韧性的适当改善尤其值得一提。

研究对象：

hhp 谐振近红外理疗系统

淋巴阻塞：

根据图 1 的图形表示，液体的减少发生在两个小组，变得相当明显。效果组显示腿部体液明显减少，而安慰剂组效果不显著。这以最有效方式说明了谐振近红外理疗设备对淋巴系统的积极影响。

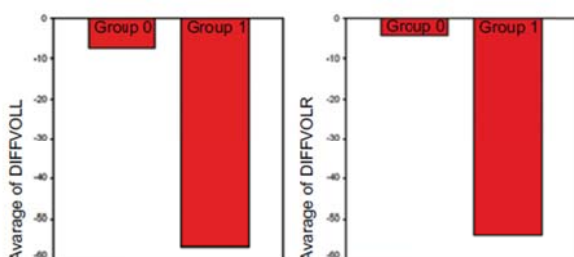


图 1：表示干预前和干预后的中位数图形差异。测试的参数说明了计算体积的中位数值差异-2 个小组的左腿（DIFFVOLL）和右腿（DIFFVOLL）（组 0-安慰剂组，组 1-干预组）

将 hhp 谐振近红外理疗设备的淋巴引流程序应用于下肢淋巴阻塞的患者，使患者腿部的液体量明显减少。由于周长减小，腿部的液体减少也符合体液分析所指示的变化：体液从腿部重新分布到躯干。下肢膝关节的柔韧性得到改善，强调了治疗引起的淋巴引流。在安慰剂组没有可测量的效果（图 2）

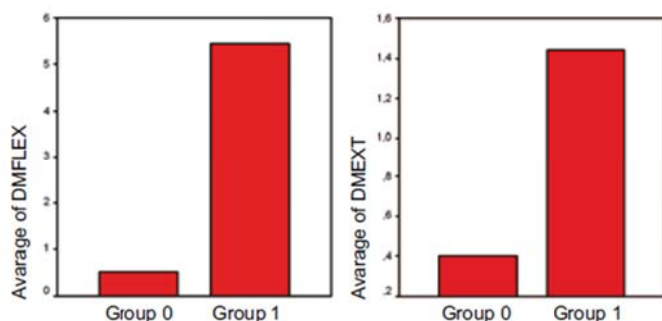


图 2 表示干预前和干预后的中位数图形差异。所测参数显示了 2 组（组 0-安慰剂组，组 1-干预组）运动平伸关节的关节弹性（DMFLEX）和伸展关节（DMEXT）的中位数差异。

将 hhp 谐振近红外理疗设备的淋巴引流程序应用于下肢淋巴阻塞的水肿患者，证实了膝关节柔韧性的改善。在建立个体差异后，应用谐振近红外理疗会产生明显的调节作用。安慰剂组（组 0）的两个图（图 2）说明没有显著差异。干预组（组 1）在运动平伸关节和伸展关节中均有显著的关节灵活性提高。这种显著的差异可以直接归因为谐振近红外理疗设备的干预，因为小组之间没有明显差异，而唯一区别就是治疗计划中的干预。

膝关节的灵活性增强，尤其是运动平伸关节，表现为膝关节内部充血的减轻，是由于干预对淋巴起到了引流的作用。因此，效应组中测试对象中液体流动性增加的趋势变得显著。

在这方面，减轻疼痛与运动平伸关节灵活性的增加有显著的联系，很明显的相关值 $r = -.76$

因此，在效应组的淋巴结缔组织疏解后，膝关节的柔韧性得到改善，关节疼痛得到缓解。

减轻疼痛：

评估统计表明，这一假设应用 hhp 谐振近红外理疗设备可以显著减少疼痛。

安慰剂组做了相似的疼痛调节方式，但是这些微小的变化并不明显。（图 3）

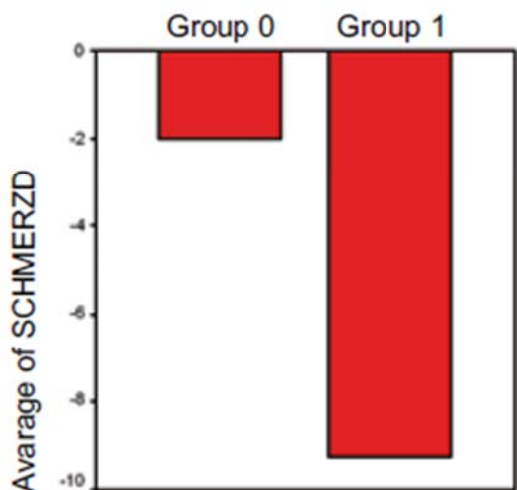


图 3：疼痛主观感觉差异的中间值表示图形。经测试的参数说明了两组干预前后建立的疼痛评分点的中间值差异。

刺激淋巴系统的多方面成果尚未真正研究过。因此，这是一个很好的例子，应用 hhp 谐振近红外理疗设备，可以有助于缓解各种其他症状。此外，还建议在未来对不同层次的皮肤进行研究。在这方面的基础研究似乎暗示着有前景的成果。

将 hhp 谐振近红外理疗设备淋巴引流程序应用于下肢淋巴堵塞水肿的患者。疼痛的主观感觉得到良好的改善。