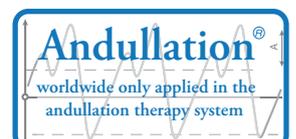




> Research Andullation Therapy
Influence on Seasickness

Biomed GbR - Laboratory for biomechanical diagnoses

Dr. Roland Stutz



The Influence of Andullation on Travel- and Seasickness

> Description of the Problem

Sea sickness and travel sickness (kinetosis) refers to all the reactions of the human organism to unusual movements and accelerations, such as for example on ships. Sea or travel sickness can affect anyone. In approximately 90% of cases these symptoms disappears after two or three days. Frequently, simply tips can help to prevent kinetosis. The use of medications for the prevention of kinetosis is controversial, partly because of their sometimes inherent side effects.

Sea and travel sickness affects thousands of people and tourists, and therefore have already been extensively investigated. The precise mechanism in which they take effect is still unknown. The phenomenon probably has something to do with (1) conflicting information which is transferred from the eyes and the organs of balance to the brain, (2) the manner in which the brain interprets this information, (3) an increased sensitivity of the organs of balance, (4) unfavourable phenomena such as anxiety, contents of the stomach, consumption of alcohol, smoking, lack of sleep, physical symptoms (heat, cold, flu, menstruation).

In order to investigate the physiological processes connected with sea and travel sickness, the Hershey Medi-cal Center in Pennsylvania, USA, possesses simulators which can cause sea sickness. The research workers also evaluate whether the unpleasant symptoms of sea sickness can also be reduced using acupuncture or acupressure methods.

> Investigation into the Effect of Mechanical Vibrations

The pharmaceutical industry makes very great efforts in order to obtain the travel sickness market by means of different medications. However, as time goes by, there is an increasing wish and requirement to attack the symptoms and complaints arising from sea and travel sickness preferably by means of a targeted preparative therapy.

These treatments include methods which stimulate the body's sensory system in a specific manner. In fact, pain, pressure and position sensors in the skin are desensitized through short-term stimulation. Intensive investigation provide the efficiency of vibrations to effect these sensors. These high-frequency vibrations can be applied to the whole of the human body, either in a standing or a lying position. At frequencies of more than 25 hertz the body's own sensors are overloaded with an immense stimulation density through which they are desensitized and through which a direct resistance is generated against other things such as pain.

Some experiments, carried out on male volunteers showed that a preceding andullation -therapy was able to strongly suppress the symptoms and complaints from sea and travel sickness by generating a resistance against the still unknown mechanisms which cause kinetosis. There was therefore an urgent requirement to carry out a thorough evaluation of these effects.

> Methodology for the present study

86 healthy male students acted as test volunteers for this study. They were divided at random into 3 groups. Group 1 was the control group. These test persons were not subjected to any mechanical body vibrations and were therefore not desensitized. Group 2 was desensitized every day for 15 minutes in a standing position for a period of ten days, using the heavy Human Mobility apparatus. Group 3 underwent a 15-minute andullation therapy per day for a period of 10 days in a lying position on the hhp medical massage mattress. All the test persons were both at the beginning at the end of this 10-day test period placed in a simulator room/drum in order to create the symptoms of sea sickness. Each individual completed an evaluation form before and after the 10- day test period.

The evaluation of the data was carried out using a visual analogue scale, which converted the subjective reactions of fatigue, weakness, sickness, dizziness and nausea into a number between 0 (entirely well) to 10 (very bad). Physiological parameters, such as heartbeat, blood pressure, coordination ability and skin temperature were measured by a medical assistant and checked by a doctor.

All the results after the 10-days desensitization phase were stored in a database by an independent person, who did not know about the results at the beginning of the test. The statistical direct interference comparison of the three groups was carried out using a variance analysis for the different values which were calculated before and after the test.

> Results

The control group (Group 1) who did not undergo any desensitization during the 10 days showed high values for average heartbeat and blood pressure when the symptoms of sea sickness were generated. On the other hand, the physiological parameters for the groups 2 and 3, which were both treated with vibrating massage, showed strong improvements. The marked increase in heartbeat and blood pressure which occurred during the inducement of sea sickness were visibly less pronounced. The average heartbeat went down to 19.3 and 18.7 beats per minute respectively for group 2 and group 3 (Fig. 1.). The same applied to the increase in blood pressure (Fig. 2.) which, after desensitization went down by 42.7% and 39.8%. whereas in the case of the control group, no difference arose in coordination ability, both the other desensitized groups did in fact show quite clear improvements of 24.7% and 23.8% respectively for groups 2 and 3. The results for the subjective impressions, such as fatigue, weakness, sickness, dizziness and nausea were also significantly less pronounced in the groups who had been treated with vibration. The andulation therapy with infrared waves in combination with the mechanical vibrations in a lying position (group 3) is more effective than vibration massage in a standing position (Fig. 4).

Figure 1: Illustration of the changes in average heartbeat after a 10-day desensitization phase with vibration massage.

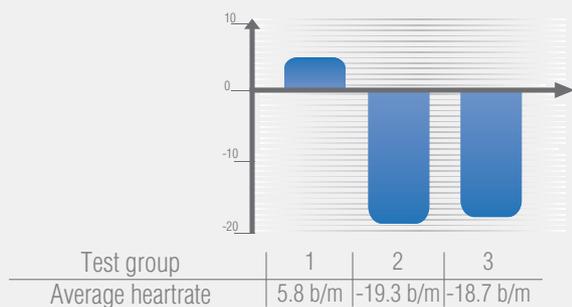


Figure 2: Illustration of changes in average blood pressure values after a 10-day desensitization phase with vibration massage.

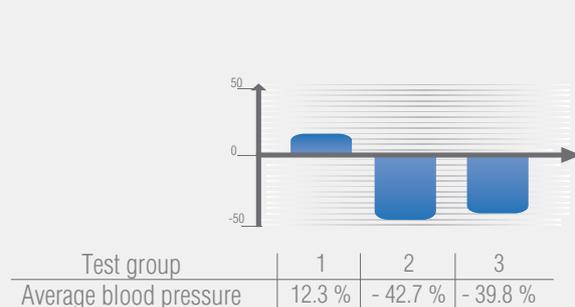


Figure 3: Illustration of changes of values achieved for the coordination test after a 10-day desensitization phase with vibration.

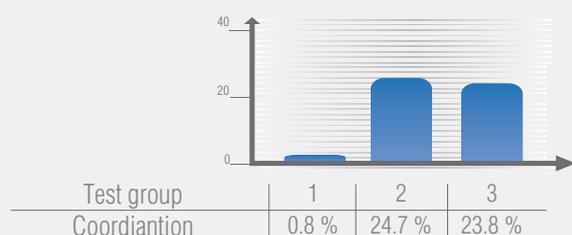
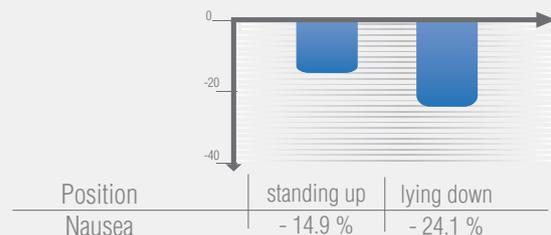


Figure 4: Reduction of nausea after different vibration treatments.

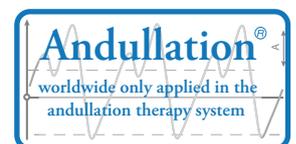


> Summary and Conclusions

A preventive treatment for sea sickness via desensitization with vibration massage (group 2 and 3) has a very positive influence on heartbeat, blood pressure and coordination ability. Both in a lying and in standing position, both massage methods show the same particularly favourable influence on these tested physiological parameters. In order to desensitize oneself against the symptoms of kinetosis, a preventive application of these treatment methods is significant. Andullation therapy is indeed more useful in preventing sickness.

These results support a direct application of the hhp medical massage mattress for the prevention of sea sickness. Since travel sickness has the same underlying mechanisms and the same complaints, it follows logically that andullation therapy can produce the same results.

The foldable hhp medical massage mattress also offers many more practical advantages than the heavy Human Mobility apparatus since its size is less suitable for the home or on board a boat.



> Research Centre

SPOREG

Ambulantes Rehasentrum

Strahlenbergerstrasse 105-107

D-63067 Offenbach am Main

> Andullation Centre UK

0800 - 0124202

info@homehealthproducts.co.uk

www.homehealthproducts.co.uk

www.andullation.co.uk

研究谐振近红外理疗对晕船的影响

Biomed GbR - 生物力学诊断实验室

谐振近红外理疗对旅行中晕船的影响

对问题的描述

晕船和晕动症是指人类机体对异常运动和加速度的所有反应，例如在船上，晕船和晕动症会影响任何人。在大约 90%的病例中，这些症状在两天或三天后消失。通常，简单的小窍门可以帮助预防晕动症。药物预防晕动症的使用是有争议的，部分原因是它们有固有的副作用。

晕船和晕动症影响成千上万的人和游客，因此已经被广泛研究。它们所起的确切作用机理尚不清楚。这种现象可能与（1）有关从眼睛和平衡器官向大脑传递的信息冲突，（2）大脑解释这种信息的方式，（3）平衡器官的敏感性增加，（4）焦虑，胃内食物，饮酒，吸烟，缺乏睡眠，身体症状（热，感冒，流感，月经）等不利现象。

为了研究与海洋有关的生理过程，美国宾夕法尼亚州的赫尔希医疗中心拥有可导致晕船的模拟器。因此，研究人员使用针灸或穴位按压法评估是否可以减少晕船症状。

研究机械振动的影响

然而，随着时间的推移，越来越多的人希望和要求通过有针对性的制剂来治疗由晕船和晕动症引起的不适和疾病。

这些治疗方法包括以特定方式刺激身体感觉系统的方法。实际上，疼痛，压力和皮肤中的位置传感器，通过短期刺激而变的脱敏。深入研究这些传感器振动效率的影响。无论是站立或躺着，这些高频振动都可以应用于整个人体。在超过 25 赫兹的频率下，人体身体自身的传感器超负荷，承受着巨大的刺激密度，通过这些刺激密度，它们会变的脱敏，并且通过其产生对疼痛之类的其他事物的直接抵抗。

对男性志愿者进行的一些实验表明，前面的谐振近红外理疗能够通过产生对未知机制的抵抗，来强烈抑制来自海洋和旅行的晕船和晕动症引起的不适和疾病。因此，迫切需要对这些影响进行彻底的评估。

研究采用方法

86 名健康男性学生担任本研究的测试志愿者。他们随机分为 3 组。1 组是对照组。这些测试人员身体没有受到任何机械振动，因此没有脱敏。2 组使用重型人体移动设备，持续十天，每天站立姿势 15 分钟脱敏。3 组为期 10 天疗程，每天在 hhp 理疗按摩床垫上躺着进行 15 分钟的谐振近红外理疗。所有的测试人员都是在 10 天的测试期结束后，放置在晕船的模拟器，以产生晕船症状。每个个人在 10 天的测试期前后完成了评估表。

使用数学模拟评分法进行数据评估，该评分法主观反映了疲劳，虚弱，疾病，头晕和恶心等，用数字 0（完全好）到 10（非常差）来评分表示。生理参数，如心跳，血压，平衡能力和皮肤温度由医疗助理测量并由医生检查。

10 天脱敏阶段后的所有结果都是由独立的人存储在数据库中的，他们不知道测试开始时的结果。采用方差分析方法对直接干扰试验的三组进行前后不同值的计算统计比较。

结果

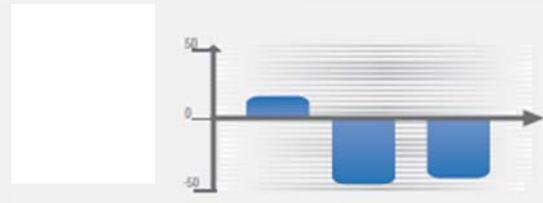
对照组（第 1 组）在 10 天内没有接受任何脱敏治疗，当出现晕船症状时，平均心跳和血压显示出高数值。另一方面，用振动按摩治疗的第 2 组和第 3 组的生理参数显示出明显的改善。在引起晕船的过程中，心跳和血压的显著升高显然不那么明显。第 2 组和第 3 组的平均心跳速度分别下降到每分钟 19.3 和 18.7 次(图 1)。同样适用于血压升高(图 2)，脱敏后血压分别下降了 42.7%和 39.8%。而在对照组中（第 1 组），平衡能力无差异，2 组和 3 组脱敏组均有明显改善，分别为 24.7%和 23.8%。在接受振动按摩治疗的组中，主观反映如疲劳、虚弱、疾病、头晕和恶心等症状也明显减轻。平卧位谐振近红外治疗(第三组)比站立位振动按摩更有效(图 4)。

图1:振动按摩10天脱敏期后平均心跳变化示意图



测试组	1	2	3
平均心率	5.8 b/m	-19.3 b/m	-18.7 b/m

图2:振动按摩10天脱敏期后平均血压值的变化示意图。



测试组	1	2	3
平均血压	12.3 %	-42.7 %	-39.8 %

图3:说明在振动下脱敏10天后,平衡试验所达到的值的变化。



测试组	1	2	3
平衡能力	0.8 %	24.7 %	23.8 %

图4:不同振动处理后恶心程度降低。



位置	站立位	平卧位
恶心	-14.9 %	-24.1 %

总结

通过振动按摩 (组 2 和 3) 对晕船的预防性治疗, 心跳、血压和平衡能力有非常积极的影响。站立位和平卧位两种按摩方法都对这些经过测试的生理参数都有同样的有利影响。为了使自己对抗晕动症状脱敏, 这些治疗方法的预防性应用是非常重要的。谐振近红外理疗法确实对预防疾病更有效。

这些结果支持直接应用 hhp 医用按摩床垫预防晕船。由于晕船疾病具有相同的潜在机制和相同的诉求, 因此从逻辑上讲, 谐振近红外理疗法可以产生相同的结果。因为重型人体移动设备的尺寸不太适合家庭或船上, 而可折叠的 hhp 医用按摩床垫还提供了比重型人体移动设备更多的实用优点。