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**THERA**  
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# » REDUCTION OF SPASM BY USING MOVEMENT TRAINERS ? «

Eine Studie von  
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Ch. Neumann  
und I. Haase



Fachklinik  
Ichenhausen

Rehab center  
for physical medicine  
and medical rehabilitation  
Orthopaedic facilities /  
traumatic facilities  
Neurology / Neuropsychology  
Inner medicine / rheumatology

Center specialized  
in Parkinson Disease  
Interimistic acute section

Krumbacher Strasse 45  
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## 1. INTRODUCTION

To treat spasm that occurs with all different neurologic diseases (such as hemispasm after stroke, brain-trauma, para-spasm with patients suffering from traumatic spinal cord injuries and multiple sclerosis), we are facing a problem that occurs on a daily



movement trainer (foot-trainer)

basis. Though it has been tried especially and mainly in the rehabilitation to face the problem with intense physiotherapy (as baclofen, tizanidin) or more invasive techniques such as botulinum toxin-injections, even selective denervating techniques are being considered.

A further therapeutic starting point would be the movement therapy of the patient by using a movement trainer, though statements being grounded by studies regarding the effectiveness of those trainers do not exist so far. Therefore the attempt was being started to give proof of the effectiveness of a move-

ment trainer, in cooperation with a company connected with medical treatment (in this case THERA-vital of medica enterprises, to be specific).

## 2. STRUCTURE OF STUDIES

225 patients (165 patients recovering from stroke,



movement trainer (upper-body-trainer)

36 Parkinson-patients and 25 patients suffering from multiple sclerosis) showing tonus-increase at the lower extremities were being put on the THERA-vital in the special clinic Ichenhausen.

They were given a therapy unit of 20 minutes each. All the patients were examined by an experienced physiotherapist and the muscle tonus was determined according to the Ashworth scale for the following muscles: hipflexor and extensor, abductions and adductions, inner and outer rotators, knee-flexor and extensors, plantarflexors, dorsalextensors. The different muscle groups were being compared regarding the muscle tonus before and after the therapy, taking into account the Ashworth items on the

scale. For the significance test the pre-writing according to Dixon and Mood were used (diversity tests for 2 distributions with dependent spot checks). en).

## 3. RESULTS

### 3.1 PATIENTS RECOVERING FROM STROKE

First the patients recovering from stroke the separate muscles showing a muscle tonus increase of at least one item on the Ashworth scale, were compared in their state before and after the therapy. The study groups suffered from an increase muscle tonus in the adductors, the plantarflexors, the knee flexors, and extensors as well as the abductors. By doing the therapy a significant reduction of the muscle tonus regarding all the muscles was caused. Moreover, another outstanding aspect was observed: the muscle groups in the hip section and the thighs profited distinctively more than the muscle groups in the thigh section.

Muscle	Number for T1 > 0	Mean T1	Mean Diff. T2-T1	Median Diff. T2-T1	Improvement	Sig.
Hip-flex.	11	1,36	-1,18	-1,0	91%	0,0020
Hip-ext.	8	1,13	-1,13	-1,0	100%	0,0078
Adductors	72	1,25	-0,65	-1,0	57%	0,0000
Abductors	23	1,04	-0,74	-1,0	74%	0,0000
Inner-rot.	10	1,10	-0,80	-1,0	70%	0,0156
Outer-rot.	32	1,13	-0,59	-1,0	59%	0,0000
Knee-flex.	54	1,35	-0,44	0,0	46%	0,0000
Knee-ext.	32	1,34	-0,56	0,0	47%	0,0005
Plant.-flex.	64	1,30	-0,45	0,0	45%	0,0000
Dors.-ext.	18	1,33	-0,50	-0,5	50%	0,0039

Chart 1:  
Results for separate muscles

	Mean	Median	SD
T1	5,2	4,0	2,8
T2	3,2	3,0	2,6
Diff. T2-T1	-2,0	-2,0	2,2

Chart 2:  
Direct Changes in tonus regarding apoplex-patients (N=49)

Note: The last line shows the medium values of the individually created differences, they therefore do not necessarily correspond with the difference of the aggregated dates (line T2-T1). (This is the case with the following charts also).

### 3.2 MS-PATIENTS

In regards to the MS-patients the sum-score was created by Ashworth-readings for adductors, abductors, knee flexion, knee extension, plantar flexion, and dorsal extensors of both sides (=12 readings, theoretical clamping range 0-60). The medium value of the sum-scores of the 19 MS-patients was at 10.3 items before the therapy and at 8.3 items after the therapy. 14 out of 19 test persons were showing improvement (74%), 4 fell off in quality (p= 0,0309).

	Mean	Median	SD
T1	10,3	7	9,0
T2	8,3	5	8,9
Diff. T2-T1	-2,1	-2,0	4,4

Chart 3:  
Direct changes in tonus regarding MS-patients (N=19)

### 3.3 PARKINSON-PATIENTS

In regards to the Parkinson-patients, the sum-score was also created from Ashworth-readings for adductors, abductors, knee flexion, knee extension, plantar flexion, and dorsal extensors of both sides. Here 27 out of 34 test persons (79%) were showing improvement, 2 fell off in quality (p<0,0001).

	Mean	Median	SD
T1	9,2	6,0	9,5
T2	6,6	5,0	8,2
Diff. T2-T1	-2,6	-2,0	3,3

Chart 4:  
Direct changes in tonus regarding Parkinson-patients (N=34)

### 4. CONCLUSIONS

Passive movement training of spastic extremities being done by using a movement trainer clearly lowers the muscle tonus directly after the therapy. Almost all the patients that were being examined by us profited from this. Only a few number of patients were showing a worsening of their symptoms by using the movement trainer. One of the main goals in further studies must be to determine if to lower the muscle tonus stays with the patient as a long term effect, and how often patients have to do such a training in order to create a long term reduction of the muscle tonus.

### CONTACT:

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Medical Director  
of the Neurology section and  
the Neuropsychology section  
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Furthermore, patients recovering from stroke were observed, with whom the sum-score gotten by the Ashworth-readings for adductors, abductors, knee flexors, knee extensors, plantar flexors and dorsalextensors for each concerning side (=6 readings, theoretical clamping range 0-30) was at least >2. The average result readings were 5.2 before the therapy and 3.2 after the therapy. (p<0,001), 40 out of 49 test persons showed improvements (82%), 3 fell off quality. If establishing a standard form of the prae-post-difference on the standard deviation of the T1-readings (which is a popular but rather problematic method), you get an effective power of 0,74, what can be interpreted as 'medium efficiency', according to the classification by Cohen.

We use the THERA-vital symmetric trainer since several weeks in our rehab center.

Several exercisers are placed to orthopedic, neurological and internistic patients' disposal for their intense and daily use. Compared to the previous THERA-vital, the symmetric trainer is even more easy to use. Even patients with brain weakness can surprisingly use the exercise on their own. The display is structured very clearly, large and can be read very well.

The new THERA-vital offers a lot of different options for exercising:

- **Passive Mode:** In the passive mode a bar-diagram shows very good the motor power the exerciser has to afford. The user is able to recognise whether his legs are moved smoothly by the device or whether he puts pressure against the movement. To make smooth and passive movement possible, the therapist can give a clear advice: "Try to hold the bar as small as possible." The patient is able to check this by himself. It is also possible to activate a spasm control which recognises a too high muscular tone against the direction of movement and stops the movement. It reacts according to the high tone with a slow restart (forward or backward).

- **Active Mode:** Here you can set different accents to the training by giving a condition of resistance (in Watt), a condition of a maximum number of revolutions or a condition of a maximum heart rate. As already included in the previous model you can also choose the function of an active muscular support. This is suitable for patients with a hemiparetic leg to ensure a smooth movement. We also use this function for leg-amputated patients.

- **Symmetric-Mode:** In the active mode the display shows the right and the left leg activity separately. The user is able to recognise in the bar-diagram how much activity comes from the right/left leg. For active symmetric-training the advise is: "Try to hold the bars on same level." More fun for the patient during exercise is the second option to represent the symmetric-training: the road. The patient has to try to hold a ball in the middle of the indicated road. This presentation is often used by therapists in the orthopedic interval-training: i.e. hold the ball on the right side for 30 seconds (activity of the right leg), then hold the ball on the left side of the road for 30 seconds (activity of the left side), etc. Passing from passive exercising into active exercising the display switches into the according presentation (bars, road). Therefore the user realises immediately when he works actively. Turning back to passive training the indication switches back into the passive display.

**Report:** After the training the device shows automatically several parameters of training, as a summary. Therefore it is possible to control the training and the patient has a possibility to follow his success.

**Conclusion:** The THERA-vital symmetric trainer can be used very good in daily therapeutic practice due to his expanded functions. It offers a targeted training for specific deficits, a targeted control of the training aims, a control of the course of the therapy and the possibilities to increase from passive training to active capacity training. The bio-feedback functions offer the patient a very good chance to control himself and has a very big aspect of self-motivation. Using the THERA-vital symmetric trainer is quite easy and practical to use in daily life.

The Parkinson medical centre in Bad Nauheim is with 160 beds the biggest specialised medical centre in treating Parkinson's disease in Germany. They look after new patients as well as ones that already got their first diagnosis and an first adjustment as well as advanced symptoms of illness and patients that are to be rehabilitated in their abilities in daily life.

THERA-vital and THERA-fit plus movement exercisers are used for all patients in the physical therapy that can be remobilised. It is a rhythmic movement therapy that helps to improve automatism which is necessary for example in the walk training. The movement exercisers are used for the improvement of movement and mobility, but the most important thing is the reduction of rigor (tonus of the muscle). Parallel to this the legs and back muscles get stronger and the heart-circulation gets improvement.

The devices are easy to handle and user friendly, using this devices improves the motivation of the patients to train on their own, which means without a therapist, because the patient is able to recognize first aims of the training like i.e. increasing of the kilometers or the total time of every training on his own. The indication, frequency of the therapy units and intensity are equal to each illness. Power and condition training must be done at least once a day, otherwise there will be no efforts. To improve the rhythm of movement and the general ability to move you can train with a Parkinson patient i.e. in the "off" phase or in the phases with increased rigor to learn to come over these phases easier.

The advance of the both of these devices THERA-vital and THERA-fit plus are especially for Parkinson patients, that 1. they can train after adequate instruction at home on their own, 2 you can train condition, power and rhythmic movement effect a reduction of the rigor and can also increase the motivation of the patient.

Please take note, that patients with extremely bad physical conditions can get tired very fast and by this the rigor can be stronger. In this case the doctor and therapist can decide in every case if the therapy should be stopped or a slight training and slow rising of the therapy units can be indicated.

The THERA-vital exerciser was bought in May 1994. During that time about 10 patients were being treated daily on a regular basis in order to get them prepared for specific training done by a physiotherapist.

The following forms of disease occurred that caused us to start using Theravital:

1. Coxarthrosis
2. Gonarthrosis
3. New artificial limbs in hip- and knee sections (after surgery)

Therapeutic goal:

The basis for each treatment done by a physiotherapist is the preparation for the actual goal, which is to strengthen the muscles, to improve the mobility of the joints, and to train the coordinative activities which is related to it, therefore to also improve the way the person walks and the general perseverance.

Before and after the training program done by a physiotherapist easy exercises for perseverance that are rhythm oriented and are being done on a regular basis work perfectly well for muscular warm ups and help to improve the muscular blood circulation which is strongly related to it. At the same time it causes these patients to integrate a new unchanging set of movements to the one that already exists, by doing a regular set of movements. And this functional training does not have any negative effect on hips that have been operated on neither on the knee joints.

In the same way THERA-vital gives you the opportunity to slightly cool down after having being treated by a physiotherapist, at the same time it helps to improve the coordination skills even after the actual treatment and surely it slightly helps to improve general perseverance without making an excessive demand on what the patient is actually able to do. From a technical point of view THERA-vital gives you the opportunity to also consider limitations of the patient such as not being able to do a great variety of movements by choosing from different pedal sizes. This way those patients with limitations can do this regular training before and after the actual training program. The machine is a motorized exerciser and can support the natural movements when showing flabby muscular structures until later on you can do it more and more independently.

THERA-vital has been highly appreciated for training programs being done by physiotherapists for patients that undertook surgery regarding artificial limbs at knee- and hip- joints, especially because of it's being easily adjustable, considering the different movements on an individual basis as well as being able to consider the individual possibilities of the patient. It surely is a highly appreciated supplement to the basic concept of the actual treatment being done by a physiotherapist and works perfectly well to prepare patients already used to the motorized splint to the ergometer training.

Dr. med. W. Oest  
Doctor of Orthopedic / Medical Director

The Wilhelm- Fresenius clinic is an internal clinic, looking after patients recovering from different forms of rheumatism as well as rather internal problems such as heart attacks and apoplex.

We have been using the THERA-vital exerciser in our therapy department since summer 1997. During this time the exerciser was mainly used by patients suffering from diseases regarding rheumatism and orthopaedic diseases. The exerciser is highly appreciated and accepted, especially by patients with artificial limbs in knee sections or hip joints. As a result of the possibility to make individual adjustments a flexible use is possible, even for patients that are showing severe limitations regarding their mobility.

There are different ways to use the THERA-vital exercisers for patients with diseases concerning ignition or rheumatism, taking into account the different phases the patient is going through. In most cases we are not using THERA-vital if we are dealing with severe ignition, e.g. if we are showing a thrust situation, as even the slightest mechanic stimulus of any movement of the joints can lead to increased pain and increased ignition. On the other hand we highly recommend to use the exerciser for patients going through a chronic ignition phase or patients that are in a more passive phase at that time.

THERA-vital enables you to start a well functioning training to get familiar with a physiological set of movements that was not being done as a result of a long term protection situation and wrongly putting weight on joints out of pain. The stepless radius adjustability also makes it possible to make adjustments to the patients own individual possibilities. The patient himself has the opportunity to adjust pressure and that way to painlessly (or at least without much pain) go to the individual capacity level. The painless movement that goes easy on joints enables the patient to work out in high speed again, often for the first time in quite a while, which often leads to a noticeable increase in motivation. A few months ago we started to additionally provide the smaller THERA-fit-plus for the daily training of those patients. According to our own experience we highly recommend the exerciser. We made positive experiences only. Both of the exercisers can be perfectly integrated into the actual therapy program. They will have positive side effects regarding the situation of the patient, psychologically as well as physiologically. It makes the physiotherapeutic treatment easier and supports it very well.

We recommend the daily use of the THERA-exerciser for your home for patients that are showing chronic limitations. That way the successes once reached by the patient that had been started in our clinic can be secured in regards to the mobility. Moreover negative side effects of the disease can be prevented or opposed.

In the following section we will report on our experiences regarding the exerciser mentioned above. Our facility, the clinic Teupitz, is a clinic providing about 350 beds, where patients recovering from neurological diseases or mental disorders as well as addicts are being treated. The exerciser is mainly used for patients suffering from Hemiparesis, Multiple Sclerosis, Polyneuropathy and Parkinson Disease. THERA-vital turned out to be a positive supplement to the regular, well planned therapy sessions. We use the machine to prevent different kinds of distortion, for muscle strengthening as well as for muscle relaxing. The passive muscle training helps to improve the mobility in hip- and knee joints with patients suffering from Parkinson Disease. Also, positive side effects on stretching techniques and mobility regarding spasm aspects can be noticed by choosing from different menus on the program. The exerciser had been designed for extension, which is being appreciated as a very positive aspect; this way rearrangements can be done by for example adding an upper body exerciser, a bed wagon and a stub securer. As the machine is easy to operate (it can be operated while remaining seated in the wheelchair), it is highly appreciated by the patients that are being treated here and by the team that is in charge of the therapy programs, we cannot imagine doing our therapy programs without the exerciser anymore.

Dr. med. J.H.Faiss  
 Doctor of Neurology

I. Dörp  
 Director of Physiotherapy

Suffering from a short term kidney disease or disorders is a phenomenon that often occurs with elderly people according to a long term chronic disease caused by long term arteriosclerosis or by suffering from diabetes mellitus for years.

Caused by age, other kinds of disorders as well as additional wearing out of joints, the mobility of patients that suffer from such disorders is often extremely limited regarding their own mobility in daily life.

As you know exercise therapy without using any kind of weight (such as exercise bath) is a perfect opportunity to either relax spasm or to improve your basic overall body resistance on the other hand. As the haemodialysis therapy takes about 5 hours 3 times each on a weekly basis plus the time you need for getting to the proper location, it is very time consuming for those patients managing to put down other appointments for treatment e.g. on their so called days off. The reason for using the THERA-vital exerciser was the fact that it gives you the opportunity to use it for exercise with patients that are forced to lie down during their haemo-dialysis treatment.

Altogether it has been 6 patients, 4 of them female and 2 male, at an average age of 71 years, (range 46 to 83 years) that attended this exercise training program 3 times a week on a weekly basis.

Furthermore the exercise trainer was used with many other patients on a non- regular basis, also it was offered for use to patients that stayed in our centre for dialysis when they had been on vacation.

The regular training time was 20 to 30 minutes, using active exercise methods, doing it in the end of the dialysis time period most of the time. We were observing the individual state of health as well as the state of circulation (low blood pressure during and after the dialysis), any changes in frequency as well as the response to the dialysis itself. The exercise trainer was accepted very well by all the patients, it was evaluated as an especially smooth form of training and regarded as motivating to improve the exercise time and possibilities in the daytime.

From an overall point of view you can observe less critical situations regarding circulation as well as regulation of blood pressure, the possibility to regulate speed by yourself and choosing either active or passive joint movement gives you the opportunity to regulate your training according to the heart frequency. Even after you have finished the dialysis (between 2 and 4 hours after you have completed the training) less hypotonies were observed. Dislocations of the punctation needles that were first expected to be observed were seen very rarely and just occurred during the first days of the training.

The specific posture for the bed located at the transport wagon of the exercise trainer gave the opportunity for a mobile and yet fixed use of the trainer during the haemodialtherapy while the patient is lying down. The trainer is highly appreciated by the patients so that sometimes it seems as if everyone just has to have one. Especially patients suffering from problems regarding the circulation highly appreciate working with the trainer during the haemodialysistherapy.

As the trainer is easy to operate and the patient can set the regulations by himself, the trainer is highly appreciated also by personnel so that you can easily integrate the possibilities of the exercise trainer to the schedule of a normal dialysis day schedule. The exercise trainer THERA-vital has become a most valued part of the dialysis therapy program to many of our patients.

Dr. Iris Lubrich-Birkner  
 Internist/ Doctor of Nephrology

In the Sauerland clinic which is a clinic specialized for neurological diseases we mostly take care of patients suffering from multiple sclerosis in all different kinds of forms and degrees. Most of our patients have been suffering from those symptoms for quite a while and had to use a wheelchair for years as a result of spastic symptoms or flabby paralysis.

At our clinic we put emphasis on regular physical- physiotherapistical treatment. For additional training we have been using exercise trainers by Medica Enterprises of the type "THERA-mobil" and "THERA-vital" for daily use at the wards according to doctor's recommendation providing assistance by well experienced masseurs that set the machines according to the individual needs and enable a safe training for disabled persons.

According to our own experience the passive muscle- and joint training is a great way of supplementation for the remaining therapy activities of our patients suffering from spastic symptoms also showing disorders in mobility, metabolism and blood circulation, circulation and intestine activities and it helps to prevent decubitalucera, thrombosis and distortions. Moreover, we noticed an additional strengthening effect of the muscles with patients that were showing flabby paralysis in muscle sections of the feet.

The exercisers are easy to operate and safe, it does not take much time to operate them, neither do they take much space and they can be used any time of the day in accordance with the regular therapy program.

For some patients that are able to operate the exerciser by themselves or those that have the assistance they need at home, we recommend to continue with the training, doing the exercises after their stay at the hospital. In this case we recommend these exercisers as an additional supplement to the regular clinical therapy treatment. You can even use it while remaining seated in the wheelchair, which is very convenient. Our patients highly appreciate the exercisers by Medica Enterprises. We cannot imagine doing our therapy programs without using them anymore.

Dr. med A. Horn  
 Doctor of Neurology and Psychiatry

We have been using the exerciser THERA-vital by Medica Enterprises for more than a year now, we are referring to that time frame on the following report. We are using the exerciser as an additional trainer for our patients, besides the regular training done by a physiotherapist. Right now there are 24 patients suffering from neurological diseases in our clinic, mainly patients showing hemiparesis symptoms recovering from stroke, patients recovering from brain trauma, MS or Parkinson Disease. Patients are usually staying with us for 6 to 8 weeks.

The patients are being treated by a physiotherapist on a neuro physiological basis (Bobath, PNF and others), on an ergotherapeutic basis as well as neuro psychologically and speech- therapeutically. By using the exerciser additionally, next to single therapy activities, positive spastic effects were being noticed, as well as effects on the active and passive mobility of feet and on the over all condition of our patients that are using a wheelchair. The exerciser is highly appreciated by the patients. After the machine has been explained by the therapist, showing how to set speed and resisting power on an individual basis, a lot of our patients are able to operate the machines by themselves. Patients that are unable to do so because of severe brain disorders are assisted by the nurse.

The patient can train independently after having operated the machine, which is made possible by the setting of the time. This way it is possible to train in the weekend and losses formerly noticed, before using the exerciser, as a result of not doing any kind of therapy training in the weekend are not so noticeable any more.

Besides our special (neurological) area we could observe a fortunate healing progress with a female patient suffering from severe ulcus cruris for years. The goal of neurological rehabilitation is to enable the patient to walk independently again. For patients that are unable to reach that goal, recommending an exerciser can help to broaden the possibilities and activities of a wheelchair user, to hinder possible side effects such as getting passive, and to strengthen the level once reached by rehabilitation at the clinic.

From our point of view the exerciser is an extraordinary supplement when treating neurological patients.

Dr. med. Arnold  
 Doctor of Neurology and Psychiatry

## **19** Arno Becker, Krankenhaus Evangelisches Stift:

### **THERA-vital Exerciser**

This specific machine was given to us and was being tested here. The test persons were mainly patients suffering from incomplete paralysis with restricted feet functions. These are the positive aspects that were being observed during our studies:

- Many patients that are unable to sit on a regular bike saddle are given the possibility to remain seated in the wheelchair by using Theravital.
- The machine is easy to operate. Many patients can "get in" by themselves.
- The footrests are designed in a tight shape, perfectly considering the patient's own physiology.
- The regulation can be done individually (by using outside help or by setting the operation manual on resistance) and can be done by always considering the patient's individual progress.
- The radius of the feet movement can be set on an individual basis, this way patients that are unable to exercise with a regular bicycle- ergometer because of deficits in knee flexibility can exercise as well.
- There surely is some positive results regarding blood circulation, mobility, intestine activities and spasm, though we cannot give any scientific proof of that. What we can say without any doubt is that regular training will strengthen the muscular structure in feet and other muscles as well.

## **20** Wicker- Klinik

### **Exerciser by Medica Enterprises**

For about two years we have been using exercise trainers of the type "THERA-mobil" as well as "THERA-vital" by medica enterprises at the exercise treatment department in the Wicker- clinic located in Bad Wildungen which have been appreciated as a positive supplement for our therapy programs ever since. We mainly use the exercisers for patients that suffer from spastic disorders regarding coordination as well as e.g. multiple sclerosis, early childhood disorders in brain sections, cross-sectional disorders etc. They are primarily used to get prepared for single therapy treatment. According to our own experience having been worked out with the Theramobil for 15 to 20 minutes a well noticeable reduction in spasm can be noticed, which helps us to set in with the "active" training program of our exercise therapy program much earlier in most cases. Especially with patients that are unable to walk, a well noticeable reduction of spasm can be seen which often leads to a higher mobility that already shows when the patient steps out.

The exercise trainers of medica enterprises have become a most highly appreciated part of our therapy program, being used before starting with the regular therapy training as well as using them in between the therapy program. We hardly can imagine our department without these exercisers now!

D. Goldberg

Dr. B. Neelsen

Direction of Physiotherapy

## **21** Krankenhaus Lindenbrunn:

### **THERA-vital**

The hospital Lindenbrunn at 31863 Copenbrügge is a specialized hospital including a department specialized in internal diseases with emphasis on geriatrics and an internal department. 110 beds are provided in the internal section, 145 beds in the neurology department. All different kinds of neurological diseases are being treated in the neurological department. The emphasis of the work that is being done here is on the neurological rehabilitation. Most patients that are being treated here suffer from stroke, intracerebralistic bleeding and other severe disorders of the central nervous system. This means that we deal with many patients that show a spastic hemisphere. But there is also patients that are paraplegic or that are suffering from flabby muscular structures regarding feet or arms.

In our hospital there is at least one motorized bicycle (THERA-vital) located at each one of the 8 wards provided for the training of the patients. These exercise trainers are being used by personnel when doing the therapy activities. But also in times of no special therapy activities the patients can always use the exercise trainers whenever they want to. There is always personnel that assists the patient with how to use the machines that are located safely in the hallways at the wards.

Those motorized machines are used as additional exercisers for the therapy besides the active exercise training program the patient is attending. The trainers are used on a daily basis, for several hours. Patients showing a spastic hemiparesis are working with those exercisers as well as patients showing flabby paralysis. The fact that using an arm-trainer while working with a foot-trainer is especially appreciated. The results are an overall body activation, (positively effecting circulation and intestine activity), furthermore a reduction of foot pain and a more flexible mobility can be observed. Possible distortions will be prevented. With flabby paralysis muscular strength will be improved. It is very easy to operate and use the exercisers. The patients can use the machines by themselves in most cases, very rarely do they need some assistance by personnel or a male nurse. The use of the machines is extraordinary safe and secure. Until this day we did not have any accident with our exercisers, fortunately, though at our clinic with 255 patients 8 to 10 Thera Vital exercisers are being used daily for many hours since three years now. We also hardly had to have any kind of repairs done or to put up with break downs.

Me personally, being the director of the neurological department, I cannot imagine this department without these exercisers anymore. Without any doubt these machines are an effective supplement for the manual exercises. The daily training will help to prevent thrombosis in feet and vein and help to prevent distortions occurring with all different kinds of neurological diseases. Several times we prescribed the exercisers also for the time after patients stayed at the hospital, for working out with the machines at home: This way the user can also exercise in the convenience of his own home, on a daily basis. The machines can also be used by wheelchair users.

All in all the THERA-vital exercisers are highly appreciated from a neurological point of view. And inexpensive. Using these exercisers is an outstanding supplement for medical treatment and manual exercise.

Prof. Dr. med. B. Hofferberth

Medical director of the neurological department and clinical neurophysical treatment



The exerciser that had been designed by you has been used by us for several years as part of physiotherapy sessions and other therapy programs regarding mobility and flexibility. Our clinic is a special clinic for rehabilitation for interdisciplinary early rehabilitation providing 20 beds, we are also providing outpatient treatment. It is mainly patients recovering from brain trauma or poly trauma, after having had surgery when a tumour had been removed.

The exerciser is being used daily by many patients as part of the actual training program. The therapy is being done while the patient remains seated in the wheelchair.

The exerciser is highly appreciated by our patients, it is partly used for treating patients recovering from para- and hemiparesis. It is easy to motivate the patients for this form of therapy, as the patient himself is an active part of the program. We did not have any problems regarding the operation of the exerciser so far. From our point of view the exerciser is a good supplement to the daily training programs done by a physiotherapist and is perfectly suited for doing it by yourself in a controlled way, to prevent muscular spasm as well as spasm in the joint sections.

Dr. Ute Knüpfer- Banerjee  
Doctor

Dr. M. Lippert- Grüner  
Assistant medical Director

We have a neurological clinic with emphasis on multiple sclerosis and amithrophical lateralsclerosis, providing 167 beds at two separate buildings. Moreover, patients suffering from Parkinson Disease and Muscle Distrophia as well as patients recovering from stroke are getting outpatient treatment or they are staying here.

Theravital has been used by our physiotherapists for about 3 years in our clinic. The machine is being used all day long, especially for treatment of spasm in the feet sections.

Almost regularly a reduction in tonus increase is noticeable when using Theravital during the therapy program, also our wheelchair users are showing a more flexible mobility. Moreover, intestine activities and circulation of the patient are showing extreme improvement.

Using Theravital can have very positive side effects for the patient when using it as an additional trainer, getting prepared for the regular training program done by the physiotherapist.

Theravital is extremely low in noise whenever used in therapy sessions, very stable, it does not take much space and can be operated easily.

Individual program settings can be done at the machine, considering the patient's individual kind of handicap.

Using Thervital is extremely appreciated for prevention and inexpensive and is seen as an outstanding supplement next to the medical treatment for muscle relaxing.

Priv.-Doz. Dr. Schädlich  
Medical Director

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## HELFEN SIE MIT / PLEASE ASSIST US

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Teilen auch Sie uns Ihre Erfahrungen, Erlebnisse, aber auch Verbesserungsvorschläge, durch den Einsatz der THERA-Bewegungstrainern, mit.

Damit unterstützen Sie die medizinische und therapeutische Entwicklungsarbeit – für eine gesündere Lebensweise Ihrer Mitmenschen.

*Please share your experience and your suggestions you made during the work with the THERA-Trainers with us.*

*Therewith you will support the medical and therapeutical development – for a more healthy way of life.*

# THERA TRAINER®

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