Don’t forget Haiti

Thanks to the many generous donations, medi for help is still providing sustainable help for self-help, even two years after the earthquake.

page 7

Application of the back braces

In the treatment of acute and chronic symptoms after vertebral body fracture with osteoporosis.

page 14

The Use of TTm/TFm pop

Liners for Preparing Stumps for the Use of Prostheses.

page 25
Dear Readers,

I hope you were able to make use of the summer months to relax during the holidays. I’m delighted to be able to present the new issue of our medi healthcare (formerly "medi for you med international") to you with focus on Orthopaedics and Prosthetics.

It has a new look and a new name. We have included all subjects that will benefit you: regular scientific articles and specific expert information, contemporary and comprehensive articles about modern treatment in conjunction with our product recommendations and congress reports.

---

4 New: the igli carbon insoles
5 medi Highlights
6 AGA Award ceremony
6 On reliable soles

7 Don’t forget Haiti
   News about our charity project
11 A year in Haiti for medi for help
13 medi for help – why donate?

14 Scientifically proven:
   Back braces improve the body's posture and muscle power
19 M.4 X-lock
Also, we would like to focus more sharply on your patients and thus added an extra section to our magazine in which we present case studies and patient’s stories such as the one of Thomas Rauch, who had both his legs amputated at birth.

October 20 is World Osteoporosis Day. A new study shows that Spinomed and Spinomed active back braces improve posture and muscle strength. Read more about it on page 14.

Have you heard about the charity project “medi for help” yet? This supports people in disaster areas, such as in Haiti at the moment, and gives those affected some of their quality of life back by providing them with lower limb prostheses.

This issue gives you all the latest news on this project and you can get to know our new workshop supervisor Mr Michael Beck. Donations and volunteers are still needed for the work on site. Have you got any ideas for this? If so, we would love to hear from you.

We hope you enjoy reading this latest issue and we look forward to receiving your feedback.

With kind regards

Uwe Meyer
The provision of medical devices at medi begins at the sole of the foot. At the heart of the newly founded business division is the interactive igli carbon insole. This dynamic, highly flexible product combines sensorimotor and conservative mechanisms of action in a patented insole system. This can correct poor alignment of the foot, relieve stresses on the locomotor system, and optimise the biomechanics. Result: this has a positive and holistic influence on the body’s posture and balance as well as on well-being from head to toe.

**Effective flexibility**

Two core elements are responsible for the effective action of the variable insole concept - the carbon bar and the individually positionable posts.

The carbon bar along the underside of the insole with its specifically placed incisions allows all biomechanical movement patterns and actively supports the muscular activity in the foot. At the same time, the optimum cradling and three dimensional stability guarantees a secure tread. Thanks to its thin and light construction, the wearer only notices it because of its effect, so it offers ideal comfort properties.

The innovative stimulation elements - the posts - are the key special feature of the carbon insoles. These are attached to the carbon bar by Velcro, so experts can adjust them quickly and individually. The posts specifically reinforce the body’s selfperception and thus optimise the position of the joints and the foot. This has a positive effect on the whole body’s posture. This can relieve numerous complaints such as back ache, knee pain, calcaneal spur or osteoarthritis.

**3D diagnostic investigations**

Special analytical software determines which post positions will suit the patient best and gives the technician suggestions for positioning them. The software guides the consultation dialogue with the clients; client data and insole settings are recorded.

The BackMapper is used for diagnosis. Based on video grid stereography or optrimetry, it provides a 3D postural analysis, which is used to identify muscular imbalances, neurogenic dysfunctions and skeletal asymmetries for an exact diagnosis. Using the Back Mapper and other instruments, medi offers success-oriented concepts for therapy with insoles.

---

**New at medi: the igli carbon insoles**

The insole manufacturer has belonged to medi since the beginning of 2012. This acquisition enabled the Bayreuth based company to expand its portfolio with the division “medi Footcare.”

Further information:
medi Highlights

6 selected highlights

1. **Spinomed active**
The back orthosis for patients with vertebral fractures is now also available in black. Find out more on page 14.

2. **Cyprus**
In November 2011 our 3rd International Prosthetics Symposium took place. Read more about it on page 42.

3. **Manumed active**
The volar splint stabilises and reduces stress on the wrist in cases of irritative conditions (post-traumatic, post-operative and rheumatic)

4. **60 years of medi**
An empty ballroom and a few knitting machines – that’s how the medi company started in 1951. By now over 1,700 people are employed by medi and its products are sold in over 90 countries. A good reason to celebrate.

5. **medi for help**
The non-profit project ‘medi for help’ uses donations to help people in crisis areas, currently in Haiti by giving back some quality of life to these people in the form of artificial legs. Read more about this project on page 7.

6. **M-Levita**
The elegant, lightweight ladies shoe offers high safety and comfort benefits ensuring confidence in every step. Highly recommended especially for amputees and for people with back pain.
AGA Award

Award for Dr. Wellmann’s research group (Hannover, Germany)

The Arthroscopy Association of German Speaking Countries (AGA) and the medical device manufacturer medi have awarded the 2011 prize worth €15,000.

The jury, consisting of a committee of five experts, unanimously voted for the research group headed by Dr. Matthias Wellmann in Hannover, “Biomechanical investigation of the stabilization principle of the Latarjet Procedure”.*

The prize was awarded at the AGA Congress in Regensburg on 24 September 2011. Every two years, AGA and medi present this award for a scientific paper on the subject “Of joint injuries in sports, rehabilitation after arthroscopic procedures and the use of orthopaedic medical devices for aftercare and prevention”.

The prize money is earmarked to be ploughed back into continuing medical research as a further contribution to patient-centred innovative research to optimise treatment methods.

References

On reliable soles

medi powered by Dachstein at the Paralympics in London

From 29 August to 9 September, the 14th Summer Paralympics are being held in London. For the first time, athletes are being fitted out with the special footwear medi powered by Dachstein and the CEP sports socks. Andrea Eber, Head of Prosthetics Marketing at medi, was in Vienna in July when the Austrian athletes were fitted out.

Andrea Eber: “medi is now a sponsor of the Austrian Paralympic Committee for London 2012. Austrian athletes wearing medi powered by Dachstein shoes and CEP socks is only the beginning. We want to convince all participating nations of the quality of our socks and footwear developed specially for prosthesis wearers.”

The Austrian Paralympics participants are the best ambassadors and multipliers for medical devices. Read more about the Paralympics in our next issue.
When the earth in Haiti shook at exactly 16:53 on 12 January 2010, it only took about a minute for civilian life to be wiped out almost entirely. 250,000 people died, another 300,000 victims were buried under rubble. Some of them were so severely injured that limbs had to be amputated.

Today, more than two years later, the conditions on the second largest Caribbean island still cannot be considered normal. It’s a fact, Haiti has grave problems, not only because of the earthquake. Diseases that return regularly, such as cholera, whose outbreaks can hardly be contained when the rainy season starts, compound the problems. A very poor transport infrastructure also means that, in addition to the earthquake, high numbers of severe road accidents are still resulting in amputations. Overall, these factors place the highest demands on medical care. Haiti comes up against its limits regularly and needs international help, and this on a permanent basis.

Dedicated voluntary helpers have been on the island for almost two years on behalf of medi for help, where they provide prosthesis modular components and other accessories for Haitians with amputations, such as special shoes for prosthesis wearers. The first workshop that was set up in co-operation with the Hanger Ivan R. Sabel Foundation and the Albert Schweitzer Hospital is located in Deschapelles and has become something of a place of pilgrimage. Because no matter how long the distances are, there are around 20 new patients waiting every day to be fitted with a leg prosthesis.

Workshop managers, who stay in Haiti for periods of several months, have also been working in Deschapelles since March 2012. They also look after the patients together with their team, but their particular focus is on training the Haitian employees. And by the way, they are getting better and better in orthopaedic technology!

Qualification to ISPO Standard II

If we look at the long-term approach of the workshop in Haiti, the management must pass largely into Haitian hands in the future. For this reason, indigenous helpers and employees are closely involved in making up the prostheses and are trained by orthopaedic mechanics from overseas, the volunteers. At the moment, four Haitians are working in Deschapelles. This not only speeds up the working processes, but it is also a huge benefit in terms of communication. Of course there are no certificates or attestation for the training by the volunteers that would enable the Haitian staff to profit occupationally in the long term. But a solution has been found for this, too. The Don Bosco University in El Salvador offers a correspondence course for prospective orthopaedic technicians. And now for the good news: two of the four technicians (Tschoel and Mika) have been admitted to the course and are undergoing extensive training in the field.

Don’t forget Haiti

Thanks to the many generous donations, medi for help is still providing sustainable help for self-help, even more than two years after the earthquake.
of orthopaedic technology as we speak. General subjects like anatomy and biomechanics and practice-related subjects like workshop management are some of the areas covered by the five training modules. Once Tschöel and Mika have finished training, they will be qualified as orthopaedic technicians to ISPO Standard II. The operative management of the workshop should be handed over to the Haitian staff by 2015 at the latest. Of course, they will continue to receive strong support from the volunteers along the way.

And what are the future plans? It will work this way in future, too. medi for help will send products to Haiti and volunteers - German and international - who will be recruited to provide help for self-help.

For example, the following medical devices will arrive in Deschapelles in September 2012:

- pairs of special shoes for prosthesis wearers
- prosthesis feet
- prosthhetic knee joints
- aluminium tubes for making up lower limb prostheses

In addition, a large surgical appliance retailer in Germany has donated walking aids and sticks that will be sent to Haiti with the same consignment. A member of staff and orthopaedic technician from this surgical appliance retailer, Mr Karsten Blasberg, has also been on site in Deschapelles twice to work there free of charge. This is a gesture that is by no means a matter of course and is one that provides tremendous support for medi for help.

The goods, weighing a total of 735 kg, will pass through a number of stations on their voyage to Haiti before they finally arrive at the workshop. The odyssey runs first from Bayreuth to Atlanta (US), where the products will be put into interim storage at the Hanger Foundation’s logistics centre. From there, they will be taken to the checkpoint in Miami, where volunteers from all over the world are regularly welcomed and prepared for their mission in Haiti. Then the consignment will finally be shipped to Deschapelles, where all those involved are already eagerly waiting for the delivery with excited anticipation.

In addition to prosthesis modular components, orthoses have also been sent to Haiti since 2012.

For instance, stabilising back braces or seat shells for hip deformities in children, which have been donated by surgical appliance retailers. Besides all the hot and sweaty work, there are naturally also very emotional moments in Deschapelles. One of these is male, incredibly sweet and practically "newly hatched" - the son of the indigenous technician Cira. And neither can it be claimed that the overall mood of the people in Haiti is as full of gloom and doom as the situation immediately after the earthquake suggested, it is, in fact quite the opposite. Haiti is open, warm-hearted, friendly and unbelievably grateful for the help that medi for help provides with its partners. Carsten Stauf, project leader of the medi for help initiative, puts it like this: "The patients get their prosthesis, and then the following happens: while they previously moved around unsteadily and without any sense of self-confidence, soon after the first walking attempts, they begin to "walk tall" and are incredibly proud. And they laugh again. Those are unforgettable moments".

medi for help soon also in Port-au-Prince

In order to optimise care further still, primarily in matters pertaining to logistics,
a second, far larger workshop is being built in the heart of Haiti, in Port-au-Prince. Again medi is working here together with the Hanger Ivan R. Sabel Foundation, among others, and all being well will open an orthopaedic technology centre in the autumn of 2012.

The central region around Port-au-Prince and the (department of) Artibonite can then be supplied better, because these two regions have the second highest population density. Moreover, 62% of the patients already come directly from Port-au-Prince and, at the moment, they have to put up with the arduous and endless journey to Deschapelles by van.

Recognition for medi for help

On 20 February 2012, the Hanger Orthopedic Group joined up with the Hanger Ivan R. Sabel Foundation to celebrate the group’s 150th anniversary and thus 150 years in the service of amputees and people with disabilities. A particularly moving moment during the celebrations in Las Vegas was when medi for help, as a member of the Haiti Amputee Coalition, was warmly recognised. The Haiti Amputee Coalition consists of the Catholic Medical Mission Board, Physicians for Peace, medi for help and the Harrold and Kayrita Anderson Family Foundation. Its aim is to put into practice the commitment of Hanger in the spirit of its slogan “Empowering Human Potential”.

In the long term, the need for new leg prostheses will diminish slightly, after all, medi for help and the Ivan R. Sabel Foundation have already cared for thousands of people. However, modifications and readjustments of the prostheses supplied to date (e.g. corrections to the prosthesis socket) will be needed permanently and must be done professionally. And what’s more, it is very important for children that the prosthesis is adapted to make allowance for their growth. So without doubt, there’s always plenty to do in Haiti. The estimated need for orthoses is about 300 to 500 new articles per year.

Therefore, medi for help still has to rely on donations and is grateful for every Euro donated as well as every other type of support. None of the activities undertaken to date would have been possible without...
the numerous donations. Potential donors will find information about the current activities and the work of the volunteers on site on the online blog. This makes it possible to gain a detailed picture of the relief organisation medi for help - all the information is clearly laid out.

We are also permanently looking for volunteers (orthopaedic technicians) who would like to work for a period of two to three weeks in Haiti. Those interested will find more information on the blog or should directly contact Mr Christian Lacher Tel +49 (0)921-912 - 1794.

"The equanimity of the patients fascinated me. Their motivation to learn how to handle the prosthesis was very high. Seeing the happy faces of the patients when all went well was a wonderful reward."
Andreas Henn

“It was always my dream to travel to a “third-world country” and help the people there. I have experienced so many good things here – one of the best times of my whole life.”
Christin Rabe

medi for help – 2010 till 2012

• Over 1,000 people have already been provided with lower limb prostheses.
• medi for help paid the travel, vaccination and accommodation costs of volunteers. The volunteers have made up prostheses in Haiti, provided support during the first attempts at walking, and have trained indigenous technicians.
• Together with its partners, medi for help has contributed towards the construction of a rehabilitation centre in Deschapelles.
• At the moment, we are supporting two technicians, who are taking a correspondence course at the Don Bosco University in El Salvador to become orthopaedic technicians.
• A second care centre is currently being constructed in Port-au-Prince.
A year in Haiti for medi for help

Michael Beck is the new Workshop Supervisor of the “Hanger clinic”. From Rickenbach to Deschapelles, 9,000km away. Michael Beck exchanges the domestic idyll of the Schwarzwald (South Western Germany) for the disaster zone in Haiti for a year.

The huge earthquake may have hit the country a full two and a half years ago, but the extent of the disaster is still clearly visible. Above all, the 300,000 injured, whose arms and legs often had to be amputated, are everpresent signs of the earthquake. Michael Beck would like to help these people and, as head of the orthopaedic workshop, contribute towards improving their situation. His decision arose from his personal conviction. “Already as a 17-year-old, it was clear to me that I wanted to help people in need, no matter where in the world they are”, says the orthopaedic specialist. Consequently, he has already been active as a development worker in Tanzania and Vietnam. Hanoi, where he spent two years between 2002 and 2004, was his longest overseas mission to date. That time his wife accompanied him, but this time he’ll be going it alone. “It was not an easy decision to make, leaving my family behind in Germany for a year. But, on the other hand, my wife has always supported my taking on a new aid mission and the children’s schooling would have been to uncertain in Haiti, not to mention the hygienic conditions and the tropical climate”, says Beck. Now he has accepted a
one-year contract as Workshop Supervisor in the “Hanger Clinic” in Deschapelles, about 80 km from the capital of Port-au-Prince, and is the new Workshop Supervisor.

Teaming up to provide the best possible aid

From his stay, Michael Beck is, above all, expecting close co-operation with the indigenous technicians and the volunteers from all over the world, in order to be able to establish long-term patient care. The instruction and further training of the Haitian technicians will play a key role in this.

They are to take over the workshop in the medium term. To achieve this, a common denominator will have to be found, as Beck well knows.

“The different mentality in Haiti will have to be taken into account in our work together. In developing countries, you just can’t assume that their concept of performance is the same as that of Western developed countries. Beck is convinced that, if you think that way, there will be a lot of resistance from the populace and it’s then difficult to get good things done. He therefore relies on team spirit and co-operation to master the daily challenges. And there are plenty of those, to be sure – ranging from the communication with the patients, to the actual provision of prostheses to amputees and to ensuring supplies and the efficient storage of matching parts.

Michael Beck will be living right on the grounds of the Albert Schweitzer Hospital.

This is a real advantage given the difficult road conditions in Haiti and will allow him to focus fully on his work. When asked what he is looking forward to most as Workshop Supervisors, he answers simply, “Helping people.”

7 July 2012 was the big day – Michael Beck arrived in Deschapelles and is now providing care to about 20 people a day.
medi for help – why donate?

Haiti needs sustained help for self-help.

With its support, medi for help ensures that patients with amputations are cared for professionally in Deschapelles. Week after week, 30 to 40 people come to the prosthesis workshop. The objective is to secure this care in the long term with your support.

Your donation guarantees:
• The provision of lower limb prostheses, joints and modular components
• Useful care products such as special shoes for prosthesis wearers and walking aids.
• Continuous and intensive care and attention for Haitians who have had legs amputated.
• The recruiting of volunteers who make up and fit lower limb prostheses free of charge in Haiti and provide support when the patients first start walking.
• Teaching and training of the personnel in Haiti
• The purchasing of a means of transport to bring patients to the care centres from outlying regions.

Help too: make a gift of a smile to Haiti with your donation
• You can transfer the sum of your choice directly to the medi for help bank account.
• Of course you also have the chance to help as a group (e.g. an association or a club).
• Donations in kind, such as walking sticks, forearm crutches or special shoes for prosthesis wearers, are possible. You’ve got an idea? Tell us about it.

The more volunteer support we can get to the people in Haiti, the more lives we can touch!

medi for help is not just a one-off. For us, social responsibility not only means of support for people in need, but also to provide lasting help for people to help themselves. Therefore, it is necessary to continue recruiting specialists from around the world to volunteer for two or four weeks at the prosthetic rehabilitation center in Deschapelles.

We have many volunteer opportunities, e.g. for orthopaedic technicians (CPOs) or physicians (vascular and orthopaedic surgeons, ...). There are no travel costs, e.g. for transport, board and lodging for the volunteers. Are you interested in volunteering? Please contact Mr. Christian Lacher (c.lacher@medi.de or +49 921 912-1794).

Account for donation

medi hilft gGmbH
HypoVereinsbank
Account No. 15722444
Sort code: 773 200 72
IBAN DE03773200720015722444
BIC: HYVEDEMM412

Visit us on www.medi-for-help.com
New study on osteoporosis proves: back braces improve the body’s posture and muscle power

High compliance factor with the back braces Spinomed and Spinomed active

The frequency of vertebral body fractures associated with osteoporosis increases exponentially with increasing age in both sexes. One quarter of all females over 50 suffers at least one vertebral body fracture with the resulting loss of height and increasing kyphosis (“dowager’s hump”).

This increasingly rounded back counts as one of the most serious physical and psychological changes in osteoporosis and can lead not only to an increase in vertebral body fractures, but also to a higher risk of falls due to the shift in the body’s centre of gravity. In addition, osteoporosis of the spine and the associated loss of height also lead to a reduction in the volume of the rib cage and thus contribute to reduced lung function with a heightened risk of pneumonia. Accordingly, three vertebral body fractures already doubles the mortality risk compared with a control group of the same age without fractures. These

Michael Pfeifer
Dr. Michael Pfeifer is a specialist for internal medicine with the specialty osteology at the “Fürstenhof” clinic in Bad Pyrmont (Germany).

His research focuses on clinical studies on bisphosphonates, the influences of vitamin D on muscle function and blood pressure and the quality of life for patients with osteoporosis.

He is closely involved in the development of the back braces “Spinomed” and “Spinomed active”.

Michael Pfeifer
Institut für Klinische Osteologie
Am Hylligen Born 7
31812 Bad Pyrmont
Germany
Tel.: +49 (0)5281-151414
Fax: +49 (0)5281 - 151100
E-Mail: mdrpfeifer@aol.com
fractures can also lead to chronic pain lasting several years, restrict everyday capabilities and, due to the changed external appearance with the rounded back, can be associated with considerable emotional problems.

**Adjust individually and activate muscles**

The back brace Spinomed was presented to the public in 1998 (Fig. 1) in co-operation with the company medi GmbH & Co. KG and affected patients who were suffering from the effects of osteoporotic vertebral body fractures. This consists of a cold mouldable, pivoting back pad that is held against the patient’s body by a strap system with Velcro fasteners.

The four different sizes of pad enable experienced orthopaedic technicians to adjust the orthosis to the individual shape of the patient’s spine, so a special custom-made model is no longer needed. This has more than halved the treatment costs compared with the traditional rigid corsets that were made individually from plaster moulds and completely immobilised the patient’s trunk. The whole orthosis only weighs 450 grams and is worn like a backpack. This is not a rigid device that holds the trunk erect, but is rather a system whose shoulder straps permanently remind the patients to tense their long back extensor muscles to hold themselves straight (biofeedback principle). This continuous tension in the body’s own back muscles resembles isometric muscle training that increases the strength of these muscles after a period of just a few weeks. The Spinomed active concept is a further development of the Spinomed model. This first became available in 2004 and has now been available for men as well since 2006 as Spinomed active men (Fig. 2).

In contrast to Spinomed, which is worn over light clothing, the Spinomed active concept has the back pad in a pocket on the back of a so-called “body variant”, which is worn directly on the skin. Textile tension elements sewn into the body replace the strap system, which not only holds the back pad against the body, but also acts on the shoulders to permanently remind the patients to hold themselves erect using the tension in the body’s own back muscles.

**Clinical studies prove efficacy**

In two prospective, randomised clinical studies conducted in 2004 and 2011,
DVO (joint organization of the scientific societies for osteology in Germany, Austria and Switzerland) note for guidance

The note for guidance of the osteology umbrella association (DVO) explicitly names special orthoses as one element in the treatment of pain and functional limitations. These orthoses recommended in the note for guidance have been proved by studies to stabilise and straighten the spinal column. By virtue of this, they not only give the patients a heightened sense of confidence but also that their mobility is restored quickly after a vertebral body fracture. They also improve the body’s posture and activate the trunk musculature. The rounded back (kyphosis), which is typical of osteoporosis, is flattened and pain is considerably reduced. Breathing improves, and possible contact between the ribs and pelvis is counteracted.

Treatment of osteoporosis made easy

Successful treatment of osteoporosis depends to a large extent on the patients’ treatment compliance. So, in 2012, the Spinomed back brace has again been considerably improved with regard to wearing comfort and handling. (Fig. 3)

The ergonomically preformed shoulder straps have innovatively simplified donning the new Spinomed. Similarly to the backpack principle, the user can comfortably slip into the orthosis and then close the front Velcro fastener. The ventilation openings integrated in the back pocket promote air circulation and thus improve the climate for the whole body.

Compliance was also written with a capital C when designing the belt. The fastener at the hip is made of elastic material with small notches which makes it flexible and adaptable. The broad belts at the waist also ensure a reliable fit and make the brace very comfortable to wear. This is all the more important because the Spinomed’s actions and full treatment efficacy can only develop if it is held securely.

The mode of action described above was proved without doubt on the basis of the criteria of evidence-based medicine.

Both studies showed that females with osteoporotic vertebral body fractures who wore the orthoses Spinomed and Spinomed active for six months, demonstrated a significant increase in back muscle strength, increased abdominal muscle strength, a flattening of the kyphotic angle as a sign of a more stable posture and better balance in standing as a measure for the reduced risk of falls. Furthermore, decisive parameters of quality of life and lung function, mean pain score, general well-being, and capabilities in everyday living also improved.

The Spinomed concept is the first treatment principle that has been corroborated by scientific studies. Its success is also reflected by the fact that there are now numerous successful “me too” products; some of which, however, can be contraindicated.

Original publication


Stronger back muscles support a decrease of vertebral fractures

A prospective 10 year Follow-up study by Sinaki, M. et al. (2002)*

Reduction in the biomechanical competence of the axial skeleton can result from the parallel decline in bone and muscle mass with ageing. In this study, the scientists evaluated the long-term effect of stronger back muscles on the spine in estrogen deficient women. They hypothesised that this could reduce the risk of vertebral compression fractures and that some of the muscle strength achieved through strengthening exercises may persist even several years after cessation.

Study Design

The long term protective effect of stronger back muscles on the spine was determined in 50 healthy white, postmenopausal, non smoking women, aged 58-75 years, 8 years after they had completed a 2 year randomised, controlled trial. Twenty-seven subjects had performed progressive, resistive back strengthening exercises for 2 years (BE) using a backpack that contained weights equivalent to 30 % of the maximal isometric back extensor strength. Each patient had been instructed to lift the backpack ten times in the prone position. As their back strength increased, the amount of weight lifted was increased with limits of 22.7 kg. The exercises were performed at home once a day, 5 days a week. Twenty-three patients had served as controls (C). Bone mineral density, spine radiographs, back extensor strength, biochemical marker values, and level of physical activity were obtained for all subjects at baseline, 2 years, and 10 years.

Outcome

Mean back extensor strength (BES) in the back-exercise (BE) group was 39.4 kg at baseline, 66.8 kg at 2 years (after 2 years of prescribed exercises) and 32.9 kg at 10 years (8 years after cessation of the

Fig.: Physical activity score (PAS) at 10 year follow-up in two study groups: back exercise (BE) and control (C). PAS was significantly higher in the BE group than in the C group (p = 0.0106). Values are expressed as mean ± SD.
prescribed exercises). Mean BES in the control (C) group was 36.9 kg at baseline, 49.0 kg at 2 years and 26.9 kg at 10 years. The difference between the two groups was still statistically significant at 10 year follow-up (p = 0.001). The difference in bone mineral density, which was not significant between the two groups at baseline and 2 year follow-up, was significant at 10 year follow-up (p = 0.0004). The incidence of vertebral compression fracture was 14 fractures in 322 vertebral bodies examined (4.3%) in the C group and 6 fractures in 378 vertebral bodies examined (1.6%) in the BE group (chi-square test, p = 0.0290). The relative risk for compression fracture was 2.7 times greater in the C group than in the BE group.

**Conclusion**

At the time this study was performed it was the first reported in literature demonstrating the long-term effect of strong back muscles on the reduction of vertebral fractures in estrogen-deficient women. The data showed that although vertebral bone loss was comparable in both groups, the BE group had fewer than half as many vertebral fractures as the control group, even 8 years after ending of the back strengthening exercises. Higher Physical Activity Scores and BES may not be the sole contributors to BMD, but they may be factors that affected the Bone Mineral Density (BMD) in the BE group at 10 year follow-up. Building muscle strength has been shown to be beneficial not only for increasing bone mass or slowing bone loss but also for reducing falls and trauma as causes of bone fracture.


---

**Five myths about osteoporosis**

**Myth 1: Take it easy after the diagnosis**

Many patients tend to avoid movement and take it easy after hearing the findings. But physical activity is particularly important, for both physical and emotional well-being. Exercises and gentle strength training promote the build-up of bone mass and co-ordination to prevent falls.

**Myth 2: Only older people are affected**

Besides a genetic predisposition, smoking, an unhealthy diet and taking medicines impair the body’s bone-building processes. But osteoporosis can develop in people of any age. However, since bone mineral density diminishes with increasing age, older people are more likely to develop it than younger people.

**Myth 3: Fatty foodstuffs are harmful**

Osteoporotic diseases are not based automatically on too much body mass, but they are associated with unhealthy eating habits. Therefore, patients should eat and drink calcium-rich foodstuffs, such as milk, soya products and vegetables (beans, green cabbage, broccoli). Vitamin D promotes the absorption of this important mineral and strengthens the bone structure.

**Myth 4: Only women get osteoporosis**

Bone metabolism is controlled by hormones. Therefore, the bone mineral density in women drops rapidly at the beginning of the menopause. However, men are also affected by a reduction in their own hormone levels, but far more slowly than women. But the number of men affected by osteoporosis is increasing sharply.

**Myth 5: Lie still after the operation**

Since operative procedures are continually being developed further, patients with vertebral body fractures today no longer need lengthy postoperative rest, especially after minimally invasive procedures such as radiofrequency kyphoplasty. Patients also profit from the short operating times and can actively plan their everyday living. These days it’s no longer necessary to lie still after the intervention.

* Ärztezeitung (2012), January 25th, no. 12

---

18 • medi healthcare
Successful treatment with a single click – the M. 4 X-lock

Flexible possibilities for versatile therapeutic aftercare

Following knee surgery, optimum healing and rapid remobilisation are high on the list of patient priorities. The knee brace M.4 X-lock from medi brings new movement to after-treatment. The patented locking system makes it possible to switch between the blocked and freely mobile modes. With blockage patients can walk without crutches and the freely mobile mode enables patients to sit down or get dressed with no stress load. Thanks to its soft, water-repellent quality, the M.4 X-lock can even be worn while showering in the blocked position.

“And it clicked”

Interview with Mathias Leitloff, Product Manager in the Orthopaedics Division at medi

Safety and functionality with maximum mobility are the essential needs of patients undergoing treatment, for instance, following a meniscus suture or a kneecap cartilage operation. Mathias Leitloff, Product Manager at medi, has taken on the challenge, together with a development team, of figuring out how to combine the positive effect of a knee brace on post-operative healing with a high level of patient compliance. The result is the M. 4 X-lock.

Mr Leitloff, the new medi knee brace has been on the market since February. What was the deciding factor that led to the development of the M. 4 X-lock?

Mathias Leitloff: The idea of a designing new kind of knee brace developed over time. At various orthopaedic congresses, I participated in various discussions on what form of treatment was most effective, in particular, after meniscus fixations. It became clear that there are many different approaches and that a uniform standard was lacking, because a universal medical aid just hadn’t been developed yet.

Why was that?

Mathias Leitloff: Treatment, for instance, following a meniscus suture, has up to now
had the objective of immobilising the knee with the aid of a special kind of splint. By the very nature of things, patient compliance can’t always be taken into account thereby. Anyone who has ever worn an immobilisation splint knows that even the simplest things like sitting, getting dressed or getting into a car can become a strenuous challenge. If they also use crutches, movements become very restricted. That’s where we wanted to start.

**How did the developmental process continue?**
**Mathias Leitloff:** Our development team of doctors, technicians and engineers began the developmental work on a new knee brace in the autumn of 2010.

In our planning, we had to consider a wide range of requirements, which had been formulated by physicians. Above all, secure and simple blockage of the orthosis had to be possible at full extension, so that the patients could apply axial load. This ensures a higher level of mobility for the user, often enabling them to do without walking aids earlier in the process.

This is also effective against muscle atrophy and supports proprioception. When not under load stress, the orthosis should enable flexion, allowing patients to exercise the leg safely in initial functional exertions. At the same time, patients should find the orthosis easy to operate and be able to wear it when taking a shower.

**Sounds like a Herculean task to. How long did the development process take?**
**Mathias Leitloff:** The first meeting took place in October 2010, the final product has been available from specialist medical retailers since February of this year. So we needed about a year and a half overall.

**For which patients was the knee brace developed?**
**Mathias Leitloff:** The M. 4 X-lock is intended for all patients whose indication allows for axial load in postoperative therapy, for example after a meniscus refixation, and who require early, but safe, mobilisation.

**What additional comfort is provided by the orthosis to its wearers?**
**Mathias Leitloff:** Due to its light and slender construction, it can be worn comfortably, both under a pair of trousers or a dress. You can even shower with it on. Thanks to the water repellent materials, the orthosis dries quickly and can continue to be used without interruption.

**What role is played by design in modern orthoses?**
**Mathias Leitloff:** Design is becoming more and more important in terms of patient compliance. A medical aid cannot fully unfold its medical effect until it is used regularly and willingly. That is why the combination of effect and design is so important - it promotes treatment compliance and thus paves the way for successful aftercare.
Olympic ticket after meniscus surgery

After his meniscus operation in December of 2011, the German champion over 400 metre individual medley and 200 metre backstroke, Yannick Lebherz, qualified for the Olympic Games in London.

This is partly due to the knee brace M.4 X-lock from medi, which allowed him to start training again just a few days after the operation. medi healthcare met the 23-year-old from South Hesse for an interview in Potsdam (Germany).

Mr Lebherz, preparation for the 2012 Olympics in London started off for you with a handicap. What happened?
Yannick Lebherz: At the end of last year, I suffered an outer meniscus tear in my right knee during athletic training. My knee twisted sideways during strength training, as I wanted to make a quick turn. I felt it crunch and the meniscus was torn. I went directly to Berlin for a radiological check. Once the diagnosis was clear, Dr. Miltner operated on my meniscus. I’m glad the operation went off without a hitch.

When were you able to start training again?
Yannick Lebherz: On December 28, five days after the operation, I started with the land training once again. On 5 January, I was able to start my swim training again thanks to the M.4 X-lock. Only two weeks after the surgery.

What movements were possible during swim training with the orthosis?
Yannick Lebherz: Of course, I started with freestyle and backstroke, whereby I was able to train my kick effectively. Breaststroke was added later. The doctor didn’t want me to use it at the beginning because of the motion sequence on the breastbone stroke.

How many workouts did you complete in a day?
Yannick Lebherz: I managed the normal workload of the training group. Right after resuming training, that was up to three training units and five hours of in the water per day. After this extensive period was over, I was about 3 to 4 further hours in the water per day.

What effect did training with the M.4 X-lock have on your performance?
Yannick Lebherz: It is more strenuous to swim with an orthosis, but the training effect was just as if I was swimming without it. I just put more load on the left leg and arms. In endurance testing, I achieved the same times as I would have if there had been no injury, so, in principle, I hadn’t lost any ground as far as endurance goes.

For how long did you wear the orthosis for swim training?
Yannick Lebherz: From 5 January to the beginning of February - so about four weeks. I have to say the M.4 X-lock was a big help.

Mr Lebherz, many thanks for the interview.
Can you drive a car despite a leg amputation? Of course!

Thomas Rauch (24) is training as an industrial business management assistant at medi and had both his legs amputated at birth.

As a car enthusiast, he not once think he might never be able to drive again. With his extraordinary personal skills, an iron will and great courage, he now drives a normal automatic car. A unique case and an astonishing story in one.

The ardent motor sports fan gained his first driving experience at the tender age of 12 – on the go-cart track. In one race, he even narrowly beat a friend, who later became the overall winner of the 2008 Mini-Challenge and has since been successfully participating in the ADAC Masters series. What's more, Thomas Rauch has succeeded in qualifying for a wildcard for the 24-hour go-cart race in Leipzig. Cars and motorsports have been a very special hobby for Thomas ever since he was little. His dream is to enter car racing properly.

So driving a standard car is absolutely normal for Thomas Rauch. He operates the brake with his left below-knee prosthesis and the accelerator of his automatic with his right leg prosthesis.

Driving licence with a prosthesis

Thomas Rauch’s path to a driving licence was initially paved with minor obstacles.

For instance, the amazed driving instructor first asked him on the phone “How can anybody learn to drive a car without any legs?”. But he was curious and made an appointment with Thomas, because the driving school, which specialises in teaching drivers with a handicap and is equipped with an automatic, wanted to give Thomas a chance – even though he was their first pupil to have had both legs amputated.

Their first meeting finally took place in a car park. The first tests, e.g. an emergency stop and tests of Thomas’ reaction times, convinced the driving instructor very quickly that his pupil really was in the position to learn to drive. They immediately made an appointment with the TÜV [Independent testing, certification, qualification, training and consultancy]
The technical expert opinion – no easy matter

Thomas Rauch deals with his everyday life just like everybody else under the motto “You can do anything you want – only no-brainers can't do anything”. He never feels “handicapped” and he tackles new targets all the time. With a gentle smile on his lips, he told us that his go-get-it attitude and his courage have caused his parents many a grey hair. Still, Thomas follows his instincts and achieves his goals.

Thomas was also fully motivated and full of élan on the way to the technical test for preparing the expert opinion. What could go wrong? He’d practiced successfully with his driving instructor in advance. But what then happened can only be compared with the term “narrow-mindedness”. Before he had even got into the car, the TÜV tester decided that Thomas most certainly cannot drive a car “in this state”, unless, of course, he was prepared to consider a hand throttle. All the driving instructor’s and Thomas’ attempts to convince him failed and Thomas left the test institute crestfallen – and without his expert opinion.

A bitter blow dealt by bureaucracy that initially shattered a great dream. But Thomas Rauch wouldn’t have been Thomas Rauch if he had accepted this short-sighted decision. Straight away, he turned to the senior editor of the magazine HANDICAP, Mr Gunther Belitz, also a leg amputee. Thomas explained the matter to him and without his expert opinion.

A bitter blow dealt by bureaucracy that initially shattered a great dream. But Thomas Rauch wouldn’t have been Thomas Rauch if he had accepted this short-sighted decision. Straight away, he turned to the senior editor of the magazine HANDICAP, Mr Gunther Belitz, also a leg amputee. Thomas explained the matter to him and without his expert opinion.

If Thomas should ever be stopped by the police, he’s got an extra sheet of paper in his driving licence. This explains exactly what handicap Thomas has and what vehicles he can drive. “I’ve never been stopped yet, but I’m sure some of the policemen will be wide-eyed if and when they do” grinned Thomas, reflecting thereby on the reactions of other people. Sometimes they simply can’t believe that Thomas has two leg prostheses, but can still drive so well.

During a drivers’ safety course hosted by the German drivers’ club ADAC, the instructor couldn’t believe his eyes when he asked why Thomas had a limp and was then shown two prostheses! It must be stated at this point that, with his special
Thomas is a unique case in being able to drive an automatic car. Thomas drives about 25 miles a day to work by car and is often on the road as a driver in his free time, too. Even long distances on holiday (320 miles or more) are no problem for him. Since his car is equipped with cruise control, Thomas can take the pressure off his leg from time to time.

Overall, driving a car is no more tiring for Thomas than it is for people without an amputation. "At this point, I'd really like to encourage everybody with an amputated leg to never give up and to not be demotivated by the first hurdles they meet. Think of my motto: You can do anything you want. My experiences might help encourage other people", says Thomas Rauch concluding our interview.

Driving a car with a leg prosthesis – you’ve got to know how!

It is also possible to drive from A to B with a leg prosthesis without any problems. But still, this point is one of the fears that plague leg amputees, especially at the beginning. Driving a car with a prosthesis, is that possible? Yes, it works!

Use special equipment and there’s nothing else in your way. One thing's certain though, anyone who thinks that people with a handicap have to give up driving a car are absolutely wrong. There is a wide variety of solutions to keep those affected on the move.

There is an essential difference depending on whether the left or the right leg has been amputated. Those who have had the left leg amputated can usually drive an automatic, while those with a right leg amputation can operate their automatic vehicle with the accelerator pedal switched over. A good, modern option in these cases is a left-sided electronic throttle if partners without a handicap want to drive the car, too. Double amputees have the option of using hand-operated accelerators and brakes or with an accelerator ring. There are many solutions from various manufacturers that have proved their worth. After the modifications to the car have been made, these are recorded in the driving licence and the journey can begin!

Hand-operated systems work as follows:
The accelerator and brake control systems are controlled with the right hand, so the feet do not have to do anything during the journey. The accelerator and brake controls are transmitted to the car’s pedals by levers. Pulling the lever backwards speeds the car up, pushing it forwards slows it down. The "parking brake" makes sure that the car doesn’t move forwards while the driver is operating the gears or the hand brake.

This car control system was developed together with people with restricted mobility, so it matches their needs exactly. The changes to the car itself are so minimal that the vehicle can easily be restored to its original condition.

The possibilities are endless and the recipe for mobility consists of courage, will, hope and help from the right people!
The amputation of a limb has dramatic consequences for the person concerned. Therefore, the sooner prosthetic fitting can begin the better the functional prognosis will be for the patient. The use of the TTm pop and TFm pop liners – “TTm” stands for “transtibial medi postoperative” and “TFm” for “transfemoral medi postoperative” – and their integration in the rehabilitation of transtibial and transfemoral stumps provides positive results. This has been shown by an open, multicentre postmarketing surveillance study conducted at five rehabilitation centers in France which is presented in the following article. The benefits of this technique are a stabilization of the stump, improved wound healing, a better fit of the prosthesis and an early prosthetic supply.

Stabilisation of the residual limb was achieved in 86 per cent of the patients (174/201) who were fitted with the silicone liner in the rehabilitation clinic, on average 18 days after the operation. The prosthetic sockets were modified once in 67 patients and twice in 134 patients. The liner size was left unchanged in 107 patients. The wound healing period was reduced by half compared with earlier studies using different techniques.

Method

In this postmarketing surveillance study, a silicone liner of type TTm pop or TFm pop was fitted to the residual limb (figures 1 and 2) on the 18th postoperative day. This is the average time at which a patient in France is transferred to a
The concept of using silicone liners for oedema therapy following amputation was developed between 1999 and 2001 at seven clinics in Germany as well as one in Belgium and was evaluated on 41 patients. Data from the evaluation confirmed that this treatment approach could be applied from the third day after surgery [7]. Compared with the conventional wrapping technique, the difference lies in the gradual increase in the compression period according to a specific compression table (the compression/reduction table is included in the therapy documentation).

In the postmarketing surveillance study described below, treatment started with the liner being worn on the residual limb for two hours in the morning and two hours in the afternoon. This period was increased by half-an-hour on the following morning and then, if the patient had no pain, by one hour on the following afternoon.

Over the next few days, the time was increased in the same way until the patient was wearing the liner for four hours in the mornings and four hours in the afternoons. If the patient experienced any pain, the period of wear was not increased, but kept the same for 24 hours. With use from the third postoperative day, the authors of the 1999-2001 evaluation [7] recommend the liner be worn for one hour in the morning and one hour in the afternoon, increasing by an increment of half-an-hour each time up to a total of four hours in the mornings and four hours in the afternoons. If pain occurs, the period of wear should remain constant for 12 to 24 hours.

In both cases, the residual limb should rest in extension on the residual limb support of the wheelchair at all times. In the primary evaluation [7], the average time needed to stabilise the residual limb was eleven days. This earlier study described the indications and contraindications of the technique, which were very closely observed in the current postmarketing surveillance study, namely:

(A) General contraindications
- Congestive cardiac failure
- Unstable skin transplants
- Burns

(B) Local contraindications
- Severe tissue necrosis
- Severe infections, but also with wound sinuses, which could be a possible indication of deep wounds
- Flexion contractures ≥ 40°

Among other things, selection of the correct size of TTm/TFm pop liner is important for therapeutic success. Firstly, measurement points to determine the diameter of the liner have to be established. Distances of 4 cm are measured from distal to proximal on the residual limb, making due allowance for bony structures. The residual limb circumference is then measured around these points, taking care that the measuring tape does not cut into the tissues.

Selection of the silicone liner

For a below-knee (transtibial) amputation, a liner of the size measured, or one size smaller, should be used. For example, if the measured circumference is 36 cm, the selected silicone liner must be size 36 or 34 cm. For above-knee (transfemoral) amputations, the liner should be one or two sizes smaller. In other words, if the measured circumference is 35 cm, then the silicone liner should be size 31 or 27 cm. However, the patient’s acceptance is always decisive when the size is being selected.
The TTm-pop liner has a distal matrix of 10 cm, so as to allow a graduated compression of the limb, decreasing from distal to proximal.

However, experience from the study presented here has shown that TFm pop liners should be at most one size smaller. Particularly because the majority of patients required surgery for vascular disease, it seems desirable to increase the period of wear after one or two days, if necessary, by means of a second reduction. As most of the patients have vascular disease or diabetes, circulation can differ greatly between the two legs in one patient. It is therefore recommended that the TPCO2 value of the residual limb is determined, if wearing the liner is important for the patient and/or will be beneficial. If this is not the case, however, or if there is any doubt, the liner need not be worn.

**Instructions for use**

Taking into account the results of the European evaluation [7], in which stabilisation of the residual limb was achieved in eleven days on average, instructions for use were drawn up for the present post-marketing surveillance study. The fitting technique corresponded to that used in twenty cases in a French pilot study, which was described in a preliminary article in the Journal de l’Orthopedie (France) [2].

The average period of wear of the silicone liner is 15 days. A plaster cast of the residual limb is made on the eighth day and the compression therapy needed for fitting a prosthesis is complete on day 15, i.e. the liner is worn for a total of 15 days. In actual fact, in the present study, patients received their prostheses on the 15th postoperative day and then wore it for six to eight hours a day, i.e. not only during rehabilitation, as is often the case. Furthermore, care has to be taken not to fit the prosthesis before the weekend, on a Friday.

In this event, the period of wear of the TTm pop/TFm pop liners can be increased by two days. The liner can then be discarded for good when the patient can wear the prosthesis for six to eight hours a day, including the weekends. If, at first, patients are unable to wear the prosthesis over the weekend, they should at least continue to place the liner over the residual limb and rest it on a residual limb support. Allowing the residual limb to hang down increases its volume and this can mean that it may not be possible to put the prosthesis on for several hours afterwards.

It is also important to note that the silicone liner can be used even before the residual limb has fully healed. Nevertheless, if healing is incomplete, the nursing staff must have fundamental knowledge of residual limb healing, so that they can select the most suitable bandage for each wound. The assessment of wound healing depends on inspecting the wound with respect to its colour, exudation, etc. In any case, every wound is assessed and documented, with or without photographs, to follow the healing process and to allow healthcare workers to react quickly depending on whether it is healing well or there are any complications.

**Effects on wound healing**

An analysis of wound healing was carried out on patients at three of the five clinics involved in the postmarketing study presented here (Nantes, Le Carbet and Strasbourg). Eighty-two patients were evaluated in total: 40 with vascular disease and 42 (51.2 %) with diabetes.
The nature of their amputations was as follows:

- 61 transtibial (below-knee) amputations: 27 patients with vascular disease and 34 with diabetes
- 21 transfemoral (above-knee) amputations: 13 patients with vascular disease and eight with diabetes.

The duration of wound healing was 77.2 days following amputation and 57 days following transfer to the rehabilitation unit. In all these cases, the liner was worn for a period of 18 days. The average stay in the rehabilitation facility was 78.78 days.

These results were compared with those of two other studies:

1. A medical doctoral thesis written in Strasbourg in 2003, which studied 188 amputations including 25 with guided tissue regeneration [6]. Wound healing lasted 142 days. A prosthesis was still worn for six to eight hours a day.

2. A randomised trial by Prof. Jean Marie Casillas, published in the Archives of Physical Medicine and Rehabilitation in 1999. This study considered two groups, each with 28 patients with guided tissue regeneration. The first group was treated with a plaster compression bandage for five hours a day and with an elastic compression bandage for the remainder of the day and at night. The second group had only a compression bandage of short elastic binders.

On average, wound healing took 71.2 days in the first group and 96.8 days in the second; the times spent in rehabilitation were 99.8 and 129.9 days, respectively. In this study, the authors showed that compression of the residual limb accelerated healing.

The present multicentric postmarketing study on the use of TTm pop/TFm pop liners gave the same result:

- Duration of wound healing following amputation: 77.2 days,
- Duration of wound healing following transfer to the rehabilitation unit: 57.6 days,
- Total hospital stay: 78.78 days.

Specific aspects related to the shape of the residual limb

The following two treatment options are available if the residual limb is pear-shaped or lobed:

1. The first consists of the usual fitting with additional wrapping of the distal, most voluminous part of the residual limb by means of a short elastic binder for a short period of 20 minutes. This should displace the oedema into the medial and proximal, less voluminous zone. The measurements can be repeated afterwards and the silicone liner possibly reduced in size.

2. The second method is to attach distal padding (figure 3) at the end of the residual limb, in order to compensate for the cavity between the residual limb and the liner, thus ensuring well-distributed, even compression. This cavity and any air pockets can lead to maceration and subsequently to new wounds.

Instructions for the care of the residual limb

Occasionally, eczema induced by irritation of the residual limb can cause pruritus. The itching may be due to inadequate rinsing out of the soap used to clean the liner. It is therefore important to rinse the liner well with plenty of water after it has been washed. A pH-neutral soap is
recommended for cleaning the residual limb and the liner, especially for people with diabetes who tend to suffer from dry skin as a result of their disease. Furthermore, the residual limb should be moisturised in the evenings, using a cold cream. Should eczema occur, a 72-hour course of cortisone cream is advisable.

Cleaning and re-use of the silicone liner

When reused by the same patient, the TTm pop or TFm pop liner should be washed inside and out with pH-neutral soap, rinsed with hot water and placed on a stand to dry. Detailed cleaning instructions are given in the treatment documents.

However, if a silicone liner is later to be used by another patient, it must first be completely submerged in an instrument disinfectant approved by the manufacturer. After the required soaking time, the liner is removed, rinsed in sterile filtered water and then placed on a stand to dry. Once again, the instructions in the therapy documents must be followed.

Once postoperative treatment with the liner has been completed, or if the liner has to be changed, the orthopaedic technician or other responsible healthcare worker in the hospital must assume responsibility for its cleaning, in cooperation with the doctor concerned. The silicone liner is not sterilised in the doctor’s practice. If there is a multiresistant bacterial infection, the silicone liner has to be destroyed at the end of treatment. It must be remembered that, in France, the cleaning instructions for the TTm pop and TFm pop liners must be validated by the local committee for nosocomial infections (CLIN).

Results of the clinical postmarketing study

A total of 211 patients in five rehabilitation units in France were included in the postmarketing surveillance study over a period of 425 days. Each patient was supplied with a TTm or TFm pop silicone liner:

- 125 TTm pop for 125 patients with transtibial amputations
- 13 TTm pop for 13 patients with bilateral transtibial amputations
- 70 TFm pop for 70 patients with transfemoral amputations, as well as
- Three TTm or TFm pop liners for three bilateral amputations, transtibial on one side and transfemoral on the other.

The aetiology of these amputations is mainly vascular (86%), and can be classified as follows:

- Arteriitis: 65
- Diabetic arteriitis: 116
- Traumatic: 19
- Cancer: 10
- Congenital: 1

![Fig. 4: Necessary subsequent adjustment of the shaft for the prosthesis](image-url)
The average age of the participants was 65 years. Therapy had to be interrupted in ten cases. A contact prosthesis was eventually fitted in 201 patients.

As mentioned previously, a vascular aetiology was the most common (86%). One-third were transfemoral amputations and two-thirds were transtibial. The latest revascularisation techniques have certainly allowed the knee region to be preserved in the majority of patients, which, in view of their age, gave them a better chance of having a functioning prosthesis. A stable residual limb was found in 174 of the patients observed, corresponding to a volume stability of 86% (figure 4).

This was measured on the basis of the following criteria:

- In 67 patients, only one prosthesis fitting was carried out.
- Two fittings were required in 134 patients, but without having to change the size of the liner in 107 cases.

Adjustment of the prosthesis involved either a change in the liner used, usually in terms of the material, or in the attachment or an alteration in the type of prosthesis shaft, or it was required when changes in volume could no longer be compensated for by residual limb stockings.

On the basis of currently available information, it seems important to maintain compression of the residual limb as far as possible by means of a silicone liner. Studies of compression using liners of different materials such as silicone, polymer gel, and urethane have in fact shown that only silicone ensures sufficient compression and that this corresponds to class 1 compression (18 to 21 mm Hg). In France, this is equivalent to compression class 2 [7]. This is valid for both TTm pop and TFm pop liners as well as for the prosthesis liner that is used in subsequent care.

**Benefits of the therapeutic approach**

**Improved acceptance of the prosthesis**

The TTm/TFm pop liner prepares patients for their forthcoming prostheses and assures increased acceptance, as the handling of the prosthesis liners used later on is similar to that of the TTm/TFm pop liner. To a certain extent, this reduces the drama of having a prosthetic limb fitted. This is all the more important as the support given to the residual limb and the weight bearing capacity of the end of the residual limb assists in performing proprioceptive exercises, such as on a gymnastic ball (figure 5) and also helps older people to stand. These techniques can be used within a few days of starting to wear the silicone liner, with the advantage that patients learn more quickly how to insert their residual limbs into a prosthesis.

**Care teams**

The compression technique described previously reinforces the interdisciplinary and team approach to patients with amputations. However, the healthcare team requires a non-physician to liaise with the patient. This may be a kinesiologist, a nurse or an orthopaedic technician, who will act in tandem with the surgeon responsible for the care of the patient.

**Constant high compression**

A tibial or a femoral compression stocking achieves compression of between 13 and 17 mm Hg, whereas a silicone liner will
ensure class 1 compression (e.g. 18 to 21 mm Hg). Compression achieved with bandages varies greatly, depending on how well they have been put on [1].

**Efficient compression therapy**
By using a TTm/TFm pop liner, compression therapy is completed within 15 days, while other compression treatments often have to be continued for up to a year. This increases the independence of older patients, who may otherwise have to rely on additional nursing staff to bandage their residual limbs.

**Benefits for wound healing**
Stabilisation and shaping of the residual limb ensures more efficient healing. In the postmarketing surveillance study presented here, the average hospital stay was 77 days per amputee.

**The prosthesis coefficient**
The prosthesis coefficient, i.e. the ratio of “the prostheses fitted per limb to the manufactured prostheses”, was improved from 1.84 to 1.22 for the rehabilitation team in Strasbourg [3]. It can therefore be deduced that, within the surveillance period, more patients could successfully be provided with a prosthesis than previously. In the Le Carbet CRF rehabilitation centre on Martinique, the total number of new fittings with interim prostheses fell from 30% in 2003 to 6% in 2008. Thanks to the introduction of the TTm/TFm-pop concept, this figure was reduced by one third at the Centre La Tourmaline in Nantes.

**Conclusions**
By using the compression liners described above, both transtibial as well as transfemoral residual limbs can be efficiently prepared for prostheses, by:
- Ensuring their volumetric stability
- Improving the shape of the residual limb
- Promoting wound healing
- Preparing the patient to use the prosthesis and
- Supporting the initial contact with the prosthesis.

The multicentre postmarketing surveillance study presented here demonstrates that the use of TTm pop or TFm pop liners ensures prompt and efficient treatment for the patient. Furthermore, it improves interdisciplinary cooperation and assists in the early provision of prostheses.

**References:**
6. Rosune, Ch.: These 2003 No. 22, presentee a la Faculte de medicine de Strasbourg pour le diplome de docteur en medecine mention médecine generale. Prothetisation contact precoce des moignons ouverts de jambe: Evaluation de la cicatrisation, de l’autonomie et de la marche a propos de 27 cas analyses au CRF Clemenceau pendant 36 mois.
Successful care after amputation – TTm/TFm pop® concept

The aims of the therapy concept at a glance

• Successful oedema prophylaxis and treatment as a precondition for efficient mobilisation after amputation.
• Improvement of patient-residual limb conditioning in preparation for optimised prosthetic care with fewer volume corrections in the prosthesis socket.
• Establishing a structure for interdisciplinary cooperation between physician, nurse, prosthetist, physiotherapist and patient.

The benefits

Fewer volume corrections in the socket
• Effective prevention and treatment of oedema
• Moulding of the residual limb to fit the prosthesis
• High volume stability

Promoting successful care
• Potential reduction of pain
• Improved wound healing
• Heighten acceptance of the prosthesis
• Potential increase in the care quotient

Early patient loyalty
• Convince all those involved in the care process
• Win the patient’s appreciation thanks to the efficient mobilization

Save valuable resources
• Reuse of the silicone cover possible after strict compliance with the prescribed cleaning and disinfection processes

Product details

Features
• Uniform and reproducible treatment of oedema thanks to constant compression decreasing from distal to proximal
• Protects the residual limb and supports wound healing
• Prevents bacterial colonization with very good cleaning and disinfection results
• Visual inspection of the skin condition and wound is possible during treatment thanks to the transparent surface
• Innovative easy glide coating for safe and simple donning and doffing
• High patient acceptance due to a pleasant skin feeling and high wearing comfort

TTm pop line (transtibial)  TTm pop line (transfemoral)
medi panthera CF:
Looking back, prospects, vision.

Since September 2011, the medi panthera CF I is available, the starting point of a new generation of prosthetic feet. The technology in the medi panthera CF combines carbon materials and elastomer in a completely new way, thus opening up new possibilities for patient care.

What had been the situation in the past? Elastomer feet ensure a pleasant gait and are very mobile. Their shortcoming? The low energy return and limited dynamism.

Classic Carbon feet have this energy return, but are less suitable for walkers at low or intermediate activity levels.

medi accepted this problem as a challenge for the Research and Development Department and, with the medi panthera CF I, created a foot that combines comfort and dynamism, due to the skilled combination of elastomers and an uninterrupted carbon spring. Elastomers support outstanding damping of energy, the elastomer units also function here structurally as force deflection points. Benefit for users: they use their own weight to activate the foot, thus saving strength. The continuous carbon spring creates a harmonious gait, while the combination of carbon and elastomers means far lower energy expenditure for the prosthesis wearer. The progressive forefoot dynamics ensure exponential loading of the forefoot, i.e. with this, dynamics and a higher resistance at the end of the stance phase are combined very harmoniously.

The integrated heel damping with the pivot principle ensures a gently initiated locomotive tensile force after the first damping phase and makes the transition a gentle one. The prosthesis wearer experiences more security and support, due to the early full-foot contact.

Only at medi: Torsion Flex control

Controlled dynamic mobility is the aim, to give amputees a high level of safety and security when walking.

With the medi panthera CF I, this is achieved through the multiple-layer principle with intermediate elastomer layers, heel damping with the pivot principle and the multiple axes – three properties that make the medi panthera CF I so versatile.

The term “Torsion Flex control” summarises the principle – a real innovation on the market. Carbon and
elastomer units are combined in a unique manner. An integrated intermediate elastomer layer (the magenta line) guarantees well-dosed, force-dependent bending and torsion of the carbon spring, i.e. the foot is able to adapt optimally to different surfaces. If an amputee, for instance, is walking about in the garden, he or she will be better able to maintain balance, because the foot readily compensates the uneven surface and has a virtually interactive effect (multi-axial).

Perfectly fitting cosmesis

The high-quality foot cosmesis with integrated protective textile gives the foot as natural an appearance as possible, saves valuable time in the provision of care and saves technician resources. The benefit: since the integrated textile relieves stress on both foot and cosmesis, it is no longer necessary to put on a standard protective stocking.

For service work, the cosmesis can be quickly and easily removed. It provides for a firm hold as well as a broad forefoot contact of the module within the cosmesis. The foam connection CAP is available in three sizes.

Market echo

medi encloses a questionnaire for technicians with each medi panthera CF I and continuously evaluates the feedback. The biomechanical functionality and resulting harmonious gait get a predominantly positive evaluation, i.e. in terms of school marks, the medi panthera CF I gets an average rating of “good” (2.0). Overall, the survey has revealed that the foot quality is convincing, due to its elastic and mobile qualities, with extra points given for plantar flexion, pronation and supination. Another plus: during everyday orthopaedic technician work, it has been found that the foot is readily workable.

Of course, various wishes were also expressed in the survey – a highly important aspect for medi, since product development is ultimately an ongoing process. Adaptation of heel damping or balancing of the hardness of the forefoot and anterior foot were named as possible additional features for the future.

Parallel to the survey of the technicians, a survey of the users of the medi panthera CF I was also carried out. The results were evaluated in a second analysis.

The majority of the users were transtibial amputees (79 %) in mobility classes 2 and 3 (89 %). The foot attained “good” marks for slow
to intermediate gait speeds in particular.

The foot also got positive evaluations in terms of stability and hold. Users assessed the panthera CF I during standing and walking as being for the most part stable – an important factor for a secure feeling. To sum up, all everyday activities can be readily mastered with the panthera CF I and the foot adapts perfectly to different surfaces.

The most important results at a glance

- Biomechanical functionality and harmonious gait
- Elastic and mobile foot
- Good plantar flexion, pronation and supination
- Easy to work and process
- Very stable gait sensation on uneven ground (high degree of safety)
- All everyday activities readily mastered

The continuing development of the medi panthera CF – an insight into the world of technology

The results of the surveys are of course immediately integrated in the developmental work. The continuing development of the panthera CF I is still based on the tried-and-tested fundamental principles of heel damping with pivot, continuous spring, Torsion Flex Control and cosmesis with integrated protective textile, with progressive heel damping and the desired higher level of dynamism in the forefoot having been added as new features for further development.

What else is new?

The pyramid, i.e. the integrative element for below-knee prosthesis, will be made of titanium in the next model. This high-quality material combines strength and lightness and is particularly characterised by its unique tensile strength, whereby it is also highly corrosion-resistant.

Heel damping with pivot principle

The integrated heel cushioning, based on the pivot principle, ensures a smooth transfer to the next movement and gives the prosthesis wearer greater stability as a result of the early full foot contact. The efficient shock absorption results in less strain being exerted on the stump and the joints involved.
The foot module was supplemented by progressive heel damping and the Torsion Flex Control principle is now even more geared to dynamism. The medi panthera CF I is focused on easy roll-off with good energy return. The future model will concentrate on adaptive and progressive damping in heel and forefoot. Increased forefoot dynamics and optimised energy return round off the new concept.

The new features also require an additional heel damping unit made of carbon and the introduction of an intermediate layer of elastomer in the heel unit.

The heel damping geometry also had to be adjusted overall.

Technicians will appreciate the individualized damping parameters in heel and forefoot. They will be supplied with two modules with different Shore hardnesses. They can be shortened as required and make for a high level of flexibility in patient care.

With the medi panthera CF I, medi has laid the foundation stone for mobility classes 2 to low-level 3. The new foot of the medi panthera CF range meets higher demands for dynamic mobility and efficiency and provides an outstanding solution for mobility classes 3 and 4.

Evolution in Dynamics – impulses in motion.

You can look forward to the future of foot prosthesis technology, as always: 100% designed and made in Germany.

medi panthera CF I
Carbon foot incl. cosmesis with integrated protective textile.

Indications
• Mobility classes 2, (3)
• Max. permissible total weight 136 kg

Features
• Continuous carbon spring action
• Integrated heel bumper
• Multiple layer principle with intermediate elastomer layers
• Quality product – made in Germany

Further information
www.panthera.medi.de/index_en.html

medi panthera CF I
Carbon foot incl. cosmesis with integrated protective textile.

Indications
• Mobility classes 2, (3)
• Max. permissible total weight 136 kg

Features
• Continuous carbon spring action
• Integrated heel bumper
• Multiple layer principle with intermediate elastomer layers
• Quality product – made in Germany

The heel damping geometry also had to be adjusted overall.

Technicians will appreciate the individualized damping parameters in heel and forefoot. They will be supplied with two modules with different Shore hardnesses. They can be shortened as required and make for a high level of flexibility in patient care.

With the medi panthera CF I, medi has laid the foundation stone for mobility classes 2 to low-level 3. The new foot of the medi panthera CF range meets higher demands for dynamic mobility and efficiency and provides an outstanding solution for mobility classes 3 and 4.

Evolution in Dynamics – impulses in motion.

You can look forward to the future of foot prosthesis technology, as always: 100% designed and made in Germany.

Further information
www.panthera.medi.de/index_en.html

medi panthera CF I
Carbon foot incl. cosmesis with integrated protective textile.

Indications
• Mobility classes 2, (3)
• Max. permissible total weight 136 kg

Features
• Continuous carbon spring action
• Integrated heel bumper
• Multiple layer principle with intermediate elastomer layers
• Quality product – made in Germany

The heel damping geometry also had to be adjusted overall.

Technicians will appreciate the individualized damping parameters in heel and forefoot. They will be supplied with two modules with different Shore hardnesses. They can be shortened as required and make for a high level of flexibility in patient care.

With the medi panthera CF I, medi has laid the foundation stone for mobility classes 2 to low-level 3. The new foot of the medi panthera CF range meets higher demands for dynamic mobility and efficiency and provides an outstanding solution for mobility classes 3 and 4.

Evolution in Dynamics – impulses in motion.

You can look forward to the future of foot prosthesis technology, as always: 100% designed and made in Germany.

Further information
www.panthera.medi.de/index_en.html

medi panthera CF I
Carbon foot incl. cosmesis with integrated protective textile.

Indications
• Mobility classes 2, (3)
• Max. permissible total weight 136 kg

Features
• Continuous carbon spring action
• Integrated heel bumper
• Multiple layer principle with intermediate elastomer layers
• Quality product – made in Germany

The heel damping geometry also had to be adjusted overall.

Technicians will appreciate the individualized damping parameters in heel and forefoot. They will be supplied with two modules with different Shore hardnesses. They can be shortened as required and make for a high level of flexibility in patient care.

With the medi panthera CF I, medi has laid the foundation stone for mobility classes 2 to low-level 3. The new foot of the medi panthera CF range meets higher demands for dynamic mobility and efficiency and provides an outstanding solution for mobility classes 3 and 4.

Evolution in Dynamics – impulses in motion.

You can look forward to the future of foot prosthesis technology, as always: 100% designed and made in Germany.

Further information
www.panthera.medi.de/index_en.html

medi panthera CF I
Carbon foot incl. cosmesis with integrated protective textile.

Indications
• Mobility classes 2, (3)
• Max. permissible total weight 136 kg

Features
• Continuous carbon spring action
• Integrated heel bumper
• Multiple layer principle with intermediate elastomer layers
• Quality product – made in Germany

The heel damping geometry also had to be adjusted overall.

Technicians will appreciate the individualized damping parameters in heel and forefoot. They will be supplied with two modules with different Shore hardnesses. They can be shortened as required and make for a high level of flexibility in patient care.

With the medi panthera CF I, medi has laid the foundation stone for mobility classes 2 to low-level 3. The new foot of the medi panthera CF range meets higher demands for dynamic mobility and efficiency and provides an outstanding solution for mobility classes 3 and 4.

Evolution in Dynamics – impulses in motion.

You can look forward to the future of foot prosthesis technology, as always: 100% designed and made in Germany.
Impressions from the Orthopaedics + Rehabilitation Technology 2012

With a highly visible stand, medi presented the new products for 2012 at the trade fair in Leipzig.

For the first time, Footcare was presented to a professional audience. The medi staff were pleased about the numerous conversations at the stand, in which they were able to present our innovations to you, our partners. A big highlight was certainly the visit by the well-known fashion designer Wolfgang Joop!

Further pictures
http://www.ot.medi.de/en/gallery.html

“A vision transformed into quality of life” was medi’s motto for the trade fair in Leipzig. Our knitting competence was symbolized by a magenta-coloured “roof” over the trade fair stand.

Wolfgang Joop spoke with Executive Director Dr. Michael Weihermüller (on the right in the picture) and Moderator Paul Johannes Baumgartner (left) about compression stockings and design.

Inconspicuous, but effective: The new Spinomed® back brace for the treatment of osteoporosis.

The future of prosthesis foot technology-medi panthera CF
medi review: 6th Osteoporosis Symposium in Budapest (Hungary)

About 150 international participants from September 30th – October 2nd 2011

Our international symposium focused on "New therapeutic aspects for osteoporotic vertebral fractures". The previous symposia have shown that there is a great need for further discussions on various forms of treatment as well as for exchanging news and views regarding this matter (including the therapy with the innovative back orthosis Spinomed). About 150 participants from 18 countries were keenly interested in the lectures followed by various discussions.

An overview of the lectures

- “Social aspects and burden of osteoporosis”
  Minne, H. W. (Germany)
- “Diagnostic and pharmacological challenges in postmenopausal osteoporosis with vertebral fractures”
  Horváth, C. (Hungary)
- “The Meeks Method: Pattern of postural change”
  Meeks, S. (USA)
- “Musculoskeletal rehabilitation of osteoporosis including the role of orthoses like Spinomed”
  Pfeifer, M. (Germany)
- “Role of orthoses in the management of back pain after vertebral fractures”
  Dionyssiotis, Y. (Greece)
- “Inclinometer: Innovative device for assessment of spinal deformities in osteoporosis”
  Recknor, C. P. (USA)
medi review:
6th Sport Orthopaedics Symposium Prague (Czech Republic)

About 100 participants from 18 countries

From October 7th – 9th 2011 our 6th Sport Orthopaedic Symposium has been held at Prague. This time, we focused on established and new aspects in the treatment of shoulder, hip, knee and foot injuries and especially regarding innovations in arthroscopy.

Again, it was a unique and exciting opportunity for the exchange of knowledge and to discuss the latest advancements in sports orthopaedics.

An overview of selected the lectures

- “RCT – Single bundle or double row reconstruction” Imhoff, A. (Germany)
- “Arthroscopic subacromial decompression – results and effectiveness” Hoffmann, F. (Germany)
- “Anterior cruciate ligament replacement in children – long term results” Trč, Tomáš (Czech Republic)
- “Patellar instability: Soft tissue, MPFL or osseous realignment” Labs, K. (Germany)
- “Patellar instability: arthroscopic surgery, indications and techniques” Bauer, G. (Germany)
- “Cartilage repair techniques: From OATS to stem cell therapy” Mayr, H. (Germany)
- “Osteotomies around the knee” Brucker, P. (Germany)
Further and continuing training are written with a capital “T” at medi. We offer our own ongoing education events for our clients to guarantee comprehensive advice and up-to-the-minute knowledge.

After the big success of our first International Master Class Orthopaedics in 2011, we were happy to invite 14 different countries to this year’s workshop on February 15th 2012.

It was a great pleasure to welcome our medi Group Companies, e.g. from USA, UK, Belgium, Spain, Denmark, Russia, Poland, France and Brazil.

The attendees benefitted from the unique and exciting opportunity to share, discuss and learn the latest advancements in patella and ankle treatment. The hands-on workshop improved the understanding of both patella and ankle injuries and opened lively discussions among the participants. ■
8th Sports Orthopaedics Symposium Sao Paulo (Brazil)  
16th – 18th March 2012

Innovations in treatment of knee, hip and shoulder injuries

For the first time medi Brasil organised an orthopaedic symposium for South America.

Knee, hip and shoulder specialised doctors from Brazil, Venezuela, Argentina, Colombia and Chile joined this outstanding scientific event.

The chairmen were Prof. Andreas Imhoff and Prof. Moises Cohen who add their knowledge and professional skills to further enhance the technical expertise of the participants.

The symposium was a very important event to medi Brasil because they had a chance to strengthen links with leading renowned doctors at one of the most beautiful coastal areas of Brazil.

A selection of lectures presented at this symposium:

- “Painful AC joint: Evaluation and treatment”  
  Gutierrez, V. (Chile)
- “Fractures of the distal humerus and elbow”  
  Gosak, A. (Argentina)
- “Shoulder instability: Should we repair after the first episode?”  
  Simoni, M. (Brazil)
- “Disable throwing shoulder – Brazilian sports experience”  
  Ejnisman, B. (Brazil)
- “RCT – Single bundle or double row reconstruction”  
  Imhoff, A. (Germany)
- “Rotational stability of the knee in ACL deficiency – What is the evidence?”  
  Cohen, M. (Brazil)
- “ACL combined with osteotomy in athletic population”  
  Castropil, W. (Brazil)
- “New trends in cartilage restoration”  
  Figueroa, D. (Chile)
- “Return to play after injury: The role of functional progression”  
  Ernlund, L. (Brazil)
- “Arthroscopic treatment of femoral acetabular impingement”  
  Moya, L. (Chile)
medi review: 3rd International Prosthetics Symposium in Cyprus

Over 100 delegates from 10 countries worldwide from 10th – 13th November 2011

The attendees of the international symposium in Cyprus learned about the results of ongoing international studies, approaches to rehabilitation and treatment following an amputation.

Carsten Stauf, project manager Prosthetics International, started off the proceedings on Thursday evening with a talk on the current status of the project “medi for help - help for Haiti”, what has been achieved so far and what is planned for the future. This project not only provides prosthetic medical devices for those affected, but it also concentrates on providing help for self-help.

The delegates learned about the latest findings from all fields of prosthetics, e.g. phantom pain, interdisciplinary rehabilitation and new approaches to post-rehabilitation measures, how to choose the best socket and the interim results from a multicentre study on the use of energy-returning systems to help achieve the therapeutic objectives. Also, the new carbon feet medi panthera CFI was one topic.

The practical aspect was not ignored: a wide-ranging workshop vividly illustrated physiotherapy exercises for prosthesis wearers.

It goes without saying that the leisure time and culture programme also gave the delegates some wonderful impressions of the country and people of Cyprus. With the Jeep safari into the mountains followed by an evening meal and live music, the nature and culinary delights of Cyprus were not forgotten and, with the visit to the archaeological dig at Curio, the participants could also turn their focus to the country’s rich history and culture, too.

An overview of the lectures

- “Rehabilitation after lower limb loss – an interdisciplinary challenge” Greitemann, B. (Germany)
- “New approaches to postrehabilitation methods” Sauer, M. (Germany)
- “Choosing the optimum transfemoral socket configuration” Caroll, K. (USA)
- “Multicenter study to obtain a study population of low mobile amputees, with the aim of greater autonomy through the use of the Clever Bone system” Ehrler, S. (France)
- “Checklist for the diagnosis of phantom pain and sensations” Kern, U. (Germany)
- “Best practice results of a new generation of Carbon spring feet” Nissels, V. (Germany)
- “Rehabilitation of tomorrow” Wertheim, C. W. (The Netherlands)
The 9th Sports Orthopaedics Congress was held in Mallorca earlier this summer at the Hotel Barcelo Formentor from 17 to 20 May 2012.

The event offered every delegate the opportunity to hear about established and new aspects of the main subjects shoulder, knee, and foot. A selection of preventive, therapeutic and surgical techniques provided a firm foundation for discussions during and after the individual lectures.

The Chairman, Prof. Andreas Imhoff MD, was highly satisfied with the echo after the symposium and the keen interest shown by all the delegates.

The 115 delegates from 17 countries gained an intense insight into the medi products exhibited by our Sales Manager, the Head of Marketing Orthopaedics and the International Eventmanager who were also present.

Of course, besides the scientific programme, social events were also on offer. Everybody agreed that the Formentor peninsula is always worth a visit. Above all, Spanish cuisine had plenty to offer on, Saturday evening, which was rounded off with the Champions League final 2012.

An overview of the lectures

- “Arthroscopic Revision after failed Anterior Shoulder Stabilization” Vogt, S. (Germany)
- “Athletes shoulder – Posterosuperior impingement” Imhoff, A. / Vogt, S. (Germany)
- “Limits of massive tears arthroscopic repair. Alternative options” Kelberine, F. (France)
- “ACL-replacement in kids including clinical and experimental data” Seil, R. (Luxembourg)
- “ACL high level athletes – Rehabilitation” Cugat, R. (Spain)
- “New treatment for medial OA of the knee” Almqvist, F. (Belgium)
- “Etiology and treatment options of patellofemoral instability” Schoettle, P. (Switzerland)
- “Posterior ankle impingement” Maffulli, N. (Great Britain)
- “The future of Sports medicine and tissue engineering” Cugat, R. (Spain)
1st Austrian Prosthetics Symposium
16th – 17th March 2012, Innerkrems (Austria)

Latest findings from different fields of prosthetics in stunning Alpine scenery

The 40 attendees of the 1st Prosthetics Symposium in Austria learned about the results of ongoing international studies, approaches to rehabilitation and treatment following an amputation with focus on post-op treatment.

Carsten Stauf started off the proceedings on Friday morning with a talk on the current status of the project “medi for help – help for Haiti”, what has been achieved so far and what is planned for the future.

The scientific presentations by the four speakers from Austria and France received high attention:
- Prim. Dr. Maximilian Schmidt, Medical Director, SKA Zicksee, Austria
- Dr. Solange Ehrler, Medical Director, Rehabilitation Centre Clémenceau Orthopedic Service, France
- Dr. Nina Mader, St. Johannes Spital Salzburg, Austria
- Dr. Burkart Huber, Univ. Klinik Innsbruck, Austria

The delegates learned about the latest findings from different fields of prosthetics and post-operative treatment with silicone liners. Further lectures were dedicated to phantom pain, insights to vascular surgery and the interim results from a multicentre study on the use of energy-returning systems to help to achieve the therapeutic objectives.
medi review: 7th Stolperstein Skiing Weekend at Kaunertal (West Tyrol)
Lots of fun on the slopes and a great success!

In 2012, the legendary Stolperstein skiing weekend took place from March 29th to April 1st. The destination was again the Kaunertal glacier in West Tyrol – a breathtaking setting.

Fifty participants from five countries lined up for the adventure. Excitement, anticipation and occasionally a little trepidation electrified the atmosphere – after all, skiing with a leg prosthesis is a somewhat unusually hobby. Nevertheless, curiosity and courage triumphed, so that nothing stood in the way of an eventful week. Thomas Rauch, himself a double leg amputee (please see article on page 22), put it like this: “I was worried that this venture would for the first time show me where my limits are. But I just gave it a try and it worked!”

After a pleasant evening getting to know each other, on Friday morning the group ventured in the direction of the glacier. Although the weather left something to be desired on the first day’s skiing, the wonderful atmosphere at the medi marquee very quickly made up for it. After a few explanations and instructions from Manfred Auer, organiser and member of the top-class group of ski instructors, we were out onto the slopes and, after a few practice runs, skiing successfully.

After dinner, we met up for a small surprise and some lectures. We heard some excellent presentations on the construction of ski prostheses in Austria and France. After the presentation, the participants were measured up so that they would be able to hit the slopes on functional socks from CEP on the following morning.

In addition, the participants had the opportunity to test a novel pro-carve ski joint with prosthesis.

As a final highlight, Manfred Auer provided “Atomic Test Ski”, which will not be available on the market until 2013. Hands-on high-tech!

The 7th Stolperstein skiing weekend was a great success and a very emotional event, which medi will be repeating in 2013.
# Upcoming Congresses 2012

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.-22.09.12</td>
<td>SECEC</td>
<td>Dubrovnik (Croatia)</td>
<td><a href="http://www.secec2012.com">www.secec2012.com</a></td>
</tr>
<tr>
<td>26.-29.09.12</td>
<td>Orto Pro Care</td>
<td>Madrid (Spain)</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03.-05.10.12</td>
<td>SECOT</td>
<td>Malaga (Spain)</td>
<td><a href="http://secot2012.com/">http://secot2012.com/</a></td>
</tr>
<tr>
<td>03.-06.10.12</td>
<td>APOA</td>
<td>New Delhi (India)</td>
<td><a href="http://www.apoa2012.com/outline_scientific_prog.php">www.apoa2012.com/outline_scientific_prog.php</a></td>
</tr>
<tr>
<td>05.-07.10.12</td>
<td>7th Osteoporosis Symposium</td>
<td>Warsaw (Poland)</td>
<td></td>
</tr>
<tr>
<td>11.-13.10.12</td>
<td>Heidelberg Live Surgery</td>
<td>Heidelberg (Germany)</td>
<td></td>
</tr>
<tr>
<td>11.-13.10.12</td>
<td>NOF 2012</td>
<td>Oslo (Norway)</td>
<td></td>
</tr>
<tr>
<td>17.-20.10.12</td>
<td>EFOST</td>
<td>London (UK)</td>
<td><a href="http://www.wstc2012.com">www.wstc2012.com</a></td>
</tr>
<tr>
<td>20.-22.10.12</td>
<td>CRSE</td>
<td>Qingdao (China)</td>
<td></td>
</tr>
<tr>
<td>21.-25.10.12</td>
<td>PRM Congress</td>
<td>Sorrento (Italy)</td>
<td><a href="http://www.prmcongress2012.sorrento.org">www.prmcongress2012.sorrento.org</a></td>
</tr>
<tr>
<td>22.-26.10.12</td>
<td>IFAS</td>
<td>Zurich (Switzerland)</td>
<td><a href="http://www.ifas-messe.ch">www.ifas-messe.ch</a></td>
</tr>
<tr>
<td>25.-26.10.12</td>
<td>ISPO</td>
<td>Lyon (France)</td>
<td><a href="http://ispo-france.com">http://ispo-france.com</a></td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04.-09.11.2012</td>
<td>FIHAV</td>
<td>Cuba, Havana</td>
<td><a href="http://www.feriahavana.com/">http://www.feriahavana.com/</a></td>
</tr>
<tr>
<td>10.-11.11.2012</td>
<td>JSPO 2012</td>
<td>Nagoya (Japan)</td>
<td></td>
</tr>
<tr>
<td>14.-17.11.2012</td>
<td>MEDICA</td>
<td>Düsseldorf (Germany)</td>
<td><a href="http://www.medica.de">www.medica.de</a></td>
</tr>
<tr>
<td>15.-18.11.2012</td>
<td>COA Congress</td>
<td>Beijing (China)</td>
<td><a href="http://www.coachina.org">www.coachina.org</a></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03.-07.12.12</td>
<td>Zdravookhraneniye</td>
<td>Moscow (Russia)</td>
<td><a href="http://www.zdravo-expo.ru/en/">www.zdravo-expo.ru/en/</a></td>
</tr>
</tbody>
</table>

For additional dates please have a look at www.medi-doctors.com.
Would you like to have ‘medi healthcare’ too?

Then register today!

Reply to fax: + 49 921 912-375 or email: doctors@medi.de

medi healthcare is a free informative magazine from the medi company. It is published 2 times a year, each issue with a focus on compression garments (Phlebology, Lymphology and Hospital) or on Orthopaedics and Prosthetics.

You can have medi healthcare sent to you by post or as an email newsletter. The subscription is free of charge and may be cancelled at any time.

Please let us know how you would like to receive medi healthcare. We will add you to our subscribers list straight away and you will receive your copy/copies with the next consignment.

☐ Yes, I would like to receive ‘medi healthcare’ in future with focus on:
  ☐ Compression (Phlebology, Lymphology and Hospital)
  ☐ Orthopaedics / Prosthetics

Please send me
  ☐ the Email newsletter
  ☐ the printed newsletter

☐ Yes, I would like to be guest author for the magazine ‘medi healthcare’
  Please contact me.
Would you like to receive more information from this issue?  
Then order now!

You can order detailed information by filing in this form and send it back to us by fax: +49 912 912-375 or email: doctors@medi.de

<table>
<thead>
<tr>
<th>quantity</th>
<th>art.no.</th>
<th>information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30039</td>
<td>Product information Spinomed</td>
</tr>
<tr>
<td></td>
<td>99E62</td>
<td>Spinomed Study</td>
</tr>
<tr>
<td></td>
<td>98222</td>
<td>Prescription guidelines hand</td>
</tr>
<tr>
<td></td>
<td>99E72</td>
<td>Product information M.4 X-lock</td>
</tr>
<tr>
<td></td>
<td>90E31</td>
<td>Brochure Spinomed for patients</td>
</tr>
<tr>
<td></td>
<td>99M69</td>
<td>Osteoporosis DVD for patients</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90E40</td>
<td>donation brochure (English)</td>
</tr>
<tr>
<td></td>
<td>90F40</td>
<td>donation brochure (French)</td>
</tr>
<tr>
<td></td>
<td>90S40</td>
<td>donation brochure (Spanish)</td>
</tr>
<tr>
<td></td>
<td>97E54</td>
<td>Special edition medi healthcare “medi for help”</td>
</tr>
</tbody>
</table>

**Orthopaedics**

**Prosthetics**

<table>
<thead>
<tr>
<th>70E08</th>
<th>special „The use of TTm/TFm pop Liners for preparing ...“ (S. Ehrler)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70930</td>
<td>information material TTm/TFm pop liners</td>
</tr>
<tr>
<td>70E88</td>
<td>overview medi panthera CF</td>
</tr>
<tr>
<td>70470</td>
<td>retailer brochure medi panthera CF</td>
</tr>
</tbody>
</table>

Name

First Name

Street

Town, postcode

Country

Email

Date

Signature

medi. I feel better
New Therapeutic Aspects for Osteoporotic Vertrebral Fractures

7th Symposium, October 5 - 7, 2012 Warsaw, Poland

This symposium will offer you an interesting programme, e.g. with
• Lectures with speakers from all over Europe and the United States
• Discussions on the various therapies and opportunities to exchange knowledge and experiences with colleagues

For more information please contact Christian Lacher
c.lacher@medi.de

Prof. Minne, Chairman