

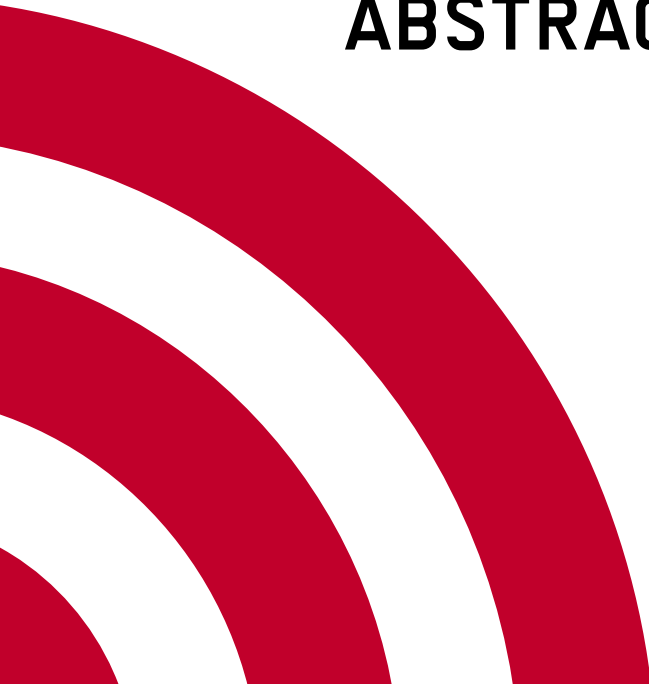


ASSOCIATION FOR
RADIAL PAIN THERAPY

FIRST ATRAD CONGRESS ON SHOCKWAVE TREATMENT FOR MUSCULOSKELETAL PAIN →

20 SEPTEMBER 2008, BERLIN

ABSTRACTS





ASSOCIATION FOR
RADIAL PAIN THERAPY

ATRAD → THE FIRST AND ONLY INTERNATIONAL ASSOCIATION DEALING EXCLUSIVELY WITH RADIAL SHOCKWAVE THERAPY ISSUES

MAIN PURPOSE BASED ON:

- Research and application
- Training and certification procedures
- High-level exchange of experience
- Representation of the members' interests
- Patients' orientation to improve healing

*Swiss DolorClast® Method
A valuable therapy concept*

*You want more information or become an ATRAD member ?
Please check: www.atrad.ch*

FOR OUR PATIENTS - TO IMPROVE HEALING - TO SAVE MONEY



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**WELCOME TO THE FIRST INTERNATIONAL ATRAD CONGRESS
ON SHOCKWAVE TREATMENT FOR MUSCULOSKELETAL PAIN
20 SEPTEMBER 2008 IN BERLIN**

Dear Friends, Colleagues and all those interested in Radial Shockwave Therapy,

The committee of ATRAD has the honour and pleasure of organising its first international congress. The quality of our excellent speakers guarantees a high level of up-to-date knowledge on Radial Extracorporeal Shockwave treatment for musculoskeletal pain. All our speakers are well-known leading practitioners and scientists in their field. We are particularly pleased to announce that the congress will be scientifically led by the outstanding specialist Professor Dr. Jan D. Rompe.

ATRAD is the first and only international association dealing exclusively with issues related to Radial Shockwave Therapy. The association was founded by Swiss doctors in 2003 and is now well established in Central Europe. It acts as a negotiating partner and protects the interests of members where official bodies, insurance companies, organisations, public authorities and industry are concerned. It also offers an identification platform to all users for the high-level exchange of scientific knowledge and ideas. It runs working seminars and sends out newsletters to support these objectives and to improve opportunities for contact between users.

ATRAD PURPOSE

In view of the core competencies of our association and our legally specified goals we work towards

- spreading knowledge from science and practice
- doing research and improving applications
- training during working conferences and exchanging of experience
- assisting to do scientific studies on new indications
- continuously educating our members
- representing the interests of our members to outside organisations and doing publicity work
- targeting on the development of improved patient education

ATRAD MISSION

Our patients are of course the centre of our mission. We want to heal them with the best possible methods, in as short time as possible and with shorter absences from their work and private life. This is also important for the economy as a whole.

We know that treatments because of orthopaedic problems will increase. This is for demographic reasons and also as a result of the renewed interest in sport and fitness. Our conclusion is that cost increases will be unavoidable unless we concentrate on improved and more economical treatment methods. This makes our mission an unmistakable message to legislators, associations and insurance companies.

BECAUSE WE SAVE MONEY!

We treat clearly defined diagnoses with unified parameters. The Swiss DolorClast® Method is superior to the traditional and in some cases antiquated treatments, more successful in healing and alleviating symptoms and far more economical.

In the light of the above, we wish you a successful conference. We hope it will provide you with a new impetus in your day-to-day work! Alternatively we hope it will encourage you to join the fast-growing community of specialists in the field of Radial Extracorporeal Shockwave Therapy!

Yours sincerely,



Dr. Max Henzen
President of ATRAD



Felix Egloff
General Secretary of ATRAD

FRIDAY 19 SEPTEMBER 2008

19.00 Welcome Cocktail at the Hotel Kempinski
20.00 Dinner

SATURDAY 20 SEPTEMBER 2008

BASICS / EXPERIMENTAL

09.00 - 09.05 Welcome
Jan D. Rompe, Max Henzen

09.05 - 09.20 Shockwave Therapy: What really matters
Markus Maier

09.25 - 09.40 New aspects: Molecular working mechanisms
Christoph Schmitz

09.45 - 10.00 Animal trial: Skin perfusion model in rats
Ludger Gerdesmeyer

10.05 - 10.20 ESWT and tissue engineering
Markus Maier

10.25 - 10.45 ESWT - Experimental studies
Wilhelm Bloch

10.45 - 11.00 Discussion

11.00 - 11.15 Coffee Break

APPLICATION I

11.00 - 11.15 ESWT - Sports professionals
Mark Henne

11.20 - 11.35 Tennis elbow - EBM aspects
Jan D. Rompe

11.40 - 11.55 Plantar heel pain - Swiss DolorClast®
Ludger Gerdesmeyer

- 12.00 - 12.15 Achilles tendinopathy - Swiss DolorClast®
Jan D. Rompe
- 12.20 - 12.35 Low back pain - Swiss DolorClast®
Martin Kosub
- 12.40 - 12.55 Cryonic neurocryostimulation - Swiss DolorClast®
Marc Rozenblat
- 13.00 - 13.15 1400 Swiss DolorClast® cases - a report
Hervé de Labareyre
- 13.20 - 13.50 Discussion
- 14.00 - 15.00 Lunch

APPLICATION II

- 15.00 - 15.15 ESWT for diabetic wounds
Gerald Zöch
- 15.40 - 16.05 Trigger ESWT - Basics
Martin Kosub, Jörg Thieme
- 16.10 - 16.30 Coffee Break

PRACTICE BUSINESS MODELS - POTENTIAL USERS

- 16.10 - 16.20 Germany
Michael Düsmann
- 16.25 - 16.35 Asia
Nick Boden
- 16.40 - 16.50 Scandinavia
Egill Knag
- 16.55 - 17.30 Discussion

SHOCKWAVE THERAPY: WHAT REALLY MATTERS **MARKUS MAIER**

Dept. of Orthopaedic Surgery, Ludwig-Maximilians-University Munich, Munich, Germany

Introduction: A recent study in the literature (Cleveland et al., *Ultrasound Med Biol* 2007; 33: 1327-1335) suggested that the rise times of the waveforms produced by the EMS Swiss DolorClast® shockwave source (as well as of piezoelectric and electromagnetic shockwave sources from other providers operated at low settings) would be too long for the pulses to be considered shockwaves, and this could explain the negative outcome of some clinical studies performed with these sources.

Methods: We performed a comprehensive literature survey about definitions of the term "shock wave" used in the biomedical field; and the potential significance of the leading positive phase of shockwaves for their biomedical effects.

Results: Several definitions of the term "shockwave" are used in the biomedical field. Importantly, cavitation consequent to the negative phase of the wave propagation appears the most relevant effect of shockwaves on tissue.

Discussion: Focusing mainly on the leading positive phase of shockwaves in further basic research on applications of shockwaves to the musculoskeletal system might be misleading. It appears more attractive to evaluate the actual contribution of the positive and negative phases of shockwaves to their biomedical effects, and to develop innovative strategies to maximize the exposure of patients to the predominant "actor".

Conclusion: The negative outcome of some clinical studies performed with the EMS Swiss DolorClast® shockwave source was most probably due to other reasons than the relatively long rise time of the leading positive phase of the shockwaves generated with this source.

NEW ASPECTS: MOLECULAR WORKING MECHANISMS

CHRISTOPH SCHMITZ¹⁾

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2) *Dept. of Orthopaedic Surgery, Ludwig-Maximilians-University Munich, Munich, Germany*

Introduction: Several actions of extracorporeal shock waves (ESW) on the musculo-skeletal system were reported in the literature. However, it was unclear whether these actions appear independent from each other or whether they share common molecular and cellular mechanisms.

Methods: We performed a systematic review of the literature concerning actions of ESW on the musculo-skeletal system (including our own studies) and identified common molecular and cellular mechanisms.

Results: Actions of ESW on the musculo-skeletal system can be classified as "shock wave triggering", "shock wave tissue engineering" and "shock wave surgery". It appears that shock wave triggering and shock wave tissue engineering are the domain of radial (low-energy) ESW whereas (to some extent) shock wave tissue engineering and particularly shock wave surgery are the domain of focussed (high-energy) ESW.

Discussion: This is the first systematic classification of actions of extracorporeal shock waves (ESW) on the musculo-skeletal system. The advantage of this classification is that it is not primarily focussing on a certain diagnosis but rather on molecular and cellular mechanisms of action of ESW on the musculo-skeletal system.

Conclusion: Rigorous use of the classification system introduced here can serve as basis to establish novel criteria for the application of ESW on the musculo-skeletal system.

SKIN PERFUSION MODEL IN RATS

HUDGER GERDESMEYER, HANS GOLLWITZER, RAINER MITTERMAYR

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Dept. of Orthopaedic Surgery and Sportstraumatology, Technical University Munich, Germany

Introduction: Shockwaves were initially used to treat wound healing disorders. First results showed good outcomes. Radial shockwaves were not applied in wound healing until now.

Methods: In an epigastric skin flap model the effect of radial extracorporeal shockwaves was investigated in rats (Male Sprague Dawley rats weighing 300 to 350 g). A total of 25 subjects randomly received assigned treatment. All subjects underwent surgery to create a specific skin flap with reduced perfusion due to ligation of the epigastric artery and vein. After surgery the subjects were assigned into 3 groups. The first group received 300 shockwaves with an ED of 0.13 mJ and 2Hz, the second group received 600 shockwaves with an ED of 0.13 mJ and 4 Hz, the third group received a placebo. To quantify the effect, planimetry and laser Doppler imaging (LDI) were performed 7 days after intervention and compared to baseline.

Results: Baseline showed homogeneity regarding all criteria. Seven days after treatment rats receiving a total of 600 SW at 0.13 mJ showed significantly better outcomes compared to placebo and rats receiving 300 SW at 0.13 mJ. These significantly better outcomes after 600 SW at 0.13 mJ were found in both criteria (Planimetry and LDI). The group receiving 300 SW at 0.13 mJ showed slightly better outcomes but they were not significant compared to placebo. Only minor side effects such as petechial bleeding and edema were observed.

Discussion: These findings demonstrate positive effects in a rat model. The clinical effect size remains unknown and needs to be determined.

Conclusion: rESWT is an effective and safe method to treat wound healing with impaired perfusion conditions after surgery. The effect size reaches clinical relevance. These initial findings have to be verified in further studies. Clinical feasibility trials could start to calculate the clinical effect size of radial shockwaves in perfusion-related wound healing disorders.

ESWT AND TISSUE ENGINEERING

MARKUS MAIER¹⁾

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2) *Dept. of Orthopaedic Surgery, Ludwig-Maximilians-University Munich, Munich, Germany*

Introduction: Tissue engineering is one of the best tested biologic procedures mediated by ESW. Independent from the shockwave source used, especially new bone formation can be induced by this procedure. Shockwave mediated tissue engineering is already in clinical use, as it is commonly known that delayed fracture healing can be cured by ESW.

Methods: In the present review clinical and experimental studies are presented dealing with tissue engineering and ESW. Special regard is taken to different shockwave sources and the results achieved by these.

Results: Concerning new bone formation ("tissue engineering") there is no difference in histologic outcome either with focused or radial application systems. Radial shockwaves led to significant new bone formation within the treated area in an animal model.

Discussion: Until today the mechanisms, leading to new bone formation after ESW application are not fully understood. Own experiments point to a significant influence of molecular parameters such as substance P. The impact on clinical application is the recommendation to limit energy-flux-densities to not more than 0.5 mJ/mm² to avoid side effects.

Conclusion: Radial shockwaves lead to significant new bone formation in the treated bone.

ESWT - EXPERIMENTAL STUDIES: FOCUSED AND RADIAL SHOCKWAVE TREATMENT INFLUENCE HUMAN MESENCHYMAL STEM CELLS

WILHELM BLOCH, YVONNE DELHASSE¹⁾

HELMUT NEULAND²⁾, CAROLINE STEINGEN¹⁾, ANNETTE SCHMIDT¹⁾

1) *Dept. of Molecular and Cellular Sport Medicine, German Sport University Cologne, Germany*

2) *ZES, Centre for Extracorporeal Shockwave Therapy, Kronberg im Taunus, Germany*

Introduction: Shockwave therapies are used for improvement of tissue repair and regeneration, processes where stem and progenitor cells are involved. Therefore the question arises if shockwave can influence stem cells involved in tissue regeneration. Human adult bone marrow derived mesenchymal stem cells (MSC) dependent regeneration can be improved by enhancement of migration, increase of proliferation and reduction of apoptosis. Due to the fact that two different kinds of shockwaves (focused and radial) improve stem cell dependent regenerative processes, it seems appropriate to investigate the influence of both kinds of shockwaves on MSC.

Methods: An experimental cell culture setup for shockwave treatment under absorbing conditions was used. The effect of radial and focused shockwaves on MSC for cell vitality, migration, proliferation and apoptosis was studied under different conditions (impulses, frequency and intensities of energy).

Results: The cell biological behaviour (migration, proliferation and apoptosis) of MSC can be influenced by radial and focused shockwaves in an intensity dependent manner. Specific differences are seen between radial and focused shockwaves for the wide of the optimal dose range and the effect on proliferation. An influence on migration and apoptosis of MSC can be observed for both kinds of shockwaves. At higher intensities the positive effects on proliferation, apoptosis and migration are inverted for both kinds of shockwaves.

Discussion: Focused and radial shockwaves can influence MSC in a strongly dose and condition dependent manner. In principal the investigated cell biological effects give evidence that shockwaves can have a positive influence on tissue repair and regeneration by activation of stem cells. But it must be noted that this positive influence could be inverted at higher intensities of shockwaves.

Conclusion: More basic research is necessary to find out optimal treatment conditions and intensities for both kinds of shockwaves to get optimized treatment for wound healing and tissue regeneration.

ESWT - SPORTS PROFESSIONALS

MARK HENNE

Orthopaedics and Sport medicine, "Ortho & Sport", Fürstentfeldbruck, Germany

Introduction: Because of strict anti-doping regulations a sufficient treatment of high level and professional sportsmen/-women during training and competition is often not as possible as wanted.

Methods: Athletes with muscle and soft tissue injuries were treated with radial shockwave therapy during two summer Olympic Games (2000/2008) and Soccer World Championships 2006.

Results: Although there was no homogeneity of patients with different injury locations and only a short follow up there was a positive response of athletes which was measured by the VAS and Roles- and Maudsley-Score.

Discussion: Treatment of Trigger points with rESWT had a positive influence on training and competition results and gave the athlete a better possibility to perform.

Conclusion: Especially in professional sports radial shockwave therapy is a good alternative treatment with almost no side effects which can be performed also even before competition.

TENNIS ELBOW - EBM ASPECTS

JAN D. ROMPE

OrthoTrauma Evaluation Center, Mainz, Germany

Introduction: Pooled meta-analyses of statistically and clinically heterogeneous data of randomised-controlled studies are difficult to interpret. Therefore, a qualitative study-by-study assessment was thought to be of greater relevance, to physicians confronted with a therapy-resistant tennis elbow patient, to determine the effectiveness of shockwave therapy (SWT) for lateral elbow tendinopathy.

Methods: Randomized trials were identified from a current search of The Cochrane Bone, Joint and Muscle Trauma Group specialized register of trials, the Cochrane Central Register of Controlled Trials, MEDLINE and reference lists of articles and dissertations. We included 10 trials that randomized 948 participants to SWT or placebo or treatment control. For each trial, two independent reviewers assessed the methodological quality and extracted data. Methodological quality criteria included appropriate randomization, allocation concealment, blinding, number lost to follow-up and intention-to-treat analysis.

Results: Conflicting results of the 10 studies were found. There was considerable heterogeneity in terms of methodological quality; treatment regimen; patient selection and follow-up period, precluding pooled analyses. Instead, individual trial results were described in the text. Only six trials had a high-quality methodology. Two independent high-quality randomized placebo-controlled trials (196 participants) reported significant success of SWT over placebo (65 versus 28%; 61 versus 29%). Design of both trials included enrolment of chronic recalcitrant patients only; 1500-2000 shocks of low-energy flux density (0.1 mJ/mm²) applied to the site of maximal discomfort (clinical focusing) in weekly intervals; no use of local anaesthesia and main follow-up at least 3 months after the last application.

Three other independent high-quality trials (406 participants) did not find any benefit of SWT over placebo (32 versus 33%; 35 versus 34%; 39 versus 31%). In these three trials, study designs deviated from the design described earlier, enrolling acute patients or applying SWT under local anaesthesia or expanding the application intervals to 4 weeks, while reducing the main follow-up to 4 weeks.

Conclusions: With current studies heterogeneous in terms of the duration of the disorder; type, frequency and total dose of SWT; period of time between SWT; type of management and control group; timing of follow-up and outcomes assessed, a pooled meta-analysis of SWT for lateral elbow tendinopathy was considered inappropriate. In a qualitative systematic per-study analysis identifying common and diverging details of 10 randomized-controlled trials, evidence was found for effectiveness of shockwave treatment for tennis elbow under well-defined, restrictive conditions only.

PLANTAR HEEL PAIN - SWISS DOLORCLAST®

LUDDER GERDESMEYER

CO-AUTHORS: LOWELL WEIL, BARRY SCURRAN, JOHN STIENSTRA, ANOOSH MOADAB, CAROL FREY, KEITH FEDDER, MARKUS MAIER, MARK HENNE, MARTIN RUSSLIES, HEINZ LOHRER, JOHANNES VESTER

Dept. of Endoprosthesis and Spine Surgery, MARE Clinic Kiel, Kiel, Germany

Dept. of Orthopaedic Surgery and Sportstraumatology, Technical University Munich, Munich, Germany

Purpose: To determine the effectiveness of rESWT for chronic plantar heel pain.

Materials and methods: 254 patients were enrolled and assigned to rESWT or placebo. 2000 treatment-impulses were applied at 0.4 Mpa without local anesthesia. 3 rESWT sessions were done with 2 weeks in between.

The primary criteria were: heel pain when taking the first steps and during daily activities. Second criteria were local pain on pressure, Roles and Maudsley-Score and SF-36. The primary point was 3 months after last rESWT, second endpoint at 12 months. The study was performed in accordance to GCP guidelines.

Results: 3 months after rESWT success was observed in all criteria. The rate difference in all items at 3 and 12 months after rESWT were statistically significant better in favour of the rESWT treatment.

Regarding the percent change of VAS pain reduction on composite score 12 month after rESWT the reduction after rESWT was -84.8%, whereas the placebo group showed a 43.2%. The difference after 1 year was 41.6% percentage points. The group difference in favour of ESWT was further enlarged up to 12 month. The same outcome was found at secondary criteria as well. The a priori ordered hypotheses of the final statistical analysis plan were statistically significant ($P < 0.025$ one-sided). Only minor side effects as petechial bleeding, swelling and discomfort during treatment were detected.

Conclusion: The radial shockwave therapy is effective, save and cost effective in treatment of chronic heel pain.

ACHILLES TENDINOPATHY - SWISS DOLORCLAST®
JAN D. ROMPE

OrthoTrauma Evaluation Center, Mainz, Germany

Introduction: Few randomized controlled trials compare different methods of management in chronic tendinopathy of the main body of the tendo Achilles.

Purpose: To compare the effectiveness of three management strategies: Group 1: eccentric loading; Group 2: repetitive low-energy Shock wave therapy (SWT); Group 3: wait-and-see in patients with chronic tendinopathy of the main body of the tendo Achilles.

Methods: 75 patients with a chronic recalcitrant (> 6 months) noninsertional Achilles tendinopathy were enrolled in a randomized controlled study. All patients had received unsuccessful management for > 3 months, including at least a) local injections; b) non-steroidal anti-inflammatory drugs; and c) physiotherapy. A computerized random-number generator was used to draw up an allocation schedule. Analysis was on-intention-to-treat basis.

Results: At 4 months from baseline, the VISA-A-Score increased in all groups, from 51 to 76 points in Group 1, from 50 to 70 points in Group 2, and from 48 to 55 points in Group 3. Pain rating decreased in all groups, from 7 to 3 points in Group 1, from 7 to 4 points in Group 2, and from 8 to 6 points in Group 3. 15/25 patients of Group 1 (60%), 13/25 patients of Group 2 (52%), and 6/25 patients of Group 3 (24%) reported a LIKERT scale of 1 or 2 points ("completely recovered" or "much improved"). For all outcome measures, group 1 and 2 did not differ significantly. For all outcome measures, group 1 and 2 showed significantly better results than group 3.

Conclusion: At 4-month follow-up, eccentric loading and low-energy SWT showed comparable results. The wait-and-see strategy was ineffective for the management of chronic recalcitrant tendinopathy of the main body of the Achilles tendon.

LOW BACK PAIN - SWISS DOLORCLAST® MARTIN KOSUB

Orthopaedics common practise, "Dr. Kosub & Dr. Thieme", Hattingen, Germany

Introduction: Lumbar back pain is predominantly caused or accompanied by myofascial pathologies. Injuries, overstraining and muscular imbalances are the most important triggers for myofascial pain. Our modern lifestyle leads increasingly to an overstraining of the tonic support systems in our bodies. The result is, in many cases, muscular hypertension, contraction and trigger points in the affected muscles.

Methods and Results: Irritation of the nociceptors in the skeletal muscles can induce chronic pain by releasing neuropeptides and structural changes on a spinal level. Nevertheless, structural changes and neural irritation of the spine in the affected area lead to irritation of the myotome, the dermatome and the sklerotome. Segmental circuits can include further spinal segments in the pain process and, for example, cause so-called satellite trigger points.

Pathophysiologically, pain mediators and tissue hormones play an important role on a muscular level. A comprehensive therapy for lumbar back pain therefore requires the inclusion of the skeletal muscles in the therapeutic procedure in order to achieve a successful treatment. A standardized therapy concept including the regularly affected muscles and their trigger points is essential here.

The treatment algorithm of the lumbar syndrome, the testing of individual muscles for strength and contraction as well as the practise of the TP-shockwave therapy can be seen in short video sequences.

Conclusion: The ESWT has increased in importance during the past few years for the treatment of trigger points and myofascial syndromes and could in the future become a permanent feature in the successful therapy of lumbar back pain. A combination with established treatment procedures is desirable.

CRYONIC NEUROCRYOSTIMULATION THERAPY ASSOCIATED WITH SWISS DOLORCLAST® EXTRACORPOREAL SHOCKWAVE THERAPY. ABOUT 7000 CASES REPORTED

MARC ROZENBLAT¹⁾

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1) Centre Coralys, Ozoir La Ferrière, France

2) Le Havre, France

3) Orléans, France

Introduction: The cold has been used as a therapy to treat pain since Hippocrates's time. Today, three cold physiotherapies are being practiced:

- By conduction: with ice for 20 minutes to reach cutaneous temperature of 0°C.

- By convection: cold air/spray at -30°C with breath of cold air to reach the skin at 4°C more quickly effective than ice. The pressure below is near 1 bar without thermal shock.

- By sublimation: (NeuroCryoStimulation therapy) : the source of the cold is -78°C and reaches the skin at -10°C enough to make the skin temperature reach 0°C within few seconds. The pressure is over 1 bar and permits to get a calorific stripping (heat fat of the body) equal to 25KJ/mol/mm².

Whole Body Cryotherapy (-110°C) is not currently used in France but a new concept is rising with liquid nitrogen.

Neurocryostimulation therapy permits stimulating skin neuroreceptors at very low temperature, to high pressure and vibrations generated by the spray of a jet of Carbon Dioxide in liquid phase.

Methods: The body response by the NeuroVegetative system following this stimulation will be the fundamental of the treatment. This specific stimulus will be named the Thermal Shock.

So, we record among several effects the increase of lymphatic drainage: four times faster than physiological drainage. It is probably the most important effect which explains the effectiveness of this therapy.

Results: 7000 associated cases (shockwave + Neurocryostimulation), over a period of 5 years in 3 French medical centers, are exemplified with their results.

For example, in the treatment of a corporeal tendinitis, three sessions are generally enough to cure.

Discussion: In association with extracorporeal shockwave therapy, neurocryostimulation does not generate adverse effects caused by the former. As a result, the caused number of sessions is decreased by two compared to shockwave therapy only.

Conclusion: Neurocryostimulation therapy may never be used before shockwave therapy to obtain anesthesia because it is potentially dangerous and the pressure of shockwave will be altered.

Primum non nocere is the most important medical motto. Shockwave therapy must not give pain.

Neurocryostimulation therapy must be utilized after shockwave therapy to increase neurovegetative effects.

Neurocryostimulation therapy probably maximizes shockwave therapy effects give early relief and allow recovery and physical practice fairly quickly.

1400 SWISS DOLORCLAST® CASES - A REPORT HERVÉ DE LABAREYRE

Hôpital de la Pitié, Dept. of Orthopaedic and Traumatologic Surgery, Paris, France

Introduction: After 9 years of use of the Swiss DolorClast®, we present the results of about 1400 cases through an open study. We treated the calcaneal tendon, the patellar tendon, the upper extremity of the hamstrings, the plantar aponevrosis and tendinitis of the elbow and rotator cuff of the shoulder.

Methods: Patients had a maximum of 6 sessions once a week. The results were asked at least 6 weeks after the last session.

Enthesopathies were treated with 2000 hits, 15 Hz and a pressure from 2 to 2,5 bars. Other problems were treated with 2000 hits, 9 Hz and 2,5 bars.

Sport practicing was not forbidden during the treatment as long as it was painless.

Results: Results are different from one tendon to the other. Good results are observed in 74% of the cases for the calcaneal tendon, 65% for the calcaneal enthesopathy, 65% for the plantar aponevrosis, 81% for the hamstrings high extremity, 60% for the patellar tendon, 70% for the rotator cuff of the shoulder (with only 34% of modification in case of calcification) and only 56-57% for the medial and lateral epicondylitis.

Discussion: The results we get remain very steady meanwhile the number of patients is gradually increasing. They are very close to the results one can find about the other shockwaves techniques in the literature, according to the parameters we chose and the literature we applied, our technique is the best.

The main limit of our study is that it is only an open study.

Conclusion: Except for the elbow, radial shockwaves seem to be an efficient treatment of tendinopathies.

EXTRACORPOREAL SHOCKWAVE THERAPY (ESWT) FOR DIABETIC WOUNDS

GERALD ZÖCH

Surgical Dept., SMZ -Ost Donauspital, Vienna, Austria

Introduction: It is proven that ESWT improves and accelerates wound healing. This trial investigates the safety and efficacy of this method for diabetic wounds.

Methods: Between July 2007 and April 2008 eighteen patients with twenty-one foot lesions (Stage I A and II A respectively according to the Armstrong - Score) were treated with ESWT. Treatment consisted in debridement, ESWT (EMS Swiss DolorClast®), 2 -times a week with 400 - 1000 shocks/cm² at 0,1 mJ/mm² and moist dressings. The materials used were not changed during ESWT treatment. The wound size was calculated by WHAT® technique.

Results: The treatment caused no pain and no infection occurred. The mean size of the wounds was: after one week 66,7%, after two weeks 58,7% and after three weeks 35,3% of the size before ESWT. Complete healing was achieved in 16 of 21 wounds (14 patients) after 6 weeks (range 3 - 11 weeks). Four patients dropped out for reasons not related to the therapy.

Discussion: This study indicated ESWT as an additive therapy to standard wound management. It can be applied safely and effectively. Neither anesthesia nor hospitalization is necessary.

Conclusion: Although it was no randomized trial the preliminary results indicate the effect of ESWT in improving wound-repair in non-infected and non-ischemic diabetic wounds.

TRIGGER ESWT - BASICS MARTIN KOSUB/JÖRG THIEME

Orthopaedics common practise, "Dr. Kosub & Dr. Thieme", Hattingen, Germany

Introduction: The skeletal muscles represent together the largest organ in the human body and in this respect a source of multiple pathologies. Yet chronic pain originating in the muscles is often not recognised, although it is of great sociomedical relevance.

Methods and Results: Muscle pain leads to biomolecular, neuroanatomical and electrophysiological changes. The release of ATP and proton (low pH value) activates nociceptors and, via changes to the milieu, causes muscle pain with muscular imbalances, taut bands and trigger points. Trigger point development is provoked by a damaged neuromuscular end-plate. On a spinal level this leads to over agitation (central sensitisation) which probably explains the referred pain.

Clinically, myofascial pain patterns develop, affecting the torso as pain in the neck and back areas and the limbs as pain in the shoulder, hip or knee areas. It is necessary to locate the trigger points by means of a thorough examination of the related muscle groups, taking into consideration loss of strength, reduced extension capacity, tonus changes and taut bands. In addition to classic trigger point treatment (manual techniques, neurophysiological approaches, needling, infiltration) the shockwave presents an important widening of the therapy spectrum.

Fundamental research shows that shockwaves have many more than only one effect on tissue. ESWT leads to changes in the concentration of numerous neurotransmitters and inflammation mediators which play a role in the above mentioned milieu of a chronically algetic muscle. It can be assumed that the trigger ESWT also acts via neuromuscular spindles and the gamma-loop.

Using the clinical picture trochanter tendinosis, the relevant muscles which arise from the functional anatomy and physiology are presented, the examination is carried out exemplarily on one muscle and the trigger-ESWT demonstrated.

Conclusion: The application of the trigger-ESWT for myofascial pain syndromes together with a few operator observations demonstrate the therapeutic success. Clinical studies are, however, long overdue, in order to provide appropriate scientific evidence for this form of therapy.

PRACTICE-BUSINESS MODELS - POTENTIAL USERS GERMANY MICHAEL DÜSMANN

Specialized in Orthopaedics and Sportsmedicine, "Orthopädische Praxis Düsmann", Stade & Kählungsborn, Germany

This lecture shows how to gain profit with the Swiss DolorClast® in a specialist practice in Germany, taking under consideration the health care, patient and insurance situation.

THE CHIROPRACTIC HEALTHCARE MALAYSIA GROUP AND SWISS DOLORCLAST® SHOCKWAVE THERAPY A PRIMARY HEALTHCARE BUSINESS MODEL FOR THE INTEGRATED PHYSICAL MEDICINE PRACTISE

NICK BODEN

CO-AUTHOR: THOMAS ONG

Chiropractic Healthcare, Malaysia Sdn Bhd, Kuala Lumpur, Malaysia

Introduction: We run 6 integrated Physical Medicine practices with the main emphasis on Chiropractic as a primary healthcare tool for the treatment of a range of musculoskeletal conditions.

Patients traditionally visit Chiropractors as a last resort to treat mainly spinal pain and discomfort as well as a range of extremity conditions including osteoarthritis, sports injuries and tendinopathies.

We challenged the traditionally conservative Orthopedic community in Malaysia by introducing a technology like Swiss DolorClast® to provide a viable non-surgical alternative treatment for conditions which up until now patients have either had to live with, settle for ineffective treatments, cortisone injections or risky surgical procedures often with an average outcome.

Discussion: We critically assessed our approach to these conditions (specifically tendinopathies) and realized the poor outcome and options we were giving patients. Swiss DolorClast® appeared to be a viable alternative or addition to our integrated approach to ensure a more satisfactory outcome and response to treatment. It also suited our non-invasive approach.

The significant investment in machinery and technology and the apparent high price per treatment of Swiss DolorClast®, insured that we have had to create a unique business-treatment model to guarantee return on investment and more importantly to provide a comparatively cheaper and more effective alternative treatment model for our patients.

Summary: This presentation aims to enlighten others of our business model ensuring a successful business and a happy patient.

ESWT - NORWEGIAN RESULTS **EGILL KNAG**

Enimed, Hakadal, Norway

Results: Norway is the country where Manual Therapy was founded in the 1960's. The development of this procedure was inspired by physical therapists. Training has become an important part of the procedure which got its own criteria in 1970. So called passive treatment, for example hot and cold packs, ultrasound and other kind of electrical stimulation, lost its popularity by the end of the last century. Reimbursement from authorities related to passive types of treatment has been reduced over time. Medical doctors intend to suggest drugs as alternative to conventional physical therapy. This is caused by the time spending, the expenses involved and lack of clinical evidence. ESWT was introduced to the market in 2001 and has become a new dimension within the treatment of patients with muscular skeletal disorders.



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Herewith I would like to ask for further information on how to become an ATRAD Member.

Place, Date **Signature**



ASSOCIATION FOR
RADIAL PAIN THERAPY

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ATRAD
ASSOCIATION FOR RADIAL PAIN THERAPY

FELIX EGLOFF
GENERALSEKRETÄR
BRÜHILFELDWEG 8
CH-8112 OTELFINGEN



*Wilhelm Bloch, MD
Department of Molecular and Cellular Sport Medicine
Institute of Cardiovascular Research and Sport Medicine
Cologne, ZES, Germany*

EDUCATION:

- 1980 to 1986: Study of Medicine and Philosophy at the University of Mainz
- 1988 to 1991: Study of Physics at the University of Mainz
- 1994: Graduation at the Medical Faculty, University of Cologne
- 2000: Venia Legendi of the University of Cologne for anatomy and cell biology

EMPLOYMENT HISTORY:

- 1991 to 2003: Scientific assistant and chief assistant, Department of Anatomy and Cell Biology, University of Cologne
- 2004 to present: Full professor and Head of Department of Molecular and Cellular Sport Medicine at the German Sport University, Cologne

MEMBERSHIPS:

- 2005 to present Member of the Medical Faculty of the University of Cologne

RESEARCH FIELD:

- Molecular and Cell Biology of the Cardiovascular System, Skeletal Muscle and Support Tissue



Dr. Nicholas (Nick) Boden

Chiropractic Healthcare Malaysia, Kuala Lumpur, Malaysia

EDUCATION:

- Master's Degree in Chiropractic (Durban University of Technology) 2002
- South African Matric
- GCSE O'Levels

EMPLOYMENT HISTORY:

- Technical Analyst/Team Chiropractor for South African Men's Hockey Team and World Student Games (Team South Africa)
1999 - 2008: support of teams during several championships
- Media Officer: South African Men's Hockey Team 2002 Hockey World Cup
- 2003 - 2005: Chiropractic Consultant, Twin Towers Medical Centre, Kuala Lumpur
- 2003 - present: Director of Chiropractic Healthcare Malaysia Sdn Bhd in active practice in Melaka, Johor Bahru, and Kuala Lumpur
- Healthcare Consultant to Malaysian Ministry of Health, International Medical University
- Accredited user of DolorClast® and Evotron Medical Extracorporeal Shockwave Therapy for the treatment of sports injuries

LECTURES:

- 2007 Guest Speaker at the EMS Medical Shockwave Therapy Distributor Meeting in Gold Coast Australia
- 2008 Speaker at the International Society for Medical Shockwave Therapy, in Antibes, France
- 2008 Beijing Olympic Committee trainer of Athletes, Village Polyclinic Doctors and Physical Therapists in the use of DolorClast® Radial Extracorporeal Shockwave Therapy
- 2008 Chiropractic Biomechanics of Posture seminar, Sydney Australia



Michael Düsmann, D.O.

Specialized in Orthopaedics and Sport Medicine

Orthopädische Praxis Düsmann, Stade & Kählungsborn, Germany

EDUCATION & EMPLOYMENT HISTORY:

- Medical School at University of Münster and Hamburg, Germany
- Visiting Physician in New York and Philadelphia
- Visiting Physician in Orthopaedics and Surgery in Warwick, GB
- Specialist office in Stade & Kählungsborn, Germany

ADDITIONAL MEDICAL FIELDS:

- Chirotherapy, Osteopathy, Sport Medicine



Felix Egloff

General Secretary of ATRAD

Otelfingen, Zurich, Switzerland

EMPLOYMENT HISTORY:

- Worldwide sales of electrical equipment with ABB Schweiz
- Human resources director for various trading companies
- Supervision of legal department for a major insurance company
- Director of logistics/information technology and human resources for a major insurance company
- Member of group management of Switzerland's largest health insurer
- From 1984: chairman of group management board
- From 1994: chairman of supervisory board
- 2003: ATRAD founder member

SUPERVISORY DUTIES:

- Member of supervisory boards of various clinics
- Member of supervisory boards of information technology companies
- Member of various committees in Switzerland and Europe

MEDIA:

- Expert in print and electronic media for the health care sector



Priv. Doz. Dr. med. habil. Ludger Gerdesmeyer MD, PhD, FIPP

Chairman: Dept. Endoprosthesis and Spine surgery, MARE Clinic Kiel, Kiel, Germany

Associated Professor: Dept. Orthopedic Surgery and Traumatology, TU Munich, Germany

EMPLOYMENT HISTORY:

- 1991 - 1992 Fellow Orthopedic Surgery and Traumatology Lubinus Klinik Kiel
- 1993 - 1994 Fellow General Surgery Burg a. F.
- 1994 - 1995 Fellow Sportstraumatology Sportsmedical Center Kiel
- 1995 - 1997 Consultant Orthopedic Surgery and Traumatology University Lübeck
- 1997 - 2006 Vice Chairman and associated Professor Technical University Munich Dept. Orthopedic Surgery and Traumatology
- since 2006 Chairman MARE Clinic, Dept. Joint Replacement & Spine surgery

MEMBERSHIPS:

- Chairman of Consensus Group Evidence based medicine and Vice Chairman of Working Group Shock Wave Therapy of the DGOOC
- Chairman Dept. Clinical Research, MARE Clinic, Kiel
- Faculty member of DIGEST (DIGEST President in 2007), ISMST and Faculty of Kyphoplasty
- Fellow of the Interventional Pain Practice (FIPP) Texas Tech University, Lubbock, TX
- International Fellow of the AAOS

AWARDS:

- SICOT Award in 2002 & 2003
- DIGEST Award in 2003 & 2007

SCIENTIFIC WORK:

- Clinical studies and basic research in the fields of ESWT, aseptic osteonecrosis, total joint replacement, epidural neurolysis and joint resurfacing
- Principle investigator of two FDA studies proofing the efficacy of extracorporeal shock wave therapy on painful heel
- Review Editor of several national and international medical journals



Dr. Mark Henne
"Ortho & Sport", Fürstenfeldbruck, Germany

EDUCATION:

- 1992 Final School Exams
- 1994 - 2001 Medical Education in Munich, Germany

EMPLOYMENT HISTORY:

- 2001 - 2004 Orthopaedic Department, Klinikum Rechts der Isar, Munich, Germany
- 2004 - 2007 Traumatology Department, Krankenhaus München Schwabing, Munich, Germany
- October 2007 Specialization in Orthopaedics and Traumatology
- Since 2008 Specialist Practice "Ortho & Sport" in Fürstenfeldbruck, Germany

SPECIAL ASSIGNMENTS:

- August 2004 Policlinic Olympic Village, Olympic Summer Games Athens, Greece
- June 2006 ESWT Representative for Soccer World Championships in Germany
- August 2008 Policlinic Olympic Village, Olympic Summer Games Beijing, China



Dr. Max Henzen
ATRAD President
Bellinzona (TI) Switzerland

EMPLOYMENT HISTORY:

- 1977: Promotion at the Medical Faculty University Bern
- Since 1983: start of a private medical practice in Bellinzona, Switzerland, in general and sport medicine
- Past Activities: Head of the medical staff in several professional elite teams (football, basketball, ice-hockey, volleyball and tennis)

MEMBERSHIPS:

- Member of the Swiss Sports Medicine Association, Swiss Ultrasonic Medicine Association and Swiss General Medicine FMH
- Founder member and president of the Association for Radial Pain Therapy (ATRAD)



Egill Knag

CEO Enimed, Hakadal, Norway

EMPLOYMENT HISTORY:

- ESWT - A new dimension in the treatment of chronic pain in the locomotive system
- Egill Knag was inspired by well-known Scandinavian pioneers named Olaf Evjenth and Hans Gunnari when he in 1979 together with them introduced physical training as an adequate method within treatment of muscular skeletal disorders. In order to introduce Medical Exercise Therapy (MET) internationally, he was heavily involved in the international education program, which was organised by The Scandinavian group Holten Institute. Beside this EK introduced Isocinetics as a functional way of testing human muscular force and function to Scandinavia.
- In 2001, he introduced the Swiss DolorClast® and ESWT to the Norwegians with good support from Manual Therapist John Gudmundsen.
- The company Enimed.no and its CEO Egill Knag, has been the representative of EMS in Scandinavia since 2001.



Dr. med. Martin Kosub

Specialized in Orthopaedics and Sports Medicine

Orthopädische Gemeinschaftspraxis Dr. Kosub & Dr. Thieme, Hattingen, Germany

EDUCATION:

- 1979 - 1986 Ruhruniversität Bochum
- 1985 - 1986 Internship
 - ▶ at Prosperkrankenhaus Recklinghausen, Germany, Department of Urology, Prof. Meridies
 - ▶ at Ev. Krankenhaus Hattingen, Germany, Surgery Department, Prof. Helwing, Department of internal medicine, Dr. Erwes
- 1986 License to practice medicine
- 1995 Recognition as Medical Specialist in Orthopaedics
- 1998 Promotion: knee-joint endoprothetics

EMPLOYMENT HISTORY:

- 1986 - 1987 Military duty as a site physician in Koblenz, Germany
- 1987 - 1991 Surgical Resident at Ev. Krankenhaus Hattingen, academic Hospital of the University of Bochum, Chief Physician Prof. Dr. med. Helwing
- 1991 - 1997 Orthopaedic Resident at Marienhospital Gelsenkirchen, academic Hospital of the University of Essen, Chief Physician Dr. med. Wessels
- 1997 - 1998 Freelancer at specialist practice "Praxis Dr. Henze", Hattingen
- 1998 Specialist practice in Hattingen, Germany



Dr. Hervé de Labareyre

Hôpital de la Pitié, Dept. of Orthopaedic and Traumatologic Surgery, Paris, France

Clinique des Lilas, Paris, France

EMPLOYMENT HISTORY:

- Since 1985: Sports Traumatologist in the Clinique des Lilas
- Work at the Pitié-Salpêtrière Hospital in the Orthopedic Surgery service
- Work at INSEP which is the place where high level sportmen are practicing in Paris
- From 1985 to 1999: looked after the French National Track and Fields Team



Markus Maier MD, PhD

Privatdozent Dr. med., Ludwig-Maximilians-University Munich, Germany

EDUCATION:

Medical studies:

- 1986 - 1993: Johannes-Gutenberg-University, Mainz and Koblenz, Germany

Medical and scientific education:

- 1988 - 1991: Hospital of Orthopaedic Surgery, Wiesbaden, Germany
- 1993 - 1995: Dept. of Surgery, Johannes-Gutenberg-University, Mainz, Germany
- 1995 - 2004: Dept. of Orthopaedic Surgery, Ludwig-Maximilians-University Munich, Germany
- 1998 - 2004: Institute of Surgical Research, Ludwig-Maximilians-University Munich

EMPLOYMENT HISTORY:

- 2004 - 2005: Senior Consultant (Orthopaedic Surgery) at the "Rheumazentrum Oberammergau", Germany
- Since 2005: Head of "Orthopaedic Center Privatdozent Dr. Maier", Starnberg am See, Germany

FOCUS OF SCIENTIFIC WORK:

- ESWT - basic research and clinical application
- Winner (together with Prof. Christoph Schmitz) of the DIGEST Award 2004 for basic research in ESWT



Prof. Dr. med. Jan-Dirk Rompe
OrthoTrauma Evaluation Center, Mainz, Germany

EDUCATION:

- 1986: Approbation
- 1987: Promotion, Ruprecht-Karls-University Heidelberg, Germany
- Title: "Quantitative Analyse von Dehnungsreflexen". Rating: "magna cum laude"

EMPLOYMENT HISTORY:

- 1997: Habilitation, Johannes Gutenberg - University Mainz. Germany
 - ▶ Title: "Die Auswirkung extrakorporaler Stosswellen unterschiedlicher Energiedichte auf knochenahes Sehngewebe - tierexperimentelle und klinische Studien."
- 2003: Professorship



Marc Rozenblat MD

Traumatologie du Sport - Médecine Manuelle - Ostéopathie

Centre Coralis, Ozoir la Ferrière, France

Diplomas:

- 1988 MD degree at University Paris VII
- University Diploma in Biology and Sports Medicine and Sports Traumatology
- University Diploma in Imagery in Sports Traumatology and Osteopathy
- University Diploma in Capacity of Medicine and Sports Biology
- University Diploma in interventional Sports Medicine in high level professional areas

EMPLOYMENT HISTORY:

- Exclusive practice of Medicine, Sports Traumatology and Manual Medicine in Ozoir-la-Ferrière, Centre Coralis, France
- Practice of ultrasound on the musculoskeletal system and use of the ESWT, neurocryostimulation, neurostimulation, muscular testing with Myotest
- Previously Physician in Hospitals of Paris ("Pitié-Salpêtrière"), Garches and Provins in Departments of Orthopaedics and Traumatology
- Previously responsible for education of Sports Traumatology at UFR-STAPS Marne-la-Vallée
- Accredited physician for skydiving, scuba diving and basket ball teams
- Physician of the French Gymnastics Federation CRIFMA
- Regular publication of articles related to Sports Traumatology in medical journals
- Active participation as a lecturer during conferences and regional, national and international congresses related to Sports Traumatology

MEMBERSHIPS:

- Member of the Société Française de Traumatologie du Sport SFTS (National General Secretary)
- Member of Société Française de Médecine du Sport and Société Française de Médecine Manuelle Orthopédique et Ostéopathique
- Management Council of the French Gymnastics Federation (Federal Doctor)
- Member of Syndicat National des Médecins du Sport and Syndicat National des Médecins de Médecine Manuelle Ostéopathie
- Member of advisory board of the magazine CINESIOLOGIE
- Member of editorial committee of the Journal of Sports Traumatology

PUBLICATIONS AND WORKS:

- Various publications and works available upon request



Dr. med. Jörg Thieme

Specialized in Orthopaedics and Sports Medicine

Orthopädische Gemeinschaftspraxis Dr. Kosub & Dr. Thieme, Hattingen, Germany

EDUCATION:

- 1983 - 1989 Medical School, Essen, Germany
- 1990 Promotion "Chirurgische tierexperimentelle Arbeit" magna cum laude for orthopaedic foot surgery
- 1996 Recognition as Medical Specialist in Orthopaedics

EMPLOYMENT HISTORY:

- 1989 - 1991 Internship at St. Josef-Hospital, Essen, Surgery department, chief physician Dr. Witthaut
- 1991 - 1992 Resident at St. Elisabeth-Krankenhauses, Hattingen-Blankenstein, Surgery department, chief physician Dr. Knaup
- 1992 - 1999 Resident at Marien-Hospital Gelsenkirchen, Orthopaedic department, chief physician Dr. Wessels
- 1999 - 2001 Senior Physician at Marien-Hospital, Gelsenkirchen, Orthopaedic department, main focus surgery
- Since 2001 Specialist practice in Hattingen, Germany



Prof. Dr. med. Christoph Schmitz

ACADEMIC APPOINTMENTS

- 2002 - 2003 Assistant Professor, Dept. of Anatomy, University of Rostock, Germany
- 2003 - present Assistant Professor, Dept. of Psychiatry and Neuropsychology/ School for Mental Health and Neurosciences, Division of Cellular Neuroscience, Maastricht University, Maastricht, Netherlands
- 2007 "Ausserplanmässiger Professor", RWTH Aachen University, Aachen, Germany

EDUCATION:

- 1993 German Federal Medical Diploma ("Approbation"), RWTH Aachen University, Germany. Herewith licensed to practice medicine in Germany
- 1994 Medical Doctorate (medical thesis, MD degree ["Dr.med."]; Mentor: Prof. H. Korr), RWTH Aachen University, School of Medicine, Aachen, Germany
- 2001 "Habilitation" (German professoral thesis, "Privatdozent" degree), RWTH Aachen University, School of Medicine, Aachen, Germany.

POSTDOCTORAL TRAINING:

- 1995 Post-doctoral researcher at Dept. of Anatomy, University of Frankfurt/Main, Germany
- 1996 - 1999 Post-doctoral researcher at Dept. of Anatomy, RWTH Aachen University, Aachen, Germany
- 2000 - 2002 Senior post-doctoral researcher at Dept. of Anatomy, RWTH Aachen University, Aachen, Germany

OTHER PROFESSIONAL APPOINTMENTS:

Elected positions in professional societies

- 1995 Anatomische Gesellschaft (Society of German Anatomists) (Germany)
- 2000 Society for Neuroscience (USA)

Appointed memberships to editorial boards of the following journals

Acta Neuropathologica (2006), Brain Research (2006), Autisme Research (2007), Frontiers in Neuroanatomy (2008)

PUBLICATIONS:

- Over 90 publications in international peer-reviewed journals



Gerald Zöch

Professor of Plastic Surgery, Vienna, Austria

Surgical Dept., SMZ-Ost Donauspital, Vienna, Austria

EDUCATION:

- 1969 - 1975 University of Vienna, medical school
- 1978 - 1984 University Clinic of Surgery, General Hospital Vienna, Head: Prof. A. Fritsch
- 1985 - 1992 University Clinic of Plastic Surgery, General Hospital Vienna, Head: Prof. H. Millesi

EMPLOYMENT HISTORY:

- Since 1992 Plastic Surgeon at the SMZ - Ost, Donauspital, Vienna, Austria

MEMBERSHIPS:

- Founder, President (2003 - 2007), General Secretary (since 2008) of the Austrian Wound healing Association

NOTES

"It takes high knowledge to do simple things."

Anne Robert Jacques Turgot (1727-1781)

Baron de l'Aulne, General Controller of Finance, France, 1774

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