the Grönemeyer Institute of MicroTherapy in Bochum is specialised in the outpatient and interdisciplinary treatment of acute and in particular of chronic pain in the back and spine. High-precision state-of-the-art micro-therapeutic instruments are applied as needed.

For gentle diagnostics, another focal area of our medical work, we deliberately prefer the use of radiation-free magnet resonance imaging, an examination technique producing "sectional images" of the human body. So we are able to precisely assess the organs, their functioning, as well as pathological changes.

In order to effectively use these possibilities of modern medicine, our interdisciplinary institute comprises the departments of cardiology, prevention and sports medicine, and a centre for prostate diagnostics. According to the latest knowledge, we combine the possibilities offered by high-tech medicine with the recollection of traditional curing processes as well as with physiotherapy and osteopathy.

Since the body, soul and mind form an entity necessitating an individual treatment, we have abandoned the selective examination of an individual organ in the favour of a holistic therapy. For instance, the majority of the cases of back pain are a result of physical malpositions, stress and other mental strain.

We generally follow the principle saying "micro is more" always looking for the gentlest therapeutic pathway appropriate for the respective complaints: for a therapy that means the lowest possible level of strain for the patient.

Please contact our hotline under the telephone number 0049 234 97800 if you want to learn more about the Grönemeyer Institute of MicroTherapy.

In a personal conversation you will be offered an individual and detailed consultation. We are looking forward to helping you by means of our diagnostics and treatments.

With kindest regards,
Yours, Prof. Dr Dietrich Grönemeyer
GENTLE DIAGNOSTICS AND MINIATURISED THERAPEUTIC INTERVENTIONS UNDER TOMOMGRAPHIC GUIDANCE.

In the Grönlmeyer Institute of Microtherapy in the Technology Centre Ruhr of the city of Bochum, headed by Prof. Dr. Dietrich H. W. Grönlmeyer, innovative, microtherapeutic, minimally invasive treatment methods are developed and applied.

By means of imaging techniques, micro-instruments for diagnostics and therapy are guided in the body with utmost precision and minimal strain for the tissue.

Medicamentous and operative microtherapy is applied in the fields of local tumour therapy, disc therapy and pain therapy, for the re-erection of fractured vertebrae, for the treatment of joints and for the therapy of vascular diseases.

In the field of diagnostics, microtherapy is applied for the gentle harvesting of biopct samples and the non-invasive representation of vascular calcifications. Extensive scientific research is done in the further development of microtherapy and in the field of biomagnetism.

Professor Dr. Dietrich Grönlmeyer, head of the Grönlmeyer Institute of MicroTherapy, is a member of the faculty of health at Witten/Herdecke University.

As a physician and as an author, in publications and in lectures, he takes a stand for a new perception of medicine in society and for an undogmatic interdisciplinary co-operation between the different disciplines ranging from high-technology to naturopathy for the patients’ benefit.
There are many patients suffering from acute or chronic pain. The problems may comprise back pain and pain in the whole musculoskeletal system, neuralgia, pain in the chest, head aches, facial pain, or tumour pain. In the back centre, a team of physicians from different specialties will establish your individual gentle and effective treatment concept tailor-made from the range between naturopathy and high-tech.

**PHYSICIANS OF DIFFERENT DISCIPLINES ESTABLISH YOUR INDIVIDUAL THERAPY PLAN.**

In the back centre of the Grönemeyer Institute, the main focus is placed on the individual patient with her or his individual needs, problems and personal history. In order to be in a position to quickly and efficiently treat diseases of the spine and joints, we use microtherapeutic methods and specific procedures of pain therapy.

**Interdisciplinary**

In an interdisciplinary team consisting of radiologists, pain therapists, orthopaedists, neurosurgeons, anaesthetists, neurologists, physiotherapists and osteopaths, the patient’s symptoms are analysed. Radiological diagnoses are established if necessary. In unison we establish an individual therapy plan for the patient which we explain and discuss in detail. In most cases, the diagnostics and the therapy can be initiated on the same day.

"Micro is more"

The treatment is accompanied by physiotherapeutic, orthopaedic, medicamentous and other procedures.

It is our aim to directly treat the origin of the pain using minimally invasive and micro-invasive measures. We act according to the principle “micro is more” with the therapeutic pathway being as gentle as possible and as invasive as necessary.

Since we offer our patients a holistic treatment, our microtherapeutic concept is composed of three pillars:

- advanced clinical and radiological diagnostics involving the expertise of specialists in pain therapy, orthopaedics, neurosurgery, neurology, sports medicine, anaesthesia, and radiology
- microtherapeutic procedures that vary according to the patient’s symptoms
- physiotherapy: patients learn how to help themselves

**BACK CENTRE: FAST AND EFFECTIVE SPINE AND JOINT TREATMENTS**

Professor Dr Dietrich Grönemeyer during a treatment
Microtherapy is a specific therapy form which principally is carried out under image-control. Modern imaging techniques such as computed tomography and magnetic resonance imaging facilitate the three-dimensional representation of structures of the body tissue: soft parts, vessels, bones.

Thus these machines are very effectively usable both in diagnostics and for therapeutic purposes. Under image-control, the precise and pinpoint placement of interventional instruments such as needles, cannulas, endoscopes into the various body areas are possible without risking the damage of vital organs, vessels, or nerves. Fluoroscopic X-ray units can be used as an additional visual control.

During your first visit, your diagnosis will be established in an extensive consultation on the basis of which your individual therapeutic concept will be developed. In most cases, diagnostics and therapies can be initiated on the same day.

**Fields of Treatment**
- back pain
- feeling of numbness, formication (itching feeling), paresis in the extremities
- vertigo, facial pain or ear noises with diseases of the cervical spine
- examination of inexplicit chest pain
- neuralgia
- treatment after disc surgeries
- slipped discs
- degeneration of the vertebral joints
- narrowing of the spinal canal (spinal canal stenosis)
- tumours/metastases in the spine
- osteoporotic vertebral body fractures
- inflammation and degeneration of the joints
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**MICROTHERAPY: HOLISTIC AND IMAGE-GUIDED THERAPY**

**THE PRINCIPLE OF MICROThERAPY**

**Medicamentous therapy**
Under tomographic image control, an analgesic is injected or applied via a catheter into the disc. Corticosteroids, a saline solution, or other anti-inflammatory substances are precisely applied either through the nerve exit foramen of the spine or through the spinal canal in order to contain swellings and to make inflammations abate.

The dispersion of the substances is controlled by the application of contrast agent. The treatments are almost painless. Jeopardised structures such as nerves, the spinal cord, or vessels are saved under highest safety aspects.

Up to 80 percent of those affected benefit from the treatment, especially patients suffering from chronic disc problems, but also patients whose discs have prolapsed only a couple of millimetres.

**Recommended for:**
Protrusion (bulging), scar tissue.

**Operative microtherapy**
If tissue is to be removed, a minimally invasive probe is inserted through which then – controlled by computed or magnet resonance tomography – micro-instruments are inserted.

Among those are, for instance, pliable fibre optic cables with a laser or thermal probes by which the aqueous substance of the disc is evaporated, but also small forceps, drills, or fraises. Via probes, high-frequency oscillations, heat, or high-proof alcohol are applied in order to effectively neutralise small aching nerves on the joint capsules of the spinal column, for example.

The procedure is also applicable for the high-risk area of the cervical spine and the thoracic spine. The treatment can be carried out under local anaesthesia.

**Recommended for:**
Slipped discs, pain of the small joints and the sacroiliac joint, tumour (pain), osteoporosis.
MRI, CT, ULTRASOUND, OR X-RAY – MODERN EXAMINATION METHODS MAKE VISIBLE BODY REGIONS AND VESSEL STRUCTURES.

Our range of examination techniques
By means of state-of-the-art diagnostics using sectional-imaging techniques, predominantly the musculoskeletal system (spine and joints), sporting injuries, the heart, and the prostate are examined.

We moreover offer examinations of the head, the chest, the abdomen, and the vessels. For this purpose we have three high-field magnetic resonance tomographs and six computed tomography scanners at our disposal.

Personal contact
We put special importance on a good contact of mutual trust with our patients. This is why we spend a lot of time on the detailed discussion of the findings of your examinations with you.

We quickly transfer all examination results to your referring physician so that no time is wasted and your treatment can soon be continued.

We also are in permanent contact with our colleagues from the other departments of the Grönemeyer Institute of MicroTherapy so that your therapy can promptly be initiated.

RADIOLOGY: WE PROVIDE VISTAS

Waiting area
Magnet resonance tomograph
Dr Marietta Garmer, head of department of radiology, during the interpretation of an examination
MRI: HIGHEST PRECISION WITHOUT RADIATION EXPOSURE

Magnetic resonance imaging (MRI) makes possible gentle and very precise diagnostics without X-rays. By MRI, soft tissue structures such as the brain, spinal cord, discs, muscles, ligaments, tendons and cartilage are excellently representable. Special software supports the analysis of complex examinations.

The institute is equipped with three modern high-field magnet resonance tomographs. One of them is a special tomograph of a semi-open construction with a wide and short tube in which patients generally do not feel constricted. Even highly claustrophobic patients or patients with physical impairments have the chance to experience a relaxed examination.

In some cases, the diagnostic examination is further enhanced by a well tolerated contrast medium that is injected into a vein or directly into the joint (arthrography). Aspirations of the joint cavities are carried out completely radiation-free under MRI control, too.

Range of MRI examinations
- spine
- brain, spinal cord
- joints of the musculoskeletal system (shoulder, elbow, hand, hip, knee, ankle, joint, foot)
- p. r. n. MR arthrography (contrast medium visualisation of a joint)
- mandibular joints
- soft tissue in the neck
- mammary gland (Mamma MRI)
- abdominal cavity (abdomen), in particular diagnostics of the abdominal organs (liver, spleen, pancreas, kidneys)
- representation of the biliary ducts (MRCP)
- cerebral vessels, carotid arteries, aorta, vessels in the pelvis and the legs, total body angiography

Special procedures
- multi-parametric MRI of the prostate including spectroscopy
- examination of the heart (cardiac MRI)
- examination of the large bowel (MR colonography)
- functional examination of the cervical spine (with forward and backward flexion)
- determination of the hepatic iron content (haemochromatosis)
- determination of the hepatic fat content (fatty liver, hepatic steatosis)

CT: COMPLEX STRUCTURES IN 3D WITHIN SECONDS

Computed tomography (CT) is an imaging technique using X-rays. Our modern scanners operate with very low dosages and thereby keep the radiation burden extremely low. We have six computer tomographs to carry out image guided treatments and examinations.

This very quick diagnostic technique is particularly convenient for patients suffering from pain which prevents them from lying still for a longer period of time. If there are counter-indications against a magnetic resonance imaging (MRI) examination – for instance because a patient has a cardiac pacemaker – a CT scan is an excellent alternative.

Computed tomography is very advantageous for imaging due to its excellent visualisation of bony structures and air-filled spaces such as the lungs. The multi-slice technique facilitates computer-aided three-dimensional reconstructions. So complex anatomic structures, for instance in the case of vascular alterations, are particularly well assessable. In comparison with conventional radiographs, computed tomography represents soft tissue definitely better.

Range of examinations by CT
- spine (cervical, thoracic, and lumbar spine)
- neurocranium (skull)
- osseous structures of the joints
- soft tissue of the neck
- thoracic cavity (chest/lungs)
- abdominal cavity (abdomen)
- representation of vessels (angiography)

Special procedures by CT
- detection of calcification of the coronary arteries
- representation of the coronary arteries (CT coronary angiography in the volume CT in co-operation with the Diagnostic Centre Ruhr)
- bone density measurement (osteodensitometry)
X-ray diagnostics still is one of the most frequently used imaging techniques. It is a quick and uncomplicated method of representing bony structures as well as the chest and abdomen, for instance. Due to technical developments of the past decades the radiation dosage has constantly been reduced.

The good old X-ray film is no longer able to match up with many of these technical requirements (e.g. the post-processing of images). We exclusively use a digital radiographic technique. Thus with a low radiation burden we acquire excellent images which we post-process using a special software.

The radiographs can be printed on films, sent within a few minutes to the referring physicians, and burnt to CD for the patients to take along for their further treatment. Thus they are always available and no precious time is wasted between diagnostics and therapy.

**Range of digital radiographic examination techniques**
- spine (cervical, thoracic, and lumbar spine)
  - including functional examinations
  - including the radiography of the whole spine (in the case of spinal curvature = scoliosis)
- bones and joints
- radiography of the mechanical axis
- paranasal sinuses
- chest/lungs
- abdominal cavity including contrast medium examination of the kidneys and of the urinary bladder (urography)

After the examination, we take our time and explain the findings on the monitor to you. Normally, you are given a short written report for your attending physician.

Some cases necessitate extra efforts (complex findings, comparison with previous diagnostics, additional computer-assisted evaluation) which take up some time; the detailed report will be forwarded directly to your attending physician. In any case, you will be given a CD with your diagnostic image data on the day of your examination.

**DIGITAL RADIOGRAPHY: EXCELLENT VISTA**

**FREQUENTLY ASKED QUESTIONS ON DIAGNOSTIC RADIOLOGY**

**What will I have to expect when being examined in a magnetic resonance tomograph (MRT)?**

The examination will last between 20 to 30 minutes, complex examinations will take longer. We will accompany you from the waiting area to the tomograph. Our experienced staff will be available for queries and they will tell you what you will have to take off prior to entering the examination room (any metal objects, watch, jewellery, wallet, mobile phone, etc).

Then you’ll enter the actual examination room and will be positioned on the table according to the planned examination. A part of the receiving coils that are important for the examination are integrated inside the examination table, some will be placed and fixed on the body region that is to be examined. They are light and not constricting.

It is very important that you keep lying as still as possible during the examination. This is why we place special importance to your being comfortably positioned. Please let us know if there is something in need of improvement.

**Do I have to take certain preparatory measures prior to an MRI examination?**

Before the majority of the examinations, you can eat and drink normally. Only some specific examinations such as the cardiac MRI and the MRI colonoscopy necessitate a particular preparation about which we will inform you when making the appointment. You will be provided with detailed information on the preliminaries.

**Why is magnetic resonance imaging (MRI) so noisy?**

The knocking noises are caused by mechanic vibrations during the operation of the so-called gradients. You will be equipped with a hearing protection.

For further information, please contact our service telephone number: +49 234 9780 0
CARDIOLOGY: EARLY DETECTION OF CARDIO-VASCULAR DISEASES

MULTIDISCIPLINARY PREVENTION AND TREATMENT CONCEPTS FOR THE HEART AND THE VESSELS.

The main focus of our work in the department of cardio-vascular medicine of the Grönenmeyer Institute is placed on prevention, diagnostics, and follow-ups of cardio-vascular diseases. We provide differentiated data for the further therapy using all modern non-invasive diagnostic techniques of cardiology which are:

- ECG (electrocardiogram) at rest, under stress, and long-term ECG
- long-term blood pressure measurement
- echocardiography (ultrasonic examination of the heart)
- Duplex-sonography of the arterial and venous vessels
- lung function test
- analysis of laboratory parameters (urine, blood, etc.)
- analysis of the cardio-vascular risk factors
- sleep apnoea screening
- cardiac magnetic resonance imaging (MRI)
- cardiac computed tomography (CT)

If an in-patient stay or an out-patient examination in a specialised clinic turns out to be necessary, we won’t let you alone: we will organise for you a prompt appointment in an appropriate clinic where the best further diagnostics and therapy are provided.

We personally know the physicians who take over your further treatment so that your optimum care is guaranteed. Redundant examinations are thus avoided, and in most cases the in-patient stay is definitely shortened.

In case invasive procedures such as a cardiac catheterisation are necessary, we absolutely have to rely on you being given the optimum in-patient care. Our longstanding co-operation with Professor Hailer in the Catholic Clinic Essen, Philippusstift, is rewarded with a maximum level of patients' satisfaction. During the in-patient stay, we are in close contact with the treating specialists.

Within the institute, our department is closely interconnected with the other disciplines thereby facilitating extensive interdisciplinary diagnostics.

By means of our services we extend and complement the diagnostic range of independent cardiologists, internists, and general practitioners.

For further information, please contact our service telephone number: +49 234 9780 0
Risk assessment of a coronary heart disease

By cardiac computed tomography (CT), earliest calcifications in the coronary arteries are made visible and the future cardio-vascular risk is determinable thereby exceeding conventional assessment methods. Thus it is possible to initiate appropriate therapeutic measures as prompt as possible and so to prevent an impending myocardial infarction.

Volume-Computed Tomography instead of Spiral-Computed Tomography

The 320-detector row volume computer tomograph used in co-operation with Diagnostic Centre Ruhr makes possible the examination of the complete heart in only one rotation (0.3 seconds) as opposed to the so far common technique of the helical computed tomography.

Volume computed tomography provides a high image quality with a low radiation load, and in many cases, cardiac catheterisations become redundant. The ultra-fast volume CT also makes possible the representation of the beating heart respectively the cardiac examination of a patient with a relatively high resting heart rate.

Detailed diagnosis also for patients with a cardiac pacemaker

This method is also appropriate in cases where a magnetic resonance imaging (MRI) examination is counter-indicated – for instance because of a cardiac pacemaker.

Modern imaging techniques have considerably extended and improved the diagnostic capacities in cardiology.

Magnetic resonance imaging (MRI) belongs to the most advanced non-invasive techniques.

It is radiation-free and gentle. By means of an MRI, many invasive cardiac catheterisations can be avoided.

By means of high-resolution film sequences congenital or acquired heart defects, pathologic alterations of the heart valves and diseases of the heart muscle – as for instance myocarditis, an inflammation of the heart muscle – are detectable.

Moreover, the Adenosine-Stress-MRI makes possible the exact assessment of the perfusion (blood flow) of the heart and thus the function of the coronary arteries. For this purpose, a brief stress situation for the heart is induced by a well tolerated medicament.

Such a diagnostic method is useful in the case of a presumed narrowing of the coronary arteries (coronary heart disease) or for the further assessment subsequently to a bypass operation or a balloon dilatation/stent implantation.

As a complement to the representation of the coronary arteries by CT or catheter angiography, the cardiac MRI provides important indications as to whether a narrowed vessel requires treatment. Previous, possibly unknown myocardial infarctions are precisely representable.
Physicians of different specialities establish your personal training programme for the improvement of your fitness – also in the case of injured joints, tendons, ligaments, or muscles.

Doing sports is supposed to benefit your health. Therefore both professional athletes and beginners need a programme which is adjusted to their individual aims and the level of their physical fitness. This necessitates differentiated diagnostics provided by physicians experienced in sports.

Specific types of sport necessitate specific treatments
Doing sports means an extreme strain on joints, tendons, ligaments, and muscles. Many types of sport bear the risk of typical injuries and effects of wear. In such cases, treatment concepts that are adjusted to the specific type of sport can nevertheless continuously optimise the sporting prowess.

Also suitable for high-risk patients
Persons with health risks or previous diseases often are recommended by their physicians to avoid physical exercise or specific types of sport. But just these groups of patients have the chance to significantly improve the quality of their lives by physical exercise on a regular basis. Many of them need, however, a particularly intensive assistance and medical control.

Sports medicine in the Grönemeyer Institute is provided by physicians of different disciplines – among them cardiologists and orthopaedists – carrying out innovative diagnostics and therapies.

Our range of treatments
- Sports orthopaedic/sports medical care for sportspersons and competitive athletes
- consultation regarding the doping control system
- treatment of structural disorders of the musculoskeletal system
- microtherapeutic reduction of irritation in the case of advanced joint arthrosis
- minimally invasive pain therapy of degenerative (due to wear and tear) spine damages
- microtherapeutic therapy of nerve-compression syndromes
- examination by an orthopaedic technician
- pedobarography (gait analysis)
- provision with customised (sensory-motor) insoles
- radial shock wave therapy

For further information, please contact our service telephone number: +49 234 9780 0
Performance diagnostics provide information on a person’s physical fitness and starting points for a targeted workout. This is important for sportspersons of every performance level and for those wanting to take up a sporting activity.

Performance diagnostics with an ensuing workout guidance is useful not only for ambitioned (competitive) sportspersons and top athletes; for patients with previous diseases for whom a targeted sporting activity is recommendable a precise analysis will be helpful. Such patients for instance are persons affected by diabetes mellitus or arterial hypertension.

**THIS IS OUR OFFER FOR YOU:**

1. **detailed check of risks**
   By staged cardiologic diagnostics, the individual risk is determined.

2. **precise performance analysis – spiroergometry**
   Spiroergometry presently is the best method of a differentiated assessment of the physical capacity. Under controlled, gradually increased strain on the bicycle ergometer, the heart rate, blood pressure, breath gases and lactate values are measured. The energy metabolism and the exact caloric consumption (burning of fat and carbohydrates) are measured so that precise individual workout levels are determinable.
   The parallel analysis of the measurements can detect factors that restrict the performance. If the performance stagnates or decreases, workout mistakes can be recognised and cut out.

3. **individual sports medical consultation**
   Having assessed the examinations, we establish an effective workout plan for you that is precisely adjusted to your personal capacity, your aims and your individual needs.
   Physical exercise is the only functioning anti-aging means. Utilise it – together with us!

**PERFORMANCE DIAGNOSTICS: FROM THE FIRST CHECKUP TO AN INDIVIDUAL WORKOUT PROGRAMME**

**SAFETY FOR ACTIVE SPORTS PERSONS AND BEGINNERS**

"**CAN I DO SPORTS WITHOUT TAKING A RISK?**"

"**DO I HAVE TO BE CAREFUL BECAUSE OF MY CARDIO-VASCULAR SYSTEM?**"

"**WHAT IS MY OPTIMUM WORKOUT PROGRAMME?**"

Both active sportspersons and beginners ask themselves these and further questions. We offer an extensive fitness check by which potential risk factors are detected.

**Risk check and regular examinations**
We recommend both sporting persons and untrained ones who want to take up doing sports to have this sports check done approximately when they are over 35. Competitive athletes should start earlier having themselves checked on a regular basis.

In a staged cardiologic diagnosis, the individual risk is determined. Subsequently, we can initiate measures to minimise the risk. The check is composed of a physical examination, the analysis of a blood sample, an ECG, and echocardiography (cardiac ultrasound).

In the sports check, we take into account the following risk factors as on physical exertion they may entail health hazards (examples):

- undetected high blood pressure
- cardiac arrhythmia occurring on exertion
- undetected congenital heart defects
- calcifications in the coronary arteries
- in particular, insufficiency of the cardiac circulation

If all of these results are normal, we give you the go-ahead for your workout programme. If risks are diagnosed with a sportsperson, in many cases a workout is nevertheless possible under regular medical control or after a prior treatment.

**Training plan as required**
If requested, we develop together with you a training plan that is optimally adjusted to your needs and capacity. In many cases this is facilitated by a spiroergometry.
Chronic pain reduces the quality of life and spoils the joy of living. Heel pain (calcaneodynia), for instance, can make every step torturous. For persons with a tennis elbow many sporting activities are impossible, and their mobility is restricted.

Many of these and other types of pain in the musculoskeletal system have their origin in diseases of the tendinous attachments or hardened muscular segments. A quick, gentle and non-invasive treatment method consists in the Extracorporeal Shock Wave Therapy, short ESWT.

This is how ESWT works
Extracorporeal shock waves are sound waves of a particularly high energy. They are produced by a medical high-tech device and then transferred to the regions of the body in need of treatment. The patient feels no or just a little local pain which quickly disappears in the course of the treatment. A slight reddening of the skin or irritation of soft tissue may occur.

Extracorporeal shock waves are transferred via the skin into the tissue. The shock waves extend in the body radially, that means they start in one spot and fan like the light cone of a torch. In the aching body region they activate the endogenic self-healing forces, the blood circulation and the regional metabolic activity. These shock waves accelerate the healing process.

ESWT: possible applications
In urology, ESWT is applied among others for the non-surgical crushing of renal or urinary calculi. Moreover, the procedure is used in orthopaedics and sports medicine in order to alleviate or cure diseases in muscles, tendons, joints and bones.

Among others, ESWT is applicable for the following symptoms:

- painful irritations of the tendons and muscular insertions caused by too much or imbalanced stress and degeneration, such as - tennis and golfer’s elbow - chronic shoulder pain - heel pain/calcaneal spur - patellar apex syndrome - medial tibial stress syndrome - tendonitis at the iliac crest - chronic Achilles tendon problems
- acute and chronic pain due to hardened muscle segments, for instance in the back, shoulders, neck
- general pain therapy by targeted treatment of acupuncture points (trigger points)

Besides the symptoms mentioned above there are many others for which the application of ESWT can be useful.

We will gladly discuss with you the possibilities of treating your problems by ESWT.
PREVENTION

PREVENTING DISEASES OF THE CARDIO-VASCULAR SYSTEM, SPINE, JOINTS AS WELL AS COLON, LUNG AND PROSTATE CANCER BY MEANS OF MODERN EXAMINATION METHODS.

Health is the key prerequisite of our quality of life and commitment. We consider it the highest good that needs to be preserved. This is why it is our aim to early detect your individual health hazards or already existing diseases. Thus we can take prompt counter measures in order to prevent damage and to preserve or even improve your quality of life.

Main areas of preventive health care
Cardio-vascular and metabolic diseases as well as cancer and diseases of the musculo-skeletal system constitute main areas of our preventive health care. State-of-the-art and gentle high-tech procedures such as magnetic resonance imaging and ultra-fast computed tomography support diagnostics.

Your individual examination programme
After a detailed basic examination, we determine your individual risk profile. Subsequently, we will guide you through your individual examination programme. If further examinations are necessary, an interdisciplinary team of physicians from different medical fields is available for you.

Offer for companies
We offer the extensive preventive programme also for businesses with workplace health promotion.

Early detection of cancer pre-stages
By means of modern magnetic resonance imaging (alternatively, with patients having a cardiac pacemaker, by means of computed tomography), the so-called virtual colonoscopy facilitates the production of tomograms of the abdomen that with the aid of a computer are processed to two-dimensional and three-dimensional representations of the colon. Thus, similar to a conventional endoscopy, a flight through the colon is simulated.

Both the inside and the outside of the intestinal wall are thereby viewable. Intestinal polyps sized at least ca. 5 mm that are regarded as a pre-stage of cancer are thus early detectable. Moreover, the other abdominal organs and the big arterial vessels in the abdomen are assessed by this examination.

Excellent images due to a proper preparation
For an optimal assessment, the colon needs to be emptied. So you will support the examination by taking preliminary measures which we will gladly explain to you.

VIRTUAL FLIGHT THROUGH THE COLON
WıTHOUT ENDOCOSPIC ENTEROSCOPY

CT IN LOW-DOSE TECHNIQUE:
MORE SAFETY FOR SMOKERS

The early detection of lung cancer in heavy or ex-smokers is possible by an annual computed tomography.

An extensive trial in the USA has verified the benefit of such an annual examination (National Lung Screening Trial of the National Cancer Institute of the USA).

In contrast to a standard computed tomography of the chest, a special low-dose imaging technique makes possible the representation of the lung tissue without contrast agent.

In Germany, prostate cancer has become the most common cancer disease affecting men. If the carcinoma is detected in an early stage, there are good treatment chances and thus chances of recovery. The high-resolution magnetic resonance tomography (MRT) presently is considered the best imaging technique for many organs when high soft-tissue contrasts are required – and this without any radiation burden by X-rays.

In particular, tissue alterations in the prostate are distinctly better representable by MRI than by ultrasound. Moreover, in the Gröneweyer Institute of Microtherapy, the common MRI examination is combined with additional functional examinations so that presumed tumour areas are better identifiable.

PROSTATE MRI – HELP IN UNCLEAR CASES

Virtual colonoscopy
CT in low-dose technique (lungs)
MRI of the prostate

FOR FURTHER INFORMATION, PLEASE CONTACT OUR SERVICE TELEPHONE NUMBER: +49 234 9780 0
Degenerative diseases of the spine and joints (“wear and tear”) frequently significantly restrict everyday activities. At the same time, physical exercise on a regular basis helps to prevent cardio-vascular diseases. We support you in taking up or resuming a regular workout in everyday life.

Our preventive range
- prevention of osteoporosis (bone thinning)
- orthopaedic assistance
- physiotherapy
- osteopathy
- treatment of structural dysfunctions of the musculoskeletal system
- microtherapeutic abirritation in the case of advanced joint artherosis
- minimally invasive pain therapy of degenerative spine damages (caused by wear and tear)
- microtherapeutic therapy of nerve-compression syndromes
- orthopaedic-technical provision
- pedobarography (gait analysis)
- provision with insoles
- radial shock wave therapy

The acute myocardial infarction often is the first symptom of a coronary heart disease. The evaluation of the myocardial infarction risk necessitates the determination of general risk factors which are found out in a detailed anamnesis conversation with you.

Cardiac MRI
In case you have a relevant medical history, complaints or conspicuous findings, a cardiac MRI examination can be carried out lasting approximately 1 hour.

Cardiac CT
In the case of characteristic risk factors and inexplicit chest pain, a cardiac CT is recommendable which takes ca. 20 minutes.

Fields of treatment of cardio-vascular diagnostics/metabolic disorders:
- coronary heart disease
- myocardial infarction and apoplectic stroke risk
- high blood pressure
- arteriosclerosis
- diabetes mellitus
- fat metabolism

YOUR PREVENTIVE PROGRAMME IS ORGANISED AS FOLLOWS:

1. Detailed conversation
You will have a detailed conversation with a cardiologist (anamnesis) on previous or present diseases and complaints. Your individual risk profile is determined.

2. Physical examination
A thorough and extensive physical examination follows.

3. Laboratory analysis
Many diseases become manifest in an early stage by altered blood and urine parameters. Besides a full blood count, other important parameters of the individual organ systems (e.g. kidneys and liver), of the blood coagulation and the thyroidal metabolism are determined.

4. ECG at rest and during exercise
The recording of the ECG (electrocardiogram) at rest provides important information on possible disturbances of the cardiac function (e.g. cardiac arrhythmia, previous myocardial infarction). In an ECG under stress, a potential coronary insufficiency (disturbed blood flow) is revealed. Furthermore, the blood pressure situation under stress can be analysed, and information on your physical fitness is provided.

5. Lung function test
The lung function test provides indications on diseases of the air passages (e.g. chronic bronchitis).

6. Ultrasound examination
The ultrasonic representation of the carotid arteries provides information on potential arteriosclerosis and on a potential apoplectic stroke risk. As the circumstances require, other vessel regions (e.g. arteries and veins in the legs) are examined, too. The ultrasonography of the thyroid, the heart and the abdominal organs (e.g. liver) facilitates the assessment of the structure and partly also function of these organs.

7. Concluding conversation with the physician
Finally, the medical specialist explains all findings of the examinations in a detailed concluding conversation with you. If further examinations are necessary, they can immediately be agreed upon or initiated. These normally are further examinations by means of CT or MRI or a further treatment by our interdisciplinary team of physicians.
MRI SUPPORTS DIAGNOSTICS OF PROSTATIC ALTERATIONS

The healing chances for patients with prostatic cancer crucially depend on the stage in which the disease is diagnosed.

More than ten years ago, prostatic cancer has superceded lung cancer as the most frequent malign disease in men. Its prevalence is still increasing. The earlier the diagnosis is made, the better the prognosis will be.

Help in unclear cases
Your general practitioner or urologist is in charge of your regular preventive examinations. S/he palpates the prostate via the rectum; a determination of the prostate specific antigen (PSA) in a blood sample and a sonography – as the circumstances require also via the rectum (transrectal ultrasound, TRUS) – are useful.

Your attending physician will refer you to our institute if certain suspicious facts are manifest or s/he already has diagnosed a disease.

By means of modern imaging technology we provide referring physicians with exact data for the further observation and therapy.

In suspicious cases the harvesting of a tissue sample (biopsy) is necessary. If a tumour is detected, the exact determination of its extension is essential for the further treatment.

Why an MRI of the prostate?
Magnetic resonance imaging (MRI) is the most precise imaging procedure for prostatic diagnostics without radiation exposure. We carry out multi-parametric MRI examinations as they provide additional information on the condition of the tissue. Spectroscopies, a special diagnostic procedure, belong to these examinations.

Thus the differentiation of benign from malign findings significantly is improved by MRI as opposed to conventional procedures. The accuracy of tissue sample harvesting (biopsy) is higher under MRI control.

When is an MRI of the prostate useful?
In the following cases, MRI diagnostics of the prostate may be recommendable for you:
- in the case of an increased/marginal PSA level and negative/unclear palpatory findings
- in the case of a bioptically verified carcinoma for the determination of the tumour stage
- for the differentiation of benign from malign findings
- for the monitoring of therapeutic procedures (hormonal therapy, thermo-ablative interventions)
- when in the biopsy controlled by ultrasound no tumour was detected but a tumour still is suspected.

If such an examination is applicable for your, we will readily offer you an appointment – also on very short notice. Together with the co-operating urologists we will provide you with all possibilities of modern prostate diagnostics.

For further information, please contact our service telephone number: +49 234 9780 0
### Glossary

#### A-C

**Acupuncture**
- Treatment method from traditional Chinese medicine (TCM), by inserting needles into the trigger points (nerve centers) that are connected via conduction pathways; energy blockages causing disturbances in the organ systems are resolved.

**Aneurysm**
- Swelling of a blood vessel.

**Aneurysm**
- Stenocardia; chest tightness caused by coronary heart disease.

**Angiography**
- Imaging technique for the representation of blood vessels.

**Angina pectoris**
- Tenocardia; chest tightness caused by coronary heart disease.

**Arthritis**
- Inflammation; arthritis.

**Arthrosis**
- Degeneration of a joint.

**Articulation**
- Joint.

**Atrio
dysplasia**
- Vascular calcification.

**Bechterew's disease/arthritis**
- Rheumatoid disease which may lead to the total stiffening of the backbone.

**Bradycardia**
- Slow heart beating below 50 beats per minute.

**Bypass**
- "Re-routing"; via a substitute vessel graft blood is diverted around a vessel constriction to the heart musculature.

**Carotid artery**
- Brain-feeding artery in the neck area.

**Cervical**
- Concerning the neck.

**Chiropractic**
- Manual treatment method treating malpositions and blockades of joints by means of specific manipulating techniques.

**Chondrosis**
- Degeneration of the cartilage.

**Compartment**
- Circumscribed area.

**Contra-indication**
- Condition prohibiting a measure.

**Coronary heart disease**
- Narrowing of the blood vessels feeding the heart muscle.

**CT**
- Computed tomography; computer-controlled X-ray unit producing high-contrast cross-sectional images of the examined body region.

**Cyanosis/cyanopathy**
- Blue colour of the peripheral skin and mucous membranes, symptom of lack of oxygen in the blood.

#### D-F

**Decompression**
- Pressure relief.

**Degeneration**
- Widening of a vessel by means of a balloon which will be "pumped up" with fluid.

**Dilatation**
- Inflammation of a disc.

**Discitis**
- Representation of the inside of a disc by means of X-ray contrast medium.

**Discography**
- Fine exterior cerebral membrane covering the spinal cord.

**Echocardiography**
- Not (!) ECG, but ultrasound of the heart for functional check.

**Electrocardiogram**
- ECG, measurement of the electric signals of the heart.

**Endocarditis**
- Inflammation of the membrane lining the heart.

**Endoscopy**
- Diagnostic examination with tubular optic instruments often combined with operative interventions with small instruments.

**Epidual**
- Mostly the most effective method of applying medicaments into the area of a prolapse of an intervertebral disc (slipped disc).

**Facet joint**
- Articulation between the superior and the inferior articular processes of the spine.

**Femur**
- Thigh bone.

**Foramen**
- Whole, canal.

**Facet joint arthrosis**
- Changes due to degeneration of facet joints (zygapophyseal joints).

**Fusion**
- Surgical operation to join two vertebrae together to make the spine more rigid.

**Haemarthrosis**
- Accumulation of blood in a joint.

**Humerus**
- Bone of the upper arm.

**Hyperdense**
- Above-normally dense.

**Hyperlordosis**
- Hollow back, excessive forward curvature of the lower part of the spine.

**Hypertension/hypertonia**
- High blood pressure.

**Ischaemia**
- Reduced blood flow, lack of blood.

**Ischialgia**
- Sciatica, pain along the course of the sciatic nerve.

**Kyphosis**
- Excessive backward curvature of the upper part of the spine.

**Ligament**
- Band of fibrous tissue connecting the bones at a joint.

**Local anaesthesia**
- Anaesthesia of a certain body area; also applicable for pain therapy.

**Lumbago**
- Acute low back pain.

**Lumbalgie**
- Lumbar pain.

**Lumbalgie**
- Referring to the lower part of the back.

**Medial**
- Towards the central midline of the body or to the centre of an organ.

**Meniscectomy**
- Surgical removal of a meniscus from the knee.

**Meniscus**
- Semilunar cartilage, one of two pads of cartilage (lateral meniscus and medial meniscus) between the femur (thigh bone) and tibia (shin bone) in a knee joint.
GLOSSARY

meniscopathy  disease of the meniscus
microtherapy  treatment with miniaturised instruments under imaging control
MRI  magnetic resonance imaging; precise imaging diagnostic procedure without radiation exposure making visible the structures of the organs and pathological changes in the body by means of a magnetic field
muscle relaxant  drugs relaxing the muscles and having an analgesic effect
myelopathy  disorder of the spinal cord
myocarditis  inflammation of the heart muscle
myogelosis  intramuscular clotting or muscle necrosis
nucleoplasty  treatment of the disc by means of a thermal probe and heat
oedema  accumulation of fluid
os ilium  top part of the hip bone
ossicle  bonelet, small bone
osteochondrosis  degenerative cartilage-bone-alterations of the joints; reduced distance between two vertebral bodies
osteoporosis  metabolic disorder causing the reduction of bone tissue
osteosynthesis  operative treatment of a bone fracture with fixation of the bone fracture fragments
osteochondrosis  degenerative cartilage-bone-alterations of the joints; reduced distance between two vertebral bodies
osteosynthesis  operative treatment of a bone fracture with fixation of the bone fracture fragments
patella  knee cap
pericarditis  inflammation of the pericardium (heart sac, membrane which surrounds and supports the heart)
peridural/ epidural catheter prolapse  catheter micro-operatively inserted into the spinal canal with a limited duration slipped disc with the outer fibre ring of the disc having cracked and the soft interior mass having leaked
protrusion  bulging
PRT  periradicular therapy; infiltration of a nerve/a nerve root (application of medicaments under CT or MRI control)
pulmonary radiology  referring to the lungs
radiography  medical specialty: use of ionising radiation and nuclear-physical procedures to diagnose disorders
radius  spoke bone (the shorter and outer of the 2 bones in the forearm between the elbow and the wrist)
retropatellar  behind the kneecap
rupture  tear
sacroiliac joint  joint linking the ilium (top part of the hip bone) and the sacrum (flat triangular bone between the lumbar vertebrae and the coccyx with which it articulates, formed of 5 sacral vertebrae fused together)
sacro- sacrum (flat triangular bone between the lumbar vertebrae and the coccyx with which it articulates, formed of 5 sacral vertebrae fused together)
scoliosta  scoliosis
sonography  ultrasonic examination
spondylarthritis  inflammation of the vertebral joints
spondylolysis  fissure formation of the vertebral arch; dissolution of the cohesion of two vertebrae
spondylosis  deformation of the vertebral body, stiffness in the spine and degenerative changes in the intervertebral discs
stenosis  narrowing (e. g. in the spinal canal)
stent  fine grid-like metal mesh implanted into a vessel like a tunnel duct
sympathicolysis  micro-invasive intervention for the neutralisation of a nerve fibre
T-Z  traditional Chinese medicine
tachycardia  racing heart/rapid heart beat, enduringly more than 100 beats per minute
TCM  concerning the thorax/chest
thoracic  chest/rib cage
thorax  chest/rib cage
thrombosis  occlusion of a vessel, in most cases of a vein due to a blood clot
thorax  chest/rib cage
tibia  shin bone
TKF  German "Thermokoagulation der Facettengelenke", thermal coagulation of the facet joints; obliteration of a nerve by means of radio frequency current
transversocostal joint  one of 24 ring-shaped bones which link together to form the backbone, vertebral body
vertebra  small joint articulating the vertebral bodies of the thoracic spine and the ribs and the longer and inner of the 2 bones in the forearm between the elbow and the wrist
vertebral artery  artery in the cervical spine
vertebroplasty  stabilisation of a fractured vertebra/of a vertebra affected by a tumour
X-radiation  short-wave-length, electromagnetic radiation used for the fluoroscopy of the body
HOW TO FIND US

By car
The easiest way to “Ruhr-Universität Bochum” is via motorway junction “Bochum-Witten” (A40/A43), turn southward (A43 direction Wuppertal), leave A43 at the exit “Bochum-Querenburg/Universität”. On “Universitätsstraße”, follow the road signs “Technologie Zentrum Ruhr (TZR)” leading you direction “Universität/Zentrum” until exit “Uni Mitte/Technologiezentrum” (ca. 2 km). Follow the left lane of the exit (NOT: Uni-Center which is a shopping centre), pass the underbridge, stay on the right lane and after it has gone “uphill again” turn RIGHT following the road signs “Technologie Zentrum” or “Grönemeyer Institut”. After ca. 200 m, the “Technologie Zentrum” is on the left-hand side. There are parking spaces for you.

Enter in the navigation system
Bochum: Josef-Hermann-Dufhues-Platz

By public transport
You will reach us by U-Bahn-Line U35 from Bochum Hauptbahnhof (main station) destination Hustadt. Get off at the station Ruhr-Universität.