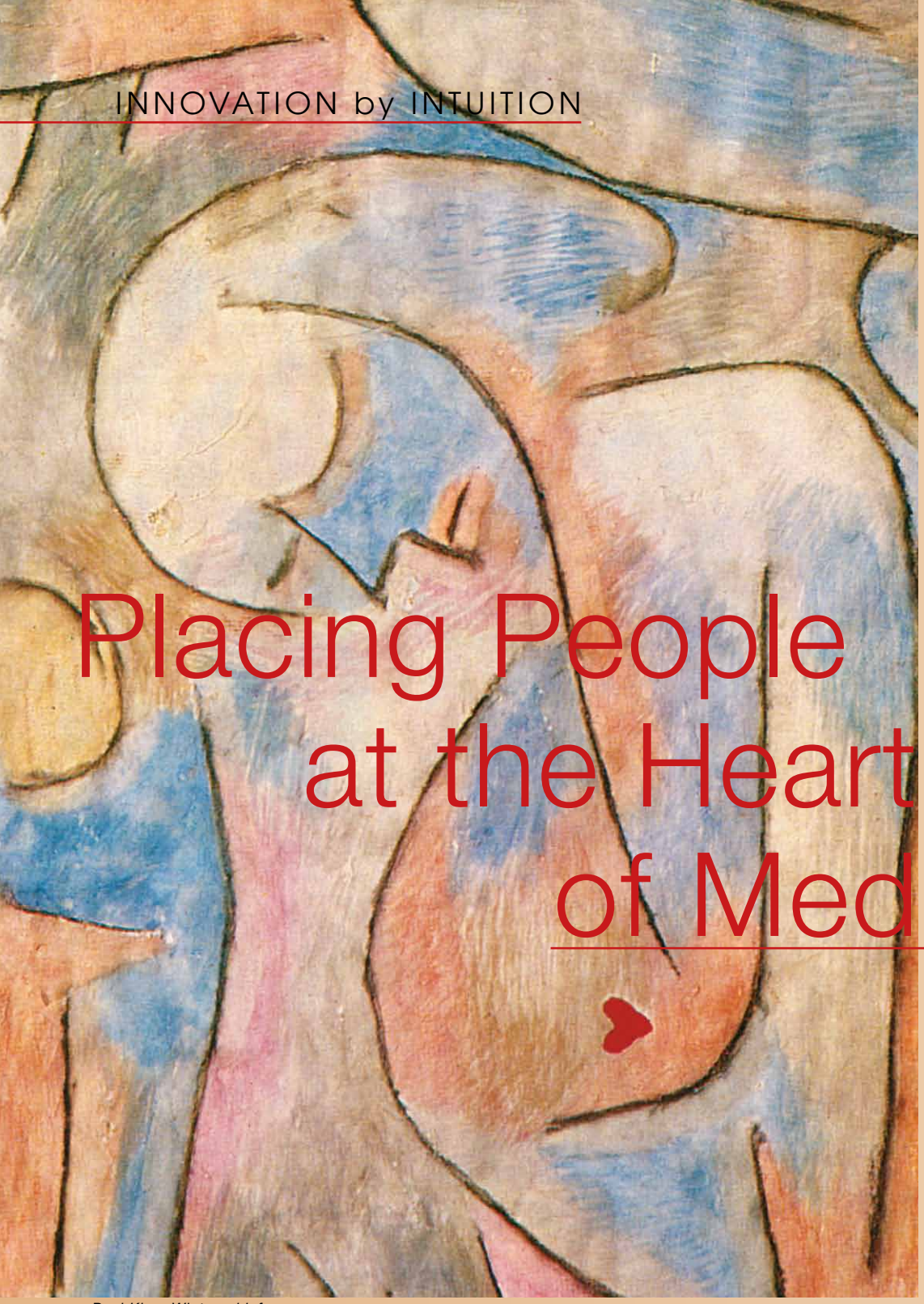
INNOVATION by INTUITION

HUMAN RESEARCH



Paul Klee, Winterschlaf

Placing People at the Heart of Medicine

Institute of Health Technology and Prevention Research

Our approach to the human body as a dynamic system opens up exciting new possibilities for the medicine of the future. Non-Invasive diagnostics focuses on the body's biological rhythms and their role in the human organism. This has allowed us to develop painless alternatives to conventional diagnostic procedures and increase prospects for prevention and earlier treatment. Through our work we support the implementation of effective disease prevention programmes in the workplace.

HUMAN RESEARCH
Institute of Health Technology and Prevention Research
Ao. Univ.-Prof. Dr. Maximilian Moser
Franz-Pichler-Straße 30, A-8160 Weiz
Tel.: +43 3172 44111-0 • Fax: +43 3172 44111-11
office@humanresearch.at
www.humanresearch.at

Alexej von Jawlensky

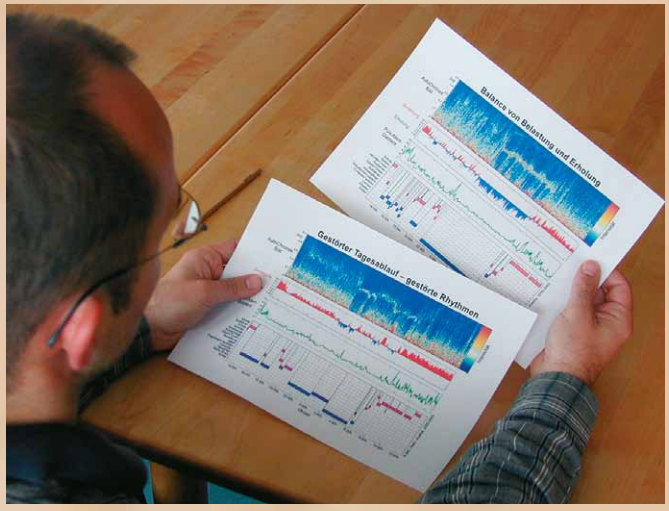
Translating laboratory research into diagnostic practice

Recent research in chronobiology and chronomedicine has highlighted the complex nature of the body's biological rhythms. The analysis of these rhythms allows us to assess the physical condition of the body. At the **Institute of Health Technology and Prevention Research** we have developed a range of new techniques and devices that allow us to transfer the research results to medical applications.

Our methods

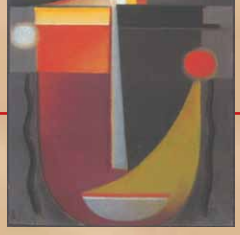
Non-invasive diagnostics allows us to monitor key medical parameters without invasive procedures. We are able to obtain detailed information about a person's state of health and the body's ability to regulate physical functions – all without causing pain or stress for the patient.

We have been developing devices and methods to measure a wide range of psycho-physiological categories from the skin surface or entirely without touching the person's body. These include the following:

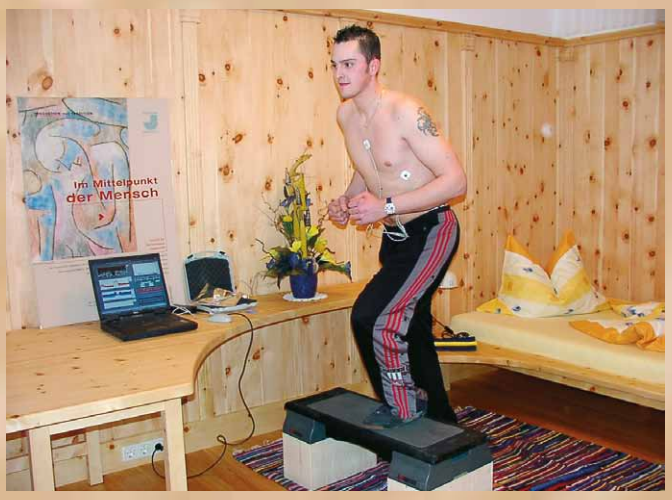


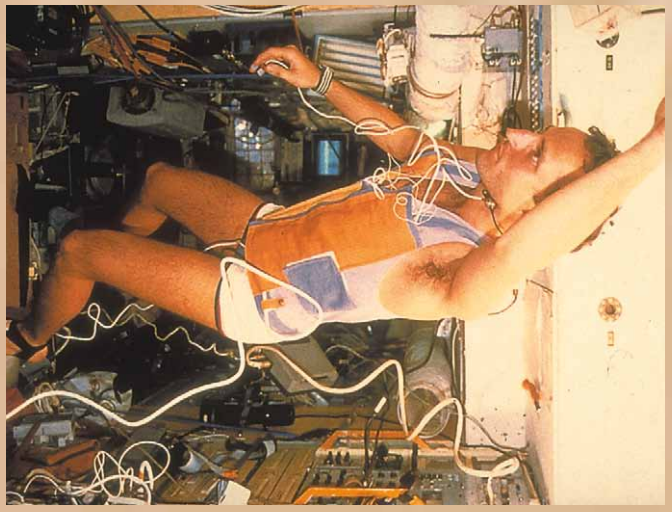
- Heart rate and heart rate variability
- Pulse wave velocity
- Pulse forms
- Blood pressure
- Breathing patterns
- Ballistocardiograms (diagrams showing the mechanical force of cardiac contractions)
- Interactions between body rhythms
- Pupillometry
- Flicker fusion frequency
- Stress build-up and recovery





Our research focus





We specialise in:

- Basic research and the creation of models
- Development of new, non-invasive medical measuring instruments
- Measurement and assessment of psycho-physiological parameters
- Development of procedures to measure autonomous physical functions of the body
- Evaluation of existing measuring systems
- Organisation of clinical studies
- Measurement of stress build-up and recovery rates

Applications

- Cardiology
- Psychiatry
- Sleep research
- Occupational medicine
- Health care and disease prevention in and out of the work place
- Evaluation of therapies
- In-home monitoring of patients
- Sports medicine
- Rehabilitation medicine etc.

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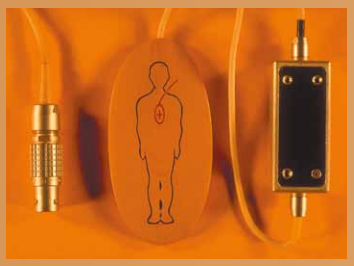
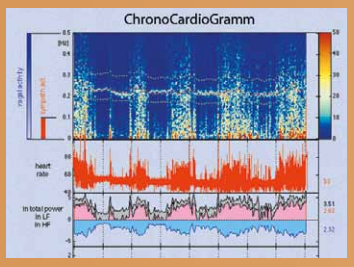
Some of our key projects



Development of measurement techniques and devices

- Measurement devices for space medical applications (Mir space station)
- Heart rhythm monitor
- Non-invasive measurement of circulation and breathing patterns
- Monitor for assessing the coherence of body rhythms
- The Nasymmetre,
  a device to quickly determine brain hemisphere dominance
- Measurement devices for ballistocardiography
- Devices for measuring the pulse rate,
  pulse recording devices, pressure amplifiers



Experimental studies

- Measurement of stress levels in different occupational sectors
  (lorry drivers, forestry and construction workers,
  health care staff and teachers)
- Monitoring of vegetative functions in psychiatric patients
- Chronobiological assessment of rehabilitation treatments
- Evaluation of industrial health promotion programmes
- Assessment of the impact of environmental factors
- Development of material properties for ergonomic equipment
- Stress recovery research

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