

Differentiation Teams: Projects

Through the (research) projects of the differentiation teams we enrich the FPH curriculum, strengthen our relations with the field and contribute to the development of our expertise.

Curious about what's going on in the differentiation teams, or are you looking for specific expertise or projects to integrate with your curriculum? Then this is a must-read for you!

The differentiation teams

- **Technology to Enable People in the Context of Health (TECH)**
- **Exploring Healthy Behaviour (EHB)**
- **Interprofessioneel samenwerken (IP)**

Click a team of
your choice

TECH



EHB



IP



Our research profile:

Technology to Enable People in the Context of Health (TECH)

Healthcare professionals and clients are increasingly coming into contact with technology, providing opportunities to support them. We investigate how technology can support the allied health professions. Our focus:

Innovative application of technologies:

Designing, researching and implementing new technologies in healthcare (3D scanning, robotics, AI, exergaming, etc.).

Sensors & Data:

Implementing small advanced sensors and other digital instruments in clinical practice. To this end, we use wearables, analysis techniques and the motion lab.

We aim to impact health with technology. Together with the field we use technology to respond to needs in the field and we work towards implementation. The perspective of the care professional and client weigh heavily in applying sustainable solutions.

Together we are working on a
new curriculum.
Check the expertise of our
team members here:



DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Wearables and stress

Good stress management can alleviate physical and psychological health problems. Wearable sensors allow us to reliably measure stress levels (e.g. via heart rate variability and skin conductance). We investigate which wearables are suitable in various healthcare contexts, how we can unlock which data and return it to end users in real-time, and how a ready-to-use application can be set up for clinical practice. Technical and legal aspects and technology acceptance are important here.



Expertise

- Neuropsychology
- Measuring heart activity and skin conductance via wearables
- Data processing and analysis
- Artificial intelligence

Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

SmartScan

Development of a new measuring device. SmartScan uses smart gloves to objectively measure the geometry and position of affected body parts during the fitting process by orthopedic (shoe) technologists.

A digital image of the limb is obtained when the practitioner drapes the gloves over it. Sensors record the location of the fingers and the force with which the foot is compressed. SmartScan aims to improve the design of tailor-made tools using this data.

Expertise

- Orthopedic (Shoe) Technology
- Motion Capture & Analysis
- Design, User Practises
- CAD CAM, Materials
- Biomechanics

Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

STIFF

Falling is a common problem among the elderly and has a major social impact. Elderly people who have decreased strength of the intrinsic foot muscles may benefit from an exercise program to strengthen the intrinsic foot muscles.

The aim of this research project is to achieve better fall prevention for this target group. We want to achieve this by gaining a better understanding of the role of the intrinsic foot muscles in balance and walking in the elderly.



Expertise

- Biomechanics of foot and ankle
- Measuring the foot arch (3D)
- Foot exercise therapy
- Intrinsic foot muscles
- MSU ultrasound

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

ShoQR

We aim to design a working and validated prototype for clinicians, patients and athletes who are interested in quantifying shock absorption characteristics during physical activity in order to gain insight in the effects of interventions (foot wear, training, etc.) or pathologies (damage to cartilage, menisci, gait impairments, etc.) on performance and risk of injury by relating the outcomes to normative data and mathematical models.



Expertise

- Motion capture & analysis
- Anatomy: form & function
- Knee osteoarthritis
- Algorithm design
- Biomechanics



Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Moving with Knee OA

Knee osteoarthritis is a chronic and incurable joint disease in which the cartilage becomes increasingly damaged. An increased load on the knee is related to the onset and progression of osteoarthritis.

This research focuses on the relationship between posture and knee load in people with knee osteoarthritis. We manipulate patients' posture to reduce knee load, reduce pain, improve mobility, and possibly prevent progression or onset of osteoarthritis.



Expertise

- Motion capture & analysis
- Anatomy: form & function
- Knee osteoarthritis
- Algorithm design
- Biomechanics

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Motion analysis laboratory

In our Motion Analysis Lab we can perform 3D motion capture of human movements. Recently, we acquired a system that combines videos obtained by 8 high speed cameras and machine learning software to perform high-quality 3D motion capture and analysis without markers and while wearing clothes. The system is very fast, relatively cheap, versatile and applicable in clinical practice.

We aim to compare this system to the current marker based gold standard, and to generate protocols and normative datasets. This way, we facilitate plug & play use for future projects.

Expertise

- Motion capture & analysis
- Anatomy: form & function
- Knee osteoarthritis
- Algorithm design
- Biomechanics



Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

FunPartClub

FunPartClub: 'Function and participation in children with club feet'. Three-dimensional gait analyzes and ultrasound seem extremely suitable for early detection of functional problems around the clubfoot.

We investigate the role of gait analysis in early detection and treatment of relapse clubfoot and the relationship between level of participation, motor ability and functioning in daily activities. This contributes to treatment when linking to clinical results and functional limitations experienced by the patient.

Expertise

- Motion capture & analysis
- Quantitative design
- Biomechanics

Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

The Diabetic Foot

Foot ulcers are a serious problem in patients with diabetes and neuropathy because they increase the risk of infection or even amputations. Foot deformities and high pressure on the sole side of the foot are risk factors in the development of such foot ulcers. We can reduce (recurring) foot ulcers by adapting footwear based on in-shoe foot pressure measurements.

We evaluate various tools and manufacturing methods and focus on technology use: dynamic in-shoe measurements of foot pressure, 2D/3D gait analysis and 3D scanning and printing.

Expertise

- Diabetic foot (complications)
- Footwear (incl. 3D prints)
- Pressure measurements
- Self-care / eHealth
- Gait analysis

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Quantitative diagnostics of dysphagia using ultrasound

Swallowing disorders, also called dysphagia, are common and manifest several symptoms that severely impact the quality of life. Current diagnostics are quite subjective and miss uniformity, as objective characterization of the swallowing function and the involved structures is lacking. Ultrasound promises to be a suitable technology to provide new diagnostic insights. Following a well-designed protocol, ultrasound measurements can provide relevant quantitative information on the swallowing structures and their dynamic behavior.

In this project, dedicated ultrasound tissue-characterization and strain-imaging methods are proposed with the aim to investigate and evaluate the added value of quantitative ultrasonography in the diagnosis of swallowing disorders.

Expertise

- Ultrasound: throat and mouth region
- Dysphagia

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

SmartNess

In the coming years, healthcare will increasingly make use of robots for the provision and implementation of healthcare. SmartNess aims to develop technology to make robot technology so safe that it can be used in the healthcare environment without endangering humans.

We will have to consider many aspects, like: What is safety and how do people experience it? Which aspects play a role and how to translate this into a robot system? With this knowledge, guidelines can be developed for robot systems, so that robots and humans can work together safely.

Expertise

- Orthopedic (Shoe) Technology
- Motion Capture & Analysis
- Design, User Practises
- CAD CAM, Materials
- Biomechanics



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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Mobile Technology Experience Centre

It is necessary to bring technologies to the attention of professional and informal care givers and clients so that they know what technology can do for them. This preferably takes place at the location where care is provided.

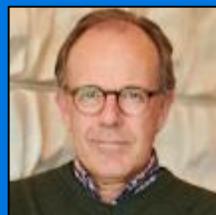
In this study, together with a large number of partners in healthcare, business and training, the feasibility of a so-called 'MTEC' is investigated with which these target groups can become acquainted with technology and can become familiar with it on location.

Expertise

- Innovations in healthcare

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

EuroAgeism

As part of a Horizon 2020 research network on ageism, our project investigates the role of ageism on the use and design of digital technology.

In this project we attempt to investigate how ageism might affect use of technology: on the individual level of the older person; on the relational level of how others (e.g., healthcare professionals) use technology with older persons; and how ageism manifests in the design process of digital technology and might affect actual use.

<https://euroageism.eu/>



Expertise

- Social Gerontechnology
- Technology acceptance in healthcare
- Inclusion of older persons
- Co-design & participatory design

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Technology Support for Diabetes

The 'Diabetes Voetenceck app' facilitates self-monitoring by patients and screening of feet by podiatrists remotely. The application aims to engage patients, prevent health problems and improve general well-being of people with diabetes.

With the project we gain insight into the current use of the app, improve the user experience and quality, explore new opportunities and possibly apply new technologies to further improve the current intervention.



Expertise

- Design
- Diabetic foot
- eHealth applications
- Prevention

Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Certification-D

Studies show that People with Dementia and their support network do not always know and trust existing solutions. It is necessary to define standards for these products and, through certification, increase confidence in them and encourage small and medium-sized enterprises to focus on this market.

In collaboration with partners from research and care institutions, SMEs, associations and People with Dementia, design standards will be developed. New and existing products for People with Dementia will be evaluated and certified.

Expertise

- Chronic illness / Dementia
- Living Labs

Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

Value based eHealth

This project concerns the development of an evaluation model for quality, accessibility and costs of lifestyle monitoring for people living at home with dementia. We focus on 'accessibility', and in particular the acceptance by healthcare professionals of this module.

The aim is to exceed the level of pilots, living labs and labs and to achieve growth and adaptation of the organization of care, so that in the future the client can make optimal use of eHealth.

Expertise

- eHealth and chronically ill children
- Implementation eHealth

Contact

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DIFFERENTIATION TEAM TECH

Technology to Enable People in the Context of Health

PITCH

At the Platform to Innovate, Test & Connect in Health, innovative healthcare companies and healthcare providers work together with students and teacher-researchers from FPH. Start-ups, scale-ups and corporate organizations use PITCH to present issues to students, who in this way come into contact with users and healthcare professionals of the future.

Companies can have their healthcare technologies tested and researched without major investments by using the knowledge, facilities and equipment from FPH.

Expertise

- Testing healthcare technologies and innovations
- Providing authentic learning situations
- Contacts with companies



Contact

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Our research profile:

Empowering Healthy Behaviour (EHB)

Empowering Healthy Behavior is concerned with the question of how allied health professionals can optimally guide people in managing and maintaining good health themselves. Our focus includes:

Sustainable change in health and exercise behavior and long-term effectiveness in prevention or treatment by allied health professionals.

Integration of monitoring and e-coaching technology in allied health care to stimulate health and exercise behaviour, self-management and therapy adherence.

Prognostic risk stratification and personalized (integrated) care.

We provide challenging education for allied health professionals on these themes and we develop new knowledge and healthcare innovations from professional and academic work places in healthcare practice.

Together we are working on a new curriculum.
Questions? Feel free to contact us!

DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

PARASOL

Our goal is to prevent complaints from becoming chronic in people with moderate Somatic Inadequately Explained Physical Complaints (MUPS). We want to encourage self-management through the blended care programme.

At home, for example, patients view information modules about factors that can negatively influence the complaints. The practitioners make the link to the patient's personal situation. The mix of e-Health and personal conversations increases the patient's insight and self-management stimulates an active lifestyle.

Expertise

- Blended care
- Self-management
- Applying e-Health

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

e-Exercise Hemophilia

The treatment of hemophilia arthropathy takes place in primary care. However, because hemophilia is so rare, physiotherapists in primary care usually have no experience with hemophilia.

Following the blended physiotherapy program "e-Exercise osteoarthritis", we believe that blended physiotherapy can also offer a solution for people with hemophilia arthropathy. Blended physiotherapy allows people to act more independently and has the potential to support primary care physiotherapists in treating this condition.

Expertise

- Hemophilia in 1st-line physiotherapy
- Blended care

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

e-Exercise low back pain

Low back pain is the most common complaint in physiotherapy practice. Online applications integrated within regular treatment of low back pain offer opportunities to stimulate adherence to treatment and self-management, and to support patients' behavioural change. At this moment such applications are limited and their added value is still unknown.

We investigate the added value of 'blended care' in which a smartphone app is integrated within face-to-face care for patients with low back pain.

Expertise

- eCoaching technology
- Behavioral change & self-management
- Adherence
- Prognostic screening for low back pain

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

Clinical Guidance Protocol

Podiatrists play an important role in the diagnosis and treatment of foot problems in rheumatic disorders. In 2019, a clinical guidance protocol for foot problems in rheumatic disorders was developed. It guides podiatrists in the use of the multidisciplinary recommendations developed in 2017.

However, the effect of podiatric treatment depends on the level of adherence. Within this project we will determine the adherence of people with foot and/or ankle problems in rheumatic disorders to their podiatric treatment. We want to know which factors are related to the degree of adherence and to what extent podiatrists promote the adherence of this target group.

Expertise

- Podiatry
- Rheumatic disorders
- Treatment of foot problems
- Adherence

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

STEPS

Stimulating self-management has a positive effect on reducing the perceived physical symptoms and improving quality of life. Self-management programs often have disappointing long-term results.

We aim to gain more insight into self-management strategies and patterns of exercise behavior in patients with persistent pain, fatigue or dizziness. We also want to know which behavioral change techniques are successful in achieving sustainable behavioral change.

Expertise

- Sustainable behavioral change
- Movement behaviour
- Self-management

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

Surf therapy

People with acquired brain injuries often experience functional limitations, e.g. in physical activities, communication, daily care and social participation in society. Surf therapy is very intensive, challenging and varied, but also motivating and stimulating at the same time. This may lead to a decrease in functional limitations in this target group in the chronic phase of recovery.

We investigate the influence of a surf week on people with brain injuries in the chronic phase of recovery on walking ability, balance, movement behavior and self-confidence.

Expertise

- Innovation
- Brain injury
- Challenging on own pace
- Walking
- Self-efficacy
- Participation
- Joy

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

RISE health promotion

Sleep, sedentary behavior, and a sufficient amount of physical activity are the 3 behaviors that complement our 24h/day. These behaviors and the different compositions have a significant impact on everyone's health. With RISE we focus on the following questions in relation to people with a chronic condition:

- What are the **most common movement behavior patterns** in people with a chronic disease?
- What are **the consequences** of these patterns on **physical functioning and health**?
- How can we **measure this valid and reliable** in practice?
- How can we optimally **support** patients with **behavioral change**?
- What **competence** and skills do **healthcare professionals** need to optimally **facilitate behavioral change**?

Expertise

- Measuring sleep and movement behavior with wearables
- Effect of sleep and movement behavior on physical functioning and health
- How to facilitate behavioral change in practice?

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

RISE intervention study

Healthy movement behaviour is a vital part of a healthy lifestyle.

Within the RISE intervention study we are developing the intervention through co-design with relevant stakeholders. The intervention aims to support sustainable movement behaviour change.

Within the blended intervention different promising behaviour change techniques like monitoring and feedback, information of healthy movement behaviour, goal setting, action planning and social support are included in the face to face coaching and the e-coaching.

Expertise

- Supporting sustainable behaviour change
- Blended care: face to face coaching combined with e-coaching
- Monitoring and feedback on movement behaviour

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

RISE tailor-made study

Achieving and maintaining healthy exercise behaviour after a stroke requires a personal approach.

Within the RISE custom made study we therefore investigate:

1. Selecting the right target group after a stroke for the RISE intervention
2. Personalizing goals within that group based on total exercise behaviour.
3. Conducting an individual behavioural diagnosis in order to create a personal intervention.

Expertise

- Effects of movement behaviour on physical functioning and health.
- Varying movement behaviours and personal movement profiles
- Factors affecting long term sustainable movement behaviour

Contact

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DIFFERENTIATION TEAM EHB

Empowering Healthy Behaviour

Stratified blended physiotherapy

Patients with neck and/or shoulder complaints experience pain and reduced physical function, resulting in high health care costs. Treatment can be improved by personalizing care. The following tools help personalize physical therapy care:

- The Blended Physiotherapy Instrument to personalize the presentation of physiotherapy.
- The STarT Instrument to personalize the content of physiotherapy in patients with neck and/or shoulder complaints.

Expertise

- Treatment of neck and shoulder complaints
- Personalized treatment
- Blended care

Contact

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Our research profile:

Interprofessional Collaboration (IP)

What is good care for you? What does good care cost? Our research is aimed at mapping out what the value of care is and for whom: of course for the patient/client and healthcare professionals, but also for other stakeholders (such as informal caregivers, researchers, policymakers and health insurers).

Based on the philosophy of **Value Based Health Care (VBHC)**, students and teachers work together in an **interprofessional learning community** to generate new knowledge, insights and healthcare innovations.

We prepare students for the healthcare of the future through challenging education and practice-oriented research. We do this on the basis of interesting lines of research and projects.

Together we are working on a new curriculum.
Questions? Feel free to contact us!



DIFFERENTIATION TEAM IP

InterProfessional Collaboration

Time-Driven Activity Based Costing

Time-driven activity-based costing is a methodology based on two parameters: the number of time units per activity and the costs per time unit. The application of this methodology for mapping the costs of (hospital) care is still in its infancy in the Netherlands.

Máxima MC in Eindhoven is one of the first hospitals in the Netherlands to conduct research into this system. The total knee prosthesis care path was chosen as a test model for this. The aim of this pilot model is to develop a blueprint that can be widely applied to map the actual costs of allied health-care pathways.

Expertise

- Organization of care
- Efficiency
- Patient Journey/Care Paths
- Time-driven activity-based costing
- Financing care

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DIFFERENTIATION TEAM IP

InterProfessional Collaboration

Health outcomes Value Based Health Care

For years, patient reported outcome measures (PROMs) have been used in Dutch health care to map the effectiveness of treatments from the perspective of the patient (client). Patient reported experience measures (PREMs) provide insight into how care is experienced.

We map the relevant health outcomes with regard to Value Based Health Care (VBHC). This means, among other things, assessing the value of existing PROMs and PREMS and re-developing PROMs and PREMs in order to map out the value of care.

Expertise

- Patient reported outcome measures
- Patients reported experiences measures
- Methodology of health outcomes
- Value Based Health Care

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DIFFERENTIATION TEAM IP

InterProfessional Collaboration

Value-driven care across the lines

Despite the many initiatives around Value Based Health Care, the value of care from individual practitioners in the 1st or 2nd line is still being looked at, but (interprofessional) collaboration between practitioners and the lines increases the value of care for the patient.

Our goal is to map and optimize the value of patient care throughout the entire treatment process. The care path Total Knee Prosthesis (TKP) within the Orthopedic Center Maxima (OCM) is our starting project. Is M. OCM maps out the value of the TKP care path for the patient, as well as the value of the entire trajectory that the patient goes through.

Expertise

- Interprofessional collaboration
- Value Based Health Care
- Patient Journey / Care Pathways
- Health outcomes
- Costs of care
- Effective care

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DIFFERENTIATION TEAM IP

InterProfessional Collaboration

Value of interprofessional consultation hour
in the 1st/2nd line orthopedics

Careful diagnosis and treatment of injuries can help with a smooth and safe return to sport. During sports consultation hours, an orthopedic surgeon, sports physician and sports physiotherapist work together to provide quickly accessible and inter-professional care to athletes with sports injuries and sports-related complaints. The patient is seen by an orthopedic surgeon and a primary care physiotherapist specialized in shoulder injuries.

Our focus is on mapping the value of sports consultation hours and shoulder consultation hours for patients and healthcare professionals.

Expertise

- Sports and shoulder consultation hours
- Value Based Health Care
- Multidisciplinary consultation hours
- Effective care
- Osteoarthritis care

Contact

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DIFFERENTIATION TEAM IP

InterProfessional Collaboration

FITVeldhoven

Healthcare in the Netherlands is based on disease processes and should therefore be called 'sick care' instead of healthcare. The best treatment to promote health and wellness is to prevent people from getting sick. Prevention, lifestyle and exercise are important components of health and well-being. But measuring health or improving health through prevention, exercise or lifestyle is not easy.

The target? To ensure that the entire municipality of Veldhoven (more than 44,000 inhabitants) meets the Dutch exercise standard.

Expertise

- Value-driven care in the right place
- Experiences and expectations of patients and healthcare professionals
- Patient Journey/Care Pathways
- Patient remote monitoring
- eHealth

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DIFFERENTIATION TEAM IP

InterProfessional Collaboration

GLA:D

The program 'Good Life with osteoArthritis Denmark' has been implemented in Eindhoven in 2020. Patients' expectations are not always based on scientific knowledge and are often unrealistic. Excessively high expectations often lead to disappointment after surgical treatment and can possibly be prevented if information is better provided in advance. Whether this also applies to conservative treatment is unknown.

Our hypothesis: realistic expectations about the treatment outcome improve the patient-reported experience after treatment.

Expertise

- Experiences/expectations patient & healthcare professional
- State of the art treatment of knee and hip osteoarthritis
- Interprofessional collaboration
- Network care
- Patient Journey/Care Pathways
- Value Based Health Care

Contact

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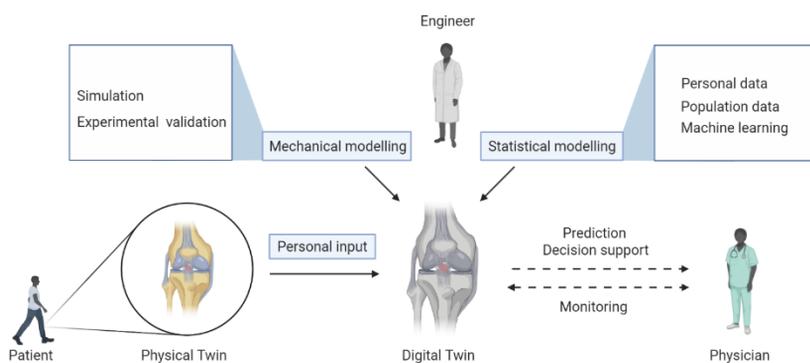
DIFFERENTIATION TEAM IP

InterProfessional Collaboration

Digital Twin Knee

Digital Twin Knee is a moonshot project with value-driven personalized care for patients with knee problems. Various national and international partners are involved in this. It is work in progress.

Concept of the digital twin in practice



Expertise

- Diagnosis and treatment of knee complaints

Contact

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