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Welcome

ETH Zurich is strengthening its contribution to the Swiss healthcare system and is investing in partnerships with universities, hospitals, and companies, thereby promoting the translation of research findings into real-world applications. The Rehab Initiative with its Competence Centre for Rehabilitation Engineering and Science (RESC) is a key pillar along with ETH Zurich's strategy in health and medicine.

We look back on a successful startup year in unusual times. The pandemic has changed the way we come together, interact, and collaborate, which is key for a Competence Centre network. It revealed weaknesses, created opportunities, and strengthened the importance of resilient healthcare systems, where prevention, rehabilitation, assistance, and inclusion play a major role.

Our vision is to make rehabilitation a more holistic process and to foster the inclusion of individuals with physical disabilities and patients with chronic movement impairments. Therefore, we promote research to fill existing gaps of knowledge and solutions, facilitate education to train the next generation of professionals, and organise outreach activities that contribute towards a society that is inclusive of persons with physical disabilities.

The Centre's bodies, namely the General Assembly, the Steering Committee, the Advisory Board, and the Executive Office have been established, and the first General Assembly meeting was held at end of the year. Our network includes 55 Members from 9 different ETH Departments and 7 associated universities, hospitals, and clinics.

We published the first research call to promote interdisciplinary and translational projects and to establish future directions for rehabilitation research. The need for education has been evaluated by semi-structured interviews with key stakeholders in the field and first models for future programmes have been developed. All our activities aim to highlight, discuss, and disseminate current topics and results from research conducted in the vast field of rehabilitation.

We are looking forward to continued collaboration with diverse stakeholders towards a holistic rehabilitation approach and to share highlights via multiple platforms.

Together towards an inclusive society.



Dr Oliver Stoller
Executive Director



Prof Robert Riener
Chair



Prof Roger Gassert
Vice Chair

The first year in review

Highlights from the Competence Centre's startup year.



Founding of the Competence Centre



Onboarding Bruno Staiano, Web Editor



Onboarding Stefan Schneller, Content & Multimedia Designer

January February March April May June

Onboarding Oliver Stoller, Executive Director



Kick-off meeting
Election of Steering Committee

Development of 1st research call

Discussion of education development

Approval of overall strategy and finances

Logo poll



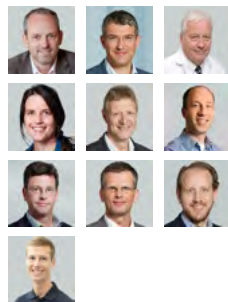
Election of Serge Altmann, CEO ZURZACH Care AG, as Chair of the Advisory Board



Launch RESC Image video



Logo and website go-live



Steering Committee Meeting
Election of Fabrizio Petrillo, CEO AXA, to the Advisory Board

Approval of revised bylaws



Partner event ETH CYBATHLON

July August September October November December

Onboarding Miriam Daep, Communications & PR Manager

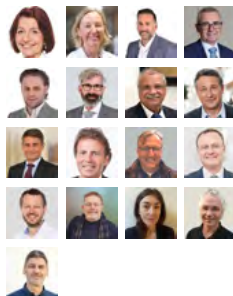


Publication of 1st research call



General Assembly
Election of new members:
Professor Katrien De Bock
Professor Eling D. de Bruin
Professor Tobias Kowatsch
Approval of budget plan

Advisory Board Meeting
Discussion of bylaws and 1st research call



Education development: expert interviews



The ETH Rehab Initiative and RESC

The ETH Rehab Initiative evolved from the great success of the first ETH CYBATHLON and paved the way for the establishment of new professorships and the Competence Centre for Rehabilitation Engineering and Science (RESC) that actively expands the network and promotes research, education and knowledge transfer.

Patients with acute or chronic movement impairments as well as people living with physical disabilities face numerous challenges and obstacles in their everyday life and can lose their autonomy. This affects their quality of life, prevents them from fully participating in and contributing to society, and creates a socioeconomic burden.

Furthermore, they are seen and treated by medical staff for limited time periods and are then lost track of without structured management of further treatment and status. Thus, the current approach to rehabilitation is highly fragmented in time and in space, and acceptance of novel treatments and technologies is rather low. The high financial burden caused by fragmented rehabilitation processes is not conducive to a streamlined treatment. The Rehab Initiative aims to transition from the current focal, short-term, and fragmented system to long-term solutions offering personalised prevention programmes, earliest possible and continuous treatment, as well as assistance in the home and work environments.

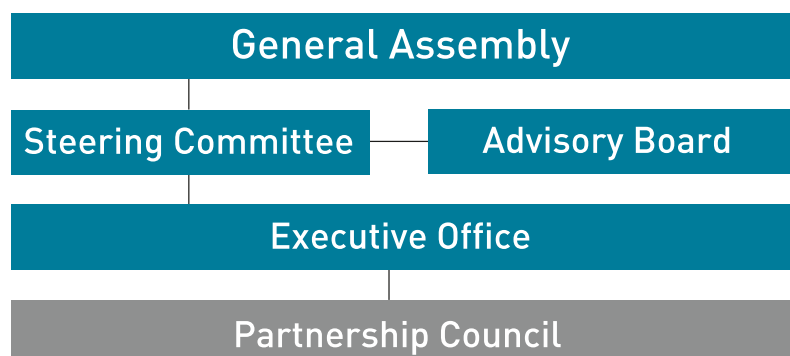
From a research and development perspective, medical, socio-economic, and socio-psychological findings of current and novel solutions should be fed back into therapies, assistive devices and adapted environments, in order to improve prevention, prediction and diagnosis, and optimise the entire rehabilitation, assistance and social reintegration process.

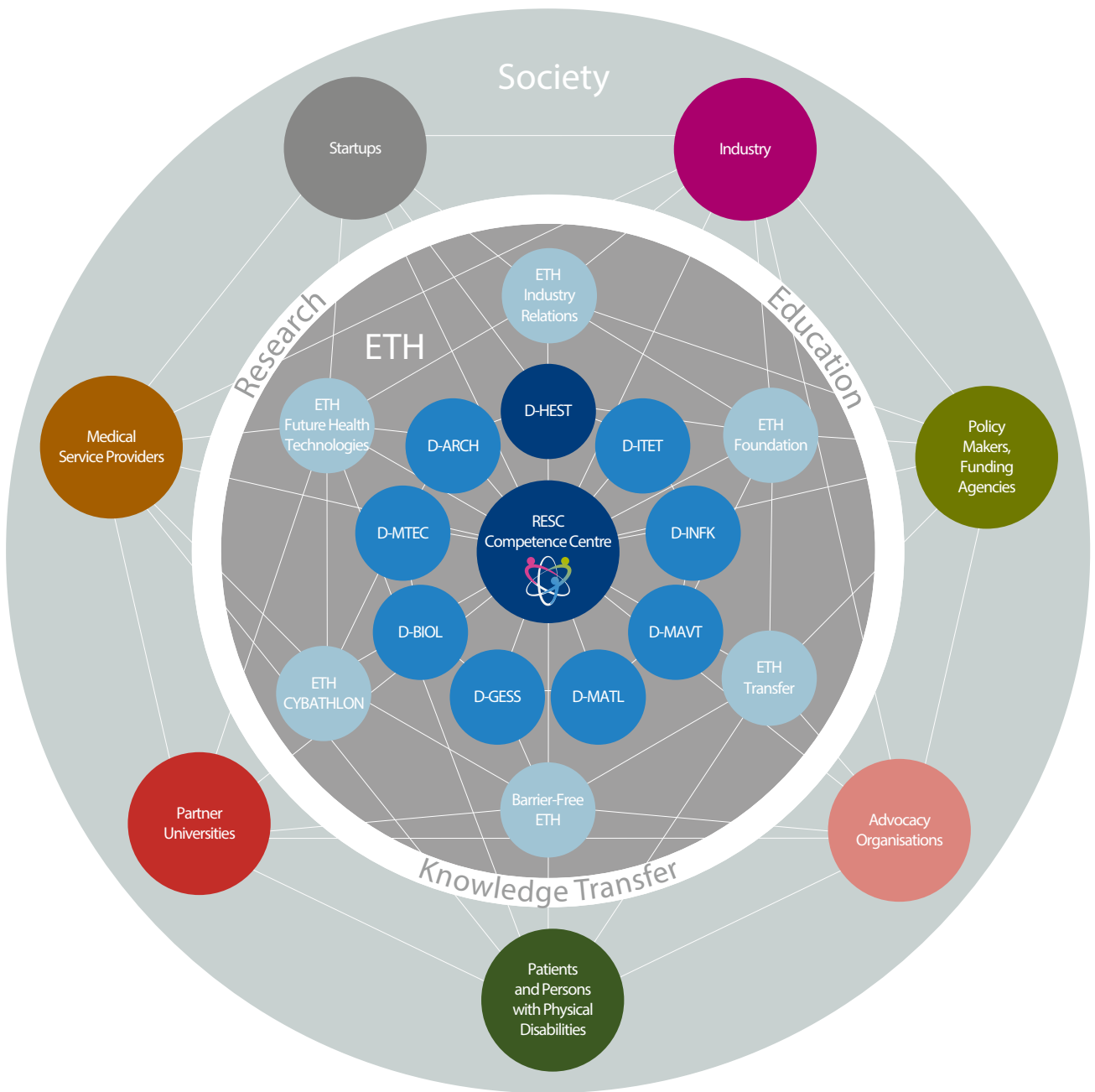
The Rehab Initiative links existing with novel professorships and their groups, promotes exchange and interdisciplinary research, education and knowledge transfer to address overarching technical, medical, economic, and environmental questions for a more inclusive society. Its mission is to improve the quality of life and participation of people living with physical disabilities. The work of the Rehab Initiative is based on a holistic approach ranging from prevention, therapy, and assistance to inclusion.

With a third of professors across departments at ETH Zurich working directly or indirectly on medical research, ETH is uniquely positioned to integrate its interdisciplinary expertise into an effort to make rehabilitation a more holistic process and to foster the inclusion of individuals with physical disabilities and patients with chronic movement impairments.

At the heart of the Rehab Initiative is the Competence Centre for Rehabilitation Engineering and Science (RESC), which is a nexus of expertise from academia, hospitals, industry, government, healthcare, and disability organisations. RESC is an ETH-accredited Competence Centre with official bodies such as the General Assembly with its ordinary (ETH-internal) and associate members (external), the Steering Committee, the Advisory Board, and the Executive Office. The Competence Centre coordinates the Rehab Initiative by actively hosting and expanding the network. Specifically, RESC promotes interdisciplinary research and exchange, contemporary education programmes, and knowledge transfer to facilitate an integrated and holistic rehabilitation approach.

RESC Organisational Structure





1 shared Mission
4 established funding partners
7 associated universities, hospitals and clinics
9 ETH departments

15 associated members
40 ordinary members
A growing number of partners from industry, service providers, tech startups, government agencies, disability and patient organisations

RESC Official Bodies

Members of the General Assembly

Ordinary Members (ETH Zurich)

Luca Benini	D- ITET	Biomedical Applications, Brain-computer Interfaces, Machine Learning Accelerators
Katrien De Bock	D- HEST	Muscle Regeneration, Exercise, Metabolism
Eling D. de Bruin	D- HEST	Motor Control and Learning, Functional Anatomy, Virtual Reality-Driven Rehabilitation
Benjamin Dillenburger	D- ARCH	Housing Typologies, Computational Design, Digital Fabrication
Stephen Ferguson	D- HEST	Musculoskeletal Biomechanics, Regenerative Medicine, Medical Technology
Roger Gassert	D- HEST	Rehabilitation Robotics, Assistive Technology, Neural Control of Movement
Marie Glaser	D- ARCH	Social Sciences, Housing Studies, Sustainable Urban Development
Isabel Günther	D- GESS	Social Impact Assessments of Technologies, Poverty and Inequality Analysis
Ernst Hafen	D- BIOL	Personal Data Management and Governance, Citizen Science, Personalised Health
Michael Hampe	D- GESS	Philosophy of the "Good Life", Critical Theory of Anthropological Essentialisms, Criticism of the "Nature-Culture-Divide"
Otmar Hilliges	D- INFK	Human-Computer-Interaction, Computer Vision, Robotics
Christian Holz	D- INFK	Sensing Technologies Interface with End-Users, Continuous Physiological Monitoring for Predictive Healthcare, Physical Computing and Computational Interaction
Marco Hutter	D- MAVT	Robotics, Control, Machine Learning
Marcello Ienca	D- HEST	Bioethics/Neuroethics and Health Policy, Disability Studies, Health Technology in Society
Taekwang Jang	D- ITET	Brain-Machine Interface, Implantable Sensors, Ultra-Low-Power Systems
Marko Köthenbürger	D- MTEC	Public Economics of Digitization and AI, Health Expenditure Forecast, Innovation and Public Policy
Tobias Kowatsch	D- MTEC	Blended Digital Coaching with Conversational Agents (Chatbots), Just-In-Time Adaptive Interventions, Digital Biomarker Research
Olivier Lambercy	D- HEST	Rehabilitation Robotics, Technology-Based Assessments in Neurorehabilitation, Digital Biomarkers
Jörg Löffler	D- MATL	Materials Science, Biodegradable Implants, Metallic Biomaterials
Isabelle Mansuy	D- HEST	Neuroepigenetics, Psychiatry, Animal Models

Mirko Meboldt	D- MAVT	Usability, Human Machine Interaction, Engineering Design
Carlo Menon	D- HEST	Innovation in Wearable Technologies, Sensorimotor Recovery, Neurorehabilitation
Ralph Müller	D- HEST	Bioimaging, Biomechanics, Mechanobiology
Stanisa Raspopovic	D- HEST	Engineering, Technology Transfer, Medical Devices
Robert Riener	D- HEST	Rehabilitation Robotics, Human-Machine Interaction, Biomechanics
Martin Schwab	D- HEST	Neuroscience, Drug development, Clinical Trial Planning
Roland Sigrist	ETH CYBATHLON	Project Development and Management, Events and Communication, Human Movement Science
Jess Snedeker	D- HEST	Biomechanics, Engineering, Regenerative Medicine
Christina Spengler	D- HEST	Human Physiology in Sleep, Rest and Exercise; Medical and Health Technology
Christoph Stadtfeld	D- GESS	Social Networks, Statistical Modeling, Social Integration and Mental Health
Bill Taylor	D- HEST	Musculoskeletal Biomechanics, Medical Technology, Neuromotor Control
Philip Ursprung	D- ARCH	Contemporary Architecture; Contemporary Art; Relation of Visual Culture and Science, Economy and Politics
Effy Vayena	D- HEST	Bioethics, Data Ethics and Governance, Health Policy
Julia Vogt	D- INFK	Medical Data Science, Machine Learning, Data Mining
Georg von Krogh	D- MTEC	Strategic Management of Digital Technology and Artificial Intelligence, Innovation in Pharma and Health Care, Organisation of User Innovation
Nicole Wenderoth	D- HEST	Neurofeedback, Brain Stimulation, Motor Neuroscience
Peter Wolf	D- HEST	Human-Robot Interaction, Biomechanics, Motor Learning
Mehmet Fatih Yanik	D- ITET	Brain Machine Interfaces, Systems Neuroscience, Ultrasound Drug Delivery
Marcy Zenobi-Wong	D- HEST	Biomaterials, Bioprinting, Cell-Material Interactions
James R. Mitchell	D-HEST	Biological Ageing, Age-Related Diseases, Prevention Professor Mitchell sadly passed away in November 2020.

Associated Members

Edouard Battégay	UZH/ICMC	Management and Leadership, Internal Medicine, Multimorbidity and Complexity
Christian Baumann	UZH/USZ	Sleep, Parkinson, Innovation
Armin Curt	UZH/Balgrist	Spinal Cord Injury, Neurophysiology, Neurology
Mazda Farshad	UZH/Balgrist	Orthopaedic Surgery, Spine, Surgical Innovation
Thomas Kessler	UZH/Balgrist	Neuro-Urology, Neurosciences, Clinical and Translational Medicine
Verena Klamroth-Marganska	ZHAW	User-Centered Design, Rehabilitation Robotics, Telerehabilitation
Malcolm Kohler	UZH/USZ	Respiratory Medicine, Breath Analysis, Sleep
Michael Leunig	ETH/Schulthess Klinik	LIS Orthopedics, Surgery, Outcome Research
Andreas Luft	UZH/USZ	Stroke Rehabilitation, Neural Plasticity and Learning and Reward, Telerehabilitation
Andreas Meyer-Heim	UZH/KISPI	Paediatric Rehabilitation, Spastic-Dystonia-Management and Neurocognitive Function after ABI, Translational Research
Alfred Müller	Schulthess Klinik	Neurophysiology and Neurology, Functional Neuroimaging, Mindfulness Based Cognitive Interventions
Rahel Naef	UZH/USZ	Family Health, Nursing Interventions, Implementation Science
Peter Sandor	UZH/ZURZACH Care AG	Neurorehabilitation, Headache & Pain, Therapeutic interventions
Markus Wirz	ZHAW	Rehabilitation of Functions, Assessment of Functions, Pragmatic Research
Björn Zörner	UZH/Balgrist	Clinical Neurorehabilitation, Neuroscience, Gait Disturbances and Analysis

Members of the Steering Committee



Robert Riemer
Chair
D-HEST



Roger Gassert
Vice-Chair
D-HEST



Armin Curt
UZH/Balgrist



Isabel Günther
D-GESS



Ernst Hafen
D-BIOL



Christian Holz
D-INFK



Philip Ursprung
D-ARCH



Marko Köthenbürger
D-MTEC



Mirko Meboldt
D-MAVT



Roland Sigrist
ETH CYBATHLON

Members of the Advisory Board

Founding Members



Serge Altman
Chair
ZURZACH Care AG



Gery Colombo
Founder Hocoma AG



Joe A. Manser
Swiss Competence
Centre for Accessible
Architecture



Vanessa Rampton
McGill University (CAN)



Georg Schrattecker
Consultant for
Accessibility in Public
Spaces

Members



Edith Bieri
Stiftung Rossfeld



Heike Bischoff-Ferrari
UZH/USZ



Fiore Capone
Active Communication



Markus Gautschi
Zürcher RehaZentren



Daniel Gelbart
ORTHO-TEAM Group



Andreas Gerber-Grote
ZHAW Gesundheit



Frank Habersatter
Mathilde Escher Stiftung



Chapal Khasnabis
WHO



Stefan Launer
Sonova AG



Fabrizio Petrillo
AXA Schweiz



Andreas Roos
VAMED Schweiz AG



Werner Witschi
Althaus AG

Executive Office



Oliver Stoller
Executive Director



Miriam Daepp
Communications & PR



Stefan Schneller
Content & Multimedia

Supporting Staff



Maya Ida Kamber
Administration



Diana Siedler
Administration



Sabina Eipe
Administration

Partnership Council

Stavros Niarchos Foundation (SNF)



The Stavros Niarchos Foundation (SNF) is one of the world's leading private, international philanthropic organizations, making grants to nonprofit organizations in the areas of arts and culture, education, health and sports, and social welfare. SNF funds organizations and projects worldwide that aim to achieve a broad, lasting, and positive impact for society at large, and exhibit strong leadership and sound management.

SNF is proud to support the ETH Rehab Initiative by funding a new professorship in the area of barrier-free, inclusive architecture, named the professorship in Architecture and Care, which is one of eight designed to dovetail with one another to provide a comprehensive scholarly underpinning for the Initiative. SNF also supported the CYBATHLON 2020 Global Edition and scientific symposium.

Schulthess Klinik



Schulthess Klinik is a leading orthopaedic clinic in Europe with a focus on people and how they move with the basic values of top-class medical services, a humane approach and innovation. As part of a comprehensive commitment, Schulthess makes its services available to CYBATHLON 2020 as a medical partner. Schulthess Klinik has been supported by the non-profit Wilhelm Schulthess Foundation since 1935. People, their mobility and quality of life are at the heart of our day-to-day work. We devote all our energy to providing our patients with the best possible care and ensuring their quick recovery. We are also helping to make treatments better and safer with our long-standing tradition of research. Schulthess cooperates with ETH Zurich, Department of Health Sciences and Technology, and more than 60 other national and international partners.

Hocoma AG



Hocoma is a global market leader for the development, manufacturing and marketing of robotic and sensor-based devices for functional movement therapy. Hocoma and The Department of Health Sciences and Technology at ETH Zurich have enjoyed a successful research collaboration for more than 15 years. The arm therapy robot manufactured by Hocoma, one of its main products, is a result of this partnership. Hocoma supports the Chair of Rehabilitation Engineering at ETH Zurich.

Swiss Paraplegic Foundation



The Swiss Paraplegic Foundation (SPF) in Nottwil (Canton Lucerne) is one of the largest solidarity networks in Switzerland. It is the umbrella organisation of the Swiss Paraplegic Group, which comprises an integral network of services for the comprehensive rehabilitation of people with a spinal cord injury. The combination of complete services from the scene of the accident through to medical care and rehabilitation, and lifelong support and advice is unique. The membership fees of the 1.8 million people who belong to the Benefactors' Association of the SPF create the financial basis for the activity of this solidarity network. Every day, more than 1800 employees are committed to fulfilling their challenging tasks. The SPF was founded by Dr. Guido A. Zäch in 1975.

Research

Our goal is to fill existing research gaps and link research themes with the existing competences at ETH Zurich and external stakeholders to overcome the challenges of the current fragmented rehabilitation approach for persons with disabilities and patients. RESC supports internal collaborative research through competitive grants, financed via the partners represented in the Partnership Council and other sources. RESC provides a platform for exchange and discussion of new strategic projects and collaborations.

A first research call was published in October 2020 with a submission deadline in January 2021. Applicants were invited to propose novel approaches under the headline “Changing Behaviours” and address the following thematic areas:

- Acceptance - How to change user behaviour to increase acceptance of novel therapeutic and assistive applications?
- Telerehabilitation - How to change patient behaviour to increase responsiveness and motivation in telerehabilitation?
- Inclusive environments - How to change human and societal behaviour via the design of inclusive environments?

Proposals need to have a strong translational impact, fit within RESC’s mission, and must involve partners from at least two different ETH Zurich departments or from at least one ETH Zurich department and one associated RESC member. The proposed starting time of the winning proposal is summer 2021.

RESC started to facilitate the formation of consortia and larger research and development projects with various stakeholders. Furthermore, we promote internal discussions to align our visions and to shape larger research lines for the future.

Outreach

In addition to research and education activities, we actively reach out to the interested public and stakeholders in government, advocacy organisations, persons living with disabilities, and other relevant groups. Our outreach activities aim to heighten public awareness of the challenges faced by patients and individuals with physical disabilities, and to play an active role in the public discourse about an inclusive society. We are committed to increase the visibility and impact of the research, potential, and expertise of members and partners within our network.

The Competence Centre works closely with the ETH CYBATHLON and was represented at the ETH CYBATHLON 2020 Symposium.

Outlook 2021

- A series of roundtable discussions with experts in the fields of inclusion and rehabilitation
- Participation at “Scientifica – Zurich Science Days” hosted by ETH Zurich and the University of Zurich, aimed at the public

ETH CYBATHLON Symposium panel discussion

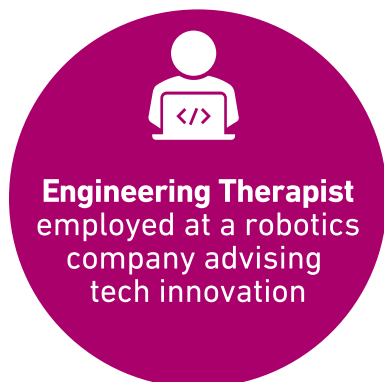


Education

To train the next generation of professionals in the broad field of rehabilitation, we are planning to establish several education programmes (master course, PhD programme, seminars, summer school, student thesis options, etc.). In our startup year, we focused on the evaluation and strategic planning of a “Major in Rehabilitation” in the Master of Science programme at the ETH Department of Health Sciences and Technology.

Semi-structured interviews were conducted with key experts to understand the future of rehabilitation and the required skills for future professionals in the field. Based on this information, we outlined a future education programme, which is now under development.

Potential future job profiles



Finances

2020 Annual Report

Summary of consolidated financials
(operational)

Revenues	CHF
ETH Zurich Executive Board	200,000
ETH D-HEST Contribution	100,000
RESC Member fees	30,000
Carry over	0
Total	330,000

Expenses	CHF
Personnel costs (incl. social benefits)	165,630
Basic costs (IT, Repro, Office)	1,344
Communications and PR	12,516
Travel, Representation, Education	235
Net profit (carry over into 2021)	150,276
Total	330,000

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