

ETH Zürich Foundation

# Uplift

The impact of giving **Nº2**

**My research into improved  
therapy for children**

ETH doctoral student  
Rosa Visscher

—  
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**ETH inspires  
school pupils**

Unique awareness-raising  
project

—  
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Support the

## Rehab Initiative

**ETH** Foundation

**“In the rehabilitation  
of patients and people  
with disabilities,  
much is still to be done,  
from enhanced  
prostheses to  
improved accessibility.  
Thanks to your support,  
we are working with  
our partners to find  
interdisciplinary solutions!”**

—  
Joël Mesot,  
President of ETH Zurich

IMPRINT

**Publisher** ETH Zurich Foundation **Editorial** Isabelle Vloemans

**Design, Illustration** Kristina Milkovic **Photography** unless otherwise stated:

Das Bild – Judith Stadler and André Uster, Zurich

**Printing** Neidhart + Schön Print AG, Zurich **Proofreading and translation** Supertext AG, Zurich

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Image: ETH Zurich / Markus Bertschi





# Her algorithm is helping children with cerebral palsy

ETH doctoral student Rosa Visscher is working with clinicians to research better treatment for young patients with cerebral motor impairment. Her trump card: data science.

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“Walking seems such a simple thing. But try teaching a robot to walk – it’s a hugely complex task.” The 23-year-old Rosa Visscher from the Netherlands first became fascinated in her current research field back in secondary school, when she met a kinesiologist while taking part in a university programme for gifted youngsters. She studied for a Bachelor’s degree in Human Movement Sciences at the University of Groningen and, thanks to an Excellence Scholarship from the ETH Foundation, moved to ETH Zurich for her Master’s. She quickly noticed: “I can think bigger here!”

Her doctoral thesis, funded by the Ralf Loddenkemper Foundation and supervised by Professor William R. Taylor at the Institute for Biomechanics and Professor Reinald Brunner at University Children’s Hospital Basel (UKBB), focuses on children with cerebral motor impairment. She not only benefits from the fact that all the disciplines

relevant to her research field are represented at ETH, but also from the specialist clinics found in Switzerland. The young researcher works closely with UKBB’s gait laboratory. More than 20 years of gait analysis has produced data on about 2,000 children.

## Decision support for clinicians

“It’s currently very difficult for doctors to gauge which procedures and treatments will produce the best results for a child,” explains Visscher. Cerebral motor impairment takes various forms, and potential treatment ranges from occupational therapy to an orthopaedic device or an operation. How an individual child will react to specific treatment depends on so many factors that machine learning is becoming a tool in the prediction of a treatment’s success. Visscher uses anonymised data sets to train an algorithm that will one day be able to help doctors in the decision-making process. →



Her vision: worldwide collaboration is making the predictions of artificial intelligence more and more precise.



**“Artificial intelligence will not replace doctors. It will help them to make better decisions.”**

Rosa Visscher, doctoral student at the Laboratory for Movement Biomechanics, [www.movement.ethz.ch](http://www.movement.ethz.ch)

→ Certain patterns are already beginning to emerge. It is becoming apparent, for example, which gait characteristics are associated with children who will not benefit from wearing orthopaedic devices – an important finding since children are very reluctant to wear them. An operation, on the other hand, often entails a lot of pain for the children. Visscher’s research should one day allow a child, its parents and the doctors to use personalised visualisations to build up a very specific picture of the child’s gait before and after a debatable procedure: “We want fewer treatments that make next to no difference. We want children to spend less time in hospital. And we want maximum mobility for patients.”

#### **Dialogue is key**

The way ahead is challenging. Visscher knows how much work is needed before academic research such as hers can be applied in everyday clinical practice: “Since the start of my Master’s degree, I’ve been spending two days a week at the clinic. It’s the only way to get an in-depth understanding of the data.” Mutual understanding and respect between the clinicians and herself has grown from month to month. “The first time I was asked for my opinion on a specialist matter at the clinic was an amazing moment!” —



Rosa Visscher conducts a test with a Master’s student in the movement analysis laboratory at the Höggerberg campus.

Support the Rehab Initiative and Excellence Scholarships at [www.ethz-foundation.ch/en](http://www.ethz-foundation.ch/en)

# “Anything that helps people with disabilities helps everyone”



They have been meeting to discuss projects for years: architect and Zurich Municipal Councillor Joe A. Manser and ETH Professor Robert Riener. The latest topic of conversation: the Rehab Initiative.



**“ETH can play a huge role in ensuring that lab technology can be used by anyone in everyday life.”**

Robert Riener

*The Rehab Initiative is an ambitious, large-scale project that will involve considerable resources over the coming years – why is it one of the top priorities at ETH Zurich?*

**JOE A. MANSER** – 50 years ago the first people walked on the moon. The needs of people with disabilities is peanuts compared with a moon mission. But because their needs have been ignored for so long, there is a lot of catching up to do. Also, it's important to remember that anything that helps people with disabilities often helps everyone. Take low-floor trams, for example: from a father with a buggy to an elderly lady with a walking frame, we all benefit. And because everyone gets on and off the tram faster, the transport operator can economise by cutting one tram per line.

**ROBERT RIENER** – Today there is little to no exchange of information between the people involved in the rehabilitation process (see following page) – this has to change if we want to make rehabilitation more effective. Furthermore, there has been too little research into a range of aspects. What do therapeutic robots bring to the healthcare system? What do assistive devices contribute to the economy? How can we meet individual needs more effectively and increase acceptance of

technology? Interdisciplinary connections like this are important. The Rehab Initiative also has links with other ETH initiatives; for example, the Mobility Initiative: special needs cannot simply be dismissed when we're looking at transporting people intelligently from A to B, as Joe explained with the example of the low-floor tram.

*What role does ETH Zurich play in improving the quality of life for people with disabilities and ensuring that they are included?*

**ROBERT RIENER** – We have to encourage research that considers diversity. ETH can play a huge role in ensuring that lab technology can be used by anyone in everyday life, is affordable and is accepted by society.

**JOE A. MANSER** – A university such as ETH should always ask the humanistic question: What do people gain from the technology? All people. Historically, many of the innovations that make everyday life easier for people with disabilities have been the result of successful lobbying by war veterans who needed better aids. ETH has the opportunity to move forward independently. My impression is that the Rehab Initiative offers researchers an exciting playground with “collateral benefits” for people with disabilities.

*Robert Riener, you set up the CYBATHLON, a contest in which people with disabilities compete against each other, supported by cutting-edge assistive technology. You, Joe Manser, have been advising the CYBATHLON on strategic matters since its inauguration in 2016 – what insights from this project feed into the Rehab Initiative?*

**JOE A. MANSER** – The CYBATHLON was a success because people with disabilities and the relevant organisations were involved from the outset: “Nothing about us without us!” We have to intensify this collaboration for the Rehab Initiative. However



Bringing their expertise to the Rehab Initiative: Joe A. Manser is an architect at the Swiss Competence Center for Accessibility in Architecture; Robert Riener holds a double professorship at ETH Zurich and at the Spinal Cord Injury Centre at Balgrist University Hospital.

**“The needs of people with disabilities have been ignored for too long.”**

Joe A. Manser

much a researcher reads up on a subject, there are certain things you can be aware of only if you experience them yourself – for example, the fact that climbing stairs using caterpillar treads can be frightening for people with disabilities.

**ROBERT RIENER** – If there's one thing the CYBATHLON has shown, it's that we have to create platforms where users, researchers, developers and other relevant groups can meet and collaborate more closely. Our aim is therefore to create an interdisciplinary rehabilitation centre as part of

the Rehab Initiative. Not every new idea will result in success, but as a general rule the more ideas there are, the more will succeed. The CYBATHLON has succeeded in making unfashionable research subjects “sexy”, and introduced new groups from the research world and society as a whole to topics such as rehabilitation technology and accessibility. This movement is set to continue with projects such as CYBATHLON @school and the Rehab Initiative. The technology has to become so good that you no longer notice it, and the attitude shift in society so sweeping that we no longer talk about disabled and able-bodied, but about human diversity.

**JOE A. MANSER** – People will always be different. But if there are technical solutions to the differences that impair people's abilities, we should make those solutions accessible to everyone. —

# Improved quality of life and participation

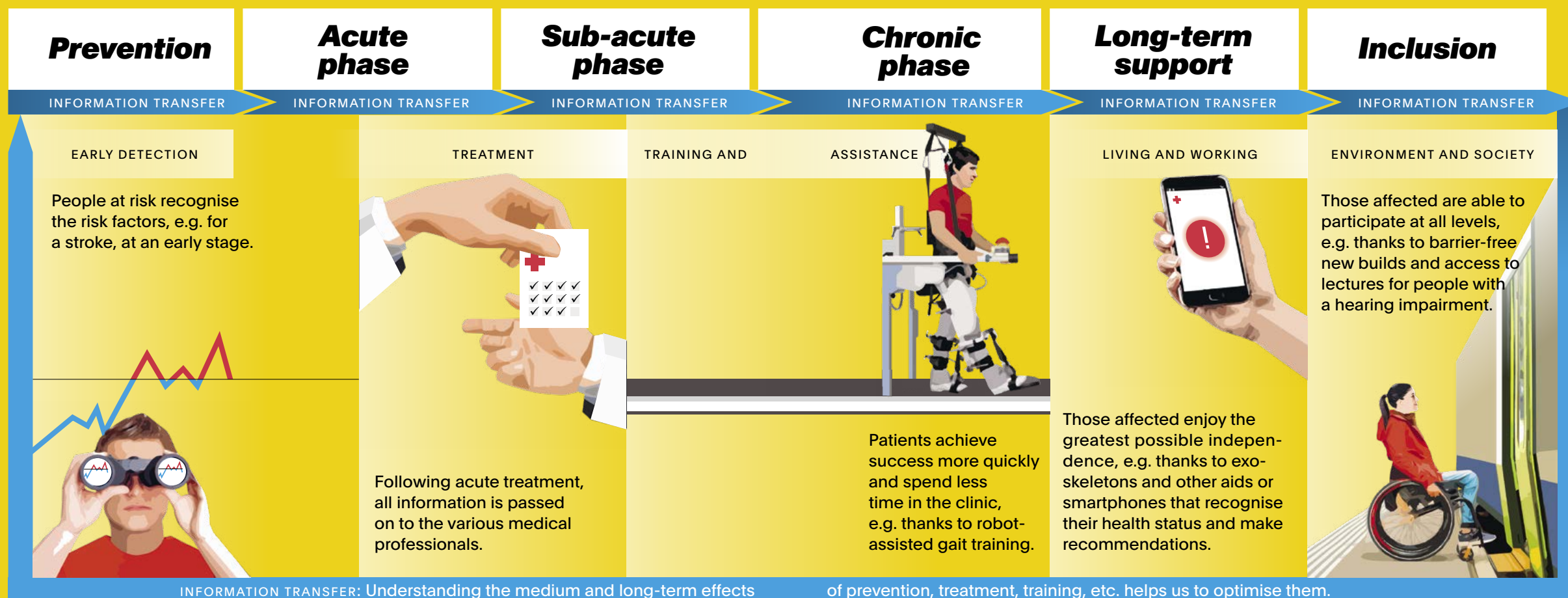
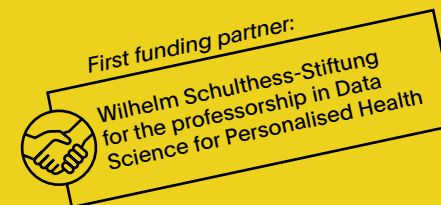
For rehab patients and people with physical impairments, everyday tasks can pose a major challenge.

Technical aids can make life significantly easier – but the Rehab Initiative set up by ETH Zurich and its partners goes much further.

## Your support provides

- Up to **8 additional professorships** plus **100 (post-)doctoral research positions** in the fields of rehabilitation and inclusion
- Further **reinforcement** of **Zurich's position** as the leading international rehabilitation research centre
- A **specialised Master's programme** in rehabilitation science and technology
- A **dedicated, interdisciplinary rehabilitation centre**

Find out more: [www.ethz-foundation.ch/en/rehab](http://www.ethz-foundation.ch/en/rehab)



Currently, the complex process of rehabilitation is not considered in a holistic way. ETH Zurich's Rehab Initiative brings the connections between basic research and practical application in clinical and day-to-day situations, and the economic and social impact

more clearly into focus. Collaboration between the different partners – including researchers, doctors, disability organisations, companies and health economists – is becoming closer and more targeted.



# "Show that you care!"

Ilse New not only supports new talent in her role as a donor to the ETH Foundation, the long-serving ETH lecturer in English language and literature has made encouraging talent her life's mission.

*What brought you to ETH Zurich?*

**ILSE NEW** - I grew up speaking two languages, with family in Austria, England and Switzerland, and I came to Zurich in 1968 to study English language and literature. At the university, I had the good fortune to study with Sir Brian Vickers, Professor of English and Renaissance literature and one of the world's leading Shakespeare scholars. He became my supervisor and mentor and when he moved to ETH Zurich in 1975 to found the Centre for Renaissance Studies, I became his research assistant. After graduation I was offered my first teaching assignment, English for Academic Purposes, and thereafter steadily expanded the range of courses. When Brian Vickers retired in 2002, I was asked to take over his lecture course on English literature. Over the years, I've shared my passion for English language and literature with thousands of students!

*Why do you support the Excellence Scholarship & Opportunity Programme at ETH?*

**ILSE NEW** - First, because in my own life I've been fortunate enough to meet persons who inspired and encouraged me. And sec-

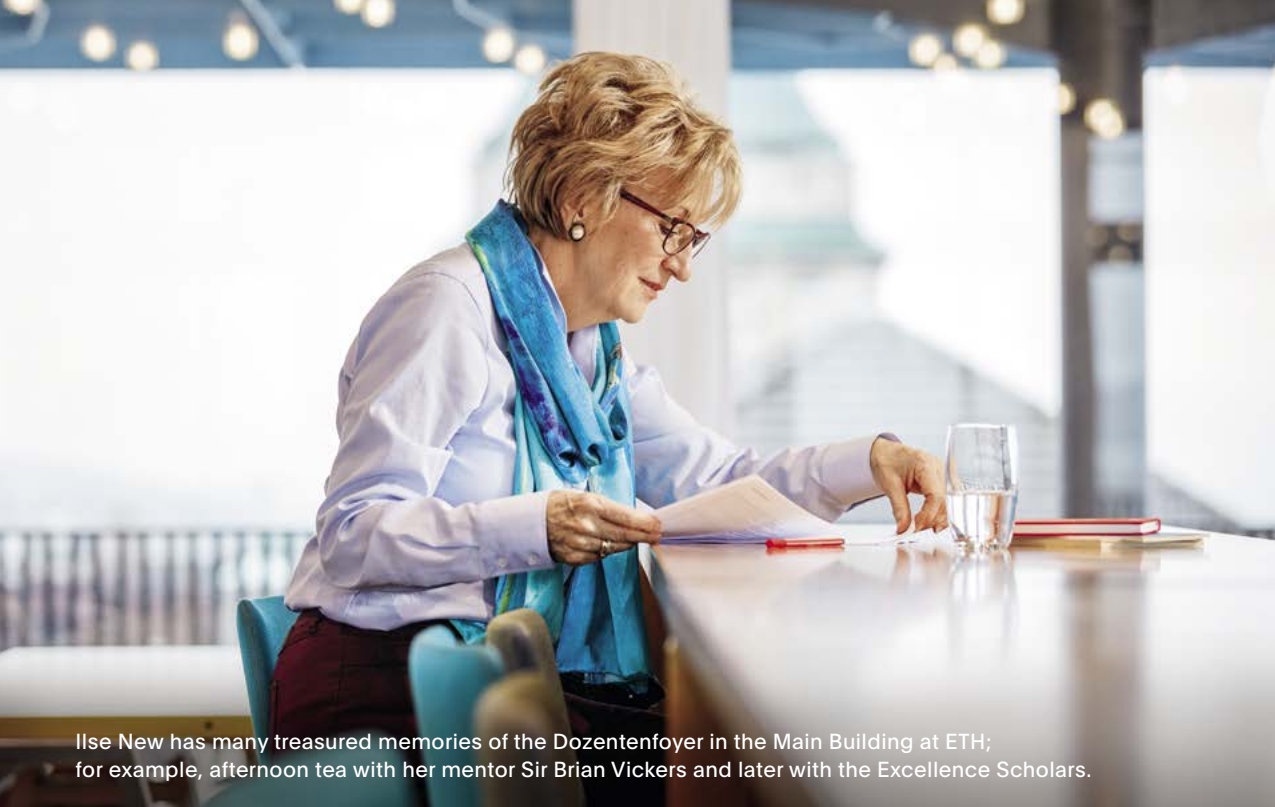
ond, as I became more involved in individual supervision over the years, I got to know many Excellence Scholars. After the founding of the ETH Foundation in 2003 and the launch of the Excellence Scholarship & Opportunity Programme in 2007, they became more frequent on my courses and inspired me time and again with their personalities and curiosity. I could witness how the scholarship inspired these talented individuals and boosted their confidence. "Striving for excellence" became their maxim. I see encouraging young people as the noblest task of every educator: "Show that you care!"

*One way that you do this today is by proof-reading the scholars' English texts – from Master's theses to academic publications.*

**ILSE NEW** - There have been unusual requests too. One of the scholars, for example, had a rock band. He asked me whether I could take a look at his lyrics, and I ended up working with them on three albums. With the support of other scholars, we also organised a number of successful benefit concerts. →







Ilse New has many treasured memories of the Dozentenfoyer in the Main Building at ETH; for example, afternoon tea with her mentor Sir Brian Vickers and later with the Excellence Scholars.

# A slightly different school day

Can you make youngsters aware of the needs of people with disabilities while increasing their interest in STEM subjects? That's the aim of CYBATHLON @school!



What are the difficulties that people with physical disabilities face in their day-to-day lives? How does the human nerve system work and how does an accident affect it? Why does differential calculation help when developing a functioning prosthetic arm? Pupils do not normally spend much time looking at topics such as these. CYBATHLON @school aims to help pupils experience them for themselves.

In April 2019, the CYBATHLON visited the Bülrain cantonal school in Winterthur. The modular programme extends from biology to ethics and can be taught on a multi-disciplinary basis. This time the Sport module was on the agenda. As an ambassador for PluSport, the specialist for disability sports in Switzerland: former elite cyclist Michele Gulino, who wears a prosthesis following a lower leg amputation. He guided the →

→ What do you notice when you follow the talents' progress?

**ILSE NEW** - I am happy to still be in contact with scholars at ETH – and also in Toronto and at Stanford. I am particularly impressed by their tendency to favour a well-rounded education, as advocated by the co-founder of the humanistic tradition at ETH, Francesco de Sanctis. The wide scope of their talent can be seen in a particular affinity for music, for example, or in an interest in literature and the arts. Many of them also show clear signs of leadership potential as they set about supporting and motivating younger students. It will be exciting to see how these scholars will shape our future!

How important was education to your own family?

**ILSE NEW** - Education has always been highly valued in my family, especially a holistic education. I can look back at generations of academics and engineers, with musical or artistic tendencies. I can still hear my grandfather's impressive renditions of Chopin polonaises, and my home is decorated with

**"I could witness how the scholarship inspired these talented individuals and boosted their confidence."**

Ilse New  
Donor to ETH Zurich

my father's watercolours. My husband holds a PhD in chemical engineering from ETH and also believes in a holistic education: it's no coincidence that we met at an art exhibition – and got to know each other through our shared love of music and playing piano duets! —

Support the Excellence Scholarships at [www.ethz-foundation.ch/en/esop](http://www.ethz-foundation.ch/en/esop)



Already supported by:

Ernst Göhner Stiftung, FBED,  
MBF Foundation, Swiss Life  
"Perspectives" Foundation and others



Pupils tried out three courses that simulate everyday challenges faced by people with disabilities.

which aims to get youngsters excited about what are known as STEM subjects: science, technology, engineering and mathematics. The pilot phase began with two modules in 2018, and with support from donors the aim is to add new modules by the end of 2020 and reach children and teenagers throughout Switzerland and worldwide. —

Support the CYBATHLON @school project at [www.ethz-foundation.ch/en/cyathlon-school](http://www.ethz-foundation.ch/en/cyathlon-school)

## CYBATHLON

**People with disabilities compete in the CYBATHLON with the aid of cutting-edge assistive systems. Robert Riener, Professor of Sensory-Motor Systems at ETH Zurich, initiated the CYBATHLON as a platform for developing assistive technology suitable for everyday use. In the first contest in 2016, 66 pilots from 25 countries competed against each other at the sold-out SWISS Arena in Zurich. The overwhelming response inspired ETH Zurich's comprehensive Rehab Initiative. The next CYBATHLON will take place on 2 and 3 May 2020. Save the date!**

Support the CYBATHLON project at [www.ethz-foundation.ch/en/cyathlon](http://www.ethz-foundation.ch/en/cyathlon)

Already supported by:

The Balgrist, EKZ, maxon motor,  
Schulthess Clinic, BNP Paribas,  
Hocoma, Swiss Foundation  
for Children with Cerebral Palsy  
and others

→ pupils as they made their way around a course wearing a prosthetic leg. The youngsters were all concentration, because walking with a prosthetic leg takes some practice. Gulino answered a range of questions in a discussion session afterwards. Sports teacher and ETH alumnus Thomas Rüegg commented: "For me, this is the Champions League of sports teaching. This module lets school pupils bring together the things they have learned in different subjects."

The partners behind the project are ETH Zurich's CYBATHLON (see info box) and the mint & pepper programme run by Wyss Zurich (ETH Zurich and the University of Zurich),

**"It could happen to any of us – after an accident or a stroke, young or old. Let's do everything we can to ensure that people with disabilities are able to live autonomously."**

Irene Kaufmann,  
Member of the Board of Trustees, ETH Foundation





# THANK YOU



## Your contribution to our future

Science and technological innovation are more important today than ever. We need answers to global challenges that affect us all: from climate change to our health. The keys to success are exceptional talent, excellent research and teaching, strong partners – and you. **Help support talent and research at ETH Zurich!**



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Text "ethzf" and the amount you want to donate to 488.  
For example, "ethzf30" to donate CHF 30 (maximum donation CHF 100).



### Credit card

Donate by credit card, PostFinance, PayPal or TWINT:  
[www.ethz-foundation.ch/en/online-giving](http://www.ethz-foundation.ch/en/online-giving)



### Bank transfer

Use the enclosed payment slip or the following details:

Bank: Credit Suisse AG, 8070 Zurich  
IBAN: CH87 0483 5027 0482 3100 0  
Post account number Credit Suisse: 80-500-4  
Payment reference: Uplift 2EN

For donations in euros or US dollars:  
[www.ethz-foundation.ch/en/bank-details](http://www.ethz-foundation.ch/en/bank-details)



### Personal support

There are lots of ways in which to support research and teaching at ETH Zurich. We would be happy to discuss the options with you – so your support can have the greatest possible impact.

We look forward to hearing from you!  
Email: [uplift@ethz-foundation.ch](mailto:uplift@ethz-foundation.ch)  
Phone: +41 44 633 69 66



A portrait of Joe A. Manser, a man with short brown hair and glasses, wearing a dark blue sweater and a blue and white patterned scarf. He is seated in a wheelchair, with his right hand resting on the wheel. The background is a blurred interior with warm, golden light. The text is overlaid on the lower right portion of the image.

**"Research into better  
technical aids for people  
with disabilities or for the elderly  
opens up new horizons."**

**Joe A. Manser**  
Architect, Swiss Competence Center  
for Accessibility in Architecture