

A black and white photograph of a woman with long dark hair, smiling as she walks on a city sidewalk. She is wearing a long-sleeved top and jeans. Her right leg is a prosthetic, and she is wearing a watch on her left wrist. The background shows a city street with a railing and buildings.

ottobock.

# Life in motion

with intelligent prosthetic  
microprocessor knee solutions

Quality for life

# The right microprocessor knee for all mobility needs



Detlef wears the Kenevo



Masomah wears the C-Leg



Axel wears the Genium



Réka wears the Genium X3

Detlef is taking his first steps into a new life after an amputation. Masomah has a desk job as a translator and is renovating a house. Axel is up and down the stairs many times a day while working. And Réka's schedule is jam-packed between studying, blogging, and sports.

“I love my walks.”

Detlef, retiree



### Benefits of the Kenevo

- Standing safely in everyday situations<sup>4</sup>
- Sufficient ground clearance, even when taking small steps and walking slowly<sup>4</sup>
- Reliable stance release with walking aids
- Controlled, balanced sitting down and standing up
- Stumble Recovery Plus active at all times, which gives you the opportunity to recover if you were to stumble
- Special wheelchair function facilitates maneuvering in a wheelchair
- Additional support while walking down ramps
- Intuitive use of a stationary indoor bicycle

**Kenevo. For moderately active people.**

## Safety you can feel

Detlef never misses an opportunity to walk or watch his grandson play soccer. Detlef lost confidence after his amputation due to his age, but the Kenevo showed him that he can put his trust in a knee joint. The Kenevo adds an element of safety in his everyday life, with every step he takes.

### Proven by study results<sup>4</sup>

- People with the Kenevo prosthesis stumbled considerably less often
- The Kenevo reduced the risk of falling
- Users with the Kenevo were proven to be more mobile and independent
- With the Kenevo, fewer people needed to utilize a wheelchair

**The prosthetic solution suitable for Detlef:**

**4R160 KISS lanyard system with Skeo 3D Liner 6Y88**

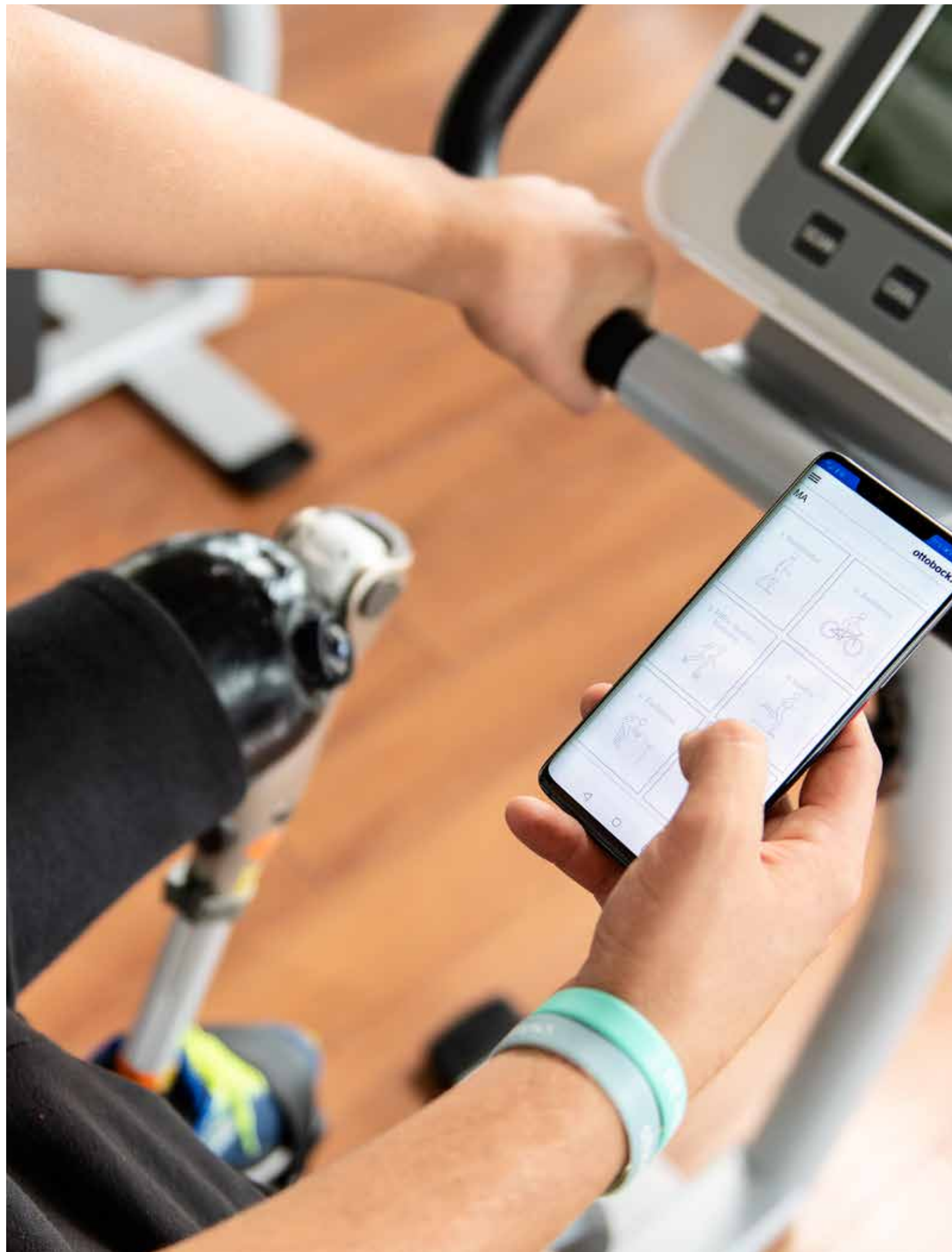
**4R57 Rotation adapter**

**3C60 Kenevo**

**4X840 Kenevo protective cover**

**1C11 Terion K2**





## The new Kenevo offers even more options

The new Kenevo has extended functionality to simplify and enrich your life. It gives intuitive assistance while walking down ramps, stepping off a curb, and using a stationary indoor bicycle. Everyday routines such as donning the prosthesis or charging with a foam cover on are even more convenient now.



### New functions at a glance

- Intuitive use of a stationary indoor bicycle
- Additional support while walking down ramps
- The prosthesis can be donned while seated thanks to complete bending of the knee
- Easy adjustments from a smartphone with the Cockpit app
- Convenient charging without removing the foam cover



“My boyfriend and I decided to renovate a house.”

Masomah, translator

**Benefits of the C-Leg 4**

- Reliable swing and stance phase control, which means you can safely and confidently navigate ramps, stairs, and uneven surfaces <sup>5, 7, 11, 16</sup>
- Safe backward walking<sup>7</sup>
- Active stumble recovery gives you the opportunity to recover, if you were to stumble <sup>11</sup>
- You can choose between intuitive and manual stance
- Weatherproof (IP67) so you do not need to be concerned in case of occasional exposure to water (e.g. rain shower while taking a walk)

**Tried and tested: more users have been fit with the C-Leg than any other mechatronic knee prosthesis**

- Around 90,000 treatments
- 60 English-language scientific publications
- Around 2,500 study participants
- The study results provide proof of the everyday user benefits

**C-Leg 4. For active people.**

**Freedom you can be confident in**

Masomah has an office job as a translator and lives a colorful life. She manages a library that she founded herself as a volunteer. She is currently renovating her two-story house with her boyfriend, and loves to travel abroad. No matter what she’s doing, the C-Leg is there to support her.

**Additional benefits of the C-Leg 4**

- A symmetric, nearly natural gait pattern
- Two individually adjustable MyModes
- Safe movements when walking at varying speeds <sup>5, 11, 18</sup>
- Cockpit app for Android and iOS devices:
  - Convenient battery checks
  - Step counter
  - Switch between different MyModes



“I get into a crane and shred rubbish. I’m up and down the stairs with a tablet in my hand, but I never worry about falling.”

Axel, process manager



### Benefits of the Genium

- Swing phase is reliably initiated with adequate ground clearance, allowing you to walk on challenging terrain <sup>13, 17, 19, 20</sup>
- Stumble Recovery Plus is active at all times giving you the opportunity to recover, if you were to stumble <sup>12, 13, 17</sup>
- Saves energy during walking, especially on slopes and uneven ground <sup>13, 17, 20</sup>
- Climbing stairs step-over-step and navigating obstacles <sup>13</sup>
- Choice between intuitive and deliberate stance
- Weatherproof (IP67) so you do not need to be concerned in case of occasional exposure to water (e.g. rain shower while taking a walk)

**Genium. For active people.**

## Intuitive movement that’s part of you

Axel is a process manager at a waste disposal company. He works hard and plays hard. He is currently building a new home for his family. Quality time spent with his wife, children, and grandson is a priority. His other recreational activities include sailing and traveling. Axel has no difficulty keeping up with his fast-paced lifestyle, and exploring new opportunities while using his Genium.

### The Genium supports the user

- With virtually natural movement patterns <sup>12, 13, 15, 20</sup>
- On uneven ground, over stairs and obstacles, as well as up and down slopes <sup>12, 13, 15, 20</sup>
- Making it easier on the entire locomotor system, including the sound side, thanks to “optimized physiological gait” <sup>13, 15, 19</sup>
- By likely reducing long-term secondary orthopedic problems <sup>13, 15, 19</sup>

*“I always wanted to do what everyone else was doing. That’s why I try everything out first. If it doesn’t work, I just do something else.”*



**The prosthetic solution suitable for Axel:**

**7T450=1 SiOCX socket**

**4R57 Rotation adapter**

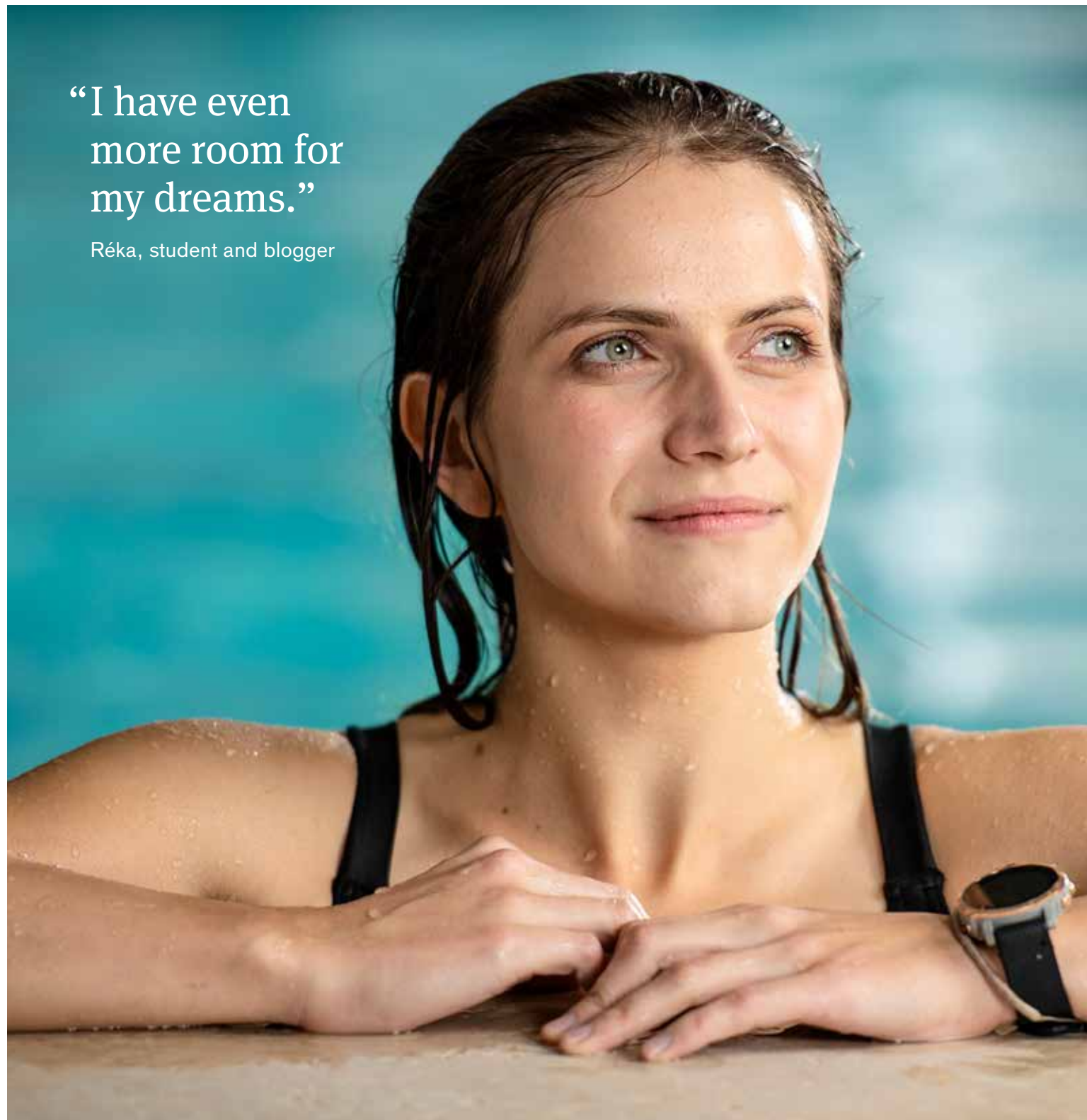
**3F1=2 / 99B120 Foam cover**

**3B1-3 Genium**

**1C50 Taleo**

“I have even more room for my dreams.”

Réka, student and blogger



### Benefits of the Genium X3

- Enhanced safety thanks to reliable initiation of the swing phase, allowing you to walk on challenging terrain <sup>13, 17, 20</sup>
- Stumble Recovery Plus active at all times, giving you the opportunity to recover, if you were to stumble <sup>12, 13, 17</sup>
- Reduces exhaustion when walking on slopes and uneven ground <sup>13, 17, 20</sup>
- Easier to climb stairs step-over-step and navigate obstacles <sup>13</sup>
- Walk-to-Run feature
- Enhanced stability and comfort with intuitive stance <sup>13</sup>
- Robust and durable
- Waterproof and corrosion-resistant (IP68) means full functionality during activities in fresh, chlorinated, and salt water

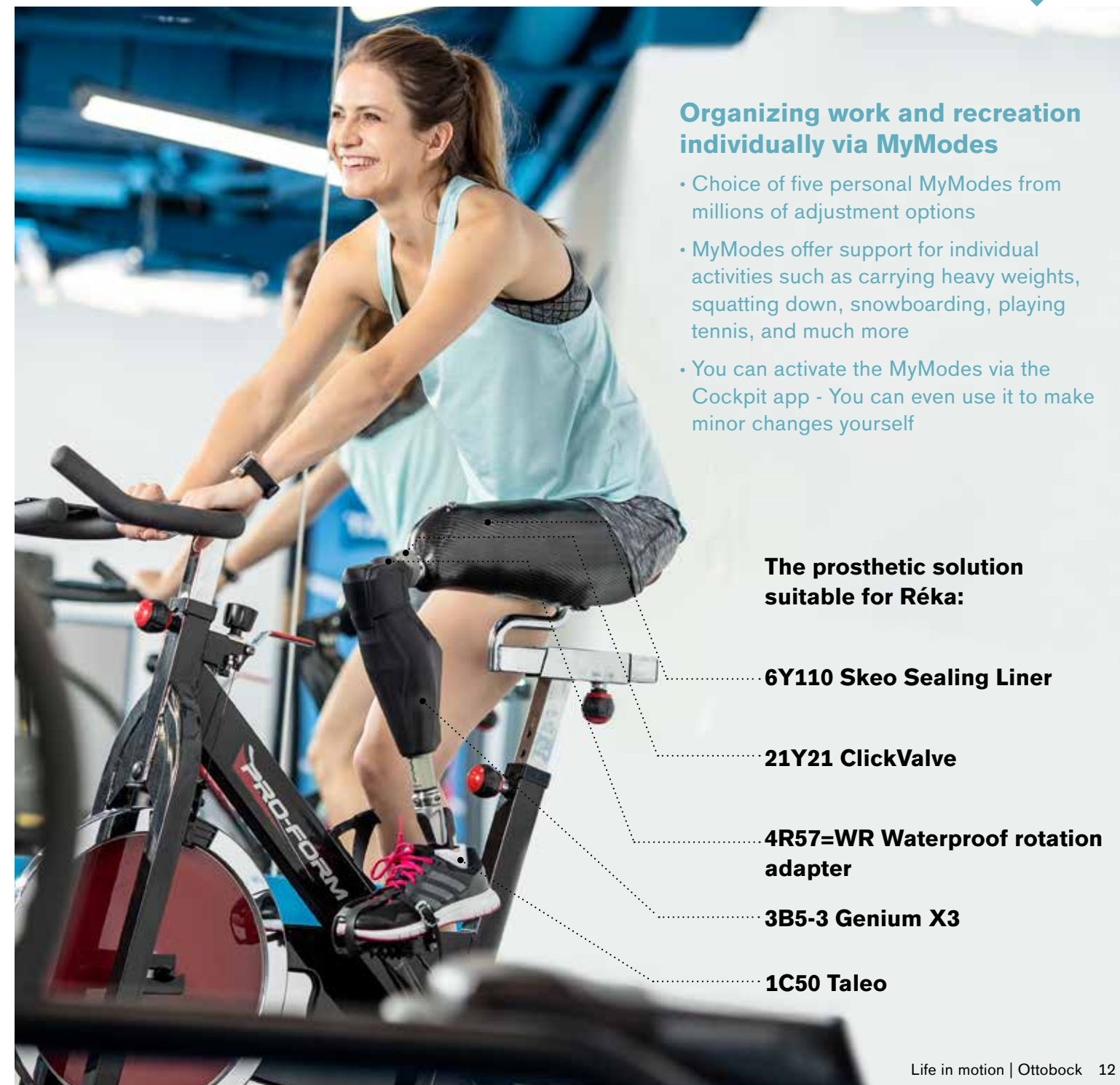
**Genium X3. For active and very active people.**

## Challenges you choose for yourself

Réka's life is fast-paced: she's a student, blogger, and influencer, and she loves being active. She feels free when she is running or swimming. When she lost her left leg after a car accident in 2014, she realized she had a second chance. It was a turning point. She's now pursuing her vision of bringing people with and without an amputation together through sports. She has just made the switch from the Genium to the Genium X3, which opens up even more opportunities for her.

### Compared to the Genium, Genium X3:

- Is waterproof and corrosion-resistant – showering and swimming in salt and chlorinated water is possible with full functionality
- MyModes include activities with water exposure



### Organizing work and recreation individually via MyModes

- Choice of five personal MyModes from millions of adjustment options
- MyModes offer support for individual activities such as carrying heavy weights, squatting down, snowboarding, playing tennis, and much more
- You can activate the MyModes via the Cockpit app - You can even use it to make minor changes yourself

### The prosthetic solution suitable for Réka:

**6Y110 Skeo Sealing Liner**

**21Y21 ClickValve**

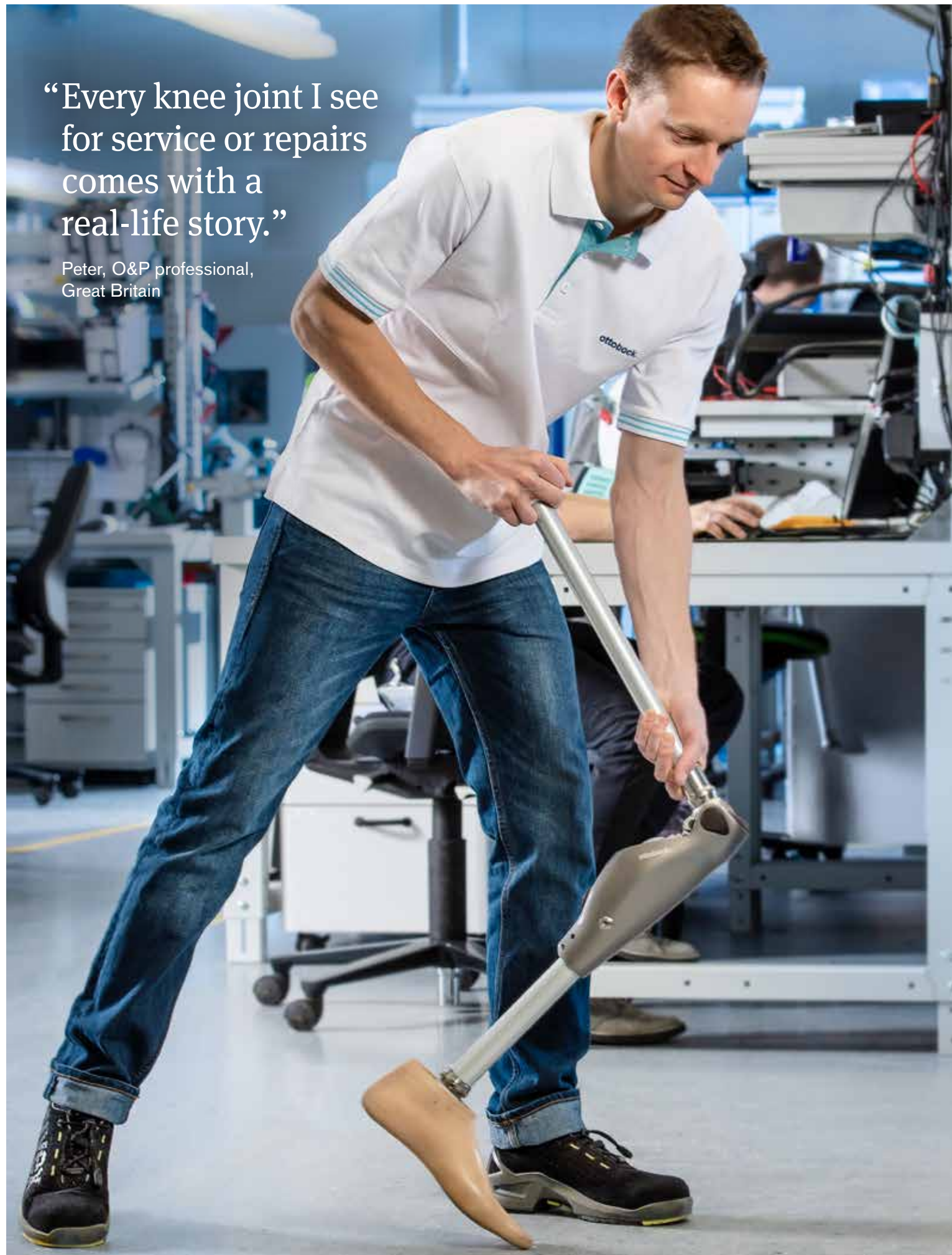
**4R57=WR Waterproof rotation adapter**

**3B5-3 Genium X3**

**1C50 Taleo**

“Every knee joint I see  
for service or repairs  
comes with a  
real-life story.”

Peter, O&P professional,  
Great Britain



## Warranty options for microprocessor prosthetic knee joints

# Guaranteed safety and mobility

The Ottobock warranty packages make life easier:

- Free repairs and maintenance during the applicable warranty term (three or six-year warranty package)
- Free loaner during maintenance and repairs
- Ottobock quality, comprehensive service

## References

- 1 More on the various studies: [www.ottobock.com/clinicalstudies](http://www.ottobock.com/clinicalstudies)
- 2 Chen, et al. (2018): Economic benefits of microprocessor controlled prosthetic knees: a modeling study. *Journal of Neuro Engineering and Rehabilitation* 2018, 15 (Suppl 1):62.
- 3 Lansade, C et al. (2018): Mobility and satisfaction with a microprocessor-controlled knee in moderately active amputees: A multi-centric randomized crossover trial. *Annals of Physical and Rehabilitation Medicine*.
- 4 Mileusnic, MP et al. (2017): Effects of a Novel Microprocessor-Controlled Knee Kenevo on the Safety, Mobility, and Satisfaction of Lower-Activity Patients with Transfemoral Amputation. *Journal of Prosthetics and Orthotics*; vol. 29 (4): 198–205.
- 5 Thiele, et al. (2018): Design and performance of three new microprocessor-controlled knee joints. *Biomed. Eng.-Biomed. Tech.* 2018.
- 6 Hahn, et al. (2015): Effects of Mobility Grade, Age, and Etiology on Functional Benefit and Safety of Subjects Evaluated in More than 1200 C-Leg Trial Fittings in Germany. *Journal of Prosthetics and Orthotics*, 2015, Vol. 27(3), 86:94.
- 7 Bellmann, et al. (2018): Comparative biomechanical evaluation of two technologically different microprocessor-controlled prosthetic knee joints in safety-relevant daily-life situations. *Biomed. Eng.-Biomed. Tech.*
- 8 Wong, CK et al. (2015): Benefits for Adults with Transfemoral Amputations and Peripheral Artery Disease Using Microprocessor Compared with Nonmicroprocessor Prosthetic Knees; *AM J Phys Med Rehabil*; 2015 Oct; 94(10):804–10.
- 9 Highsmith, M. J. et al. (2010). Safety, energy efficacy of the C-Leg for transfemoral amputees: A review of the literature. *Prosthetics and Orthotics International* 2010; 34(4): 362:377.
- 10 Kannenberg, A et al. (2014): Benefits of microprocessor-controlled prosthetic knees to limited community ambulators: Systematic review. *Journal of Rehabilitation Research & Development (JRRD)* 2014; 51(10): 1469–1496.
- 11 Hafner, et al. (2009): Differences in function and safety between Medicare Functional Classification Level-2 and -3 transfemoral amputees and influence of prosthetic knee joint control. In: *Journal of rehabilitation research and development* 46(3), p. 417–433.
- 12 Highsmith, MJ et al. (2016): Effects of the Genium Microprocessor Knee System on Knee Moment Symmetry During Hill Walking. *Tech Innov.* 2016; 18:151–57.
- 13 Bellmann, et al. (2012): Immediate effects of a new microprocessor-controlled prosthetic knee joint: a comparative biomechanical evaluation. In: *Archives of physical medicine and rehabilitation* 2012; 93(3):541–549.
- 14 Kampas, et al. (2018): Die neuen Genium Kniegelenke – Funktionserweiterung zur Erhöhung des Anwendernutzens (The new Genium knee joints – functional enhancements to increase benefits to the user), *Orthopädie Technik*, 11/2018.
- 15 Aldridge Whitehead, JM et al. (2014): Does a Microprocessor-controlled Prosthetic Knee Affect Stair Ascent Strategies in Persons with Transfemoral Amputation? *Clin Orthop Relat Res.* 2014; 472(10):3093–101.
- 16 Kahle, et al. (2008): Comparison of nonmicroprocessor knee mechanism versus C-Leg on Prosthesis Evaluation Questionnaire, stumbles, falls, walking tests, stair descent, and knee preference. In: *Journal of rehabilitation research and development* 45 (1), p. 1–14.
- 17 Highsmith, MJ et al. (2014): Perceived differences between the Genium and the C-Leg microprocessor prosthetic knees in prosthetic-related function and quality of life. *Tech Innov.* 2014; 15:369–75.
- 18 Bellmann, et al. (2012): Stair ascent with an innovative microprocessor-controlled exoprosthetic knee joint. *Biomed Tech.* 2012; 57:435–44.
- 19 Mileusnic, MP et al. (2019): Benefits of the Genium microprocessor controlled prosthetic knee on ambulation, mobility, activities of daily living and quality of life: a systematic literature review. *Disabil Rehabil Assist Technol.* 2019 Aug 30:1–12.
- 20 Kannenberg, et al. (2013): Activities of Daily Living: Genium Bionic Prosthetic Knee Compared with C-Leg. In: *Journal of Prosthetics & Orthotics* 25 (3), p. 110–117.

