# ottobock. *en route*

No. 1

English edition

Welcome to the first issue of the Ottobock Magazine *en route*!

*en route* no. 1 is dedicated to the seventeenth Summer Paralympic Games, to take place in Paris between 28 August and 8 September 2024. Since their inception in 1948, when Sir Ludwig Guttmann organized the Stoke Mandeville Games in England for World War II veterans with spinal cord injuries, the Paralympics have become one of the world's most prestigious sporting events. 40 years later in Seoul, Ottobock became a partner of the Games, providing comprehensive technical support to athletes with disabilities competing in a wide range of sports. The Paralympic movement has since surged to great prominence, with the 2020 Tokyo Paralympic Games and the 2022 Beijing Paralympic Winter Games demonstrating to billions of viewers that the Games are more than just a fascinating and exhilarating sporting event—they inspire people around the world to bring about social change and promote inclusive professional and sporting opportunities for those with disabilities. Ottobock supports people all over the world to restore and expand their mobility and empowers them to transcend themselves.

*en route* is aimed at everyone who's on the move—whether it be travelling the world or simply navigating life. With this magazine we want to spark debate and show what human mobility means in all its spatial, social and aesthetic dimensions. *en route* is proudly and exclusively a print publication. How does a print magazine fit into today's digital world and align so well with a company like Ottobock, a leading pioneer in digitization and artificial intelligence, you might ask? To put it simply: the magazine is an anchor in the digital storm, allowing us to pause, reflect and navigate at our own pace. The specific paper and inks of the magazine in your hands right now have been chosen for their unique physical qualities: to create a lasting tactile experience to revisit over and over again at your leisure. We believe it's not a question of analog versus digital, but of linking analogue *and* digital in a manner that appeals to all our senses. Producing and printing a magazine, like creating a bionic prosthesis, requires years of practice and passion, and combines the best of the analog and digital worlds to create a lasting physical object of functional, emotional and aesthetic value in equal measure.

PARIS 2024

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# What's up, Peter?

**The countdown has well and truly begun. The seventeenth Summer Paralympic Games take place in Paris between August 28 and September 8 2024, and the metropolis on the Seine is already ramping up for the global mega-event. Peter Franzel is responsible for the partnership with the Paralympics at Ottobock and describes some highlights.**

## "Games wide open"

This is the slogan the Paris 2024 Organizing Committee has chosen as the strong claim representing both the 2024 Olympic and Paralympic Games in France. Paris is really opening up for the Games, is transforming numerous monuments into competition venues, and will morph into one huge open-air sports arena to allow as many people as possible to participate. This open approach is an invitation to the whole world to enjoy the emotions of the Games together and share them with others. Paris wants to host Games in 2024 that are more responsible, inclusive, democratic and spectacular than ever before.



## The torch

As always, the Games will begin with the Paralympic Torch Relay. The flame will be lit in Stoke Mandeville in England, the birthplace of the Paralympic movement, and then be carried across France by more than 1,000 torch bearers. Among them will be some of the world's most famous athletes, but also many sports fans and those involved in parasport or non-profit projects in their countries. Along the way, the whole world will be able to experience the beauty of the highly varied countryside and cultural heritage of France. The flame will finally reach Paris to light the main torch during the opening ceremony on August 28. Incidentally, the same torch will also be used in the Olympic Torch Relay. As an iconic object of the Games, the torch always embodies the message of the respective Games through its shape, color and inspirations. It's a work of art in itself. The champagne-colored torch for Paris 2024 was designed by French designer Mathieu Lehanneur, who sought to "play with perfect symmetry to better express the message of equality. I wanted the torch to be extremely uncluttered, iconic and almost pure essence. It's simple like a hyphen and flows like a flame."

## The biggest Games of all time

No less than 2.8 million tickets are going on sale, and when they're all gone it will make these the biggest Paralympic Games ever. Around 4,400 of the world's best Paralympic athletes from more than 180 nations will compete in 549 different events in 22 sport disciplines: blind football, boccia, goalball, para badminton, para archery, para equestrian, para powerlifting, para judo, para canoe, para athletics, para cycling, para rowing, para swimming, shooting para sport, para taekwondo, para table tennis, para triathlon, wheelchair basketball, wheelchair fencing, wheelchair rugby, wheelchair tennis and sitting volleyball.

## Football beside the Eiffel Tower

Many Paris landmarks will be transformed into sports venues for the Games, thus presenting the city from its most beautiful side and offering spectators and athletes alike an incomparable experience set against spectacular backdrops. While athletics will mainly take place in the Stade de France and other famous stadiums, blind football will be played next to the Eiffel Tower and wheelchair fencing and para taekwondo will take place at the Grand Palais, the emblematic Belle Époque glass palace built for the 1900 Paris Exposition. The gardens of Les Invalides, home to the renowned tomb of Emperor Napoleon I, will host para archery. Majestic horses and riders will convene at King Louis XIV's Versailles Palace for the para equestrian events. What's more, the Paralympic Games will be celebrated as a single, massive, marvelous public festival extending far beyond the sports venues: throughout the summer, free cultural and gourmet festivals will be hosted in all of the city's *arrondisements* for locals and visitors from all over the world, displaying Parisian *savoir-vivre* at its very best.



## Mega-workshop

Ottobock will once again provide the technical services at the Paralympics this year—everything will be bigger and better in this respect too. This time the technicians won't arrive with just a few containers: the central workshop in the Paralympic Village will occupy an entire hall over 650 square meters in size, supplemented by another 15 smaller stations at various competition venues. The Ottobock team will be made up of 158 technicians from 41 countries speaking a total of 32 languages. 40 percent of the team is female. The experienced orthopedic technicians, wheelchair specialists and welders, tailors and 3D printing experts will ensure the professional repair and maintenance of the equipment of athletes of all nations—regardless of the brand of their prosthesis, orthosis or wheelchair. Thanks to the technical teams' well-proven engagement, the athletes will once again be able to dedicate themselves fully to doing their very best in their competitions at Para Paris 24.

**Peter Franzel**, Head of Global Events, Exhibitions & Sport / Ottobock

**Link to video:**
Road to Paris 2024

# Para, Para, Paris!

## Heinrich Popow

**The Paralympics pioneer has become a para patron. Heinrich Popow is a role model for multiple generations in the Paralympics—standing on his shoulders are over 1,500 athletes who have turned para sports into a popular movement all over the world. He expects his protegees to break through in Paris and looks forward to tough, dramatic and exciting competitions.**

*Ottobock is playing an increasingly vital role for athletes at the Paralympics. Technicians repair and rebuild damaged prostheses, orthoses and wheelchairs for all athletes. If that doesn't do the job, they receive a complete replacement. Many participants from the Global South who have travelled to the Paralympics with improvised prostheses receive a suitable prosthesis from Ottobock. This is what makes it possible to level the playing field.*

Yes, these really are Paralympic stories that can only be told thanks to Ottobock. In contrast to athletes from highly industrialized countries, they're much more poorly equipped. Balancing that out requires immense willpower and the accomplishment of exceptional human feats starting from nothing. When you put tenacity and Ottobock's technology together, exceptional performances increase every four years from one Paralympics to the next. That's an incredible boost for the Paralympic movement.

*Top performers are increasingly verging on Olympic standards. In track and field today, only hundredths of a second and a few centimeters decide the medals. The Paralympics themselves have become a high-performance competition.*

Yes, that's quite complicated. I think Paralympic sport has now reached a point where we have to decide: are we a movement for all individuals with a disability, or a movement that makes seemingly impossible new records possible? The latter means that higher standards and requirements increasingly restrict access to competitions. It's really impossible to reconcile this trend towards exclusivity with the goal of inclusivity.

*But aren't the Paralympics all about being inclusive and diverse?*

Certainly that's the case with grassroots sports, which take a highly inclusive approach. No difference is made based on language, origins or type of disability. But when it comes to elite sports, it's vital to ensure parity and equal opportunity. This is why different disciplines have different criteria that become more demanding as the level increases. The more professional the performance, the more people are shut out of the Paralympics movement. The basic idea of "everyone's a winner," with which the Paralympics movement once began, has thus become somewhat lost.

*So the more specialized the Paralympics become, the fewer people are able to get involved?*
The Paralympics themselves don't need to include everyone. Rather, they're the end point of successful integration. The Paralympics are an example of the result of perfect societal integration. It's a long rocky road for people with disabilities. Simply navigating life with a disability is highly challenging. To then become a competitive athlete is an even greater challenge. Naturally there are exceptional athletes who pursue this path but there are too few such exceptions to organize a competition. For instance, there are no longer running competitions for bilateral transfemoral amputees because two exceptional athletes—a British and a South African man—have become so good that the qualification standards have been pushed so high that others can't keep up. These top athletes' exceptional performances result in the discipline obviating itself. In contrast, broader categories—such as male lower-leg amputees—have a more even performance distribution, where a number of emerging talents are pushing the field forward and their abilities are more or less commensurate. This makes this discipline particularly enjoyable for the spectators.

*What are you advocating?*
I think we really need to push the boundaries of disability and use the beauty of sport to show how athletes with disabilities develop exceptional abilities that allow them to constantly expand limits to go higher, faster and farther. You shouldn't hold people back.

*So you accept this means it would become less inclusive?*
It doesn't become less *inclusive*—rather, inclusivity needs to be redefined. I'm not actually a fan of the term "inclusive." I'm more about normalcy, and Paralympic sport powerfully shows that it's increasingly a normal fixture in society. That is, it's a shining star of a perfectly inclusive society in touch with individuals with disabilities.

*But wouldn't that mean that the Paralympics have become increasingly commercial—like the Olympics?*
The Paralympics continue to express the ethos of sports that has long become decoupled from the Olympics. We welcome everyone, and personal, individual stories still carry weight. You have to find a healthy medium without excluding the most elite and exceptional athletes who wow society with their abilities. The first runner with paraplegia took part in the London Marathon in an exoskeleton suit in 2018. He used to be in a wheelchair, fought his way out of it and then ran a marathon! These are the stories our lives tell, and the Olympics haven't offered such stories for quite a while. The Olympic flame only still burns in the heart of Paralympic athletes. Paralympic sport displays a particular *joie de vivre*, with an open attitude, and with fun and excitement. People dance, sing, make music together and embrace. It's an emotional coming together without divisions.

*Ottobock has become increasingly important to the Paralympics.*
Three things are important for an athlete at the Paralympics: where you're sleeping, where you can get something to eat, and where Ottobock is. We support all athletes at the Paralympics, not just those with Ottobock products. Everyone! Treated equally. We even buy spare parts from our competitors so we can help other athletes. That's not something competitors can offer. They have neither the network nor the technicians. And they lack the experience we've gained over the past 35 years, and the passion and vision that Hans Georg Näder has brought to the Paralympics.

*Hans Georg Näder cares chiefly about Paralympic ideals. But looking back, you see it's also a great strategic move. 1.5 billion people around the world watch the Paralympics. That has made the brand known internationally. Almost every person with a handicap knows Ottobock just thanks to the Paralympics.*
The Paralympics convey the idea of quality of life and make human empowerment tangible. These are also goals expressed by the Paralympic movement. Näder's state-of-the-art prostheses ensure that people experience as few obstacles as possible, meaning they still have enough energy in their free time to do sports. In the past, everyday life was so exhausting that it was impossible to imagine doing sports. But Ottobock's technical advances have made it possible for people to not only access sport more easily, but also to support the Paralympic movement.



*You are, clearly, Germany's "para pioneer." You've knocked down so many doors and made it possible for subsequent generations to pass through much more easily. You've already brought two generations to the starting line and are getting to know the third, fourth and fifth. 23 years ago you were a lone ranger, but now there are almost 200 Ottobock ambassadors worldwide. Do you know them all personally?*
Yes I do, and their numbers are increasing. What unites us is that we've overcome everyday challenges. Getting through life with a prosthesis is itself a kind of sport and requires top performance. So I see us all as athletes.

*You also organize running clinics around the world. How many people have taken part in these so far?*
For almost 15 years we've organized 10 to 15 running clinics with up to 20 participants.

*So you've supported over 1,500 people. You've developed from a para pioneer to a para patron.*
I like that notion. I'm happy to be a supporter of this movement.

*You also regularly visit hospitals and sit at the bedside of, for example, a 20-year-old soldier who has just lost his legs. That's also something you find time for. And you've seen so much suffering …*
… but I have the good fortune of being able to turn sorrow into joy. Otherwise this suffering would eat away at me and wear me down. For instance, I was in a hospital in Hannover visiting a young Ukrainian soldier who'd already lost a leg and was going to have the other amputated because it wasn't possible to save it. I prepared him for that. That was tough for me, too. I was born in Kazakhstan, my father has Ukrainian roots, and my mother is German-Russian. I knew that this young Ukrainian could speak Russian but didn't want to use it due to the war. But in this kind of situation, that's completely beside the point. I walked into his room, introduced myself, offered help in Russian, and he immediately accepted it, also in Russian. And then we sat together and he told me his story and wanted to know what he should expect.

I tried outlining his future by answering all his questions as truthfully as possible. My focus here is always sports. As a biped, we have the choice of doing sports or not—our quality of life is only slightly affected. This choice is taken away from you when you experience an amputation. You have to do sports because that enables a better quality of life. It's really a discussion between equals, because I'm affected myself. I'm allowed to discuss things a biped can't discuss, and this always leads to a positive outcome.

*What surprises are you expecting at the Games in Paris? What trends do you see?*
Paris is going to be dangerous—in a good way. Athletes who were at Rio have now retired. Tokyo was still defined by strict Covid restrictions. Those were good Games, but maybe not so lighthearted. A new generation of athletes will be seen in Paris—it'll be an explosive atmosphere.

*So everything is still to play for?*
Our athletes like Johannes Floors and Léon Schäfer learned their lesson in Tokyo. They won't make the same mistakes in Paris. They're both unbeatable—but they still have to deliver. And that's going to be thrilling. With elite athletics, I expect tough, dramatic and exciting competitions. We'll all be there cheering them on: "Para, Para, Paris!"

**Link to video:**
Running Clinic with Heinrich Popow




Iconic pose: Monica Contrafatto, Ambra Sabatini and Martina Caironi (left to right)

# Charlie's Angels

## Ambra Sabatini and Martina Caironi

**Ambra Sabatini, Martina Caironi and Monica Contrafatto are superstars back home in their native Italy. After sweeping the podium in the 100 meters in the T63 category at the 2021 Paralympic Games in Tokyo, the super-fast female trio were photographed in the famous pose from the movie *Charlie's Angels*, generating headlines and TV appearances all over Italy. Two years after that magical moment, the trio had the perfect opportunity to repeat their iconographic pose at the 2023 World Para Athletics Championships in Paris, as they swept the podium once again. Needless to say, the trio want to repeat their performance at the Paralympics 2024 and pull off a photo-hat-trick in the process.**

### Ambra Sabatini

At the World Championships in Paris 2023 Ambra Sabatini crossed the finish line with a new world-record time of 13.98 seconds, promptly adding the World Champion title to the Paralympic gold she'd won in Tokyo. This made her the first woman with an above-the-knee amputation to finish the 100 meters in under 14 seconds. In Paris, she was followed by Martina Caironi (14.35) who took silver, and Monica Contrafatto (14.67) who won bronze. After her victory Ambra expressed her relief: "I had a tough time after Tokyo because other athletes had improved a great deal and, at times, 14 seconds just seemed completely out of reach." Away from the track the 21-year-old is close friends with her older teammates Martina and Monica, but once they're at the starting blocks they're rivals of course—and you can certainly tell.

Ambra is thrilled about the Paris Paralympics, especially since the Games can finally take place without Covid restrictions, and her family and friends from Italy will also all be travelling to Paris. Family is important to her; she can well imagine starting her own family with her partner of three years at some point in the future. Currently, however, she lives in Rome (far away from her small home village of Porto Ercole in Tuscany), where she trains with Martina Caironi at the Gruppo Sportivo Fiamme Gialle, the sport section of the Italian financial police force Guardia di Finanza. It's difficult for her to combine this with studying Communication Sciences, so for now her focus is on preparing for the Paralympics.

At a very young age, Ambra can already look back on an unprecedented sports career, but she still has long-term goals beyond the 2024 Paralympics. She plans to compete in Los Angeles in 2028 and Brisbane in 2032, with focus more on the 200 meters and the long jump, so her family planning will have to take a back seat for now. Ambra's major goal: to match the records set at the Olympic Games and, race by race, close in on the magic 13-second mark for the 100 meters. In this context she hopes further technological innovations by Ottobock will boost her performance. As much as the regular Olympic Games are a great motivator, she's rather skeptical about the tendency for the Paralympics to increasingly merge with the Olympics: "It's good to see the Olympic Committee and the Paralympic Committee collaborating ever more closely. However, only the Paralympics guarantee people with disabilities public attention and visibility in society. That's why the Paralympics should remain independent."

### Martina Caironi

Martina Caironi only came second in the 100 meters at the World Championships in Paris, which left her quite disappointed. Now 34 years old, she since realized on vacation that her times are actually consistent with her age. She competed at the London Paralympics in 2012, was Italy's flag bearer for the opening ceremony of the Rio Games, and in Tokyo participated in a Paralympics marked by Covid. Now she's eager to repeat the *Charlie's Angels* movie pose with her two teammates on the winners' podium at Paris 2024. The three athletes are close friends, but don't get to see each other so often as they live in different parts of Italy. They've become such crowd favorites that they're now even invited as celebrities to glamorous events such as the Venice Film Festival.

Having won more than 25 medals, Martina is among Europe's top para athletes and wants the Paris Paralympics to mark the culmination of her illustrious career: "At last we'll be out there racing in front of spectators again! I'll give my all so that everyone there has a really exciting time." Her family and friends are already planning their trip to Paris in a big bus. "It'll be very emotional! And after the competition, we'll be partying for sure!"

For the past year and a half, Martina has been with Gruppo Sportivo Fiamme Gialle, the sports section of the Italian financial police force Guardia di Finanza. Her salary allows her to pay her rent, coach and physiotherapists. What's more, the Paralympic Games' prize money has also risen significantly, though it's still a long way from matching the Olympics.

After the Paralympics, Martina wants to first focus on her family and possibly start working at a sports organization to pass on her knowledge: "The Paralympics is a large family and I really want to continue working in it." For now she wants to concentrate on the sport side of things, but is very active in championing people with disabilities by giving talks and attending conferences to promote more understanding. At the same time, she's busy lobbying for Italian health insurance to cover more services than it currently does and to improve access to resources for all those with disabilities: "I'm just one example among many, but I want to be a role model and encourage people to accept their disability and engage in sports." As the Ottobock ambassador for Italy, she not only receives technological support but is trying to establish Running Clinics by Heinrich Popow in Italy. "They're a great opportunity, especially for children, because they make you realize you can live a good life even with a prosthesis."

**Link to video:**
Trio wins 100 meters in Tokyo 2021


# From Unfinished Business to the Last Dance

**In Paris 2024 thousands of athletes from all over the world will compete as ambassadors for Ottobock. We meet four of them here.**

## Léon Schäfer, Leverkusen

Léon Schäfer (26) has unfinished business at the Paralympics. After missing out on the gold medal in the long jump in Tokyo, Léon now intends to finally claim it at Paris 2024. And his chances are looking good: at the World Para Athletics Championships in Paris in July 2023, he won gold in the long jump and set a new world record. Yet he's not yet satisfied with his achievements in the 100 meters—even though he won bronze. The World Championships showed him he needs to up his game: "I realized I still wasn't able to handle the pressure in the 100 meters. I didn't fully concentrate on my run, I let my competitors to my left and right distract me for a few tenths of a second, so my running technique changed minimally in the second half and I lost time. I have to learn to keep my focus on myself." In preparation for Paris 2024 he wants to hit the mark in the long jump very early on, to then concentrate on sprint training: "I simply have to run more races." Yet in spite all of the ambitious athlete's self-criticism, we mustn't forget that he's not only a reliable source of medals for TSV Bayer 04 and the National Paralympic Committee Germany, but has also emerged as a para pop star who knows how to cleverly use the growing reach of the Paralympics for his own marketing. He's the face for Nike alongside soccer stars Mario Götze and Leroy Sané. At the World Cup in Paris he performed long jump in a do-rag, a style of headscarf also worn by rappers like 50 Cent or LL Cool J. All of this resonates well with his young Instagram fans and is a great help for the Paralympic movement's work with the next generation of athletes. Léon already participates in Heinrich Popow's Running Clinics and can imagine taking on even more responsibility. Yet despite his celebrity status, he still has to deal with the hardships of everyday life, just like all those with disabilities—shown by the fact that he still doesn't have a driver's license. He adamantly refuses to take a driving test only for converted vehicles, because given how often he's on the road he relies on standard rental cars. Yet finding a driving school and a MOT inspector who specialize in transfemoral amputee learner drivers still represents an almost humiliating ordeal in Germany as it's frequently hampered by bureaucracy. For Léon a great deal depends on this, even beyond his personal mobility: a well-known car manufacturer recently shot a campaign with him as a model, but the planned commercials can't be released until he officially has his license.

**Link to video:**
Long jump world record in Paris 2023

## Tomomi Tozawa, Tokyo

Tomomi Tozawa (24) lives about an hour from Tokyo. At the age of ten, her left leg was amputated due to osteosarcoma. Only by chance did Tomomi hear about the Japanese Running Clinics in 2017. It was there that she met Heinrich Popow. He immediately recognized her natural talent and persuaded her to take part in a Running Clinic for advanced runners. Tomomi had never actually done sports of any kind, not even at high school, so she started at square one. Heinrich taught her a tremendous amount about optimal technique and how to train with a sports prosthesis, especially for running and long jump. She became hooked and just a year later spontaneously took part at the 29th Japanese Para Athletics Championships in Takamatsu in 2018, where she promptly finished second in the 100 meters and won gold in long jump. Tomomi studied sports science at Nippon Sport Science University to learn even more about track and field athletics. She's since joined Japanese electronics giant Fujitsu, who have granted her leave of absence to fully concentrate on competitive sports; once her athletic career is behind her, Tomomi will be able to return to her job. At the Tokyo 2020 Paralympics, she came fourth in the long jump and eighth in the 100 meters. Tomomi was initially delighted that the Games were being held in her home country, but sadly the spectator stands remained empty due to the Covid pandemic. There were also many restrictions in the lead-up to the Games; she was isolated in a separate training camp, far away from her family, which may have contributed to her being unable to deliver her very best. She recalls, "I was actually absolutely sure before the Paralympics that I'd be successful, but then my mental strength suddenly left me. I had very strong doubts." It was a hugely important experience for her. Since then Tomomi has been working primarily on building her mental strength in preparation for next year's Paralympics. Her winter training starts in November. She'll then also support Heinrich Popow at a new round of Running Clinics in Tokyo. Her personal goal for Paris is to break the five-meter mark in the long jump. Tomomi doesn't know if that'll be enough for a medal, though, as she doesn't know the other competitor's performances yet. But she's already looking forward to seeing the Ottobock technicians again. They fixed her sports prosthesis for her in Tokyo when it broke shortly before competition: "If it hadn't been for the guys, it would've been game over for me in Tokyo."




## Vinicius Goncalves Rodrigues, São Paulo

His hair is dyed red, his skin covered in tattoos, he wears earrings and a heavy curb chain. He has thousands of young followers on Instagram. Vinicius sees himself as more of a punk, plays the drums now and then, and loves heavy metal band Iron Maiden. There are three women in this bachelor's life who mean the world to him: his mother, his sister and his daughter. He was shortlisted for the TV show *Big Brother*, still a popular success in Brazil, and if he'd joined life in the Big Brother house, he probably would've given up on sports altogether. Vinicius still dreams of a career as a showbiz star, but for the time being he's focused on his sports career. Vinicius Rodrigues (28) is one of the most successful para athletes in Latin America. His most emotional moment was breaking the 12-second mark for the 100 meters, running it in 11.95 seconds at the World Para Athletics Grand Prix in São Paulo in April 2019—setting a new world record. At the Tokyo Paralympics he won silver in the same discipline. At the World Championships in Paris, it was "only" enough for a silver medal yet again, which he's not happy about—at the 2024 Paralympics he wants to crack his own world record and finally win the cherished gold. He's looking forward to Paris, even if his family can't attend for financial reasons. He plans to again grab plenty of attention with his style. The show must go on. Ten years ago, after losing his left leg in a motorcycle accident at the age of 19, Vinicius met Heinrich Popow at the 2013 Running Clinics in Brazil. Heinrich inspired him with his positive mindset and motivated him to run again, and as a role model Vinicius wants to share this spirit with young people. There are already plans for him to lead the Running Clinics in Latin America in the future and to continue what Heinrich has so successfully established worldwide. A decade ago, when Vinicius lost his leg, he never thought his life would take such a positive turn. He's travelled all over the world, taken part in numerous sports events, met many different people and made countless friends. "Even when fate deals you a real blow," he says, "it can bring you joy in the long run. You just can't allow fate to beat you down. If I'd known beforehand how happy all of this would make me, I would've had my leg removed much sooner."

**Link to video:**
Silver medal 100 meters in Tokyo 2021

## Irmgard Bensusan, Leverkusen

Irmgard Bensusan came to Germany in 2014 because of her first great love. And this first great love, as she likes to say, was athletics. Born in Pretoria, Irmgard began running as a three-year-old, took part in school competitions and even made it into the South African national team. Yet in 2009 she fell at a hurdle and has had foot drop ever since, with partial paralysis of her right calf caused by nerve damage. When Irmgard should have been classified for parasport in South Africa, her disability wasn't recognized. It was her German mother who then put her in touch with TSV Bayer 04 Leverkusen, who embraced the ambitious athlete. In Leverkusen she trained in Karl-Heinz Düe's legendary group with Heinrich Popow, together with athletes without disabilities. She'd originally only planned to stay in Germany for a year, but has now been with TSV Bayer Leverkusen for almost a decade. Irmgard has been competing for Germany ever since and most recently surprisingly defended her world championship title in the 200 meters at the World Para Athletics Championships in Paris in July 2023. This was already her fourth world championship title, and she has a haul of five Paralympic silver medals. Throughout her career Irmgard has always relied on Ottobock. Her sports orthosis has been continuously optimized; she uses three to four different orthoses in everyday life, for sports or sprinting. During the Paralympics, she likes to visit the Technical Service Center, whether it's to have her orthosis repaired or just to have a coffee with the technicians, whom she knows well. She'll compete as a sprinter at the 2024 Paralympics for the last time and so bring her Paralympic career to an end, even though she plans to remain involved in parasports in the future. Irmgard's already looking forward to the new challenges that await her. She plans to compete in international and regional competitions for a few more years, but first and foremost wants to work in her profession as a certified public accountant and earn her own money. She may move back to South Africa to be with her family or to Australia with her boyfriend. Irmgard's proud of her exceptional career—winning many medals for Germany and celebrating great success. But she doesn't want to keep running until the bitter end: "At some point, enough is enough." She's sacrificed a great deal for the sport. At the last Paralympics in Tokyo, Irmgard was under much pressure and doesn't want that again. She wants to allow herself to be surprised in Paris and savor every moment: "Paris is like prom night for me. The last dance!"

**Link to video:**
Gold and world champion in Paris 2023



# Help, my knee's squeaking!

Julian Napp

**It goes without saying that a knee joint from Ottobock generally never squeaks. Nevertheless, the reception desk at the Technical Service Center at the Paralympics, just like a real hospital emergency room, is frequently faced with solving bizarre or at least highly unusual problems—when, for example, a flustered athlete needs help because their prosthetic or wheelchair malfunctions right before a crucial competition. In his role as Technical Director, Julian Napp has often been on the front line, and in this account of a workshop visit he reveals all the things Ottobock technicians might do in such an emergency. At the Paralympics in Paris he'll be managing the workshop together with his French colleague Bertrand Azori from Nancy.**

I've been in charge of our Technical Service Center at the Paralympics since 2012. Initially I worked as a technician, and since the 2014 Winter Paralympics in Sochi, Russia, I've been the Technical Director, coordinating the repairs in the workshop during the Games. We started out with containers, but now we support the Paralympics with a large workshop. In Paris we'll be moving into a spacious hall 650 square meters in size. We always arrive two weeks in advance and spend three days setting up the workshop. In Paris we'll also have 15 other, smaller workshop stations at decentralized venues so we can be available on site wherever we're needed, right next to the competitions. For example, at the tennis courts we have a small workbench with equipment and materials in case something happens during the tournament. If a tennis player has a sudden flat tire on their wheelchair, then it has to be changed very quickly or the match is annulled. Or an athlete may have tightened the screw on a prosthesis a little too much, and the screw suddenly snaps—you have to replace it very quickly. Or the thread might have been inserted incorrectly when tightening the prosthesis. That's why we also have technicians on site who can assist immediately.

When an athlete comes to the reception desk of our Technical Service Center, I'm there to welcome them, and we start by taking a look at their

problem. It could be a fractured prosthesis, a flat wheelchair tire, or a broken white cane. I then find out which of my colleagues there at the time has the necessary expertise and language skills and ask them to handle the problem. There's an extensive workshop behind the reception and waiting area where we've got everything we need for repairs: sewing machines, ovens, welding equipment, milling and drilling machines, 3D printers and, of course, large workbenches with tools. And finally, we have a vast stock of spare parts that always saves us when we get stuck with a repair. We even have a big box of spare parts from each of the other major manufacturers. They always send us parts in advance and then leave the maintenance to us, because they're unable to operate a workshop at the Paralympics themselves—meaning if an athlete's sports or everyday product, irrespective of who made it, breaks before or during competition, they can contact us, and we'll replace our competitors' products. Would you like me to let you in on a secret? Sometimes at Ottobock we even buy spare parts from our competitors so we're able to support the athletes. In the end, this is the only way we can ensure a level technological playing field, which is our most important goal at the Games.

We now handle some 2,500 repairs during a Paralympics. Our priority is the sports equipment. However, we of course also repair every kind of everyday equipment. After all, the athlete has to get to the training grounds and back to the Paralympic village with their normal




wheelchair or prosthesis too. It's always impressive to see what extraordinary achievements some athletes from the Global South can achieve with their makeshift equipment. And it's equally remarkable to see all the creativity the local technicians have put to use to make as much as possible out of as little as possible, because in these countries financial resources simply don't exist to allow athletes to afford proper prostheses. Our primary focus is always on the repair job.

That said, when a repair is no longer feasible and the problem can't be solved with a spare part, we also build from scratch. To do this we have a stock of standard feet, tubes and knee joints in our workshop, and we then only have to screw them together in the right length. By contrast, it's a bigger job to renew a shaft, for example, and tailor it to the body again. That takes several days. In the past we still made plaster casts. We'd make a cast, then sculpt the plaster, drape, laminate and sand the carbon to build the shaft. Now we work with a digital scanner, a digital workbench and 3D printing. Digital manufacturing allows us to work faster and more efficiently. In Paris we'll be able to produce parts directly on site with a milling machine and a 3D printer, or work together with the service departments in Duderstadt or Paris. We then simply forward the data to them, and they print or manufacture the shaft and send it back to us two days later. This advance in digitization saves us a huge amount of time on site, and our technicians can get straight on to the next athlete.

We always have to improvise a great deal at the Paralympics. Of course that has to do with time pressure. The athlete has to continue training quickly or be ready for their next round right away. You can't repair many things the way you're used to. There are so many products on the market. Every knee joint or foot has its own characteristics. Wheelchairs have screws with metric or inch threads, different diameters and different lengths. We can't always have everything on hand. That's why we improvise at short notice and sometimes that means cutting a new thread so the athlete can get back to competition or training quickly.

Most athletes arrive a week before the Paralympics begin—this is our busiest time. Something invariably goes wrong on flights to the Paralympics, with airlines not always treating the wheelchair or luggage with necessary care, and things can easily get broken or bent on the baggage carousel. The athletes arrive at the Paralympic Village and before the Games have even started all sorts of things need repairing very quickly so they can even begin training. The week before competition is always the most stressful time for us.

At the competition itself, even at the technological level the wheat is very quickly separated from the chaff. The sprinter squads all arrive with top equipment nowadays. The level of performance is so high today that it's no longer possible to qualify for the Paralympics in the major athletic disciplines, such as the long jump and sprint, with poor equipment that's been cobbled together. All sports are becoming increasingly professional. And the preparation for competition is also becoming more and more professional. I support athletes like Johannes Floors, Léon Schäfer and Irmgard Bensusan. And Johannes, for example, trains every day, sometimes even going to the gym and running twice a day. He competes all year round, he focuses on the right nutrition, he sees doctors regularly and gets himself checked out: he's the consummate professional. At the last Paralympics in Tokyo, there were only four tenths of a second between first and fifth place in the photo finish for the 100 meters in his category. When the top slots are so close together, you won't get far with a homemade prosthesis. DIY equipment is more likely to be found in the throwing disciplines, where you can still marvel at the provisionally welded-together camping chairs.

There's one new thing I've truly learned about our craft through the competitions—and this realization also helps us in our work on everyday prostheses: the prosthesis is always a compromise. It's only ever adjusted and usable for one specific thing. When someone with a recent amputation decides to play sports, they receive a simple sports prosthesis. Over time, of course, the athlete's constitution changes, they improve, they train regularly, they may lose a little weight,

they run differently. And then you need to adjust the prosthesis accordingly. It must simply evolve with the athlete. Of course it's not the prosthesis that jumps or runs, it's still down to the athlete to do that. But as the athlete progresses, so too must the prosthesis. A professional won't be able to run by tweaking a prosthesis designed for an amateur—and vice versa. It's always an interplay between the body and technology. If I want to jump as far as Léon Schäfer, I won't be able to manage that just by using his prosthesis. 90 percent of the performance is still achieved by the human being through their mental and physical effort. The prosthesis counts for only ten percent of the result. Nevertheless, the interaction between an athlete's body and their technical prosthesis is crucial. If an athlete has been training for a competition with a certain prosthetic setting for a year and changes this shortly before competition, then they no longer match the prosthesis and won't achieve the performance they're used to. We can only experiment, optimize and fine-tune the device after the season, but then comes the phase of preparation for the Paralympics, when we no longer tinker around with it. It's as simple as that.

Ludwig Guttmann speaking to his patients in the garden of Stoke Mandeville Hospital

Ludwig Guttmann (1899–1980), founder of the Paralympic Games

# The History of the Paralympics

The origins of the Paralympics can be traced back to a doctor from England and will forever be closely associated with his name. Dr. Ludwig Guttmann was a German-Jewish brain surgeon and neurologist who escaped to Great Britain from Nazi Germany in 1939 with the help of the Council for Assisting Refugee Academics (CARA) and is considered the founding father of the Paralympic movement. In 1943 Guttmann was commissioned by the British government to establish the National Spinal Injuries Centre as the first specialist clinic for spinal cord injuries at Stoke Mandeville Hospital near London. The initiative had been launched by the Royal Air Force, which, with preparations underway for the Allied landings in Normandy, predicted a large number of injured soldiers and wanted to be able to treat and rehabilitate a large number of returning pilots with spinal injuries.

At the time, the treatment of paralyzed patients was still considered entirely hopeless; most died on the operating table and suffered hellish agony. Guttmann experienced this personally as early as 1917, at the age of 18, when he volunteered as an intern at the accident hospital in Königshütte and had to watch a young miner who had suffered severe spinal injury and paralysis slowly waste away in isolation over five weeks. The doctors could do nothing but watch him die. Six years later, Guttmann graduated from medical school at the University of Wrocław in Poland and subsequently took a job in neurology and neurosurgery. However, the experience in Königshütte remained with him. Common treatment at the time was to put patients with paraplegia in a plaster bed so they could no longer move; many died within a few months from severe urinary tract infections due to unsterile catheters or from blood poisoning as a result of pressure ulcers. Guttmann implemented innovative methods that are still valid in the treatment of people with paraplegia today: placing a catheter became a medical task and had to be executed under sterile conditions. He further did away with plaster beds and metal bedpans, and directed that patients be turned regularly and positioned on their sides to prevent pressure sores from developing in the first place. Guttmann also emphasized exercise in rehabilitation, believing that physical activity played an import-

1996 Atlanta

1996 Atlanta

1996 Atlanta

1996 Atlanta

1998 Birmingham

ant role in helping patients regain self-confidence, mobility and quality of life. He introduced physiotherapy exercises to strengthen patients' muscles and devised sports activities to boost their physical and mental strength.

Sport as a cure for those with paralysis was considered an absurd idea by the medical profession at the time, but Guttmann persisted, and physiotherapy and physical education began at Stoke Mandeville Hospital. His patients exercised in the hospital wards, initially starting with wheelchair polo played in the hallway against the physical therapists; this was later expanded to include other sports such as basketball, archery and netball—a kind of hybrid between handball and basketball. Guttmann recognized the transformative effect of exercise on his patients' lives. His goal was not only to extend their life expectancy, but also to improve quality of life so that young patients could eventually return to a normal life.

Alongside the start of the London Olympics, Guttmann organized the first Stoke Mandeville Games on July 29, 1948. 14 men and two women with spinal cord injuries competed in wheelchair archery: the team from Stoke Mandeville versus another London hospital. This was the moment that, in retrospect, launched the entire Paralympic movement—from the very beginning Guttmann dreamed of a worldwide elite sports competition for people with disabilities that would eventually be on a par with the Olympic Games. Indeed it's safe to say that by organizing these competitions Guttmann had launched a new sports movement. Speaking in 1956 at an international congress on the significance of sport in the rehabilitation of the disabled, he said: "Until then, the problem was hopeless, because we had not only to save the life of these paraplegic or quadriplegic men, women and children, but also give them back their dignity and make them happy and respected citizens." Guttmann's games were now held every year at the same location and offered people with disabilities the opportunity to participate in sports, exchange ideas and compete against others. Over the years, the number of participants and sports grew. By 1949, 60 athletes from five hospitals were taking part and basketball was played. Netball was held in front of 10,000 spectators at the British Festival of Sport in London in 1950, and archers with paraplegia competed against the best archers in the country. The number of disciplines also expanded to include fencing, powerlifting, billiards and swimming.



In 1952, Dutch and Israeli athletes took part in the International Stoke Mandeville Games alongside the British participants, thus laying the foundation for an international movement. A total of 130 athletes from different countries competed. By 1954, 14 countries were participating. This also helped spread the idea of sports rehabilitation for people with disabilities internationally. Most participants with paraplegia came from hospitals or rehabilitation centers where medical directors had followed the example of Stoke Mandeville and included sports in their programs. The fourth Stoke Mandeville International Games took place in 1955 and embraced no less than 18 countries and 200 participants.

Guttmann's dream finally came true in 1960, when the ninth Stoke Mandeville Games were held in Rome at the Olympic venue, six days after the closing ceremony of the Summer Olympics. 400 wheelchair athletes from 23 countries competed in eight sports and were cheered by 5,000 people at the opening ceremony. These games were later defined as the first Paralympics and were granted Olympic status. Since then the Paralympic Games have been held every four years. As a founding story, Stoke Mandeville occupies a similar place in the history of the Paralympic movement as does Ancient Greece in the Olympic narrative.

In 1964, Paralympic Games were held in Tokyo from November 3–12, in the same place as the Olympic Games, with 21 countries and 375 athletes taking part. Para powerlifting and 60-meter wheelchair races were added to the program. At the time, specialized sports wheelchairs didn't exist; athletes used ordinary wheelchairs which weighed at least 15 kilos. It wasn't until the early 1980s that the first specialized wheelchairs, then mostly self-built, appeared on the market. By contrast, today's wheelchairs feature a third wheel on the front, are made of aluminum with carbon wheels and, at seven kilos, weigh only half of the originals.

The next Games, scheduled to be held in Mexico in 1968, were instead hosted in Israel due to what the Mexican government claimed were technical difficulties with the preparations. Tens of thousands of people gathered in Tel Aviv from November 4–13 on the twentieth anniversary of the foundation of the State of Israel to cheer on 750 athletes from 29 countries who set 20 new records. The women's wheelchair basketball tournament and the 100-meter wheelchair race were both introduced. In 1972 the Summer Paralympics took place outside the Olympic city of

1998 Nagano

2000 Sydney

2004 Athens

2004 Athens

Munich, under the motto of overcoming national egotisms and promoting international goodwill by means of "cheerful games." We have no record of how the Jewish Ludwig Guttmann experienced the Munich massacre that killed eleven Israeli athletes and the subsequent failings of the Bavarian police and German politics. As it was, Guttmann already had enough difficulties with the German organizers, who didn't exactly cover themselves with glory on this occasion: the "XXI World Games of the Paralyzed" were originally supposed to be held in Munich in 1972 directly after the Summer Olympic Games. However, due to the increasing commercialization of the Olympics, the Olympic Village was already no longer available one day after the end of the Games because of conversion work, so the Paralympics participants could not be accommodated there. The comparatively small town of Heidelberg stepped in and, in the run-up to the Olympic Games from August 1–10, hosted the Games for people with disabilities on a scale and at a level of internationality that was truly unprecedented. The logistics alone were a major challenge: around 1,000 athletes from 41 countries, 400 coaches and attendants, 220 competition judges and around 400 people involved in emergency medical care alone had to be coordinated.

At the "World Games of the Paralyzed" in Heidelberg, the word combination "Paralyzed" and "Olympics" could be seen emblazoned on the buses of the US team. Perhaps this provided the idea for the later name of the Paralympics. Until 1980, however, the Games were officially called the "International Stoke Mandeville Games," although they were also referred to as the "World Games of the Paralyzed" or the "Olympics for the Disabled." Initially the term "Paralympic" was a neologism made up of "paraplegic" and "Olympic," as they were originally games for people with spinal injuries. Now, due to the inclusion of a variety of other physical limitations, the word *Paralympics* derives from the Greek preposition *para* (beside or alongside) and the word "Olympic." Its meaning is that Paralympics are parallel Games to the Olympics, and illustrates how the two movements exist side by side. In 1984 the Games were officially called the Paralympics. They were once again held back in Stoke Mandeville, as the Olympic host, Los Angeles, refused to receive athletes with disabilities because they "would not fit into the professional image of the Games."

Since the 1988 Summer Games in Seoul, Paralympic events have been held in the same city as the Olympic Games. Seoul also marked the first time that the Organizing Committee of the Olympic Games worked together closely with the Paralympics Committee. New types of disabilities were included, and the 17 sports each had their own classification by type and category of disability. At long last, participants were treated "as athletes, not patients," according to Dr. Robert Steadward, former President of the International Paralympic Committee. For all these reasons, the Seoul '88 Paralympics were seen as extremely challenging and as the launchpad for the modern Paralympic era. Accordingly, it was probably no coincidence that at this historic moment Hans Georg Näder stepped onto the Paralympic stage and from then on supported the movement both logistically and financially. A year later, the International Paralympic Committee was founded in Düsseldorf as the worldwide umbrella organization of the Paralympic movement, comprising around 200 international sports federations and national organizations for people with disabilities. Since 1999, it has been headquartered in Bonn and currently has over 70 employees from 20 nations. Every four years, the IPC organizes the Paralympic Games as the most important global competition for athletes with disabilities. The Committee's mission is to promote an inclusive world through parasport and to lead the Paralympic movement, to oversee the implementation of the Paralympic Games, and to support members in achieving peak athletic performance for para athletes.

Since its creation, the IPC has stood for the Paralympic values of courage, determination, inspiration and equality. Ludwig Guttmann, who died in 1980, did not live to see his "Stoke Mandeville Games" finally officially become the Paralympics in 1989 with the founding of the International Paralympic Committee—making them the Olympic Games for people with disabilities he had always dreamed of.

**Link to video:**
History of the Paralympics

# No innovation without cultural transformation!

**Georgia Näder has taken on considerable responsibility at Ottobock France for a period of two years. Here she's establishing a new culture of cooperation to give the younger generation in the company more opportunities to shape its direction. The idea is that this new culture becomes a model for the entire company. Only if Ottobock succeeds in transitioning from its product-driven approach to a more customer-focused one, can it unleash all its innovative technological power.**

*You spend a portion of your time in Paris. Are you already looking forward to the Paralympics next year?*
I'm very happy to be there amongst the action. At the Para World Championships in July 2023 it was great that all at Ottobock could come together with the athletes and support them in their competitions. Our Technical Service Center is truly a hub for all participants in the Paralympic Village—it's the place to be! The first thing everyone always wants to know is where the Ottobock workshop is. We're there for all athletes, and any question or wish they have. We don't let anyone down—no matter which country they're competing for or which brand of equipment they use. We help everyone perform their best at the Games, for which they've spent years preparing. I love this team spirit, the sense of support and a common goal. Everyone does their work in the workshop or on site, but when León jumps or Johannes runs, they're all down on the sidelines cheering. There's a wonderful feeling of solidarity and empowerment.

*Paris will also see the Olympic and Paralympic Committees working together on marketing for the first time. Ottobock will now be joining big brands like Toyota. Of course Ottobock's commitment as the main sponsor and top supplier requires a large investment, but the global media reach as a result is invaluable.*
I still remember the discussions within the company as to whether these investments were worthwhile or not. But our involvement has immeasurable value for our brand. That we're present at the Paralympics with our large workshop and services, that athletes from all over the world know us—that has a huge impact and one that's often underestimated.

*When you're in Paris, do you also coordinate Ottobock activities for the Paralympics? Will you be in charge of the workshop?*
No, our technical managers take care of all that. My main task is to bring the teams together and, along with the global marketing team, to coordinate the campaigns around the Paralympics. Globally, it's about creating more awareness for the Paralympics and repositioning our brand. We want to present the Ambassador Program in an even more attractive light to bring more athletes to Ottobock, and we want to be the best team on the ground—at least that's our aspiration.

*After all, you're not only in Paris a lot because of the Paralympics. You're taking on the transition into the next generation of the French organization.*
France is one of the most important markets for Ottobock and is of great importance to us. Mario Henkel, Ottobock France's Managing Director, has been with us for 47 years and has successfully built up Ottobock in France over 35 years. What he has accomplished is simply impressive. Our family and the company have so much to thank him for. He's now slowly stepping down, and that's also why I decided to go to France for two years to lead this transition.

*So you're playing hardball?*
My role is to transform the organizational structure in France to make it truly prepared for the future. Our French division has been very successful for many years with its traditional hierarchical structure, something that's also typical in France. This is how it was learnt, how it was lived, and how it was wanted. Now however, I'm joining the team as a member of a new generation with a different approach to collaboration. We need to restructure the organization in France in view of Mario's retirement in any case, and we're taking the opportunity to reorganize things to reflect how we fundamentally want to work together at Ottobock in the future. Things will be much more cooperative and less isolated from headquarters. At the beginning of the year, the entire marketing team was in France for two days and we first showed the French team what headquarters actually do and who the contacts are for which topics—who they can simply call if they have anything to discuss. Then we exchanged ideas on upcoming topics and projects. This was an important first step towards getting everyone up to speed.

*Is it only the younger employees who are ready for such a cultural change or are the older ones too?*
Both younger and older! Younger employees, however, are now taking on greater responsibility earlier on. We've also torn down the silo structure. In the process, we'll also upgrade the Patient Care Unit, which now generates half of our sales in France but has hardly been considered in the management structure to date. Our new collaborative culture must also be reflected in the teams and structures. That's why we invited a few of our top talents in France who are expected to play a leading role there and developed a new organizational structure together, rather than imposing it from above. This was a little culture clash for many at the beginning, but plenty of the staff are very motivated and see great opportunities in the change. We'll also restructure management on this basis, forgoing a new Managing Director for the time being. Initially, decisions are to be made on a cooperative basis. That's something that we'll have to become familiar with first, because it involves a new culture of cooperation. We're on the right track in France, and everyone's extremely motivated.

*You don't just take care of the company's structures, you're also responsible for new products.*
When I took on my projects in France last year, in addition to all the organizational issues, I also wanted to take on a real sales project with the marketing of the Exopulse Suit …

*… this is a new kind of neuromodulation suit that uses numerous embedded electrodes to relieve chronic pain and relax spastic and tense muscles through low frequency electro stimulation …*
… yes, exactly, the suit can improve the everyday life of many users significantly. In 2022, just two of these suits were sold in France. At the time, there was no real setup for marketing this new product. So we started from scratch. At the end of November, a TV show picked up on the topic and in a five-minute clip showed the spectacularly positive impact of the suit for some patients. However, neither our brand nor the product name was mentioned in the broadcast. So we didn't know what was going to come of it. We quickly moved the Exopulse landing page to our homepage and created a new email address for people to contact us. We received numerous inquiries, even though people had to do some tedious research to find us in the first place. And we had a correspondingly very high conversion rate when it came to making appointments. That was really exciting. Within a month, we'd received 600 inquiries, which we all answered and qualified by phone or email, even over the Christmas holidays.

*Can interested parties order the suit right away or do they have to see a doctor first to get a prescription?*
Patients need a prescription for the Exopulse Suit. Doctors didn't know much about the product and were very open to more in-depth information. With the prescription patients can make an appointment to have the suit fitted. However, at the time, we only had one physiotherapist who could do the fittings. So we had to train additional staff in Patient Care over a very short period of time. Even the inventor of the Exopulse Suit, Fredrik Lundqvist, came over from Sweden for the training sessions. For the first three weeks of January, I attended every fitting appointment to see how we could improve our process to make users feel as comfortable as possible and give them the best outcome.

*Does health insurance cover the costs?*
No. There isn't any reimbursement scheme for this product at the moment in France.

*Will the project be accompanied by a study to make it easier to convince health insurance providers?*
Yes, there are ongoing studies looking at all the benefits the suit has for sufferers of multiple sclerosis, cerebral palsy and fibromyalgia. The results will be published at the end of this year. But I still think it'll take some time for reimbursement. Despite these hurdles, we've performed over 250 fittings since January.

*That's a great growth area. It's not about amputations and prostheses, but about empowering patients with a wide range of medical conditions.* That will definitely be one of the major growth areas going forward. The patient pool is simply much larger. There are many patients with strokes, incomplete paraplegia, multiple sclerosis or cerebral palsy who don't really have a proper point of contact for their illness. However, we're still in the learning phase in these areas. The needs of these patients are very different from those with prostheses. We must therefore ask ourselves: what are their everyday challenges? How can our products help those patients in particular who currently don't have a great deal of hope, because they've tried a whole lot such as painkillers, Botox injections or physiotherapy, but have achieved very little relief? It's about genuinely understanding what these patients need in their daily lives. Before, we hadn't been in much contact with neurologists. How can we approach them early on and convince them? This learning process is really very exciting.

*How do you see the future of Ottobock? Where do you expect the next innovations? You're now responsible for so many things. What does your job title "Vice President of Futuring Mediterranean & Business Transition" actually mean? Only your father could have thought that up.* (laughs)
Yes. We spent some time thinking about how we could summarize my various tasks and roles in one title. France is a particularly good pilot project when it comes to putting the next generation in charge. This goes hand in hand with a cultural shift towards doing things differently in the future, to try out more without the need for instant perfection. That's what this title stands for. I see my role as better linking culture and innovation as well as products and users …

*… "connecting the dots"—that's also your father's great talent …*
*(laughs)* I probably get that from him. But back to our innovations: we currently have many exciting projects that are moving into product development. Our products are increasingly becoming more digitized and smarter. For example, we're continuing to develop our mechatronic knee joints to improve the everyday lives of users even further. We're also about to launch our height-adjustable foot, which will enable women

to wear high heels for the first time. I called for such a project as long as seven years ago, but some people simply didn't listen. It's turned into a really wonderful project, in which we've also tried out and established new ways of working. Heinrich Popow and I have introduced a new format called *Spotlight*, where we specifically involve users in product development much earlier in the process and in a more intensive way. In the case of the height-adjustable foot, we held a few workshops each time with Research & Development (R&D), Product Management, Heinrich and myself, together with seven female users, in order to find out what's really important to them and what priorities arise for us as a result.

*This means you follow the design-thinking method: listen to the target group, develop ideas together with them, test prototypes with the users, and develop them further.*
This project was also a real eye-opener for our product management and R&D teams. It turned out that users were interested in completely different product features than the engineers expected. Going about things this way saved us many months of development work, as without these insights we would've gone in the wrong direction. Now the foot is ready, and the users are thrilled! I loved that the team went high-heel shopping with the users and Heinrich even organized a dance class for them in their new shoes. Everyone was so happy.

*When will the height-adjustable foot be launched?*
Very soon. That was a beautiful project and a good example of how important it is to involve users at an early stage and keep in close contact with them. We can use it as a basis for developing better products and services that actually come from the everyday needs of the user and are not shaped in isolation by what's important to an engineer's heart. There needs to be a balance and a much better exchange and openness.

*But that would mean a cultural revolution! Ottobock has traditionally always been very much engineering-driven.*
In essence it's about listening carefully to users, understanding them, and responding to their needs. This is a cultural transformation that is necessary for us as a company at this stage, and is embedded in trends and technology shifts in the ecosystem. Without it, successful innovation will be harder and harder. And it should also be the ambition of everyone within the company to develop the best products and services for our users. This only works with an open exchange and curiosity.

*The shift from product to customer centricity is the current topic par excellence. Ottobock is now catching up with what other companies began doing years ago. A lot's happening at Ottobock right now. Putting the user at the center of all processes is a big step.*
We're doing our best. And I myself am passionately convinced that this is the right approach. The title of my Master's thesis was "User centricity—exploring the impact of putting users at the core of healthcare organizations to provide better user experience."

*It seems you're now trying a new customer-centric approach to brand communications as well.*
A few years ago I'd already said we should just have our users tell their stories about their lives. There are so many amazing personal stories that are immensely motivating and touching. Other companies would love to have this user-generated content, and we have it in abundance and have done too little with it before.

*A radical step has now been taken with the promotional film to reposition the Ottobock brand: it simply shows, in a compilation of many Instagram and Facebook videos, what people dare to do with their physical limitations: skydiving, mountain biking, mountain climbing …*
We dug up a lot of footage shot by our ambassadors for the video. I remember sitting in a café with my boyfriend as I was reviewing a first draft of the video to see if it was going in the right direction. And I just sat there with tears running down my face—out of pride and joy. It conveys the "will to overcome" so impressively. The word "overcome" describes it so well, because these people want to overcome these hurdles and difficult times, and they actually do it. The song "I am a Mountain" by Sam Ryder brings all those stories together.

*Sam Ryder won second place in the Eurovision Song Contest (ESC) 2022 with his song "Space Man." Did you secure the rights right after that?*
No, it actually came about a bit differently. At the time, we wanted a song for our new brand campaign to go with our rebranding. At first we thought of a very well-known pop song. Somehow, though, we felt we needed a song of our own that properly reflected the stories of our users. Our marketing team then looked for a newcomer and discovered the young, then still unknown, Sam Ryder. We told him the stories of some of our users, whom he later also met in person. Inspired by their experiences, he then wrote "Mountain" in his parents' garden in the space of just 30 minutes. He wanted to release the song as a new single because he liked it so much himself. Of course we agreed. For the ESC Sam was requested as an additional act and was asked to perform our song. Some of our users then performed the song with him and were quite literally given a platform through "Mountain."

*And it was successful?*
It was. Unfortunately, we had to black out the logos on the prostheses, but it was still the marketing scoop of the year. At the World Para Athletics Championships in Paris last July, the song was played on the big stadium screen during all the breaks—it was like an anthem for the athletes. Everyone was singing along. It was beautiful that the spirit of sports, the athletic performances, this immense motivation and empowerment were expressed through our song.

# The Workshop of the Athletic Body

Henry Leutwyler

**Henry Leutwyler is renowned for his meticulous photographic documentation of objects. He doesn't just shoot them but creates veritable portraits of them, imbuing the inanimate with transcendental character. For *en route*, Henry sifted through all the objects in the basement of an Ottobock workshop, which an orthopedic technician needs to repair each and every kind of prosthesis at the Paralympics. Sometimes these repairs are made on a provisional, makeshift basis only, designed to allow the object in question at least to last for the next competition, which often follows in just a matter of minutes. Henry's photos movingly convey the immediacy, almost archaic function of body parts. An unexpected aesthetic of details emerges, evoking the incompleteness of a human body shaped by traumatic damage.**


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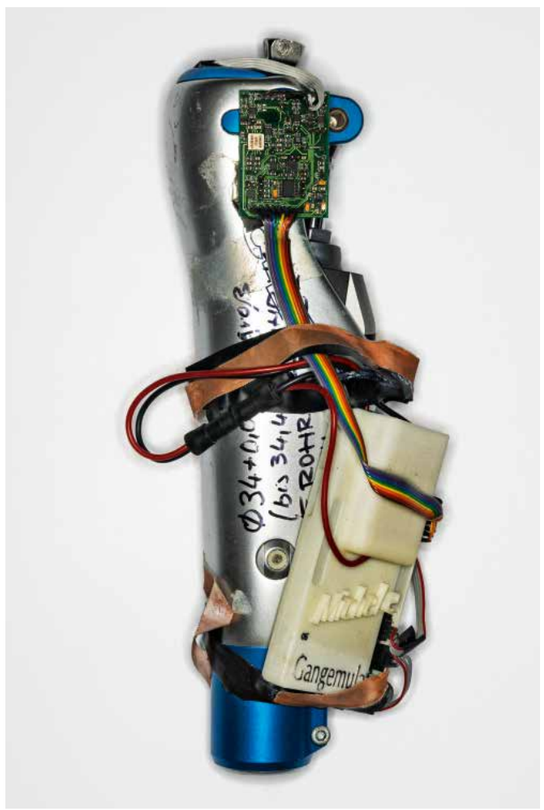



ottobock.
bebionic




On March 25, 2023, Henry Leutwyler took a flight from New York to Switzerland. He then travelled from Geneva to Duderstadt with his assistant Michael Sonderegger in a car packed with photographic equipment. On Monday he set up his photo studio in the Ottobock workshops and began taking pictures a day later. Within just 48 hours, he'd completed the photoshoot: Henry's 40 years of experience as a still-life photographer certainly came in handy.

Swiss-born **Henry Leutwyler** has lived in New York since 1996. His photographs of artists, politicians and other figures have been published in the *New York Times Magazine*, *Vogue*, *Vanity Fair*, *Esquire* and *Fortune*, among others. In his book *Elvis by the Presleys*, he employed an almost archeological approach to portray a man he'd never met through his personal belongings. Henry's books with the printer and publisher Steidl include *Neverland Lost: A Portrait of Michael Jackson* (2010), *Ballet. Photographs of the New York City Ballet* (2012), *Document* (2016), *Hi there!* (2020), *International Red Cross & Red Crescent Museum* (2022), *Philippe Halsman. A Photographer's Life* (2022), *Misty Copeland* (2023) and *The Tiffany Archives* (2023).

# Paralympics Partners

## Hiroki Nakajima

## Tokyo


Hiroki Nakajima (right)

**While repairs are often only minor, many athletes nevertheless depend on the Ottobock Technical Service staff to keep up with the demanding technological level of the competitions. It's 158 Ottobock technicians from 41 countries who make this possible, by providing technological support to the Paralympic athletes, working in shifts in the state-of-the-art workshop with the highest level of personal commitment. We meet five of these dedicated technicians here.**

A lot can happen to a wheelchair at the Paralympics—from a simple flat tire to an irreparably bent or broken frame. That's why Hiroki Nakajima (49) keeps a wide range of spare parts at Ottobock's Paralympics workshop, including those of many competitor products. Since Ottobock's share of the world market for wheelchairs is small, a large number of wheelchairs at events aren't actually made by Ottobock, but by other manufacturers. Those manufacturers, however, don't have the capacity and experience to be present at the Paralympics with their own technicians and are therefore more than happy for Ottobock to handle things on their behalf. While many parts are the same, such as a bicycle tube in a wheel, other repairs involve a great deal of improvisation. That's why Hiroki, a technician in the wheelchair division at Ottobock Japan, studies other manufacturers' models to learn about their technical features. He's already served on the Ottobock team at five Paralympics and is always running into athletes who greet him warmly, like an old friend. At the London Games he once received an emergency call from a tennis court where a player's wheelchair had broken. Hiroki only had 20 minutes to repair it, otherwise the athlete would've been disqualified. He carried out the repair right in the middle of the tennis court, managing to restore the wheelchair to a degree of usability in the short time. The player could not only continue the match but even won it—an exceptional moment! Hiroki was interviewed by numerous Japanese TV stations, and the Paralympics in Tokyo were broadcast at prime time throughout the country. This contributed massively to the understanding of people with disabilities there. In Hiroki's words: "Japanese people are rather shy and don't like to show off their prostheses and wheelchairs, but that has changed for the better since the Paralympics. The Paralympics remind us of everybody's potential, including yours and mine. I'm very proud to be a part of the Paralympics and to support the Games. I believe the Paralympics are becoming a beacon of hope for an inclusive society in which everyone has the chance to pursue a bright future."

# Donna Fisher

## Dublin

Donna Fisher (52) is a Clinical Specialist CPO at Ottobock Ireland. She's also been part of the technical repair service team at the Paralympics since the 2012 Games in London. The technical work in the repair center includes a range of prostheses and orthoses. Often Donna works in the sewing team together with professional seamstress Sonja Wagner from Ottobock Vienna, and through their collaboration the two have become good friends. There's always a lot of sewing to do: cushions for wheelchairs, and fabrics and leather for all kinds of attachments to all kinds of assistive devices. Donna loves helping athletes achieve the dreams for which they've trained so hard for so many years. She also values the team spirit within the international Ottobock workshop. It was a wholly new experience for her, she didn't know anyone when she first joined the team in London 2012; when she returned home after four weeks, she'd made more than a handful of new friends. What she appreciates most is the high degree of improvisation in the workshop: "You constantly have to step out of your own comfort zone and respond flexibly to new problems. And that only works if everyone on the team participates." Over the years, Donna has observed the athletes' equipment improving from one Paralympic Games to the next. Still, there's always a lot to do in the workshop. Top priority is to repair existing equipment; if that's not possible, the team has to try to restore functionality by replacing components. And if that doesn't work out either, the user may get a new device, which then has to be manufactured and adapted to the body—"It's a race against time that's truly worthy of the Olympics, too!" she says. Donna has always strived to go the extra mile throughout her 30-year career. Now she's trying to pay more attention to her work-life balance, for example by taking her dog for a daily walk on the beach or in the woods. In fact, the Paralympics in Tokyo were supposed to be her last before retiring. However, those Games proved very difficult because of the Covid pandemic—not because of the work, but because of the contact restrictions. "Face-to-face meetings were extremely limited in Tokyo. That's why I'm looking forward to Paris so much, when we can all finally have a proper get-together again. I've made friends for life at the Paralympics."



# Sonja Wagner

## Vienna


Sonja Wagner (33) is a textile engineer in textile product development at Ottobock in Vienna. She was part of the teams at both the Rio de Janeiro and Tokyo Paralympics and is now looking forward to running the sewing team at Ottobock's service workshop in Paris, along with her colleague Donna Fisher from Dublin. As a designer, Sonja trained as both a master tailor and a prosthetist, and this unusual combination allows her to combine her knowledge of fashion and textiles with Ottobock's technology. In Vienna she develops products that users wear on their bodies every day or feel on their prosthesis, such as support bandages for upper-arm prostheses so the prosthesis doesn't hang heavily on the body like a one-sided backpack. In the past, cotton harnesses were stretched across the chest and firmly mounted to the shaft—such straps were very uncomfortable to wear, especially for women. So one of the first products Sonja developed was a removable belt in three different sizes that can be adjusted under the armpits like a nursing pillow. Just like clothes and shoes, the designer sees an important trend in the individualization of prostheses and the customization of bandages. Sometimes you might like to wear loose-fitting garments, sometimes tight ones, or in different colors and materials—all depending on how you feel at a particular moment or the situation you find yourself in. "This should also be possible with prostheses," she says. At the Paralympics Service Center Sonja devotes herself to repairing wheelchairs that incorporate textiles, as well as leather and straps for orthotics. In Tokyo, for example, a kayaker needed a safety belt in a bright color. For safety reasons she wouldn't have been allowed to compete with her own inconspicuous belt: if a boat should ever capsize, rescue divers need to find the belt immediately and open it as quickly as possible to free the athlete. Sonja looked for a suitable material and soon found a neon-colored shoe, which she cleverly cut up to create a belt—the athlete was then permitted to compete. Sonja likes working quickly to find fast, pragmatic solutions for athletes with the materials available on site. It's all about short distances and keeping things simple. "There's a real start-up-like atmosphere in the Service Center team," she says, "After all, we're a big company in Vienna and sometimes things can get a little cumbersome. But at the Paralympics we're more than a hundred extremely motivated people working together who know what our common goal is. This suits me best of all."

# Lorena Klingebiel

## Duderstadt

Lorena Klingebiel (28) is happy—she can pack her bags for Paris 2024. So far, she's only participated in the Paralympic Winter Games in South Korea and China. Ottobock has a worldwide application process for working in the Technical Service Center. From the large number of applicants, Ottobock finally selects those who best fit into the team in terms of expertise and language skills, to cover all technical fields and, if possible, all languages in a two-shift operation. At Ottobock in Duderstadt, Lorena is primarily responsible for orthotics and this will be her area of specialization in Paris. She's already gained many great experiences in the Paralympics workshop: for one athlete, she even glued back the broken handle of his beloved coffee cup, which he carries with him to every competition as a good luck charm. Such small moments move her without a doubt. That said, Lorena's also part of major changes: she's in charge of the large 3D printer in Paris so locally developed components can be printed quickly. Lorena is further fascinated by the digitalization of orthopedic technology—after training as an orthopedic technician, she became a master technician and combined this with studies in orthopedics and rehabilitation technology. She's now been working in the development department for two years and is responsible for evaluating feedback from orthopedic technicians and patients on new or existing products. Here she's in charge of prototype testing and passing on results to the designers and engineers. Lorena relays back and forth between users and developers, until a new product is finished, and uses agile working approaches and design thinking methods to develop products faster and in a more patient-focused way: "If you involve patients in the definition and development of new products right from the start and let them test prototypes in everyday life, you save a lot of valuable development time." That's why Lorena's also a big fan of digitization, because with scanning, digital modeling and 3D printing, you can adapt prostheses to the patient much faster. She feels that digitization has progressed slowly over the last five years, but now feels that a jolt has gone through the entire company and even important little things like improved and simpler 3D programs are meanwhile available. In Lorena's words: "This enables us to develop and improve our products much faster".



# Miguel Espinoza

## Santiago de Chile


Miguel Espinoza (55) is a certified prosthetist and orthotist (CPO) at Ottobock in Santiago de Chile. He'll be working as a technician at the Paralympics in Paris 2024 for the fourth time now. First, however, he's attending the seventh Parapan American Games at the end of November 2023 in Santiago—the world's second-largest tournament for athletes with disabilities after the Paralympics in terms of participant numbers. Ottobock will also be on the ground here with a Technical Service Center. Such a major sporting event fills Miguel with pride, but it also means a great deal of responsibility for him. Nevertheless, he's not at all worried. As Technical Director for Latin American countries, Miguel's been in charge of leg, arm and hand prostheses for over 30 years; his job involves extensive travel across the continent and confronts him with a wide range of different healthcare systems. While in Argentina private insurance companies are legally obliged to cover the costs of prosthetic aids, in Chile there's no funding for prosthetic care. In other words, 80 percent of his patients have to pay for the expensive equipment themselves. There's only support for children, which comes through the Teletón Foundation—established in 1978 by Chilean television presenter Mario Kreutzberger, known as "Don Francisco," and dedicated to raising funds for children with disabilities. Miguel, who was born in Ecuador and came to Chile 32 year ago, began his career at Teletón and still enjoys collaborating with the foundation. He loves his job and has had many emotional moments at the Paralympics. Once, a sitting volleyball player from Rwanda came to the service workshop. At the age of 17 she'd received a leg prosthesis from the Red Cross made of very simple material, which she'd long since outgrown—in fact it was so outdated Miguel could no longer repair it. As a result, he ended up building a completely new prosthesis for her: "The young woman was so grateful because we were able to fundamentally change her quality of life." Another time, a Peruvian marathon runner who'd lost both arms came to him. A rule of the competition stated that you couldn't run the marathon unless you were able to drink water unassisted, Miguel explains. So he made an extension for his upper arms out of strong liner material, to which he attached 13 small water bottles with Velcro. This allowed the athlete to drink water on his own throughout the race: "He even finished in a leading position!"


# The sprint starts in your mind

## Johannes Floors

**Johannes Floors is as astonishingly ambitious on the running track as he is in his job as an orthopedic technician and mechanical engineer. He intends to win gold and set a world record at the Paralympics in Paris 2024. What's more, he's determined to optimize the design of ankle joints in everyday prostheses, to help thousands of customers walk with greater ease and balance.**

*Congratulations on your gold medal at the Para Athletics World Championships in Paris!*
Thank you! That was definitely a fantastic experience. I'm on a solid course, especially looking ahead to Paris 2024.

*Will you take a break before you resume training?*
I've just had a short holiday and a break from training. We're letting the season come to an end before our off-season begins.

*… to let your muscles rest? …*
… to let my whole body, as well as my mind, have a break and some peace. You won't see me as often on the track, and I won't put on my sports prostheses for the next two to three weeks. But I'm doing other physical activities I enjoy and don't always find the time for, like indoor climbing, hiking and diving.

*When will you begin training specifically for Paris 2024?*
We'll begin the winter training season in October with frequent long-distance runs. They always say the summer athletes get into shape in winter and the winter athletes in summer. What you haven't practiced in winter is hard to master during the season.

*What goals do you have for Paris next year? Of course you'll want the gold medal as well as beating your personal best, and setting a world record …*

… that's exactly what I'm planning, and I'm incredibly fit. I know my body is capable of running even faster. It didn't happen this year, but I know my body was capable of it.

*Was technique the issue?*
I just hadn't run enough 400-meter races. You need four to five competitions to get into the groove and develop a feel for how it works. I just had three races because the season was so short. But the season's a bit longer next year and I can plan differently. And, being at the top of my game, my goal is certainly not just to come away with gold, but with a new world record.

*You're an incredibly disciplined person, and not just in athletics. You trained to become an orthopedic technician and now you're studying mechanical engineering.*
I finished my bachelors at Ottobock at the start of 2023, and right now I'm doing my masters, focusing on product development.

*What was the topic of your bachelor thesis?*
I was researching new developments for prosthesis ankle joints. The R&D division at Ottobock was incredibly helpful. I was able to build on existing ideas to design a hydraulic system and create an initial functional prototype.

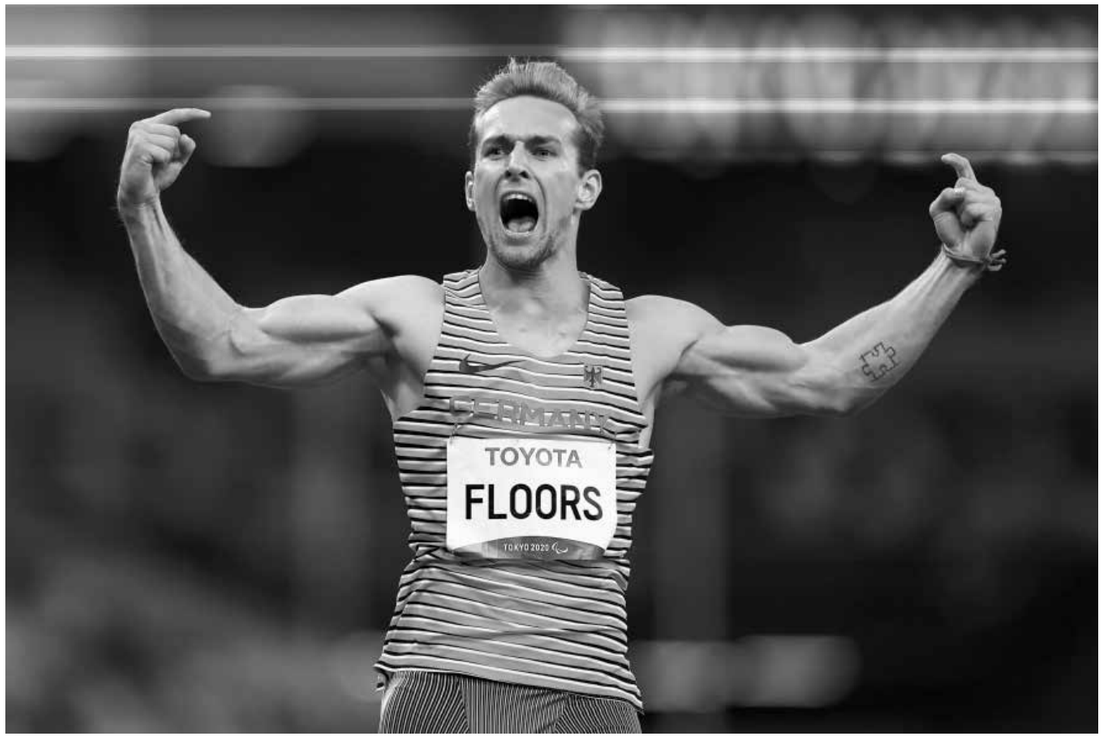
*Is this joint for everyday prostheses or specifically for athletes?*
It's for an everyday foot prosthesis. Naturally I didn't accomplish that alone, but I did invest a lot of brain power.

*Ottobock of course already makes the best joints in the world. What's left to improve?*
It's a new concept, an extension of the hydraulic ankle that's capable of making its user's everyday life simpler. I'm not allowed to say much about the project because the idea is being registered for a patent, but basically it's a highly efficient distribution of the hydraulic fluid in the ankle joint that makes your step a little easier, smoother and more stable. It really was a terrific project, a lot of fun and very challenging on a technical level.

*You're always setting yourself clear goals and milestones: 6 months, 18 months, 3 years, 5 years. What are your career goals?*
I want to finish my masters by 2026. At the same time I'll continue to work for Ottobock's R&D division. I can easily imagine myself staying in this field, because it's great fun to realize new ideas and find links between everyday and athletic prostheses. This draws on everything I've learned up to now. Biomechanics, motion sequences in sprinting and sports, and everyday life with a prosthesis. That fulfills me.

*What knowledge from athletic prostheses can be applied to everyday prostheses? Or is it the other way around?*
Both are possible. You just need to dive in when it comes to sports prostheses. If you get lost in the details and keep tweaking your prosthesis, you can lose track of the fact that you're in training. But running is what matters. The more stability you can build up through the small interlocking muscle chains, the easier you can walk in everyday life. There's a give and take between the two. The more frequently you use your prosthesis, the more intricate the changes become. If I want to adjust my prosthesis now, it can be by only one or two degrees, half a screw turn, or an extra 1 to 2 millimeters of material. But when I think back to the early days, some nine years ago, I wouldn't have even noticed these adjustments.

*Today the difference between results in a 400-meter race is down to hundredths of a second. Athletes are already competing with the best prostheses available. Is technology capable of influencing these minimal differences, or is that up to the athlete?*
At the end of the day, it's up to the athlete. The best car is no help if you're not a good driver. Once you get used to your prosthesis, experience it as a part of your body, and understand what effect an adjustment might have, then small differences can certainly mean you gain a few tenths of a second or run more smoothly. But they're interlinked and develop together. If I'm not comfortable with my prosthesis, I can specify what needs to be changed. The prosthesis influences how I run, but I control it. Ultimately,




as the athlete, I'm in charge of the prosthesis and not the other way around. Especially when a world record depends on three hundredths of a second, it's all about physical and mental performance. The sprint starts in your mind, and your body needs to be at the top of its game.

*Technology plays a major role at Ottobock, working on the medical equipment of the future. The Ottobock workshop will once again have handheld scanners and 3D printers at the Paralympics. What role does technology play there?*
I've not yet met an athlete with a 3D-printed running blade. These blades are made from carbon, so they can better withstand the stress of sprinting and jumping, but so far it's impossible to print carbon well enough. The blade is still made by hand using the traditional method of laminating and casting. But scanning makes it much faster and easier to create an impression of the stump, which can be used to create a 3D model.

*Which used to be made with plaster …*
Exactly. Previously, people would make a plaster cast, tweak the shape and check the dimensions. Modelling the stump can simply be done digitally now. The model can be printed out in 3D for the first trial and then tweaked digitally. Because this process isn't site specific, each step happens more quickly. It doesn't matter whether the prosthesis is for a patient or an athlete.

*There are also movement analyses that record gait using sensors. How can such digital tools help when training?*
We use biomechanical labs and place sensors on the joints to analyze sprints, the effects of training, and how and where forces are changing. These analyses allow us to record the entire training process over a number of years and draw conclusions on whether something needs to be changed about a prosthesis or one's own running style.



*Is digitalization the latest round in the technology arms race? What advantages can be gained in this competition?*
In track and field and at an elite level, we've seen that a solid experienced coach can recognize how an athlete's running approach can be improved even without digital tools like videos and gait analyses. Digital tools can support and simplify the process, but don't determine whether you gain a tenth of a second.

*Digitalization is always predicated on a certain degree of standardization. Is a sports prosthesis a niche project that's harder to standardize, in contrast to an everyday prosthesis? How can your knowledge of sports prostheses benefit Ottobock when it comes to digitalizing everyday prostheses?*
At Ottobock I work on the areas where I can apply my knowledge. At the moment these include topics like sports prostheses, especially concerning the lower leg, as well as everyday prostheses. Sports prostheses are a highly specific product and thus a very small niche. Basically it's important to have a standardized product or broad application. Everyday prostheses are a means of establishing a solid basis. Computer modelling a blade for both is basically identical. The main difference between everyday and sports prostheses is their durability; less pressure is applied in everyday use. That's why a 3D print with a very firm and long-lasting plastic is certainly possible, because it can handle the pressures of everyday use. In contrast, much more force is exerted in sports. When sprinting, for example, it's three times my body weight, and when jumping, up to 700 or 800 kilograms. Such prostheses require a balance of weight, stability and lightweight design. This was only achievable using carbon until now. Why are our racing cars and bikes made from carbon? Because it's both stable and lightweight. The everyday blade should also be lightweight, of course, but 10 grams here or there don't matter. As with everything, you have to start at a certain level before improving. I don't want to exclude the possibility that one day a 3D-printed prosthetic blade could be so stable and lightweight that it could also be used in sport.

*At Ottobock are you able to apply technological advances from everyday prostheses to sports prostheses?*
I don't have much to do with technology. I'm much more focused on the foot itself, created from carbon, and how it can be developed. So not on the blade, which is created digitally.

*What are the challenges of the foot in your view?*
On a day-to-day level you need to enable a natural physiological stride by elegantly designing the carbon springs. At the same time, the foot needs to be light and fit beneath the prosthesis for as many users as possible, which means a low profile—this creates added value together with our hydraulic ankle joint.

*What motivates you when doing this work?*
I love contributing my knowledge from my training and studies to movement, biomechanics and sports. I can bring together all the threads and create products that help others. That is, I can give something back. That's very fulfilling, and a lot of fun too.

**Link to video:**
Gold medal
in Tokyo 2021

# 35 Years of Passion and Partnership

## A Portrait of Hans Georg Näder

**Thanks to his passion, he's almost single-handedly helped the Paralympic idea achieve a breakthrough. Hans Georg Näder has supported the Paralympic Games since 1988, and Ottobock has been its main sponsor and top technical supplier ever since. Of course the world market leader for prostheses benefits from the global reach of this media presence, which increases steadily with each event. But it's Hans Georg's athletes that are most dear to his heart: he cheers them on and cries with them, shedding tears of emotion and joy.**

In 1988 Hans Georg was 27 years old, and at the time nobody could have foreseen that only two years later he'd suddenly be called upon to take the reins at his father's company, due to his deteriorating health. The son of the successful prosthesis manufacturer Dr. Max Näder was still enjoying a carefree, gilded youth, with all the privileges it afforded him. That's how it looked, and that's how it could have stayed—but it wasn't to be. The young heir had already been possessed by a great seriousness for quite some time, because every day he experienced the dramatic fates of the patients, clients and prosthesis users he encountered at his father's factory. Hans Georg didn't see them as numbers, but as people. After all, losing an arm or a leg remains one of the most traumatic experiences a person can possibly endure; perhaps only death could be worse. He grew up with these impressions, leading him to develop a deep empathy that continues to shape his entrepreneurial actions to this day. At the time, Hans Georg, who had yet to assume his role as the company's successor, was looking for a field of activity that promised on the one hand to be meaningful, and on the other to have a relevant strategic connection to his father's company. In 1988, when four Australian Ottobock mechanics spontaneously loaded their tools into suitcases and flew to Seoul to repair high-tech prostheses and wooden legs in a tent they'd brought along with them, Hans Georg evolved this impromptu gesture of help into a systematic, lasting partnership with the Paralympics: "The initial enthusiasm turned

into a passion. We've now been supporting the Paralympians with our unique Technical Service for 35 years." Ottobock has been present at every Paralympics since the Seoul Games. Each year the demands from the athletes grow. In both Athens and Beijing Ottobock helped around 2,000 athletes. In London, a new record of over 2,500 repairs was set. Many Paralympic athletes participate with technical aids that are subjected to extreme stress during competition. Wheelchairs in particular can be damaged in close-contact sports. In many cases this would normally spell the end of the competition for athletes—which makes technical support during the Paralympics so indispensable. Ottobock handles all technical requirements to enable Paralympians to fully concentrate on their performance and competition. The service is incredibly important, says Hans Georg, "because if the prosthesis doesn't work properly at the decisive moment, all the training is in vain."

Since 2005 there's been a comprehensive cooperation agreement between Ottobock and the International Paralympic Committee, which was broadened in 2021 and extended until 2032. Hans Georg signed the corresponding document at the private party for his sixtieth birthday. Although this was only due to his tight schedule, it was a particularly fitting birthday present, as it proved that the marathon of 35 years of commitment to the Paralympic movement has more than paid off.

Looking back, Hans Georg remembers the opening ceremony in Seoul where some of the athletes were still wheeled into the arena by nurses in white gowns and lace bonnets. It's in part thanks to the entrepreneur from Duderstadt that the Paralympics have emerged from the dusty corner of subaltern patient rehabilitation into a vital, colorful and proud movement. Today he reflects: "In practice the Paralympics have anticipated many cultural phenomena that we're only now intensely debating throughout all of society: inclusion, diversity, body shaming and body identity. In this sense the Paralympics have been truly pioneering, and they've unfurled tremendous emancipatory power, especially in authoritarian or religious states around the globe."

The Paralympic movement developed its global influence primarily as a result of its ever-increasing media reach. In 1988, for example, coverage of the Seoul Games on German television was still limited to eight minutes on the health show *Gesundheitsmagazin Praxis*. Things have changed radically since then: TV stations soon realized that viewers wanted to experience the true sporting passion and join in the excitement, to follow athletes and their impressive life stories as they surpass themselves for those crucial tenths of a second that can make all the difference between gold and silver. All of this is now highly attractive television and material for millions of videos on social and digital channels. "The pure fervor of emotions delivers meaningful content and thus great entertainment. Today you're more likely to find that at the Paralympics than at the Olympic Games, with the credibility and authenticity of the latter having been severely undermined over the decades by corruption and doping scandals," Hans Georg maintains. "The Olympic Games themselves have become nothing but big business. Now it's at the Paralympics that the real Olympic flame burns. This is where people are really still fighting just to be a part of it. People simply feel that the Paralympic family is still intact."

This great media reach not only carries the values of the Paralympics and the torch of enlightenment to the far corners of the world, but of course the Ottobock brand too. The global media value is now incalculable. Brand awareness has risen sharply, especially in emerging and growth markets, helping the company to better establish itself there. Since the International Paralympic Committee and the International Olympic Committee (IOC) have agreed to jointly market the Games in the future, Ottobock's commitment has become even more valuable, because now it's suddenly on the same level as the IOC's top partners, which include global brands such as Toyota. "This is normally completely unthinkable for a medium-sized company," says Hans Georg. For him there was never really a financial interest behind his involvement in the Paralympics. If this had actually been a bet, however, it would have more than paid off. This is also because he got involved in the Paralympics at a time when no one was interested and everyone only wanted to invest their advertising money in the Olympic Games. Back then people were still saying, "Who watches the Paralympics?" But now—globally speaking—the broadcast times of the Paralympics on TV are just as long as the Olympic Games.

As with all his private and professional projects, here Hans Georg also relies on people who embrace his cause and then advance it themselves with great energy. In the Paralympic discipline he relied on a particularly fortunate collaboration with the para athlete Heinrich Popow, who's now one of the movement's most prominent faces. Heinrich described how this came about in 2021 in the book *Begegnungen* (Encounters): "The first time we met was in 2004 at the Paralympic Games in Athens, when I was still under contract with a competitor company. Ottobock was also the Technical Service provider at the Paralympic Games back then, and Hans Georg himself was actually sitting in the Ottobock container, smoking a cigar. At the time I wasn't so happy with the products Ottobock provided for people who wanted to be physically active; there was just nothing available at the time. In 2007 he suggested we talk about my criticism at some point. And then we started working together to develop the products that led to the Running Clinics and young people being able to start playing sports much earlier. (…) I was very lucky to be able to follow my ideas and instincts thanks to the trust Hans Georg Näder placed in me. Right at the outset, he said to me, 'I see something in you.' For me, he's a father figure of sorts. I was able to let off steam as far as the technology was concerned. But I was also given the opportunity to develop my desire for physical activity and to somehow search for and find myself in sports. I was allowed to make a lot of mistakes." Nowadays, the para pioneer of former times has long since become a kind of para patron. He's not only an athletic role model for several generations of Paralympians, but over 1,500 recreational athletes now also stand on his shoulders, who, with Ottobock's help, have made para sport a popular movement around the world *(see interview on page 11)*. For Heinrich, "Hans Georg has made it easier for people to gain access to sports with ever-improving technologies, while at the same time comprehensively supporting the Paralympic movement. He has, in other words, thought of everyone. That is human, visionary and unique. I'd like to see anyone else do that— no one else can pull that off."


# In Search of the Human Body's Remaining Secrets

**In *Futuring Human Empowerment*, entrepreneur and futurist Hans Georg Näder takes us on an exciting journey to the remaining secrets of the human body. The book offers a glimpse behind the closed doors of the laboratories and think tanks where the world's most innovative researchers, engineers and start-ups are working to expand the capabilities of the human body with artificial intelligence and advanced technologies.**

*Futuring Human Empowerment* gives us a comprehensive overview of the central scientific disciplines advancing human mobility. In doing so, it simultaneously describes various growth paths for Ottobock, which is focused on expanding sectors aligned with its strategic corporate goal as a human empowerment company. This means that in the future, Ottobock will not only be restoring the strengths and capabilities of the human body, but will also be taking a pioneering role when it comes to broadening them. In doing so, the corporation translates fascinating technologies into solutions that enable—empower—people to surpass themselves.

Ottobock's growth strategy in the areas of human mobility and human empowerment focuses on conquering new fields of application and in turn new target groups and markets, with innovative technologies as the main growth drivers. The book concentrates on seven fields of technology and research: digitization, quantum technologies, advanced materials/3D printing, bionic regeneration, artificial intelligence, human-machine interface, and wearable robotics/bionic reconstruction.

Central to this is the overarching vision of the complete *digitization* of the over 100-year-old craft of orthopedic technology. Significant progress has already been made here. When it comes to *quantum technologies*, however, tangible results are more likely to appear in the more distant future. Ottobock is nonetheless pursuing the goal of gaining a better understanding of emerging technologies, involving itself in pertinent research projects as a participating observer. For example, Ottobock is a co-researching party in the project "Human-machine interface based on quantum sensors" of the future cluster QSens. The aim here is to significantly improve the intelligent control of prostheses and orthoses through quantum sensors. The first applications on and within the human body are soon expected.

Ottobock can look back on many years of experience in the field of *advanced materials/3D printing*. Cutting-edge materials have always been crucial to the company's history of innovation. Currently Ottobock is testing the use of soft polymers for Rapid Liquid Printing; these are soft polymer structures created in a gel: a

revolutionary technology for all applications that require soft polymers to be anatomically shaped or custom-made. For Ottobock, this is a major breakthrough. The technology, already patented worldwide, also enables the most diverse applications in many other industrial sectors.

Intensive research is being pursued in the emerging field of *bionic regeneration* in search of the formula for a longer life. The focus here is on how to strengthen the human body's self-healing powers and how biomedical technology can help fight pandemics, cancer and other incurable diseases. It's now possible to grow stem and muscle cells on an industrial scale, and the first artificial organs are already being produced using biological 3D printing. Meanwhile, artificial skin and tissue are being created using 3D printers in research labs around the world. It won't be long before there'll be many applications of tissue engineering on an industrial scale too. Bionic regeneration essentially entails perfect wound healing by mobilizing the hidden self-healing powers of the human body. For some reconstructive tasks requiring small cell volumes, this may soon become a reality. And that could be of interest to Ottobock, for instance when it comes to significantly improving the interface between the human residual limb and the technological socket. It would represent a major advancement in terms of the user's quality of life.

As in all high-tech companies, *artificial intelligence* plays a major role at Ottobock. It's used, for example, in the intuitive control of prostheses through brain-computer interfaces, in baby helmets that correct the deformed shape of an infant's head, and in the data-protection-compliant evaluation of millions of customer records geared at improving applications. AI's ultimate strength can be seen in machine learning and pattern recognition, which are already used in many technical solutions. At Ottobock, AI will play an increasingly important role in smart, intuitive care solutions and intelligent processes in the patient journey.

The *human-machine interface* takes center stage in Ottobock's research. Optimizing the connection between humans and machines not only defines technological progress, but above all determines whether users accept these technologies in the first place. The overarching goal is to increasingly merge the technical aids with the body so that users perceive them as their own body parts. In the long term, Ottobock can further expand its technological expertise in the core area of orthotics and prosthetics for the benefit of its users, and may be able to make greater use of all of its experience to develop applications that go far beyond the repair of the human body and serve much larger target groups. This would open up unprecedented opportunities in the market.

The chapter on *wearable robotics/bionic reconstruction* covers Ottobock's classic core competencies. In this more traditional business, some very promising advancements are being made around the world in the laboratories of Hugh Herr, Tommaso Lenzi and Homayoon Kazerooni, as well as in the operating theater of Oskar C. Aszmann, all of which will be valuable for furthering technological solutions. The continued advance in robotics shows how the new strategic focus on human empowerment opens up undiscovered growth markets as well as strengthening the competence for the development of active prostheses. The company's ability to translate biomechanical knowledge into intelligent control systems is a major competitive advantage.

The seven technological fields described in *Futuring Human Empowerment* all contribute to Ottobock's growth strategy and vision in different ways. Ottobock wants to offer people technological solutions for each and every of the mobility challenges they face in their everyday lives. To help them do what they love for longer, in the most intuitive and affordable way possible. And now Ottobock is expanding everyone's own physical capabilities with the help of innovative technologies. The corporation's vision in this respect couldn't be clearer: "We empower people! We are the human empowerment company."



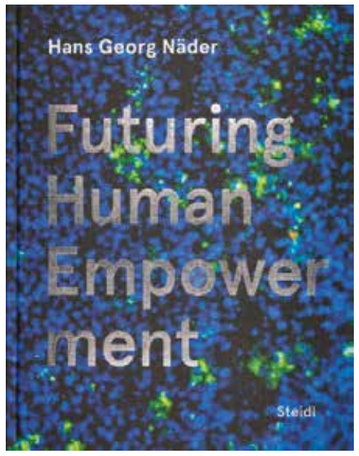
# Books

## Hans Georg Näder, published by Steidl


**Hans Georg Näder**
**Futuring Human Mobility**

Concept and realization by Thomas Huber
Photos by Christoph Neumann and Sascha Boldt
264 pages
ISBN 978-3-95829-635-0

For generations, world-leading German prosthetics company Ottobock has been restoring mobility to people and developing wearable human bionics to mobilize the human body. Published on the centenary of Ottobock, this book presents the vision for the future of human mobility of Hans Georg Näder, chairman of the company and grandson of its founder. What roles will digitalization, robotics, prostheses, artificial intelligence and the imagination play in how we optimize and employ our bodies, and shape the development of humanity? *Futuring Human Mobility* explores these questions and their philosophical, ethical, social, political, economic and medical implications in our changing and diverse global community. Incorporating interviews, essays, short stories and artwork by 40 international experts, the book is a fountain of inspiration and a call for us to look beyond the narrow horizon of the present to a future of dynamic possibilities.




**Hans Georg Näder**
**Futuring Human Empowerment**

Concept and realization by Thomas Huber
Photos by Christoph Neumann and Sascha Boldt
336 pages
ISBN 978-3-96999-113-8

Entrepreneur and futurist Hans Georg Näder takes us on a journey to the remaining secrets of the human body. *Futuring Human Empowerment* offers an exclusive look at laboratories and think tanks worldwide that are normally closed to the public and where the most innovative researchers, engineers and start-ups are working to expand the capabilities of the human body through artificial intelligence and progressive technologies. In exclusive in-depth conversations, experts explain how they're using biotechnologies in the fights against pandemics and cancer, mobilizing the human body's hidden self-healing powers, deciphering the mathematical algorithm of life, cultivating stem cells on an industrial scale, and printing artificial replacements of vital organs on 3D bioprinters. Another focus of the book is the design of the human-machine interface. While humanity entered the age of robots and cyborgs long ago, robot "co-workers" are increasingly taking on more of the workload in modern industry, and numerous technologies are seamlessly incorporated into the human body, releasing its unseen potential.


**Hans Georg Näder**
**Begegnungen (*Encounters*)**

Concept and realization by Thomas Huber
Photos by Christoph Neumann and Sascha Boldt
448 pages
ISBN 978-3-96999-046-9

Hans Georg Näder is one of Germany's most successful entrepreneurs. Through numerous innovations he's transformed Ottobock into a global market leader in prosthetics and medical technology. Yet Näder is not only a visionary and futurist, but an ambitious art collector and socially engaged global citizen—a man with many facets. He states that most of his decisions, both personal and professional, are foremost shaped by his encounters with others, hence the title of *Begegnungen* (Encounters). This collection of one-on-one interviews and portraits brings together some of the key people who have accompanied and inspired Hans Georg Näder on his journey through life, presenting a spectrum of reflections from prominent figures in commerce, politics and research, along with employees, friends and family. The book reveals the impressive character of each personality and Näder's remarkable vision for the future.

**Steidl**

Typographical note:

Almost all typefaces used in the printing industry have been designed by men. For the Ottobock magazine we chose a typeface designed by a woman:

**Myriad (1992) by Carol Twombly**

Myriad was the first original design by Carol Twombly (together with Robert Slimbach) and is one of the sans-serif linear Antiqua typefaces derived from Renaissance Antiqua. Myriad has a warm and open quality, combined with good legibility. It is varied yet readable at the same time and guides the eye well even in longer texts.

**Ottobock en route N° 1**
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Translation into English: gainestranslations
Copy-editing: Hannah Hempstead, Monte Packham

Image credits:
Pages 6–9: Emilia Hesse
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Page 34: Paul Gerdes/Lizaveta Borakhava
Page 58: Mika Volkmann

Archive photos:
Ottobock Archive, Duderstadt

Image editing and separations: Steidl
Production and printing: Steidl



Printed by Steidl
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