

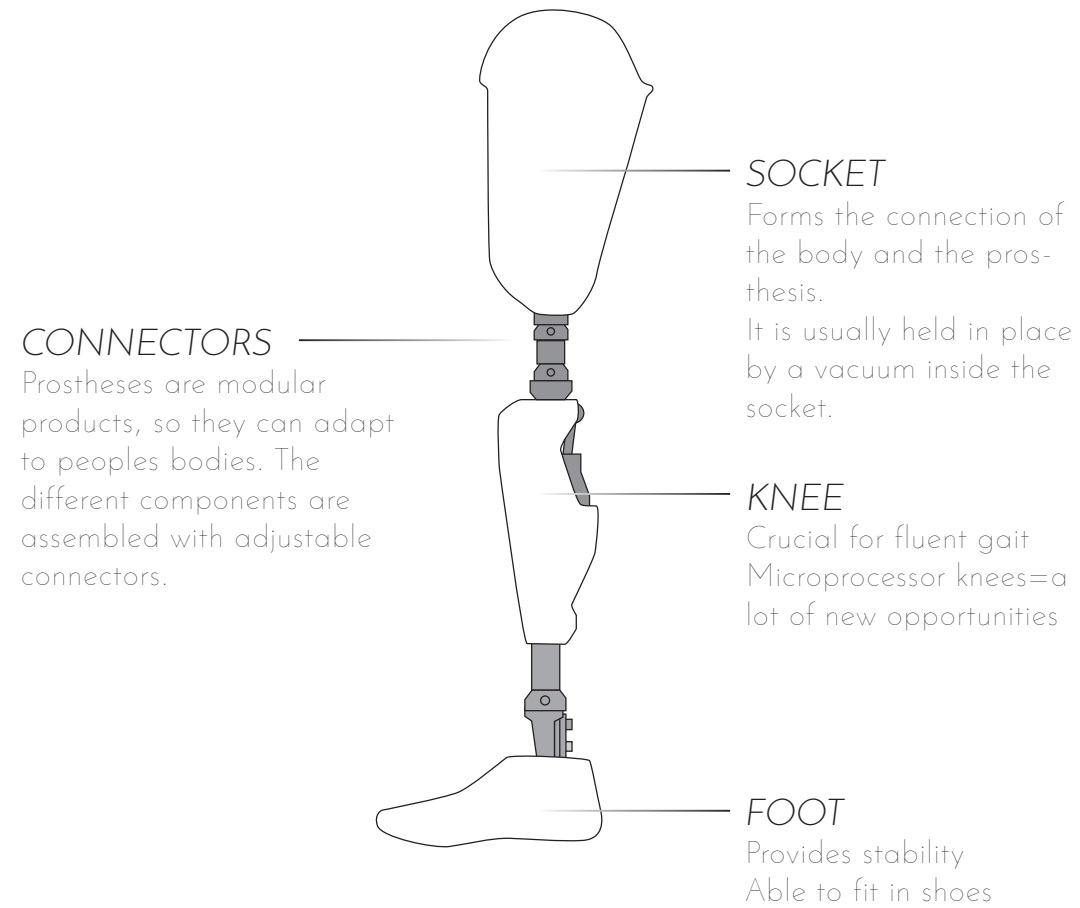


antilope
modular sports prosthetic system



RESEARCH

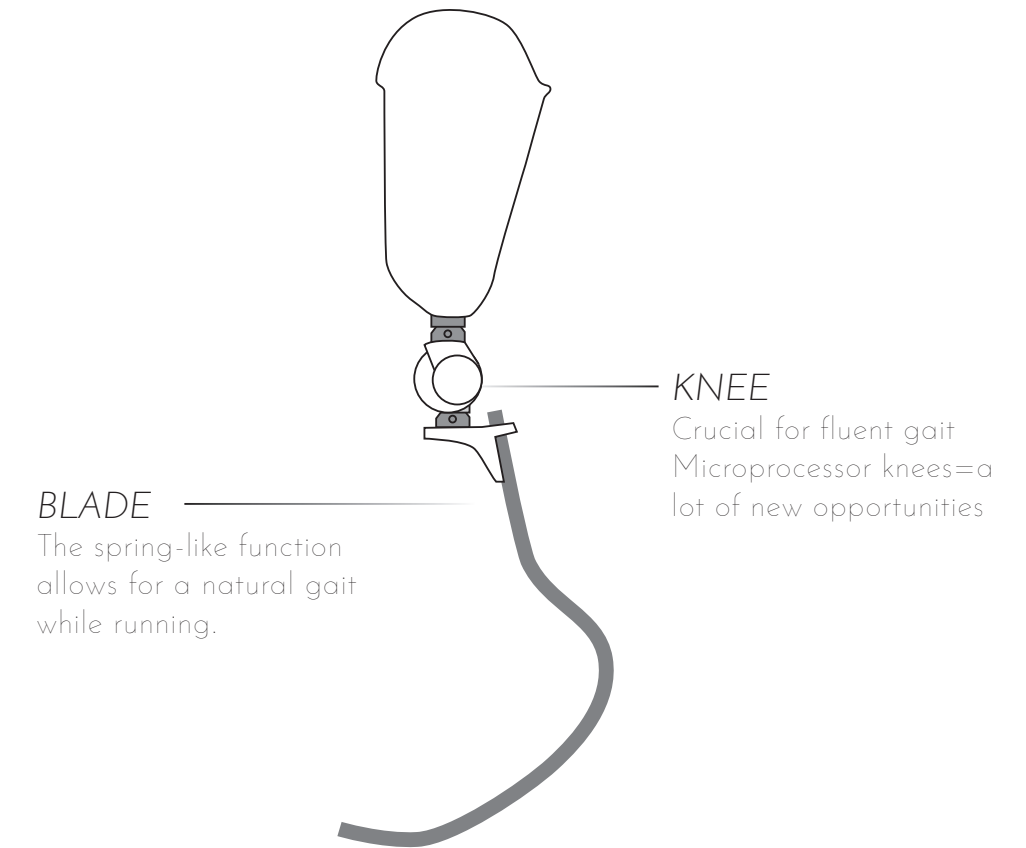
HOW DOES A PROSTHESIS WORK?



"RUNNING WITH A WALKING FOOT COMPONENT IS A BIT LIKE RUNNING IN ITALIAN LEATHER SHOES. YOU CAN DO IT, BUT IT DOES NOT WORK VERY WELL."

Jan Lentes, Prosthetist

WHAT MAKES A RUNNING PROSTHESIS DIFFERENT?





VISITING TSV BAYER LEVERKUSEN

During my research, I had the chance to visit a training at TSV Bayer Leverkusen and meet a few amputee top-athletes who compete on international level, as well as some junior athletes.

It was super interesting to follow their training and get an insight into the world of paralympic sports.



MOST TOP ATHLETES ARE SPONSORED AND WORK VERY CLOSELY WITH PROSTHETIC MANUFACTURERS. THEY TWEAK AND OPTIMIZE THEIR OWN PROSTHETICS, MANY EVEN WORK AS PROSTHETISTS BESIDES THE SPORT.



CA. 6000€

CA. 3500€

CA. 3500€

13.000 €

VISITING A PROSTHETIST

Through the athletes at TSV Bayer, I got in touch with a prosthetist who is specialized in providing sports prosthetics.

He showed me how sockets are made and prostheses are fitted and adapted to the body. Visiting his workshop, but also getting his feedback during ideation phase helped me to get a better idea of design opportunities and realistic solutions in this field.

"A SPORTS PROSTHESIS COSTS ABOUT
13 000 €
IT IS NOT COVERED BY INSURANCE"

MOODBOARDS

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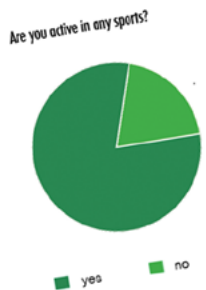
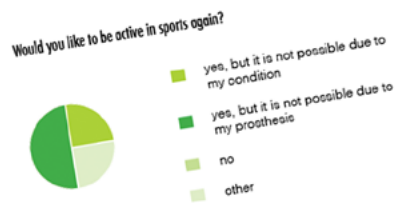


TECHNICAL - HUMANOID

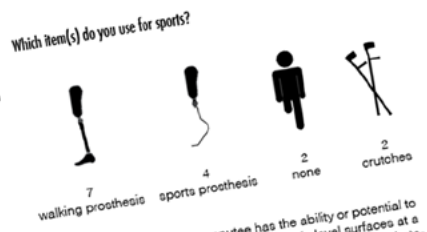


NATURAL

CHAPTER 21



Very Limited Mobility. The amputee has the ability or potential to use a prosthesis for transfers or ambulation in level surfaces



Very Limited Mobility. The amputee has the ability or potential to use a prosthesis for transfers or ambulation in level surfaces at a fixed walking pace. Walking at various speeds, bypassing obstacles of any kind are out of the K1 class.

0-20 years
21-30 years
31-40 years
41-50 years
51-80 years
Older than 80 years

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Below Knee

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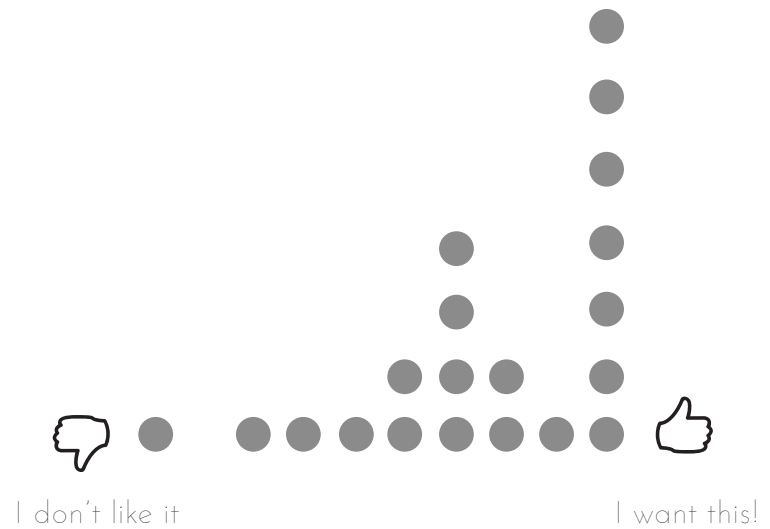
with hip endoprosthesis
knee amputation stump

USER SURVEY

I created an online survey and posted it in various amputee groups on social networks. I wanted to get an idea about what people consider important or would like to see improved in their prosthetics, especially regarding sports. This is one of the most interesting insights I got:

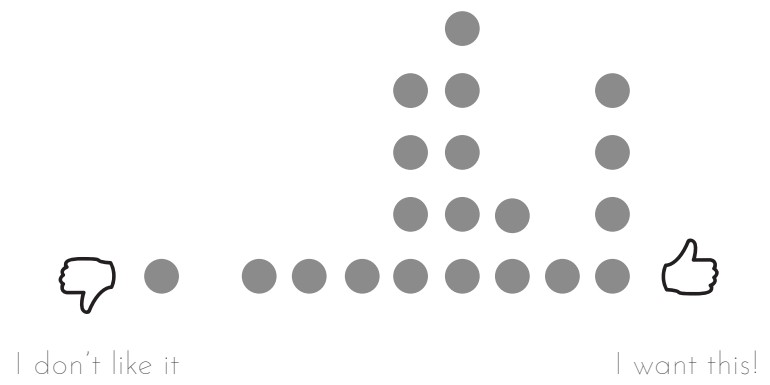
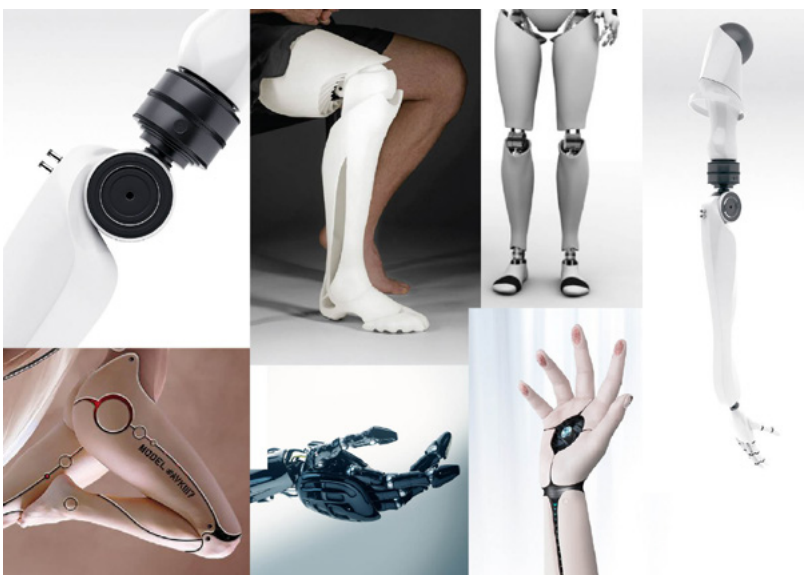


"AN IMPROVMENT WOULD BE TO MINIMIZE TRANSPIRATION IN THE SOCKET. AFTER FIFTEEN TO TWENTY MINUTES OF PLAYING SOCCER, THE STUMP IS TOTALLY WET. I EVEN LOST MY PROSTHESIS DURING A GAME ONCE."

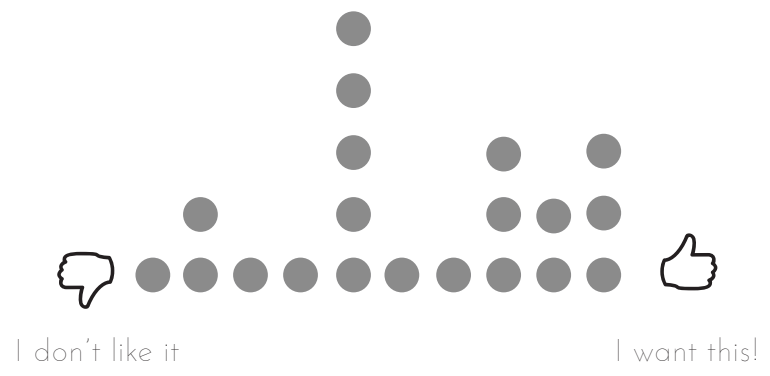


WHAT DO AMPUTEES WANT THEIR PROSTHETICS TO LOOK LIKE?

In the same survey, I asked people to rate three different moodboards on a scale from one to ten. The tendency showed that many people prefer a sporty look over prosthetics that try to imitate a natural limb. These are two of the answers I got when asking what a prosthesis should look like:



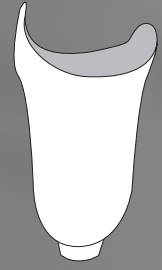
„ I LIKE IT WHEN MY PROSTHESIS IS VISIBLE AND I STEP OUT OF LINE A LITTLE BECAUSE THEN PEOPLE, ESPECIALLY KIDS, START ASKING QUESTIONS ABOUT IT.“



„I THINK THE TECHNOLOGY IS WORTH SEEING.“

IDEATION

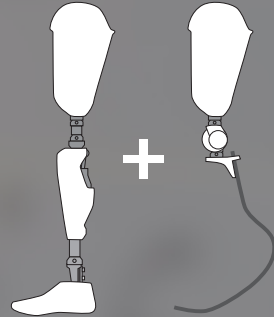
CREATING AN AFFORDABLE SOLUTION FOR AMPUTEES TO GO OUT FOR A RUN/
TEES TO GO OUT FOR A RUN/
BE ACTIVE IN SPORTS IN THEIR FREE TIME



How to reduce sweating and skin problems on the residual limb?



How to make sports prosthetics more affordable?

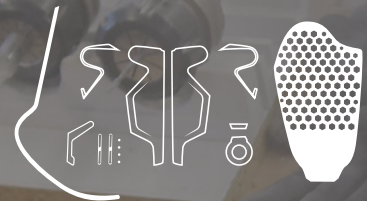


Could one prosthesis be suitable for walking and running?

CONCEPT SKETCHING



MODEL BUILDING



27 PARTS

From very large ones like the blade or the socket to tiny ones like the details of the attachments, the model presented many different challenges.



10 DAYS

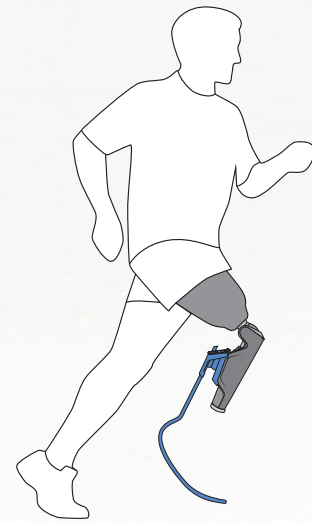
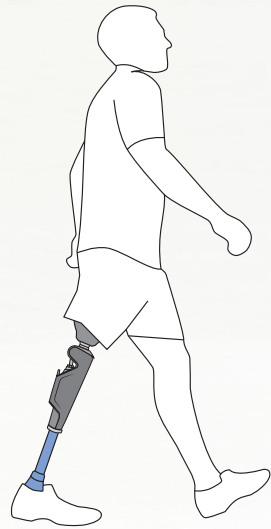
Of printing, milling, sanding, bending, painting and quite a lot of gluing and problem solving...



1:1 MODEL

In the end, the full size model helped me to realistically get my concept across.

FINAL CONCEPT

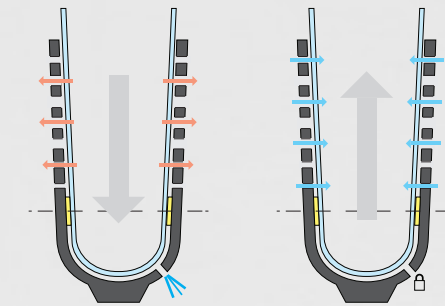
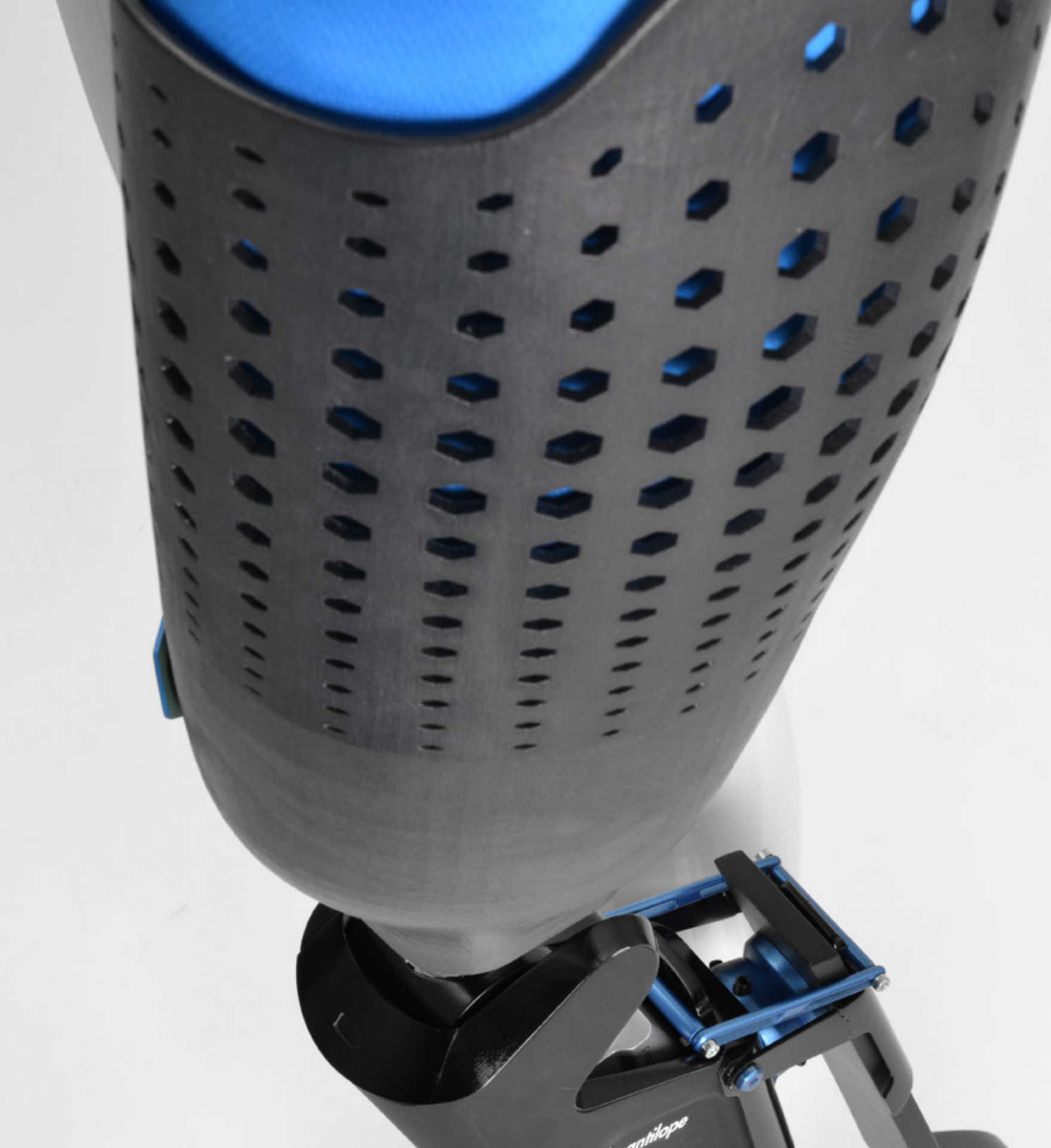


TWO IN ONE

Antilope is a modular prosthetic system that allows the user to switch the foot component as quickly as changing from normal to running shoes.

The same prosthesis can provide safety and stability in everyday life as well as flexibility and a natural gait during running.



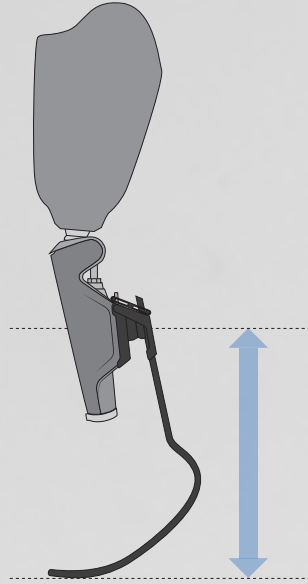


LET THE SKIN BREATHE

Traditional prosthetic sockets get warm and damp while wearing them, which often causes skin problems.

By including a pattern into the socket, air can pass through and cool the limb.

To hold the socket in place, a vacuum is created in the lower part by a sealing lip on the sleeve.



PUT ON THE RUNNING BLADE

The running blade basically works like a spring mechanism. When you take a step, it flexes and returns the energy when you push yourself off the ground.

For that flexing movement, it is good to have a rather long blade. This is why the running blade is attached to the back of the knee component.





GO OUT FOR A RUN

Just put on the blade and you are ready to go.

With Antilope, it becomes more affordable to own a running prosthesis. It opens up a lot of opportunities to integrate sports into everyday life. Whether it is going out for an afternoon run or playing basketball with friends, Antilope makes it easy to be active.