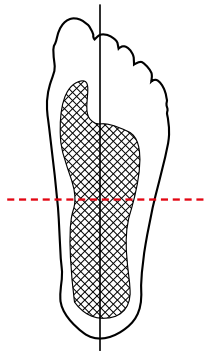
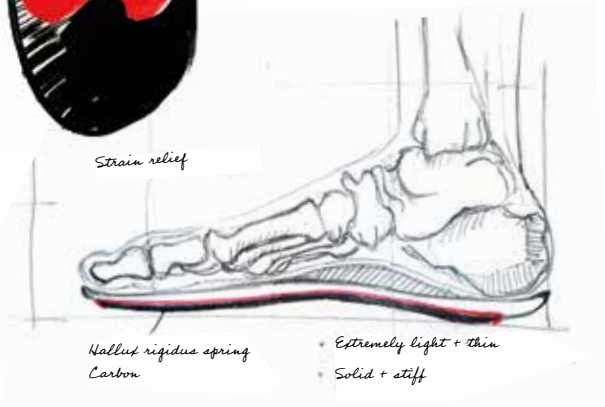
CARBON
INSOLE SYSTEMS

FORWARD THINKING



UNDERSTANDING MOVEMENT TO PERFECTION



CARBON
INSOLE SYSTEMS

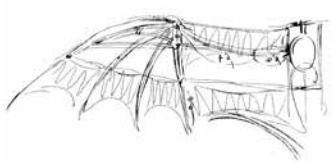
SPRINGER

INTELLIGENT TO THE CORE

All of the components in our carbon systems have one thing in common – they have been optimized for their specific purpose and unite skilled craftsmanship with the highest material standards.

CARBON
INSOLE SYSTEMS

SPRINGER



DREAMING THE IMPOSSIBLE

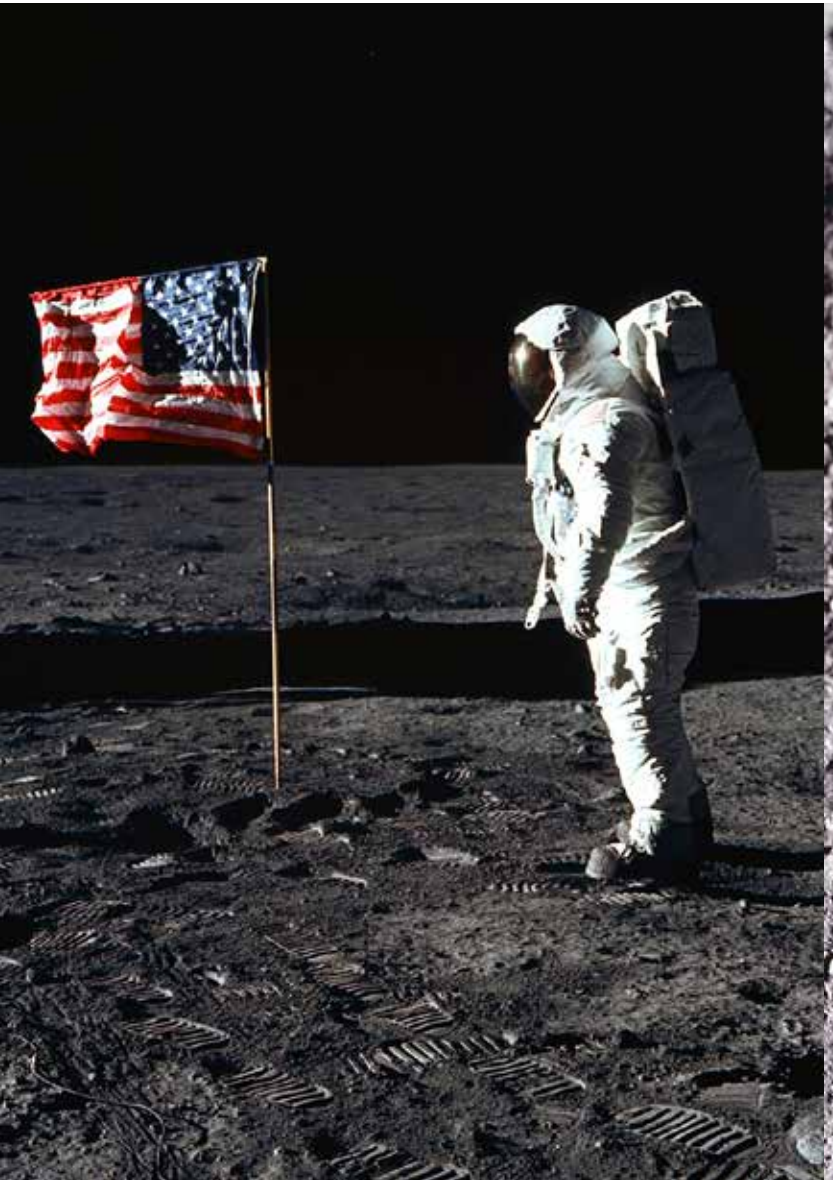
Carbon is a lightweight yet robust material used in modern-day aviation.

During the Renaissance, long before the scientific findings and achievements of the modern age, one of the greatest geniuses of the century racked his brains over how to construct a flying machine. Leonardo da Vinci's dream of flying has always fascinated mankind. His inventive spirit often looked to nature for inspiration, which is why he began studying the flight of birds, their anatomical structure, bones and feathers.

Pioneers such as Otto Lilienthal, Clement Ader and George Cayley continued his legacy. By 1903, the brothers Wilbur and Orville Wright had finally succeeded in manning the first continuously powered flight.

All these pioneers had one thing in common – their dream of flying; the crux was to find the right design, material and approach and unite them.

CARBON
INSOLE SYSTEMS



SPRINGER

PURSUING A VISION

By virtue of their uniquely high durability and significantly low density combined with compromising strength and rigidity, **CARBON FIBER MATERIALS** have become indispensable to space travel. Space shuttles and satellites use them – and now, so do our orthopedic insoles as well!

On 25 May 1961, President John F. Kennedy announced to Congress his bold vision to land a manned spaceship on the moon and return safely to Earth, and to achieve this within a decade. Making this idea a reality was declared a national objective and necessitated an enormous scientific effort driven by major technical breakthroughs. Thanks to the Apollo 11 mission, on 21 July 1969, astronaut Neil Armstrong was the first man to set foot on the moon. Without the unconditional will to take up this challenge, to persist, to venture out into the unknown and to strive for the greatest possible results, the mission would not have been such a success.

CARBON
INSOLE SYSTEMS

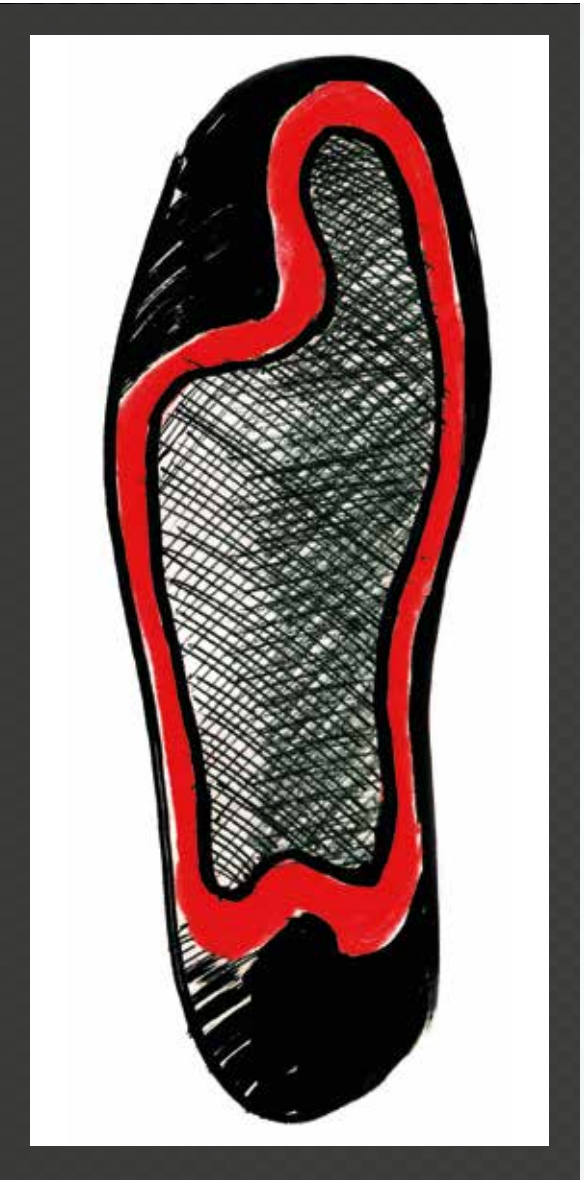
SPRINGER

INVESTING IN THE RIGHT IDEA

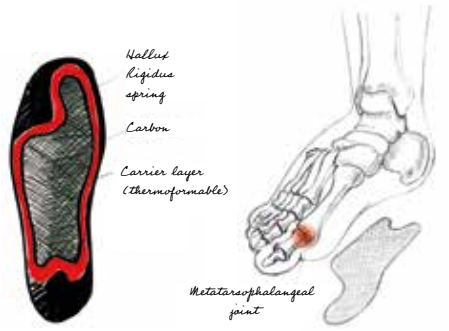
TODAY, CARBON is a common construction material in the automotive industry as well, playing a special role to ensure that the chassis of electric cars remain lightweight but strong.

Evolved from a means of transport into a cult artifact, the car has shaped the lifestyle of entire generations for over 120 years. On 29 January 1886, Carl Benz applied for a patent on his motorized tricycle. His invention, however, was not immediately met with enthusiastic approval. Eyewitnesses of his test drives were not very convinced of the benefits of – what they called – his »stinky box on wheels«. »Pity, that poor man, he will drive himself crazy and ruin his business if he pursues that harebrained idea!«, critical contemporaries of his are said to have exclaimed. Gottlieb Daimler's efforts were received with a similar lack of enthusiasm when he installed a single-cylinder petrol engine in a four-wheeled carriage construction at around the same time. It would be years before they could market their cars and produce them in series. Nevertheless, with perseverance, technical know-how, skilled craftsmanship and a knack for betting on the right idea, these great inventors' dreams of freedom and mobility eventually took off and changed the course of history forever.

CARBON
INSOLE SYSTEMS



SPRINGER



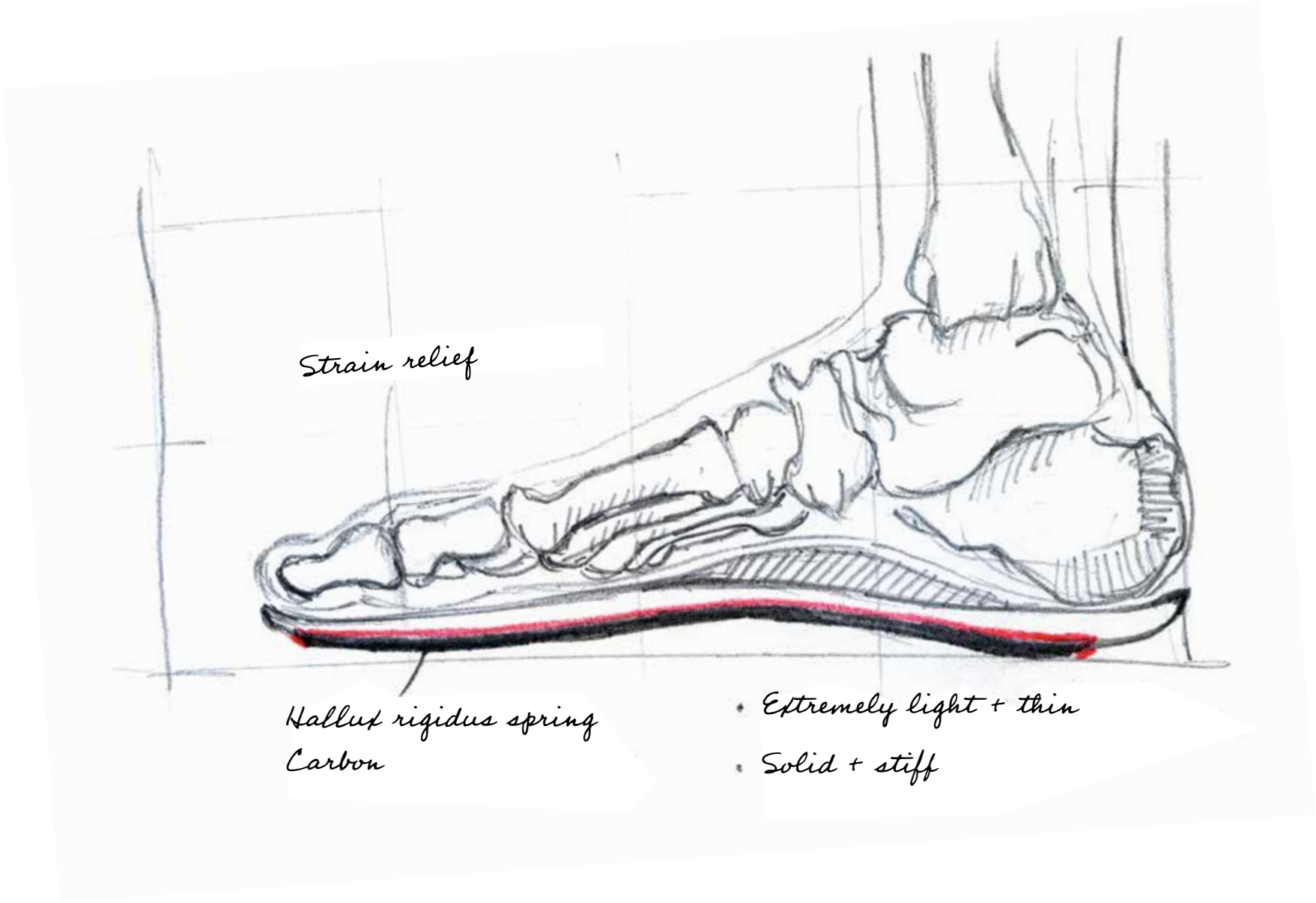
THE DECISIVE MOMENT

SPRINGER can thermoform **CARBON** at 115°C, melting and softening its sharp edges. This process is now patent-protected.

Feet are afforded little space in shoes. In everyday life, this can often be torturous. On the other hand, in some sports, shoes are chosen deliberately with a tight fit. Nevertheless, whatever the particular sport, orthopedic insoles should be as thin as possible. At the same time, however, these insoles must provide a maximum of foot arch support and positively influence movement patterns. Insoles should consequently not only be ultra-thin, but ultra-stabilizing as well. Not to mention that every gram counts in sports.

With all of these principles in mind, our R&D department wanted to design ultra-thin and feather-light yet highly robust insoles. At that time, we sensed that CARBON would be the best material to meet these requirements and got to work. But it was not until months later that we succeeded in thermoforming CARBON at 115° C. A resounding moment of success and a milestone breakthrough. Now, the patent we were granted and the tens of thousands of satisfied customers we have to this day are a testimony to the significance of this achievement.

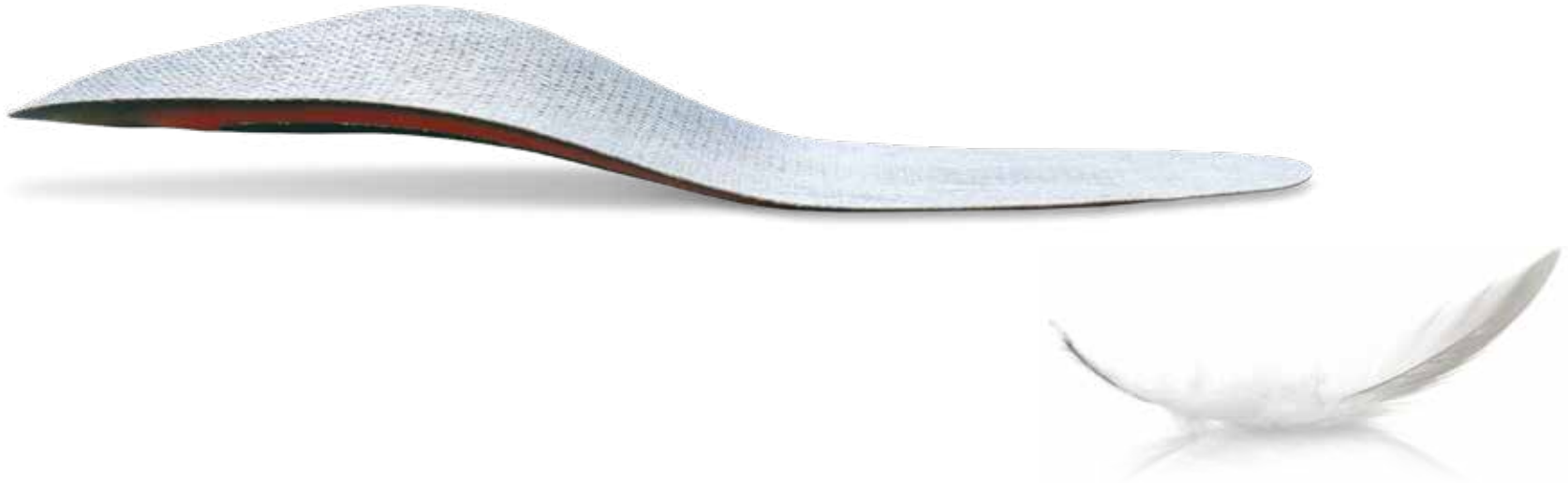
CARBON
INSOLE SYSTEMS



SPRINGER

SUPPORTING NATURAL KINETIC MOTION

Our carbon insoles support the natural shock absorption provided by the medial longitudinal arch of the foot, yet they are extremely thin and light as a feather. This property enables the foot muscles to more effectively transfer power, while protecting them from premature fatigue.



CARBON
INSOLE SYSTEMS

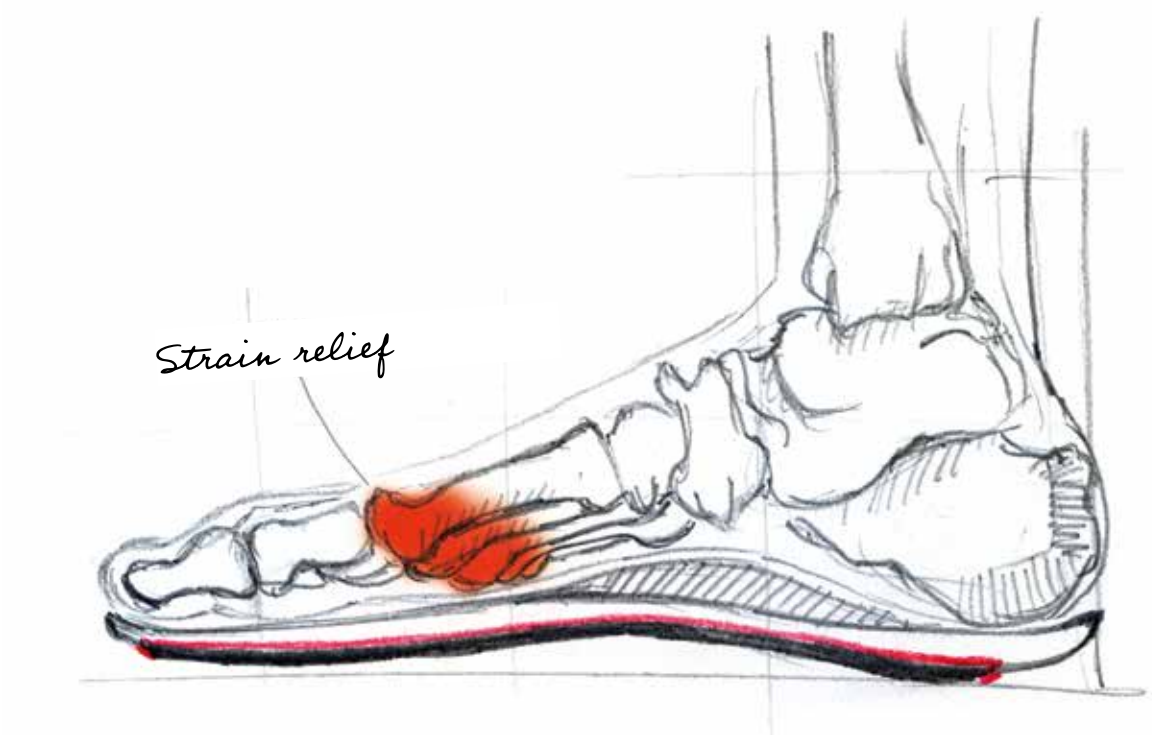
HALLUX RIGIDUS SYSTEM

In hallux rigidus, the metatarsophalangeal joint of the hallux has stiffened or its mobility is limited. This condition causes pain that can persist permanently and is intensified by movement. The rolling movement of the foot deteriorates due to arthritic changes. The design principle of our hallux rigidus carbon insole ensures that the pain-inducing metatarsophalangeal joint is immobilized without impeding the foot's natural rolling motion any more than necessary. Although partial or complete stiffening of the first metatarsophalangeal joint limits the range of motion of the big toe, the foot can still roll freely due to the insole's dynamic, shock-absorbing construction. Hallux rigidus often manifests concomitantly with unilateral symptoms, in some cases allowing a simple carbon hindfoot support to be employed on the contralateral side.

CARBON
INSOLE SYSTEMS

SPRINGER

METATARSAL SYSTEM



Merely having a splayfoot won't necessarily cause problems. However, when the metatarsal heads are put under a lot of strain, each step promotes widening and flattening of the transverse arch. This can cause periostitis that often leads to metatarsalgia accompanied by pain in the ball of the foot. Contrary to what is often assumed, the greatest pressure does not occur directly on the plantar aspect under the head, but diagonally distal to the head during heel-to-toe movement, when the toes are extended to the utmost. The art of effective splayfoot relief therefore lies in the redistribution of forefoot pressure. That's why we employ flat retrocapital pads that allow greatly improved pressure redistribution instead of small teardrop-shaped pads. At the same time, the butterfly-shaped forefoot support ensures that metatarsal heads I and V stabilize the transverse arch. The cut-outs underneath heads II, III and IV ensure that as little pressure as possible is exerted on the painful area. The insole's unique butterfly shape is extremely thin and stable, yet still adapts to the athlete's natural running movement.

CARBON
INSOLE SYSTEMS

SPRINGER

SOCCER & RACKET SPORT SYSTEM

champsole®

Developed by **Dr. Oliver Ludwig** and his team of sports scientists and athletes

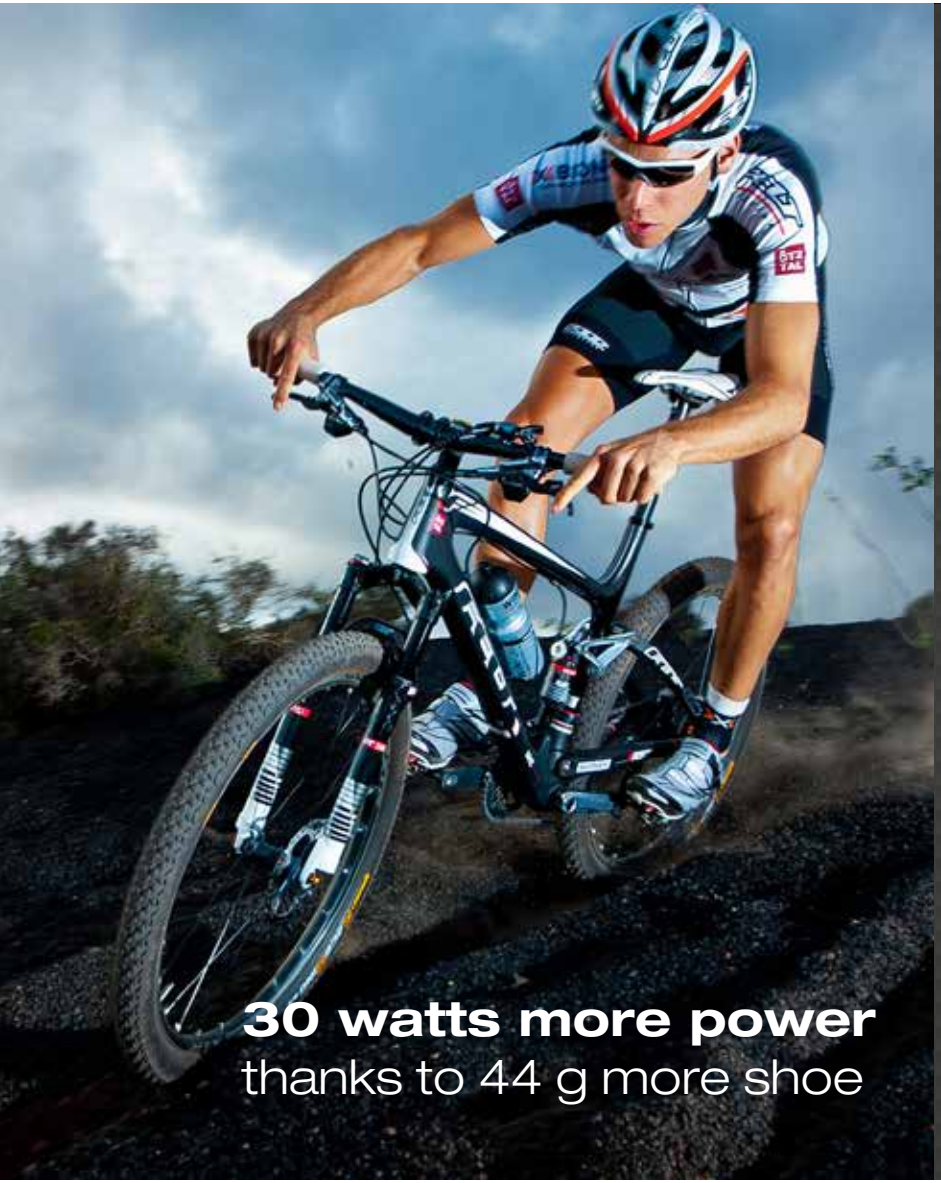
What do soccer and racket sport shoes have in common? They lack the necessary footbed to provide foot stability in the phase between toe-on and maximum loading, nor do they provide adequate cushioning to protect the joints. These shortcomings result in extremely high injury rates. In addition, soccer players are especially prone to buying shoes that are much too tight to ensure they have an optimal feel for the ball. The foot should fit in the shoe as if it were in a stocking—a formidable technical challenge when it comes to insole production. Our champsole® offers a revolutionary step by combining the needs of the athlete with those of the pedorthist. Champsole® insoles will not bunch up in your shoes and are light as a feather. Moreover, the carbon material offers excellent traction to stabilize the medial longitudinal arch of fatigued feet, helping them endure the entire match while restoring their natural shock-absorbing abilities. The insole supports rapid movement of the hallux joint. This is especially important for quick changes of direction and dynamic maneuvers.

The insole core is fused from two layers of material in a process patented by SPRINGER AKTIV. The black core is made of carbon fabric bonded by a special resin and characterized by high flexural strength with low fracture density in the axial direction. This combination results in a stiff yet very light core. A red thermoplastic synthetic completely surrounds the carbon core to prevent sharp edges. The white support layer consisting of stiffened plastic extending the length of the sole has proven its merits in orthopedic applications for many years.

INDICATIONS

- Soccer
- Tennis
- Badminton
- Squash
- Table tennis

CARBON
INSOLE SYSTEMS



30 watts more power
thanks to 44 g more shoe

SPRINGER

CYCLING & RIDING SYSTEM

WINSOLE CARBON SPORT-SYSTEM

Developed in collaboration with **Jens Machacek**, pedorthist and sport biomechanics engineer

Cyclists and equestrians have more in common than it may seem at first glance. They like to feel the power in their legs and move at breakneck speeds in the fresh outside air; whether their feet are fixed in pedals or stirrups, however, they share one orthopedic commonality: the position of their feet and legs promotes a tendency towards supination. Whereas the primary cause of this tendency in bicycle enthusiasts lies in their well-developed and supinating calf muscles, horseback riders have pronounced adductors and an internally rotated position of the leg. As a result, the lateral muscle chain of the leg is weak and tends to supinate. The knee regulating function of the WINSOLE cycling/equestrian insole provides support to the outside of the foot to prevent or alleviate excessive loading and the knee pain often associated with it. This ensures that the ankle is in correct physiological alignment and that the knee is guided properly. These benefits enhance athletic performance as well. The improved power transmission made possible by WINSOLE insoles has been proven to provide up to 30 watts of added power. That's because power transmission is more effective the more optimally the foot is coupled with the footbed of the shoe. The WINSOLE is an ultra-light, ultra-flat insole that can be individually adapted to each foot and is embedded like a second skin in your cycling shoes, ski boots or riding boots. World champions and Olympic medalists swear by Jens Machacek's WINSOLE technology.

INDICATIONS

- Cycling
- Horseback riding
- Alpine skiing

CARBON
INSOLE SYSTEMS

SPRINGER

SKATING & GOLF SYSTEM

WINSOLE CARBON SPORT-SYSTEM

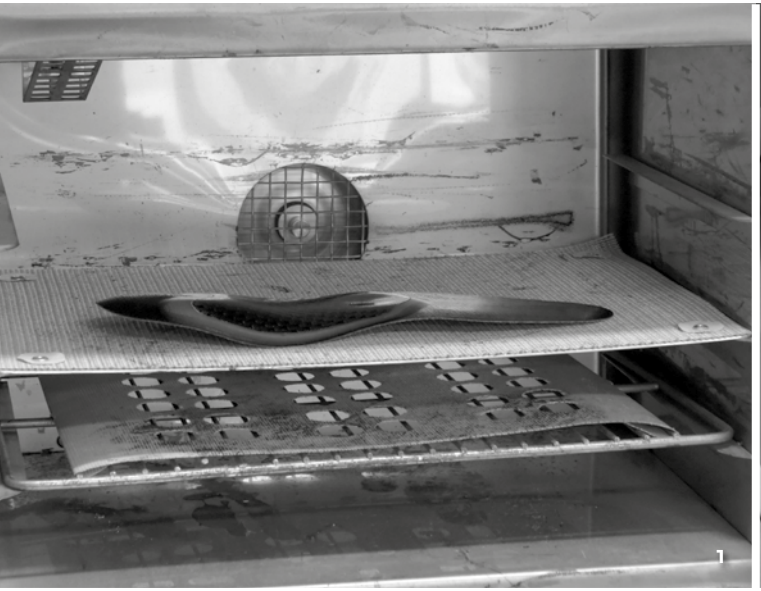
Developed in collaboration with **Jens Machacek**, pedorthist and sport biomechanics engineer

In golfing, inline skating and figure skating, the greatest source of orthopedic problems is attributable to the fact that athletes tend to cover long distances. If there is a misalignment in the boot or shoe that the athlete is wearing in addition to the physical stresses caused by the athletic activity, problems that are often only minor when remaining stationary can quickly become exacerbated. Thanks to the elastic springiness provided by our patented longitudinal arch, these ultra-light carbon insoles prevent misalignments by optimally stabilizing the foot in the shoe while still allowing it to roll naturally and extend powerfully. The insoles optimize the impact of the foot during rollerblading and ice skating, allowing a more controlled skating technique and providing relief to the outer leg muscles. The foot correction provided by the insole gives golfers a more stable stance during rotation, allowing them to take more precise and more powerful swings.

INDICATIONS

- Golf
- Inline skating
- Inline speed skating
- Ice hockey
- Ice speed skating

CARBON
INSOLE SYSTEMS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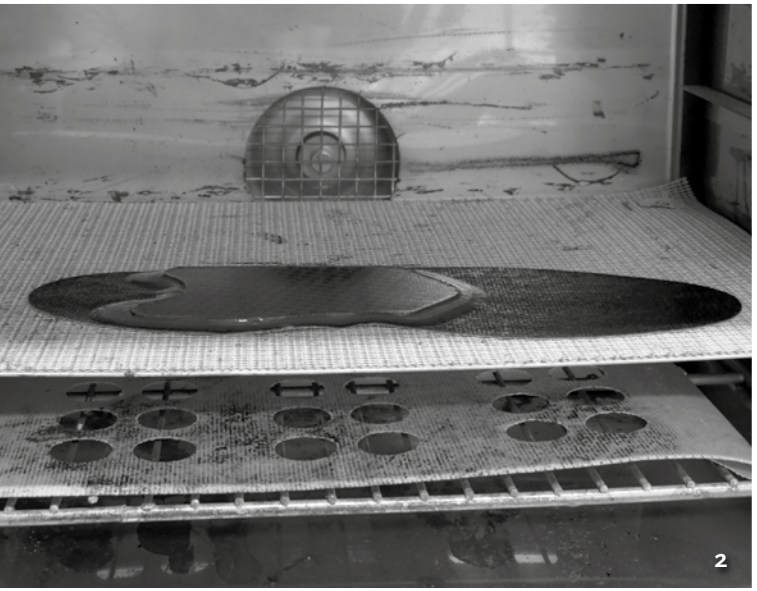
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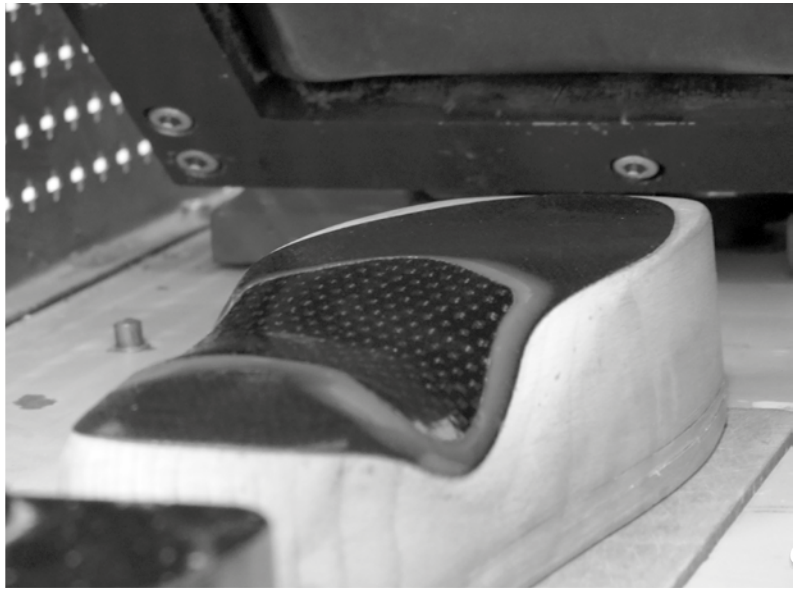

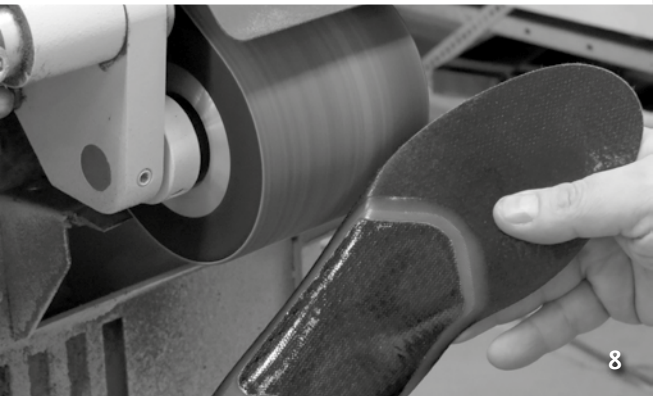

PROCESSING INSTRUCTIONS

Please note the following information regarding the correct fabrication of SPRINGER carbon insoles:

1 - Heating the blank
Place the carbon blank in a convection oven set to **120°C** for **10 min**.

2 - Blank after heating
The heated blank is now flat and can be thermally reshaped again when heated.

3 - Thermoforming with the lath press
Place the blank on the last of your choice.

4 - Pressure for pressing
The optimum pressure for thermoforming the blank is 3 bar.

5 - Apply silicone film
Cover the heated blank with a silicone film so that it does not stick to the machine.

6 - Allow to cool
After cooling down for **15 min**, the blank will have taken on the shape of the last. Do not remove the silicone film until the blank has cooled to shape.

7 - Deep-drawing under negative pressure
Another way to mold blanks. For this application, also cover the blank with a silicone film so that it does not stick. The same heating and cooling times as above must be observed.

8 - Grinding
After thermoforming, the blank undergoes grinding as required.

CARBON
INSOLE SYSTEMS

HALLUX RIGIDUS SYSTEM
006 4L 013 111 0 022 00000
Long rigidus spring

HALLUX RIGIDUS SYSTEM
006 4F 013 111 0 020 00000
Short rigidus spring

HALLUX RIGIDUS SYSTEM
006 4L 013 111 0 025 00000
Mixed pair, right-side big toe stiff, no rigidus spring on left side

HALLUX RIGIDUS SYSTEM
006 4L 013 111 0 026 00000
Mixed pair, left-side big toe stiff, no rigidus spring on right side

METATARSAL SYSTEM
006 4L 013 111 0 040 00000

SPORT SYSTEM
006 4L 263 653 7 042 00000
Cycling, riding, Alpine skiing

SPORT SYSTEM
006 4F 263 653 7 088 00000
Golf, skating, ice hockey

SPORT SYSTEM
006 4L 13F 908 7 057 00000
Soccer and various racket sports

CARBON
INSOLE SYSTEMS

SPRINGER

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