

### Osteoarthritis of the knee – what is that?

How it develops, what happens in the joint and what types there are

Page 6

#### Facts about osteoarthritis of the knee

Who can help, what you can do and where to go from here

Page 16

### Back in the swing of things

How Christoph found the way back to his active life

Page 28

#### Agilium Select – The choice is yours

Which brace fits your active life best

Page 38



# Your active life with osteoarthritis

Osteoarthritis is a widespread disease: It is estimated that more than 8 million people are affected by this joint disease in Germany alone. This includes many young and athletic people as well.

Osteoarthritis most often develops in the knee. The diagnosis can cause uncertainty among those affected: Many fear that knee pain will be their constant companion from now on and that they will be able to move only with analgesics. Others wonder how long they will still be able to pursue their hobbies or climb the stairs, and at what point they may no longer be able to do anything without a prosthetic knee joint. Is there no way out of pain other than medication?

Yes, there is. Say "Stop!" to osteoarthritis. Today there are good options for living an active life with osteoarthritis. In many cases, a brace can help reduce the pain – and help you regain your quality of life.

This magazine offers tips and information to encourage you and help you live an active life, even with osteoarthritis. You also learn all about the Agilium line: Which brace is suited for whom? How do they work, and what can each one do?

We wish you all the best and hope that the information on the following pages opens up many new prospects for you!



"Ottobock offers the perfect brace solution for every patient with osteoarthritis of the knee."



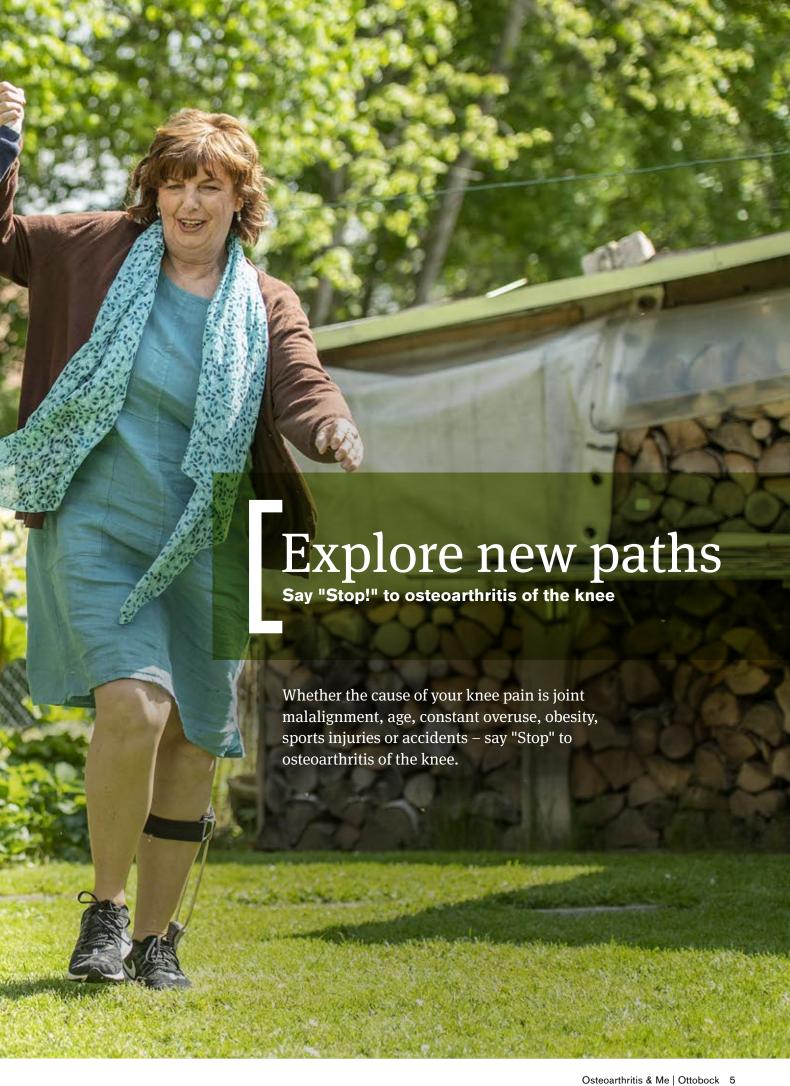
#### Osteoarthritis of the knee – what is that? The vicious circle of osteoarthritis Things no longer run smoothly \_\_\_\_\_\_9 Not all osteoarthritis is the same \_\_\_\_\_\_**10** Experts to support you \_\_\_\_\_\_\_12 Grandma is back 14 Facts about osteoarthritis of the knee \_\_\_\_\_\_**16** Your way to everyday life without pain \_\_\_\_\_\_\_\_18 Gaining time with healthy nutrition **20** Exercise is fun – and keeps you healthy **22** A versatile device 24 The Agilium line. As unique as you \_\_\_\_\_\_26 My active life with the Agilium ...... 28 The daily companion – Agilium Freestep 3.0 ..... **30** The discreet companion – Agilium Softfit The strong supporter – Agilium Reactive ..... The dynamic motivator – Agilium Patella ...... 36 Agilium Select – the choice is yours ...... 38

### Content









# Osteoarthritis of the knee – what is that?

Osteoarthritis, sometimes abbreviated as OA, refers to changes in the joint when the layer of cartilage is damaged or destroyed by wear and tear that ultimately can also cause changes to the bone itself. Joint mobility is compromised and this can lead to inflammation and pain. Approximately 60% of all osteoarthritis cases involve the knee – these are referred to as osteoarthritis of the knee.

#### How does osteoarthritis come about?

Risk factors such as obesity, joint malposition, lack of exercise, constant overloading or incorrect loading of the joints or injuries accelerate wear and tear of the knee joint. Osteoarthritis can thus also occur in younger people.

Once the cartilage is damaged and its gliding properties are affected, the knee can no longer serve its purpose properly, the range of motion is reduced and the joint becomes painful.

Because osteoarthritis is a natural part of the ageing process, it cannot be halted. However, worsening of the condition can be considerably delayed and the pain of affected individuals can be significantly reduced by taking the right steps.

#### How do you identify osteoarthritis?

There are several common symptoms that signal osteoarthritis of the knee. These can occur individually or together. Especially in the initial phase of osteoarthritis, however, you may not notice any of these symptoms.

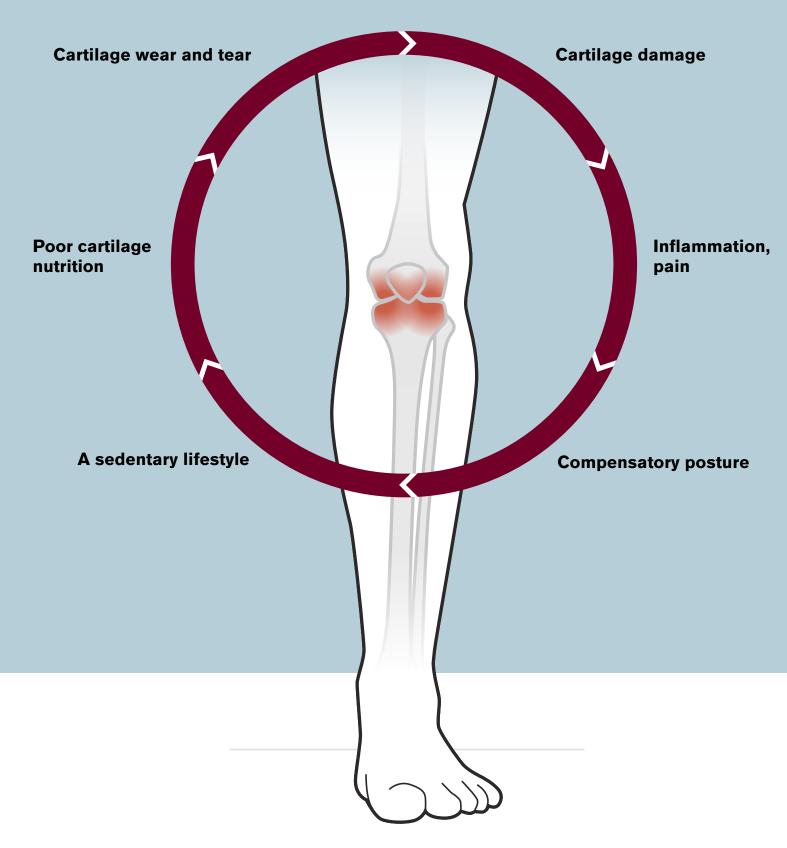
#### Initial symptoms of osteoarthritis of the knee

- Knee pain after rest (start-up pain)
- Knee pain after unusual exertion, such as carrying heavy loads
- Knee pain during everyday activities, such as climbing stairs
- Knee stiffness
- Grinding and crackling of the knee joint
- Swelling and inflammation in the knee

It pays to listen to your body and consult a doctor when problems first arise. The sooner osteoarthritis of the knee is recognised and counteracted, the better the chances are for getting knee pain under control, maintaining joint mobility for a long time and slowing down the progressive changes in the knee joint.



#### The vicious circle of osteoarthritis



### Things no longer run smoothly

As soon as osteoarthritis of the knee causes pain, it leads to a vicious circle: To relieve a painful knee, it is moved less. This reduces the amount of nutrients provided to the cartilage, leading to its further degradation. It is no longer able to optimally do its job in the knee – and so the knee hurts.

As a degenerative joint disease, osteoarthritis of the knee typically starts with signs of wear and/or minute damage in the joint cartilage. The cartilage gets rough and uneven, the joint cannot move smoothly any more – it catches and grinds.

This leads to reduced mobility and pain. Affected individuals instinctively assume a relieving posture to reduce strain on the knee. But that's not good. The unnatural posture often leads to new problems in other areas, such as the hips. The supply of nutrients to the cartilage, which is based on movement, is reduced - and so the vicious circle begins.

Increasing friction leads to painful inflammation in the knee. Fluid effusion develops in the joint capsule. At this point, medical professionals speak of activated osteoarthritis - the pain becomes chronic.

As osteoarthritis progresses, cartilage damage increases and all tissues involved in the joint are affected. The bones form spurs (osteophytes) to stabilise the joint, but this also reduces movement in the knee joint.

As a rule, knee pain then occurs at increasingly shorter intervals and becomes more severe over time.

Use gentle treatment options – from changes in nutrition to movement exercises and a brace – to break the vicious circle of osteoarthritis as early as possible.



#### **Devices for osteoarthritis**

If you suffer from osteoarthritis, a brace can help alleviate pain and reduce the strain on your knee joints.

# Not all osteoarthritis is the same

#### Stages of osteoarthritis of the knee



#### Osteoarthritis stage 1

The joint cartilage exhibits initial signs of wear. It is less elastic than healthy cartilage and cannot recover well after being subjected to loads. High loads can lead to the first knee pain.



#### Osteoarthritis stage 2

The cartilage tissue becomes thinner. The cartilage surface becomes rough and uneven. The bones form initial spurs (osteophytes). The knee is considerably less able to bear weight.



#### Osteoarthritis stage 3

The cartilage has partly disappeared so that the bones begin to rub against each other in some places. X-rays show pronounced bone spurs and narrowing of the joint space. At this advanced stage, osteoarthritis causes considerable restrictions of movement and knee pain.



#### Osteoarthritis stage 4

The joint space has narrowed considerably and the joint cartilage has almost completely disappeared. The bones are often damaged as well. The joint is deformed and often inflamed. Joint replacement surgery – a prosthetic knee joint – may be the best solution in this final stage.

#### The four different types of osteoarthritis of the knee

#### Lateral osteoarthritis of the knee

This form of osteoarthritis frequently occurs in patients where the lower leg axis

#### Medial osteoarthritis of the knee

Medial osteoarthritis of the knee frequently of the knee, increasing the risk of this type

#### **Tricompartmental osteoarthritis** of the knee

areas of the knee joint are equally affected the tibia, femur and patella.





#### Individual solutions

The braces in the Agilium line can be used effectively for the various types and stages of knee OA.



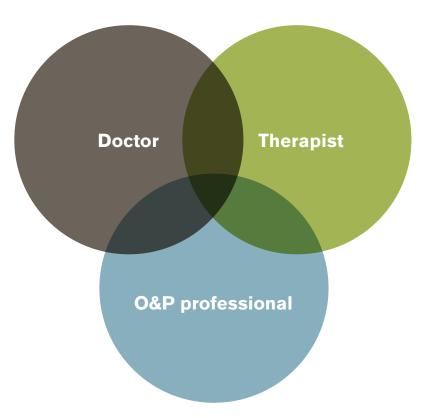
#### Retropatellar osteoarthritis

### Experts to support you

Experts in various fields are here to support you during treatment. Sharing information between the doctor, O&P professional, therapist and you facilitates the best possible, individual treatment of your osteoarthritis of the knee. The therapy can be ideally designed to match your personal needs, paving your way back to an active, pain-free life.

#### **Everything meshes perfectly**

Your individual treatment results from the interplay between your doctor, therapist and O&P professional. It is perfectly tailored to your individual illness, needs and preferences.









"It's a joy to see patients feel immediate pain relief when they try a brace on for the first time."

Heiko Drewitz,

### Grandma is back

It started some time ago, gradually got worse – and then it wouldn't go away any more. "I always had pain in my left knee," Silvia says. "In 2018, I went to the doctor and we did an arthroscopy. The diagnosis was osteoarthritis of the knee." Pain medication brought no real relief, and the injection of hyaluronic acid and later cortisone did not substantially improve things. Before opting for surgery, Silvia went to a medical supply company where a brace was recommended.

She took a trial model out onto the street. "It really was an aha moment for me," says the refreshingly young-looking grandmother, laughing. "After just a few steps, I suddenly noticed how it was supporting me and that I was in less pain." She has now had her Agilium Freestep 3.0 for a few months.

"My physical situation has improved dramatically, I am much more mobile, far more confident with greater stability, and I can walk a lot farther." She is able to walk long distances again and enjoys hiking with her husband. Silvia can now do many more things with the children again. "My grandchildren are always saying, Grandma, bring your brace," she says, with a carefree laugh.



### Facts about osteoarthritis of the knee

While osteoarthritis cannot be healed, it can be treated – often, the pain can be considerably reduced or even eliminated entirely. There are three basic treatment methods for osteoarthritis of the knee: Conservative therapy, invasive joint-preserving therapy and invasive joint-replacing therapy. The term invasive is used for all treatments in which the doctor makes changes to the knee joint – surgery, in other words.

#### Invasive joint-preserving osteoarthritis treatment

Joint-preserving methods for treating osteoar-thritis affect the human organism to a greater or lesser extent. Gentler methods include injecting hyaluronic acid or cortisone into the knee joint. Hyaluronic acid is an important component of connective tissue, and occurs naturally in the body. Thanks to its hydrophilic properties, hyaluronic acid improves the consistency of the joint fluid and provides relief for the joint cartilage. Another form of therapy is so-called corrective osteotomy. This surgical intervention is used to correct axial malalignment, thereby preventing incorrect biomechanical stress on the knee joint.

#### Invasive joint-replacing osteoarthritis treatment

If osteoarthritis of the knee has damaged the joint cartilage to such an extent that joint-preserving therapy no longer helps, you may have to consider joint replacement. During the operation, the natural joint is replaced either fully (total joint replacement) or partially by an implantable prosthesis (endoprosthesis).



In order to avoid or delay a knee operation, osteoarthritis patients should manage their symptoms early on with joint-preserving therapy options.

#### Conservative (non-invasive) osteoarthritis treatment

Conservative joint-preserving therapy includes all non-invasive treatments. This includes healthy nutrition, movement therapy, special exercises and moderate sports activity to strengthen the musculature. Pain relieving creams, analgesics and anti-inflammatory medications and cooling and warming therapy help alleviate pain, and supports or braces can also provide relief for the affected knee. An individually adapted combination of therapy measures can relieve pain, increase mobility and improve wellbeing.







"Studies and practical experience show that with a brace, we can avoid operations for osteoarthritis of the knee in many cases and help our patients enjoy a better quality of life."

Dr Hartmut Stinus
President, German Society for Foot and
Ankle Surgery (2018–2020),
Specialist for orthopaedics and accident surgery



### Your way to everyday life without pain

Knee or ankle-foot orthoses specifically relieve the painful areas in the knee joint and can provide sustainable relief from knee pain. Braces are proven to reduce the use of analgesics or, in the best case, eliminate the need for them entirely. Largely pain-free movement and even sports become possible again. It is thus possible to break the vicious circle of pain, lack of exercise and progressive osteoarthritis.



#### Step 1

#### **Diagnosis**

doctor whether a brace is suitable for your symp-

#### Step 2

#### Fitting with a brace

Ottobock has developed optimal braces to fit together with your technician. Your new brace is



#### Therapeutic exercise

Exercise strengthens the muscles. Your therapist helps you implement the various measures. This disciplined you are in doing your part, the better following the therapy recommendations is best.



#### Back to a pain-free everyday life

exercises combined with balanced and, above all,











## Gaining time with healthy nutrition Living with osteoarthritis, without pain or surgery – making this work depends mainly on the affected individuals themselves. Aside from muscle development

through exercise, proper nutrition is particularly important to alleviate osteoarthritis symptoms and slow the progress of the disease. The food pyramid provides a good overview of a healthy and balanced diet.



The lower the body weight, the less strain there is on the joints. A calorie-conscious diet is thus always recommended for osteoarthritis.

Your meals should consist primarily of fruit and vegetables, salads, plant oils, nuts and seeds, with little or no highly processed foods, convenience products and sweets. It is also better to only eat small amounts of meat.

A published study proves that, aside from being overweight, consuming large amounts of sugar and a high proportion of saturated fatty acids can cause direct damage to your joint cartilage. High-fat animal products such as pork liver, lard, egg yolks and some types of cold meat such as liver sausage also contain high levels of arachidonic acid, which promotes inflammation.

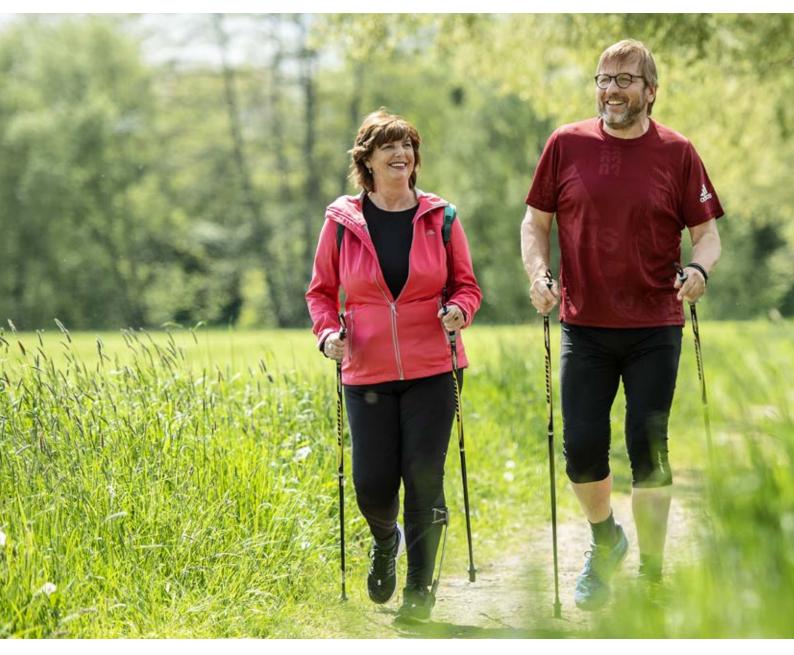
The good news is that you don't have to avoid animal-based foods entirely. We suggest choosing poultry instead of pork and, ideally, not eating more than 300 to 600 grams per week (recommendation of the German Nutrition Society).

By the way, eating fish two or more times a week is fine. Mackerel, salmon and herring are rich in nutrients and omega-3 fatty acids, which can help to curb inflammation in the body. Herbs and spices can also help combat osteoarthritis symptoms. Turmeric, nutmeg, cinnamon and coriander have an anti-inflammatory effect and reduce swelling, while chili and ginger can contribute to pain relief.

It is best to avoid alcohol and nicotine entirely.

### Exercise is fun and keeps you healthy

Regular exercise strengthens the muscles, promotes blood circulation and boosts the supply of nutrients to the cartilage. That is good for treating osteoarthritis. And it feels good too.



#### Keep fit.

Your blood carries the nutrients from your diet to should try to stay moderately active in your daily

is to keep moving, without overexerting yourself.

"Movement is crucial for osteoarthritis patients in order to strengthen the musculature on the affected joint, permanently reducing instability in the knee."

**Christian Krone** Graduate physiotherapist





#### **Agilium Move** helps make your knee fit





#### **Endurance**

Endurance training promotes wear and tear.



#### Balance

helps you keep your knee stable.



#### Strength

Strong muscles support your



### A versatile device

Braces are a simple way to provide relief and alleviate joint pain – without medication, let alone an operation.

Braces are medical devices that stabilise, immobilise and relieve strain on the affected joints, depending on the design. They promote mobility by helping you perform movements correctly and preventing malpositions.

In general, a brace is made of a sturdy, rigid material and includes functional elements such as straps, bars, articulated joints or rods. Depending on the requirement, they can be used to immobilise, mobilise, relieve or stabilise, or to correct malpositions. In other words, a brace can be used either to completely immobilise the affected area or to mobilise it in a very controlled manner. If you believe a brace could help, you should always start by consulting your doctor. It is best for affected individuals to decide with their doctor and O&P professional what the optimal version is for the respective patient.







"80% of our patients choose the Agilium Freestep. They immediately find it comfortable and feel safer with it."

**Heiko Drewitz** Master Orthopaedic Technician

#### Surprising shape convincing function The Agilium Freestep 3.0 is applied on the foot and acts on the knee. It redistributes the forces acting on the joint. It takes the load off the affected area of the joint and directs it to the centre of the knee. Freedom of movement in the knee is not restricted. ı Load line without Load line with Agilium Freestep 3.0 Agilium Freestep 3.0

### The Agilium Line As unique as you

Ottobock restores the freedom of osteoarthritis patients with the Agilium line. The four models differ in their mode of action and design so that appropriate treatment is possible for virtually any diagnosis and all user needs. So that life, sports and also work can go on.

#### The Agilium line from Ottobock



#### **Agilium Freestep 3.0** The daily companion

It is applied on the foot and acts on the knee: The knee stays exposed and its freedom of movement is not restricted - at work and in your spare time, in sports and practically any situation.



#### **Agilium Softfit** The discreet companion

It fits inconspicuously under clothing - almost invisible yet noticeably effective, it relieves the knee and alleviates pain. The Agilium Softfit convinces users in daily life and sports with the proven 3-point principle.



#### **Agilium Reactive** The strong supporter

This is not a classic brace since its calf strap can be loosened at the push of a button. That makes it comfortable to wear, even while sitting and relaxing. The Agilium Reactive has been optimised for patients who prefer a brace that spans the knee.



#### **Agilium Patella** The dynamic motivator

It shows impressively how fluid the transition from a support to a brace can be. The Agilium Patella is used for retropatellar osteoarthritis, or osteoarthritis behind the patella.





 $\hbox{``I cannot imagine life}\\$ without my brace any more."

Christoph

#### Working with and thanks to the brace

As a test engineer, Christoph is on the go almost every day. He visits workshops where he has to cover long distances on foot. This is no problem thanks to his brace. He can even take along his heavy case, despite having advanced osteoarthritis.



#### Scan the QR code

to learn more about Christoph's experiences with the Agilium Freestep 3.0.





# Back in the swing of things

A football game, an injury, and suddenly everything changed – Christoph needed surgery after a meniscus injury. While smoothing the meniscus was successful, subsequent inflammation triggered by bacteria had serious consequences. Today the 37-year-old has "a knee like a 70-year-old man".

His doctor recommended an operation and a prosthetic knee joint, but also said it would never feel the same as a natural knee. Christoph chose to fight.

The test engineer tried returning to everyday life with a brace and was rewarded."The brace lets me do many things I couldn't do otherwise," he now says. "Osteoarthritis will never dominate my life." He gets on his scooter, pushes down hard on the kick starter with the affected leg to start the engine, and continues his active life with osteoarthritis.

### The daily companion





### Agilium Freestep 3.0

**Proven effectiveness and comfort** 

It takes the load off the affected area of the joint and directs it to the centre of the knee. You benefit while standing as well as walking or running. Your knee retains its full freedom of movement.

#### Benefits at a glance

- Does not slip out of place on the leg
- Freedom of movement in the knee
- Easy to put on



"With the brace, I enjoy much greater stability and feel very safe while walking again – it feels great."



Scan the QR code

### The discreet companion





### Agilium Softfit

Inconspicuous and sporty support

Athletic users such as former ski racer Christian Neureuther value the Agilium Softfit. The innovative, breathable material with Vector-Grip technology and the good fit ensure that the knee brace does not slip out of place and fits comfortably. Worn inconspicuously under clothing, the support assists you in everyday life, recreation and sports.

#### Benefits at a glance

- "Vector-Grip" prevents slipping
- Discreet under clothing
- Breathable material for everyday use and sports





Scan the QR code to learn more about Christian's life with the Agilium Softfit.

### The strong supporter





### Agilium Reactive

Supports an active life

The three-point brace is so lightweight that users hardly notice they are wearing it. That guarantees patented Smart BOA dial allows the calf strap to again with a few turns. That gives you more

#### Benefits at a glance

- High stability with a flat, slim design
- Very low net weight
- Easily adjustable at any time with the Smart BOA dial



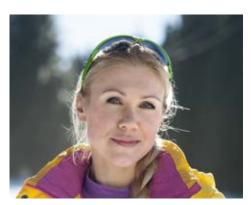




Scan the QR code

"This brace is perfect for me because I have a very sensitive kneecap and I can adjust the Agilium Patella so that it's always comfortable to wear."

Kadri



### Agilium Patella

Targets the right spot



### The dynamic motivator





#### Benefits at a glance

- Dynamic patella tracking
- Soft padding in the patella tracking area
- Discreet under clothing



**Scan the QR code** 

### Agilium Select – the choice is yours

The braces in the Agilium line were developed especially for osteoarthritis patients. Thanks to the various brace designs, your individual needs can be taken into account. Use the selection tool to find the brace that best fits your osteoarthritis of the knee and your lifestyle.

	Retropatellar osteoarthritis		
What is the doctor's diagnosis?	Medial (inner side of the knee) or		
	lateral (outer side of the knee) osteoarthritis of the knee		
	Need for knee stabilisation		
Are there accompanying illnesses?	Baker's cyst, knee swelling		
Do you wear compression	Yes		
stockings?  How would you describe your leg shape?	No		
	Normal		
	Slim		
What activities are important	Voluminous, V-shaped		
	Sitting activities		
to you?  What sports do you do?	Movement-intensive activities (e.g. walking, climbing stairs)		
	Long walks, hiking, cycling		
what sports do you do?	Jogging, other sports activities		
What shoes do you prefer to	I mainly wear closed low shoes.		
wear?	I mainly wear boots, open shoes and high shoes.		
How important is the visibility	I want to wear the device discreetly under clothing as far as possible.		
of the device to you?	The device can be visible over my clothing.		
Very well suited	Well suited	O C Less suited	— Not suited







© Ottobock ·646H48=en\_MASTER-01-2107 · Technical changes and printing errors reserved.



Please contact us if you have any further questions or would like more information.

You can also find lots of other useful information on our website