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Global Medical Devices Nomenclature (GMDN UK) defines a *new* term (2020):

"FLUIDIC EXTERNAL KNEE PROSTHESIS"

## Global Medical Devices Nomenclature (GMDN) Agency

defines a new term for "Fluidic External Knee Prosthesis" (2020)

A device which is a component of an external lower limb prosthesis designed to functionally replace, in part or total, an absent knee, wherein the principle of operation for stance/swing motion control is based on hydraulic actuation regulated by a motion-feedback fluidics circuit (using vortex and pressure-compensating valves).

It responds to changes in motion in real-time by continuously sensing knee flexion speed and instantly adjusting motion resistance within a single step. It may have various designs and functional features (e.g., lightweight for short stump use, waterproof, secure stance, stumble recovery) for support during a variety of activities.

## My name is Charles. I'm 54 years old, a husband and father of four daughters

I have been missing a leg due to bone cancer since I was 23 years old. I have first hand experience with many prosthetic knees, including some of the most advanced and most highly proclaimed in the marketplace.

Even though my amputation left me with a short transfemoral residual limb, I do not regard myself as a disabled person.

OX143DB

The **VGK-S** is by far the best and most versatile knee I have ever had. It combines state-of-the-art functionatlity and security with robustness, and a feeling of extreme lightness in my mobility.

I am able-bodied. I can do anything I want!





family moving to Manchester motivated by better prospects in life; a growing industry, more resources and above all, more opportunities for the next generation.

What challenged my life at the age of 12 was an osteosarcoma, a bone cancer with a survival rate of less than 5%! In a similar manner to the way the Covid-19 pandemic hit the world, my cancer diagnosis dealt a swift and heavy blow to life as I knew it. The diagnosis was followed by a period of immediate chemotherapy, capsule isolation and a transfemoral amputation that left me with a very short stump.

It wasn't easy to get back to walking and living again: hard materials used in prosthetics produced recurrent blisters in my stump and hands. Whilst still a teenager, socialising also proved to be difficult in a strict Catholic school that was highly selective for learning standards, but maybe, not so ready for the "different one". However, I survived that period and at age 17, I could manage to walk with effort, but without need of crutches!

Despite the physical and social challenges during my adolescence, I must say, all this trauma has not stopped me from an active physical life; a paralympic swim, travel around the world, water sports and an academic and working life: MSc and MBA, 5 languages and progressing into a successful career as an Air Traffic Controller since 1995.

"This knee allows an amputee with a condition like mine, a short transfemoral stump length, to forget about it and continue to live a great life."

Having my daughter in 1999 was also a great challenge in my life. She is now in her third year in Medical School.

My activities have been supported by an amazingly innovative prosthetic knee, called the VGK-S, developed by a highly motivated team at Orthomobility, near Oxford. This knee allows an amputee with a condition like mine, a short transfemoral stump length, to forget about it and continue to live a great life. Lightweight is an essential for an amputee with a short stump, especially so, to reduce excessive pendulum effects on gait. It must be said that heavyweight and unbalanced prosthetic devices produce fatigue and a negative impact on the social life of an amputee. We have a genuine right to work and study, just as well as to get back home relaxed with enough energy left to involve in sports, games and social activity afterwards.

The Covid-19 pandemic has brought isolation and uncertainty into all of our lives. It reminds me of my fight against cancer and the importance of being able to lead a healthy, active, and independent life. To achieve the latter, I have discovered that with a prosthetic knee like the VGK-S, there is no need to compromise on functionality!

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## My name is Kinga. I'm 48 years old. I lost my leg at age 26 in a car accident...

There were five of us in the car and only the driver and I survived. I lost my right leg above the knee and my then fiancé, who was sitting next to me on the back seat. As a teacher of physical education, all at once my life changed completely! This accident was reported all over the news, even in the US.

After this terrible time and several operations, I was offered the world leading microprocessor prosthetic knee joint (MPK). I was so happy. However, after a lot of travel to the US for the prosthetic care and special setting of the software, I figured out that the MPK was incompatible with my short stump... It was just too super heavy for me to carry!

In 2018, I was still dreaming of being able to walk without crutches when I heard about the **VGK-S**. It is a prosthetic knee designed specifically for amputees with a short stump like mine. The knee weighs less than 1 kg and is positioned close to the body, which made it feel incredibly light and intuitive to control. I felt unstoppable!

Finally, all my dreams have started to come true! In the winter of 2019 I got married to my prince, and became pregnant with my first baby! Despite all these crazy times with the Coronavirus, I have a real angel, my son, born on the 7th of January 2020! I am the happiest Mum ever. I can't wait to show him to all!





## My life on one leg



I am Lisa and I am 31 years old. For me, a new life began seven years ago. Although I lost the fight for my leg, which lasted more than two years, I have won new courage and the absolute will to accept the challenges of life!

In December 2010 I got pain in my knee, which finally radiated into my whole leg. After months of painkillers to keep me upright, the devastating diagnosis came: osteosarcoma. A marathon of chemotherapy and operations followed. I received a MUTARS prosthesis because my knee was destroyed by cancer. But I defeated the cancer and life gave me a second chance. I was able to resume my profession in the care of the elderly and gave it 100%. However, my luck lasted only for a short time. A bacteria that led to an infection was more persistent than the cancer and it accompanied me from now on. Two years of countless operations and painkillers later, it was clear to me that my life is more important than my leg. I was ready to sacrifice my leg to save my life!

This knee joint, weighing less than one kilo - and doing all the functions that my MPK did - gives me the independence and self-determination I need for myself and my job.

As the doctors could not guarantee that they could save any part of my leg in the operation, I was happy to wake up with at least a short stump from the anaesthetic. At the age of 24, I now stood for the first time in my life, on one leg!

I learned to walk with a prosthesis and mastered everyday life with a microprocessor knee joint (MPK), which I was told, was the very best technology in the marketplace that science could offer (wrong, as I discovered later!). I needed to have more and I wanted to be independent! Although I could no longer pursue my hobby of horse-riding, I found my fulfillment in my work. For more than five years now I have been working in a nursing home again, caring for the elderly. I love this profession, but I soon realised that I was reaching my limits, with more than 5 kilos of prosthetic, artificial equipment... clutching, hanging and dragging... onto my short stump!

This time, luck was on my side. In Germany, I came across a knee joint, the VGK-S, that could keep up with my needs. This knee joint, weighing less than one kilo - and doing all the functions that my MPK did - gives me the independence and self-determination I need for myself and my job. Even after a 10-hour shift, I no longer need to rest. VGK-S helps me to achieve my goals and to meet the demands I place on myself.

For the first time since my amputation, I feel complete again! I am no longer a person with a handicap! I am simply Lisa, who can achieve everything again.

