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RUSH



Kelvin's osseointegration journey

Limbs 4 Life first met up with Kelvin Cook last year at the Western Australia Amputee Forum, and he is a spokesperson and peer support volunteer within the amputee community. In this article Kelvin shares his personal experience of becoming an amputee and his decision to choose osseointegration over conventional prosthetics.

It was November 2000. I was coming home from work on my motorbike when an elderly driver who was travelling on the wrong side of the road ran into me. When I woke up, I was on one side of the crash barrier and my leg was on the other side. My life as I has known it was over.

I became a right above knee amputee.

After my rehabilitation I was using normal prosthetics reasonably successfully but over the years I was gradually having more and more problems with socket fit, skin breakdowns and back pain. I tried everything but nothing seemed to be working. In a last ditch attempt to address my issues, and at my own expense, I travelled to England. I went to London Prosthetics and Crystal Palace Clinic, but unfortunately there was nothing available to me there. On my return I found myself relying more and more on a wheelchair or using crutches without my prosthesis.

Not long after my amputation I had actually enquired about osseointegration with my prosthetist but his opinion, at the time, was that it was still quite experimental and the risks involved would need to be considered.



As my mobility declined, I began investigating the osseointegration procedure further. I eventually made contact with Dr Munjed Al Muderis and the specialist osseointegration team in Sydney, and soon after my wife and I flew over from Perth to meet with Dr Al Muderis and the team. I was assessed by the team to ensure I was a suitable candidate and I was also given the opportunity to talk with other amputees who had already undergone, or were planning on having, the osseointegration procedure. My wife was encouraged to come into the clinic to ask questions and to better understand the procedure as well.

I left Sydney feeling confident that osseointegration was the right decision for me. On the 3rd May 2014, two days before my birthday, I underwent a two stage operation with Dr Al Muderis. The first stage involved reshaping the residual muscle and bone at the end of my stump and inserting the internal component of the implant. The wound was then closed for six weeks before the second stage of the surgery could commence. The second stage involved creating a circular skin opening at the end of my stump (a stoma) through which an adaptor is connected to the internal component which was then attached directly to my prosthesis.



I was amazed that within only a few days after the final surgery I was able to partially weight bear, and within a week I was wearing a prosthesis. I used crutches for the first six weeks until I gradually became independent, at which point I didn't need the crutches.

We used our motor home, driven over from Perth, while I recovered from the second stage surgery. It was during that time that my wife and I decided to go for a bike ride, and unfortunately I fell off the bike and landed in a bus lane which resulted in me breaking my right hip on the same side as the osseointegration. I was immediately concerned that the fall had also damaged the osseointegration implant, but thankfully it was fine. Dr Al Muderis performed surgery to repair my hip and finally everything was back on track.

For hygiene reasons it is important for me to twice-daily clean the stoma, around the implant, as there can be some slight discharge. Initially I attended three monthly and six monthly followup appointments with Dr Al Muderis, but I now only attend annual appointments.

The outcome of having the osseointegration procedure has been everything I could have hoped for and, in fact, more. The surgery did involve out-of-pocket costs but, knowing the incredible outcome it has had on my life, I would have sold my house if I had to in order to have this surgery. I haven't used a wheelchair or crutches since I had the osseointegration procedure! In July last year my wife, daughter and I made a big decision and opened a retail business; something I would never have imagined or considered prior due to my low level of functionality prior to my osseointegration.

The osseointegration has positively affected me in so many ways. I never used to wear shorts, but now I never wear long pants. I also openly talk with anyone who is curious about my physical appearance. I no longer have back pain and I can walk hand-in-hand with my wife as opposed to clinging on to a pair of crutches. It's the little things that make enormous differences. I'm proud of what I've achieved and I'm proud of the 'new me'.

I'm so grateful to Dr Al Muderis' team for their professionalism and I'm so thankful to my family for their ongoing support.

Kelvin provides peer support to other amputees who have had or who are considering the osseointegration procedure. He has also started an 'Osseointegration Peer Support Australia' group on Facebook. www.facebook.com/ groups/234082296790332/

If you would like more information about Osseointegration you can visit: www.osseointegrationaustralia.com.au www.opraosseointegration.com



Osseointegration

Artlimb.com is a non-profit, independent project dedicated to sharing knowledge and discussing information about artificial limbs, and in this article we explain Osseointegration in simple words.

The general idea

Osseointegration is a direct structural and functional connection between living bone and the surface of a load carrying implant. This implant is inserted into the bone during a surgical operation.

In simple words, it is a metal rod which has a very reliable direct connection with the bone. Over the recovery period, bone grows into the implant increasing the strength and reliability of the connection. Once this connection is reliable enough to load through, a prosthesis can be designed and fitted to the implant by your prosthetist. In a traditional socket prosthesis, the artificial limb uses the surface of the stump as a connection. This connection can be very firm and controlled but there will still be some movement between the underlying skeleton and the prosthetic socket.

You can experience this by gripping your arm and turning your wrist. No matter how hard you grip, your bones will still move under the skin and muscle.

An osseointegrated prosthesis has a direct connection to the skeleton, which means that there is no movement between the prosthesis and the bone. This direct connection allows the amputee greater control over the prosthetic limb while providing a very simple and reliable fixation.

Due to this direct connection, a prosthetic socket is not required. By removing the socket, the skin and soft tissues are not subjected to the traditional forces experienced in a socket prosthesis. As a result of this, the skin has a much lower risk of getting rubbed or over pressed by the prosthetic socket. With the skin uncovered, there are also less issues with sweat retention and overheating of the limb. An additional benefit is that to put on the prosthesis, the amputee simply needs to clip the limb onto the metal connector that sticks out through the skin.





Without the socket, prosthetic knee units are no longer restricted, allowing the amputee greater range of motion and improved sitting/kneeling comfort.

Functional differences



When walking on a prosthetic limb, there are a lot of forces acting through the prosthesis. In a socket prosthesis, all of these forces are partially absorbed by the soft tissue of the stump. This dulls the sensation of what surface is being walked on and how the mechanical parts of the prosthesis are working. In an osseointegrated prosthesis, the direct connection to the bone heightens these sensations which can be uncomfortable if the incorrect componentry is used.

The most common forces that can cause discomfort and need to be accommodated for are vertical shock, rotation and, in above knee patients, terminal impact (caused by the prosthetic knee). To compensate for vertical shock and rotation. shock and torque absorbing adapters can be installed. Additionally, an appropriately designed modern foot can be used to further reduce these forces. Terminal impact is when the knee comes to a sudden stop with a visible and perceivable impact when it fully straightens as it swings through. To prevent uncomfortable terminal impact sensations, an appropriate knee unit with a hydraulic control specifically designed to prevent this impact is required. If the forces acting on the prostheses get excessively high and potentially dangerous for the amputee, there is usually a safety device installed in the prostheses that will disconnect it from the body and prevent serious injury.

Points to consider

When deciding if osseointegration is suitable or not, there are several considerations to keep in mind:

- Osseointegration is a surgical operation and it is important to discuss the risks with the surgical team.
- As there is a metal abutment protruding through the skin, there will be a permanent stoma on the stump. Because of this opening between the outside environment and your stump, a special cleaning regime may be required to ensure proper hygiene of the stoma.
- Currently osseointegration is expensive. The specific cost and funding options are constantly changing and vary depending on individual cases.

Osseointegration is a very modern approach to prosthetics and has shown rapid development over a short period of time. For further information on your individual situation in relation to osseointegration, consult your doctor and prosthetist.

If you are interested in reading more information about prosthetics, please visit ArtLimb online at www.artlimb.com

Make sure you connect with us:



Find us on Facebook at Amputees - Limbs 4 Life Follow us on Twitter @Limbs4LifeINC Or connect with us on our Limbs 4 Life You Tube Channel



Compare quality of life in people with partial foot and below-knee amputation

Eligibility requirements Audults over 18 years of age Amputation affecting just one leg Either a partial foot or below knee amputation

www.surveymonkey.com/r/amputation-qol

Why is the research important?

Partial foot amputation is often preferred to below knee (transtibial) amputation given the belief that quality of life is better with a less invasive amputation surgery. Recent research indicates that quality of life may be the same in people with partial foot and below-knee amputation. Further research is needed to be confident in the advice we give people facing difficult decisions about lower limb amputation.

Am I eligible?

You are eligible to participate in this study if you:

- are over 18 years of age,
- have a partial foot or below knee (transtibial) amputation affecting one leg.

What is involved?

If you choose to participate, you will need to complete an online survey of about 20 minutes. The survey will ask for information about your age, cause of amputation and amputation level as well as things that influence quality of life. The survey does not ask for personally identifying information, like your name, address or specific medical information. All the information you submit is anonymous. There is no way for the researchers to identify you from the data.

Where can I find out more?

You can go online to read the complete Participant Information Statement or complete the survey. Visit: www.surveymonkey.com/r/amputation-gol

Contact the Principal Investigator for more information: Dr Michael Dillon - Discipline of Prosthetics and Orthotics, La Trobe University. Phone: 03 9479 5889, Email: Michael.Dillon@latrobe.edu.au



A look inside the National **Disability** Insurance **Scheme** (NDIS)



Ian Robertson is a senior prosthetist (Manager of APC Prosthetics) working in the Hunter NSW region (one of the first trial site locations for the roll-out of the National Disability Insurance Scheme). In this article, lan shares his experiences and we capture insight from a number of his clients (NDIS participants) who have entered the Scheme over the past 14 months.

The NDIS has been described as a "once in a generation" opportunity to change the way that disability services can be delivered. Participants (amputees - whether congenital or acquired) should embrace the change and be proactive with their prosthetic care. As the NDIS is goals based, the needs of the individual are the defining factors that determine the types of limbs that can be provided.

APC Prosthetics (APC) has been a registered provider with the NDIS since the inception of the Hunter Trial Site, and has serviced amputee participants over the last 14 months - both here in Newcastle and at our Sydney facility. To date we have treated over 30 amputees during the Hunter Trial with a further 10 participants currently under assessment. The age of the clients range from 5 to 64 years of age. Without a doubt, the introduction of the NDIS is improving the lives of people living with limb loss here in the Hunter region.

The NDIS policy of looking at the 'whole person' is providing significant and improved outcomes, as individualised solutions are being provided. These solutions are based on the participant's goals and lifestyle needs rather than the basic standardised mobility solutions that have previously been available to participants on the

state government funding scheme. With these tailored solutions, participants have successfully returned to work, or had their lives made easier at work, thereby extending their working life. The provision of limbs that address the participant's social goals has also had a positive impact on people's lives.

One the greatest challenges to participants with amputations above the knee is the fear of falling. It is always in the back of their minds - watching every step they take, every minute of every day. It is often said that people with amputations are like cyclists – it is not if they will fall but when they will fall. Walking requires constant vigilance and large amounts of mental energy (concentration) to be expended.

Through the individualised and tailored solutions that have been provided in the Hunter trial site, we have provided peace of mind for two above knee amputees who are new fathers. They have both been provided with microprocessor knee technology that provides increased security through sensors that monitor the environment the participant is in, as the knee unit adjusts itself as needed. This has enabled our clients to carry their newborn babies without the risk of falling and causing injury to their child. This technology has been available since the 1990s

but unavailable to these participants under the state prosthetic limb service. Through the NDIS, however, these participants have now been able to access this technology and these gents can now be real 'hands on' dads.

We have also provided aquatic limbs (eg. water / shower wet legs) to our NDIS participants. We have a teacher, who is an amputee, who can now access the water on sports days and walk safely around in a wet environment. These aquatic limbs have also enabled people to travel and stay in hotels or caravan parks without the need to carry bulky shower chairs or wheelchairs. These limbs have also provided these participants with the opportunity to return to the beach to fish or swim safely with their family.

The feedback from people with these different types of prosthetic limbs is extremely positive. The main comment that we hear from participants is that they now have the freedom to take part in a number of different activities and return more closely to their pre-amputation lifestyles. These types of limbs were not available under the previous state prosthetic limb service but has now been provided through the NDIS.

Amputees must be proactive regarding their prosthetic needs in order to work within the NDIS system. Some of the additional requirements by the participant include meetings with client planners, assessments with clinicians and working within a structured administration system.

From a business perspective, the NDIS has changed our day-to-day operations. The role of the prosthetist is evolving as they are not simply providing a device, but providing solutions to meet set goals with measured outcomes. The added administration required by the NDIS has changed the way APC Prosthetics Hunter operates. This means that a greater proportion of the prosthetist's time is spent researching and report writing; with the result being that the amputee (participant) is provided with the most appropriate limb that will provide solutions that will help them to achieve their goals.

Now is an exciting time to be involved in the industry. Our NDIS clients now have the ability to do things that were previously unachievable and as a business we can now provide a service without the restrictions that were previously placed upon us.

Stories from Hunter NDIS **Trial Site Participants**



Ben's Story

Ben was 20 years old when he lost his leg above the knee. Ben was one of the first amputee participants to transition into the NDIS in the Hunter region. Ben said that obtaining his NDIS participant number took him longer than anticipated but he said "it was a new Scheme and I think that everyone was trying to get used to the systems and requirements at that time". Prior to being accepted into the NDIS Ben was using a hydraulic knee provided to him by the NSW state prosthetic limb service funding.

Through the NDIS, at the age of 32 years, Ben received a microprocessor knee; a device which has clearly changed his life. "I would never have been able to access this kind of technology on the public system," Ben said. "I have a young family and I work but, until receiving the C-Leg through the NDIS, I never felt safe on my previous knee unit," Ben stated. In reflecting on this change, Ben said that "words cannot describe the difference this has made to my life".

Since receiving his C-Leg Ben reports having more energy, feels safe on different terrains and also feels capable of delivering greater outcomes in his workplace. "I now have ownership of my life. One of my goals was to also get a water-leg, this means I can go to the beach with the family, enjoy time outdoors and in the water without the fear of ruining my walking leg and/or need to hop along the sand to get to the beach. If it wasn't for the NDIS funding I never would have been able to achieve such outcome or gained access to this technology," Ben enthused.



Greg's Story

Greg lost his leg above the knee at the age of 57 and at that time he was working as a panel beater. Greg returned to work after his amputation but found his job "too difficult" wearing the NSW publicly funded lock knee that he was provided with at the time. Fast forward five years and life is very different for Greg since becoming a NDIS participant.

Greg's application into the NDIS took longer than he expected, however the outcomes since being approved as a participant are evidence of the difference that NDIS support has made to his life. Since being fitted with a micro-processor knee that suits his lifestyle

Greg says that he can "now do all of the things he used to do prior to losing his leg". Greg is a very busy and active member of his community and the Newcastle Amputee Association, and also helped to fundraise \$1.3 million for Camp Quality in the 3,500 km 'Bush Bash'. Greg says that since receiving his NDIS funded prosthetic leg he can now walk up to 6.2 kilometres per hour, is an active member of his gym and is hoping to participate in the City to Surf this year. Greg also likes to take time out in his garden, laying sleepers and digging the soil.

"The best thing for me that has come out of being a participant in the NDIS is that I feel like I have my life back," Greg enthused. "The microprocessor knee that I now use makes me feel safe for the first time since I lost my leg as it has a fall prevention sensor which makes a huge difference to my day to day life; and this knee unit is something which is not funded under the current public system," Greg explained.

"Through the NDIS I also requested and have received a water-leg which now means that I can launch my boat without the fear of ruining my prosthesis if it gets wet," Greg said. Put simply, when reflecting on the NDIS, Greg says "the outcomes have been unbelievable for me!"



National Disability Insurance Scheme - Amputee Survey

Limbs 4 Life and the Australian Orthotic Prosthetic Association (AOPA) are keen to hear from adult amputees and parents of children with limb difference in regards to the National Disability Insurance Scheme (NDIS) so that we can make sure the NDIS works as well as possible for you.

The purpose of this survey is to help people to learn about and understand the NDIS, help ensure smooth transition into the NDIS and assist healthcare providers to support you. To do this we would like to learn about what you need, your experiences to date and any concerns you may have.

The survey is open to people already involved in the NDIS as well as those not receiving NDIS support yet.

The survey will take between 5 - 10 minutes to complete and your response be anonymous and confidential. Visit the survey:

www.surveymonkey.com/r/NDIS2016



Grant's Story

Grant was born with a limb deficiency 41 years ago. During that time Grant has seen and experienced a lifetime of technical prosthetic changes over the years. Grant applied to be a participant in the NDIS as soon as it was available in the Hunter region. Once Grant's NDIS application was completed the length of time to being provided with a participant number happened guite guickly and from that point on "things started moving ahead very quickly".

Through NDIS funding Grant was able to change his prosthesis from a Total Knee to a Genium X3. Grant works full-time and the benefit of obtaining support and outlining his goals with the NDIS has led to some significant lifestyle changes. Grant reports that he no longer has back pain, he can master stairs much more elegantly and walks more confidently. "The other major benefit is that living close to the beach, I can now ride my bike and instead of needing to change my prosthesis, my water proof Genium X3 leg allows me to jump off the bike and get straight into the water," Grant explained. Goal setting is a key component of applying for funding through the NDIS. Grant outlined that

he needed some assistance to clearly outline his goals during the application process but that his prosthetist provided him with great assistance so that he could articulate clear and concise goals and aspirations.

The information and stories provided by lan, Ben, Greg and Grant refer to their positive experiences with the NDIS in the Hunter NSW Trial Site.

This is but one NDIS site in Australia, and it is incredible to think that as the NDIS rolls-out across Australia stories such as these will become common place ones within the amputee and limb difference

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oapl.

kid Play like a pro

No turning back Geoff's story

Thirty years ago a young, active Geoff Chandler was in the prime of his life. The then 23 year old Geoff loved running, basketball and had a passion for footy. Geoff's life was full and budding with opportunities. However, Geoff's path changed dramatically when he was involved in a devastating motorbike accident that left him with breaks and fractures all over his body. Furthermore, Geoff's right leg was severely damaged and he battled with the resulting chronic leg pain for almost 26 years.

Geoff remained in hospital for nine months following the accident. It was during this time that Geoff had a conversation with one of his doctors who said to him "you'll never run again and that I would need to use a walking aid for the rest of my life". At the time Geoff said to himself "never, ever forget those words and use every opportunity to prove them wrong". And proving them wrong he has over the years!

Geoff did everything he could to remain as

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positive as possible, however the recurring pain and difficulties in his damaged leg did place limitations on him. This was particularly the case in the early years after his accident. Glen Bow, the President at Geoff's local footy club in Geelong, became a close friend and mentor after he had his accident. Glen assisted Geoff to find work at AWH Logistics, a local wool shed, and this supportive employer provided him with responsibilities that allowed him to work while sitting down.

Having grown up as an active and athletic child and young man Geoff desperately wanted to return to playing sport after his accident but said that "because of the leg, I just couldn't do it".

Years later, in 2009, Geoff slipped and fell while crossing the road. This accident resulted in Geoff shattering his already fragile leg, and he experienced another lengthy recovery period. "After six months in plaster the cast was taken off, they did an X-ray and it didn't look good," Geoff recounted. Unfortunately, Geoff's leg wasn't healing with the next proposed option being bone grafts; something Geoff wasn't interested in going through.

"I wanted to get on with my life, and I didn't want to put up with any more pain," Geoff recalled. It was at that point that Geoff decided to ask about a leg amputation.

After careful consideration with his doctor and discussions with his family, Geoff decided that an elective amputation would give him the best possible outcome and a chance to live a life free from pain. Two weeks later Geoff had his right leg amputated below the knee.

"While I was recovering from my surgery I remembered what I was told all those years ago, and I thought now is my chance to prove that I can live my life to the full and I began planning what my next moves would be," Geoff said.

Even before Geoff was fitted with his first prosthesis he decided that he wanted to attempt the Kokoda Track in Papua New Guinea. In fact Geoff had wanted to do it many years earlier but because of his damaged leg he knew it was "never going to happen". Geoff's interest in the Kokoda Track is a very personal one. "My father was a Digger at Kokoda, it has always been a dream of mine to complete the track to gain an understanding of what he and his mates went through," Geoff explained. Once he was fitted with his prosthesis, and had adjusted to a life without chronic pain, Geoff decided that he would attempt the Kokoda Track.

But before that, Geoff had to adjust to his "new and improved life" – a life with more activity. Within two months of his amputation Geoff returned to work at AWH Logistics, but now with a capacity to stand rather than sit at work. Four months after his amputation Geoff entered his very first 'Fun Run', spending the previous months training his body to participate in that sort of exercise.

Not long after that, Geoff received one of the most exhilarating and unexpected phone calls of his life. It was from the organiser of the Kokoda Brothers Tour. Unbeknownst to Geoff, his rehabilitation nurse contacted them shortly after his amputation telling them that the 96km Kokoda Track was his lifelong dream. In July 2011 the dream became a reality. After months of training Geoff set off with the Kokoda Brothers Tour and fourteen other participants and completed the eight-day trek. "There is no doubt it was the hardest thing I have ever done but I loved every minute of it, and each night the satisfaction I gained from completing another day on the track was unexplainable," Geoff stated.

When Geoff's mentor Glen lost his battle with cancer, he was inspired to undertake a fundraising trek to Mount Kilimanjaro in October 2013. In completing this African trek Geoff was able to raise a staggering ten thousand dollars for Anam Cara House, a community service that provided care to his friend Glen. "When I got to the top of Mount Kilimanjaro I said G'day to Glen, because 6,000 meters above sea level was the closest I could get to him," Geoff shared.

Geoff continues to work with his original employer, at the wool shed, but now holds a supervisor's role. Geoff is actively involved in his community and speaks at various public events, in addition to continuing to raise funds for causes that are close to his heart. Geoff is also about to be trained as a Limbs 4 Life Peer Support Volunteer, as he is keen to give back to the amputee community that he is now a part of.

Geoff hopes that by sharing his story, it will help to inspire others to find ways that they can safely and positively be active and contributing members of their own local communities.

Geoff will be fundraising for the 'The Weekend to End Women's Cancers' event, which will see Geoff walk 60kms over two days in April. This event raises vital funds for the Peter MacCallum Cancer Centre and Geoff is glad to be lending a hand (ooops "leg") to this important organisation. If you would like to support Geoff visit **www.endcancer.org.au**







You can now walk into any of 'The Athlete's Foot' stores and have each foot individually measured and fitted with two different sized shoes from our *ILFIT* range, or purchase either a left or right shoe at half the retail price, no waiting and no extra cost.























MENS LADIES





Thank you and farewell to Jacinta

On behalf of the Board of Management, staff and volunteers we would like to thank and recognise Jacinta Dyson for all of the work she has done and the contribution that she has made to Limbs 4 Life over the past ten years. Jacinta has played a vital role in making the organisation what it is today.

Jacinta is the co-founder of Limbs 4 Life. Having worked directly with amputees in one of Melbourne's rehabilitation facilities, Jacinta saw a need to fulfil a gap within the healthcare sector. When the opportunity arose to set up an organisation to inform and support amputees, Jacinta jumped at the chance.

Limbs 4 Life was officially incorporated in 2004 and not long after that Jacinta took on the role of developing and launching Amplified magazine, our first website and generally used her creative and artistic talents to breathe life into Limbs 4 Life.

It is with great sadness that we bid farewell to Jacinta, but thank her for her outstanding contribution in making Limbs 4 Life what it is today.

We will miss you greatly Jacinta, and we wish you every success with your future goals.



Do you get your prosthesis checked regularly?

Jackie O'Connor **BPO with Hons (Bachelor Prosthetics Orthotic** with Honours) - MAOPA Policy & Advocacy Manager with Australian **Orthotic Prosthetic Association**

You change all the time - your weight goes up and down, the muscle mass on your stump changes, what you need and want to do in life changes - therefore your prosthesis needs to change with you to help you function at your best. Planning a regular prosthetic review means you and your Prosthetist can work together to avoid any problems with your prosthesis and keep you functioning at your best.

There are lots of different aspects about you and your prosthesis that should be considered in a review. Consider the points raised in this article and make sure you discuss them with your Prosthetist during your next visit. You and your Prosthetist are the best people to decide how often you should plan reviews. Most people would benefit from at least a six monthly review, so if you don't have one planned and it has been a while, make an appointment and get yourself back to your best.

Componentry

What is componentry? The componentry on a prosthesis is all the parts that your Prosthetist has to order from registered suppliers.

Registered suppliers have to meet lots of standards before they can sell these parts. For example, a prosthetic foot, knee or hand and all the joining bits (such as the adapters, the grub screws and everything in between) make up the prosthetic componentry. The only thing that this doesn't include is the socket which is made just for you.

Componentry warranty. All componentry has a warranty. This warranty is important because like anything you buy it means the manufacturer has to replace it free of charge if something goes wrong (in a certain time frame) as a result of the way it was made. There are certain things you and your Prosthetist have to do to make sure this warranty is not void. To maintain the warranty and ensure that the components function as well as they can for as long as they can, your Prosthetist might:

- Change any socks on prosthetic feet which keep out dirt and stop wearing of the parts
- Make sure that there are no cracks or other signs of wear and tear which might break in the future
- Add lubrication to moving parts
- Tighten screws if they have worked loose
- Change any bumpers or parts that wear auickly
- Service parts by generally cleaning them up and reducing wear and tear.
- Conducting componentry checks and maintenance can:
- Save time and money in the long run
- Ensure optimal function of the component
- Avoid breakages and the need for emergency repairs.

Having a regular review with your Prosthetist will allow for the required care and maintenance of these parts to be conducted.

Socket Fit

Having a well-fitting socket is a vital part of a prosthesis helping you do what you need to do. When your socket fits as well as it can, it should result in:

- Your skin being healthy and not having • breakdowns
- Your consumables, like liners and socks lasting longer
- You being more comfortable and thinking about your prosthesis less each day
- You having more energy to use the prosthesis as it functions more efficiently.

Because you change every day and the socket is in such close contact with you, this is the most important part to have regularly checked, especially if you want to function at your best and be safe. If you are active with your prosthesis, if you have changed weight and/ or you have had skin breakdowns, then you should get your prosthesis checked regularly before any problems occur.

Alignment

The alignment of the prosthesis is the angle between all the parts from the bottom of the socket to the end of the prosthesis. It relates to the angle the prosthesis goes on and the angle it works at when you do certain things. If you change your shoes and the heel height is different to the height and angle that the prosthesis was set at, your Prosthetist might be able to change the alignment of your prosthesis to make walking a lot easier and more efficient for you. You may not even notice the changes in the alignment of your prosthesis, however you may be surprised about the difference that the smallest tweak can make to your everyday function. Alignment can easily be checked during a review with your Prosthetist.

General Function

Checking in with your Prosthetist means they can chat to you and help you with lots of other things that you may never have thought about, like:

• Overall body. Your other leg or parts of your body that might be affected by your amputation and prosthesis. It's important to look after your whole body and sometimes wearing a prosthesis makes that hard. Sometimes you might need your Prosthetist to help you to find another health professional that can make you more comfortable. For example a Physiotherapist to help with your walking/gait, a Podiatrist to look after your foot or an Occupational Therapist to help with upper limb issues.

- Declining health. Perhaps you are getting older and things are getting harder, you can't walk as far as you used to, or your prosthesis fits some days and not others and you don't know why. Your Prosthetist can help link you in with other health professionals and make life easier for you
- *New challenges.* Once you achieve some goals in your life, then it's normal to want to set new goals and/or to try new or different things. This is a good time to talk to your Prosthetist because there might be changes that they can make to your prosthesis that will help you achieve these new goals. If you don't discuss your goals with your Prosthetist then they are unable to make recommendations about the type of prosthesis which will better suit your needs.
- New ways of funding your prosthesis. At the moment there are lots of changes being made to the way prosthetics will be funded. For some people the National Disability Insurance Scheme (NDIS) will be an opportunity to have access to funding for componentry that you may not have been able to access before. Speak to your Prosthetist to see if you are eligible.

Given the benefits of a prosthetic review, give your Prosthetist call and make an appointment today!





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Become a Peer Support Volunteer

Limbs 4 Life is seeking amputees throughout Australia to be trained as Peer Support Volunteers.

Limbs 4 Life Peer Support Volunteers have:

- Successfully adapted to the challenges of amputation
- Are good listeners
- Want to assist new amputees
- Are willing to share their experiences.

For more information or to obtain and Application Form contact us toll free on 1300 78 22 31 or email peersupport@limbs4life.org.au

amplified WINTER 2016

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Health and Wellbeing Recognising your emotional health Planning physical activity Nutritional guidance

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Preventing **Limb** Loss

The importance of self-care and regular check-ups with podiatrists

In 2015, Limbs 4 Life launched an initiative to raise awareness about the risk of amputation associated with diabetes. In this article we re-visit some of the important information about foot problems and self-care then explain what is involved when a podiatrist assesses 'high risk' feet.

Diabetes- the most common cause of foot and lower limb amputations

It is estimated that up to 85 amputations are caused by diabetes every week in Australia. Australia has one of the highest rates of diabetes-related amputations in the developed world and this rate has increased over the last decade¹, with diabetes-related amputations accounting for up to 60% of all amputations².

What is a high risk foot?

A high risk foot is a foot at higher risk of amputation. People with high risk feet usually have decreased sensation due to peripheral neuropathy (nerve damage). Peripheral neuropathy can be of two main types- sensory and motor3. Sensory neuropathy affects the sensory nerves and can produce numbress. tingling or even increased sensitivity and pain in the feet. Motor neuropathy affects the nerves that control the muscles and can lead to muscle weakness, which in turn can produce deformity of the toes and feet.





Diabetes can also cause peripheral vascular disease (PVD)3. Peripheral vascular disease can result in reduced blood flow to the feet and legs which can cause pain in the feet or legs with walking or even when at rest. People without diabetes can also develop PVD, particularly when there is a history of smoking. The rates of peripheral neuropathy and PVD increase with age and duration of diabetes and people can have one or both of these conditions³.

The High Risk Foot, injury and amputation risk The combination of foot injury plus high risk factors can lead to a pathway to ulceration, infection and amputation. We know that at least three guarters of amputations are preceded by ulcers3 and it is thought that in cases of a major amputation, the remaining limb is susceptible to extra pressure and subsequent injury³.

The key to preventing amputation is to identify the risk factors, prevent injury to the foot, better manage injuries if they occur and prevent ulceration and infection.

Everyone with diabetes should have an annual foot check by a podiatrist, doctor or other trained health professional. If you have high risk feet a check-up at least every 3-6 months is recommended.

What will a podiatrist do in a high risk foot check-up?

A podiatrist will usually ask questions about your general health, diabetes control, smoking history and history of foot problems as part of a foot check. Next, the podiatrist will perform some more detailed assessments of your feet, including testing for neuropathy, PVD, checking footwear and foot deformities and identifying areas of the foot at risk of tissue breakdown







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Figure 3 Monofilament placed against the toe to test sensation

The podiatrist will check circulation in the feet. Sometimes this will involve using the Doppler ultrasound to measure the blood pressure at the ankle and the arm. This allows an ankle-brachial index or ABI to be calculated. The ideal ABI is 1.0, which means there's no drop in blood pressure at the ankle and hence no damage to the large arteries in the leg/ankle.

Figure 4 Doppler ultrasound being used to detect pulse

If the podiatrist requires more information about blood flow below the ankle they may use another test called photoplethysmography or PPG. This test can detect the blood flow to the skin by placing a sensor on the toes. A Toe-Brachial Index can be determined - TBI, similar to the ABI (figure 5).

Figure 5 PPG sensor measures blood flow to the toe

After conducting the high risk foot assessment, the podiatrist will provide advice about caring for your feet tailored to you from the findings from your tests. They will recommend a daily self-care routine. Go to care4feet.org.au today for great tips you can use in your foot care routine

Dr Reed is director of podiatry at the FootMotion podiatry clinic in Brisbane and an Associate Professor of Podiatry at the Queensland University of Technology.

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Expansion of our Peer Support Program across Australia

Limbs 4 Life is thrilled to announce that our Volunteer Amputee Peer Support Program will be nationally expanded over the next three years. With support from The PB Foundation, our best practice and early intervention program will soon be made available to all amputees and their families across Australia.

"The Peer Support Program has always been Limbs 4 Life's flagship program. Providing new amputees with access to trained volunteer peers who have the 'lived experience' of limb loss has proven to be incredibly valuable to a person's recovery and general wellbeing," said Melissa Noonan CEO of Limbs 4 Life.

The Limbs 4 Life Peer Support Program has been successfully operating in Victoria for eleven years. In 2008 the program expanded into South Australia, where it is formally recognised as part of the South Australian Health Department's 'Amputee Rehabilitation Treatment Plan'. Limbs 4 Life also works in conjunction with the Tasmanian Amputee Society to deliver Peer Support to amputees and their family members in Tasmania. Currently Limbs 4 Life has 93 trained Peer Support Volunteers supporting amputees and families in these three states.

As part of the three year program roll-out, Limbs 4 Life will expand its services into New South Wales and the ACT in the first year, Western Australia and Queensland in the second year and in the third year the Northern Territory will come on line.



Limbs 4 Life is proud to announce the appointment of Fay Keegan as our new National Program Manager to oversee the expansion and delivery of the Peer Support Program. Fay is a tertiary qualified Social Worker with post-graduate qualifications in Psychology, Relationships and Family Therapy, and Mediation. Fay has worked in public and private organisations since 1980; principally in mental health, child and family services, trauma and relationship counselling across both Sydney and rural areas. Along with being an accredited trainer, Fay also has a keen interest in social advocacy and equity issues.

"I am thrilled to announce the appointment of Fay, who will be a wonderful addition to the Limbs 4 Life team and play an important role in assisting even more amputees across Australia receive the peer support they deserve," Melissa stated.

If you would like more information about the Peer Support Program please email peersupport@limbs4life.org.au or call 1300 78 2231 toll-free.

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wearing comfy shoes over a pair of stilettos! The handle has also been designed so that your weight sits directly over the stick rather than being offset. This keeps the wrist and hand in a neutral position which reduces strain and injury.

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* Flexyfoot provides 50% more grip than a standard rubber tip. Grip depends on the conditions, the terrain and the user. We cannot guarantee Flexyfoot will not slip.



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The alignment of your prosthetic leg

Aideen Curran B. Pros & Orth CPO. MAOPA. MISPO Clinical Specialist - Ottobock Academy Sydney

This topic is a very sensitive one for me. I feel very passionate about alignment, and I see many parallels to this aspect of my job to that of my dad's as a mechanic. Over his 45 year career the advances in automotive technology have been huge; power steering, ABS brakes, fuel injected motors, and on board computers.

For a man that struggles with an iPhone, he has had to adapt to new technologies and new devices that are required to service the features of the modern day car. He no longer uses mirrors to determine a wheel alignment. Instead he relies on lasers, computers and calibration devices that are far more advanced and accurate than my father could ever achieve unaided.

And my job as a Prosthetist is no different. In my role at Ottobock I am responsible for training Prosthetist's from around Australia and NZ on the most advanced technology, particularly Microprocessor controlled knees such as Genium, X3, C-leg and Kenevo, and our latest developments in Microprocessor feet such as Meridium and Triton Smart Ankle. These are highly technical devices and contain



sensors similar to those in airbags, aeroplanes and smart phones, mini hydraulics, intelligent computers and wireless Bluetooth.

However, the alignment of these prostheses should be no different to that of a basic knee or

basic foot. Because alignment is paramount; it creates the foundation for the entire system to work, and no amount of fancy technology inside your prosthesis can compensate for poor alignment.

Alignment in the simplest of terms refers to the relationship between the socket and the components beneath. These components may include but are not limited to the prosthetic foot, the prosthetic knee, small components such as tubes and rotators, and adaptors that can shift and slide in various directions.



The importance of alignment is often underestimated and the smallest of changes can have such a huge impact on how you walk. Our objective as Prosthetist's is to position these components in a way to balance external forces acting upon the system. These are invisible forces, and if positioned incorrectly may have detrimental effects on the safety of your prosthesis, the impact on your muscles and joints, and the comfort inside your socket. You may recall a time that your leg didn't feel right. Perhaps it threw you off balance, or pushed you in a certain way, maybe your prosthetic knee collapsed and you now find it hard to trust your prosthesis. This could be result of poor alignment.

Poor alignment is when the components have been put together in a way that creates a force on the prosthesis or on your body. The force might be so great that you can see it with your naked eye, much like the wheel alignment scenario the wheel wobbles and shakes the whole car. But often it's subtle and can't be seen, and over time it wears down the tyres causing preventable and irreversible damage. So the force on your prosthesis needs to be in exactly the right place to be balanced between safe and dynamic. But how do you check this if you can't see these invisible forces?

At Ottobock, we use objective measuring devices such as L.A.S.A.R. Posture (a force plate) to accurately calculate the forces acting upon the prosthesis. We can see in millimetres the necessary changes that need to be made for your individual prosthesis to be not only safe, but dynamic, and most importantly not cause your body an injury or harm.

Here is an example of a below knee amputee on L.A.S.A.R. Posture. The laser projected up from the force plate is actually the exact point at which the amputee is loading their prosthesis, or where their weight is. The Prosthetist will mark a target line on the prosthesis which relates to the optimal place that the red force line should be. As you can see in figure A, the force line is too far in front of the small line marked on the socket.



Figure A

Now you make think that doesn't look too bad, it's only about 10mm in front of the target line and he looks to be standing balanced. But did you know for every 1mm that your prosthesis is not aligned correctly, studies suggest you could be using 11% more energy than you need to!

With this line too far forward, the man has more weight going through his toe: like his toe is pointing downwards in a high heel shoe but without the heel. This will give him the sensation that he is falling backwards in standing, and may feel hard to rollover during walking, or the feeling of going uphill. If left in this position, over time his knee joint will deteriorate causing damage to joint capsule and ligaments, and by favouring his other leg, it too could be at the mercy of osteoarthritis. But it's a simple fix...if you have the right tools.

Figure B shows the correct alignment after the Prosthetist has made a small turn of the grub screws to optimise the prosthesis.



Figure B

He will now be balanced in standing, the foot will perform dynamically like it is intended to, and he will no longer be subjected to external forces that will deteriorate his skeletal structures. To the naked eye he looks to be standing the same in both pictures, but the result is very different.

It makes me verv upset when I see a prosthetist squinting with one eye closed watching a patient walk, as if they can see forces with

their naked eye. I have even had prosthetist's tell me that they have "trained their eyes"!



Question your prosthetist. Ask them what scientifically proven device they have to objectively determine the correct alignment of your prosthesis? Do they have L.A.S.A.R. posture? If so, have you had your alignment checked on it recently?

If you wouldn't accept a mechanic squinting with one eye at the tyres on your car, then you shouldn't accept that of your prosthetist. The end result is the same...Safety is compromised; performance is compromised and over all comfort is reduced.

True or false?

It is normal that I must rely on my sound side when standing.

False: If you have an optimised alignment, and limited other issues on your "sound side" you should be standing with even weight on both legs comfortably.

I have an above knee amputation, and my prosthetic knee joint is not working because it always collapses underneath me.

False: If your knee joint is yielding or collapsing when you stand this could be a sign of poor alignment and your prosthetic knee joint could be working fine.

When I close my eyes and listen to my steps they should sound even and symmetrical.

True: the timing of your steps should be even, like a metronome. Try clapping with each step to check.

When I stand its normal for my prosthetic leg to be in front compared to my sound leg.

False: If you stop and stand relaxed, look down at the position of your feet. They should be in one line, and not one in front of the other.



Even though I only have a basic prosthesis, the alignment is no different to that of a computerised one.

True: Despite all the technology that goes into a high end prosthesis, it will not perform at its desired functionality if it is not aligned correctly.

Limbs 4 Life Phone: 1300 78 2231 Email: info@limbs4life.org.au www.limbs4life.org.au

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