The National Disability Insurance Scheme Evidence Advisory Commitee Review

People who use prosthetics with microprocessors and myoelectrics

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Limbs 4 Life™
Empowering Amputees

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Introduction and key issues

The National Disability Insurance Scheme (NDIS) Evidence Advisory Committee (EAC) have been asked to make recommendations to government on the safety, suitability and value for money supports for NDIS funding by drawing on the best available evidence. The government wants to ensure that the NDIS provides safe, effective and high-quality supports that maximise the benefits for people with disability.

The EAC are seeking feedback on a range of supports including prosthetics with microprocessors and myoelectric arms. Microprocessor feet and knees and myoelectric devices are used by people with limb loss to regain function of the limb/s which has been amputated/missing. The EAC will utilise the information provided to give advice to government about the safety, efficacy and cost effectiveness of various disability supports.

Limbs 4 Life are aware that some individuals (Participants) are not willing to make individual submissions to this Review and as such Limbs 4 Life have developed a survey in line with the questions proposed by the EAC for the amputee community. A link to the survey developed by the EAC has been shared via the Limbs 4 Life social media channels and website. In addition, Limbs 4 Life have developed a short survey which was distributed to all amputee stakeholders and their families nationally.

Limbs 4 Life welcomes the opportunity to provide feedback to this Review on behalf of people in Australia living with amputation who utilise microprocessor and myoelectric devices.

The general consensus regarding the provision of myoelectric and microprocessor devices indicates that these complex assistive technology prosthetics promote independence, increase confidence and stability, and enable people to undertake tasks themselves. Feedback also highlighted the fact that people who use this technology are far less reliant on additional supports and can complete daily living tasks independently. A number of respondents indicated that since accessing this technology, they no longer require assistance with home cleaning, general maintenance, gardening and shopping support.

Limitations

Due to the very short timeline for this consultation process, Limbs 4 Life were unable to share surveys with those stakeholders who do not have access to online services (computers, smartphones, internet). As such,

data collection will be limited to those people with access to online services who can meet the timelines for the purpose of the enquiry.

About Limbs 4 Life

Limbs 4 Life has been operating in the disability sector for more than 20 years and is the peak body for people with limb loss in Australia. The organisation works to empower amputees through education, knowledge and support. Limbs 4 Life builds community connections among stakeholders ensuring that people and their families do not go through amputation alone; Limbs 4 Life works to ensure that people pre or post amputation have access to the Limbs 4 Life evidence-based best practice peer support program, along with the provision of resources and current health literacy to assist them to transition back to independent living.

Limbs 4 Life's mission is to provide information and support to amputees and their families while promoting an inclusive community. Our philosophy is to empower amputees with knowledge and support to make a real difference, because no one should go through limb loss alone.

Limbs 4 Life provides services to thousands of amputees and their care givers, who rely on its programs and support for assistance prior to or after amputation. Limbs 4 Life is supported by over 200 trained Peer Support Volunteers, is governed by a voluntary board of management and is operated by staff with a majority representation from those with lived experience of amputation. Since its formation, Limbs 4 Life has greatly extended the supports available to amputees, their families, primary care givers and healthcare staff. Limbs 4 Life's services include provision of:

- Best practice Amputee Peer Support Programs;
- Evidence-based health literacy resources and wellbeing information;
- Independent support and advocacy to assist people to navigate healthcare and disability systems and pathways;
- Access to social and economic inclusion activities; and,
- Educational workshops to assist people to develop self-confidence, regain self-esteem and learn skills to self-advocate.

Limbs 4 Life advocates for amputees by initiating or participating in research, providing advice and recommendations to government, responding to submissions, and educating the community about amputation and the impact of limb loss.

Amputee population and limb loss impacts

Of the 160,395 [1]people who have undergone amputation in Australia, it is estimated that more than 42,000 are living with major limb loss and are potential prosthetic users, however not all are NDIS participants. In fact, as of December 2022, amputees made up 1% of Australia's NDIS participant population (n=4,060/573,340; https://data.ndis.gov.au/data-downloads#participant)

The main causes of amputation include diabetes, vascular disease, cancer, infection, birth deficiencies and traumatic related injuries.

[1] KMPG Limbs 4 Life Socio-economic burden of amputation study 2020

Notably, Australia has an appalling record when it comes to diabetic-related amputations increasing by 30 per cent in the past decade and resulting in our country having the second highest rate of preventable diabetic related amputations in the developed world[2]. Of grave concern is the fact that major limb amputations are 38 times more likely in Indigenous Australians aged 25- 49 years than in the general population[3].

Scientific literature reports that over the past few decades the amputee community has identified problems with the function and comfort of their prosthetic products[4], as well as challenges with patient-prosthetist communication, and that these issues compromise amputee choice and control, limit independence and contribute to prosthetic abandonment for 1 in 5 amputees.[5]

Amputation recovery and rehabilitation

The loss of a limb is considered a major health and disability event which can impact on a person's functionality, mobility, independence and mental health. Following an amputation and acquiring this physical disability, restoring functionality and daily living abilities, reducing dependency on others, increasing mobility and optimising a person's quality of life and satisfaction are key rehabilitation and disability adjustment goals.

People who undergo amputation spend a period of time in acute hospital settings recovering from the surgery, after which, in most cases, they are transferred to sub-acute rehabilitation facilities to learn to adjust to the loss of a limb/s. Rehabilitation involves a multidisciplinary healthcare team to support amputees build capacity and to learn how to:

- ambulate safely;
- regain functionally, mobility and balance;
- use a wheelchair and/or other mobility aids, and upper limb solutions (assistive technology);
- overcome fears;
- prepare for the fitting of a prosthesis; and,
- plan for re-entry into the community.

With respect to lower limb amputations, it is estimated that recovery post-amputation occurs over a 12 to 18 month period and is inclusive of activity recovery, reintegration into society, and prosthetic management and training. It is also during this period that amputees seek funding supports, particularly the NDIS, to facilitate independence, support needs, community engagement and socioeconomic participation.

The impact of acquiring an amputation / disability

It is worth noting that people who undergo amputation face a number of complexities including:

- Coping with, processing and adapting to the impact of limb loss, and can require psycho-social support;

[2] https://www.mja.com.au/journal/2018/diabetic-foot-amputations-finally-time-act

[3] https://pmc.ncbi.nlm.nih.gov/articles/PMC5678749/

[4] Hagberg and Brånemark 2001, Pezzin, Dillingham et al. 2004

[5] Laskovy, Long et al. 2023

- The impact of limb loss on their day-to-day lives, including self-care, employment and income, social and recreational activities and relationships;
- Trying to understand a sometimes complex healthcare system;
- Working to physically regain mobility and balance;
- Learning and working to physically regain functionality; and,
- Navigating, understanding and engaging with funding streams such as the National Disability Insurance Scheme.

Understandably, the myriad complexities of this amount of information can increase anxiety and have an impact on a person's mental health during the time of recovery.

Consultation process

The purpose of the EAC review is to seek feedback from NDIS Participants because the government wants to ensure that the NDIS provides safe, effective and high-quality supports that maximise the benefits for people with disability. The EAC have been asked to make recommendations to government on the safety, suitability and value for money supports for NDIS funding by drawing on the best available evidence.

Participants were asked to respond to five questions:

1. As an amputee, do you use microprocessor / myoelectric prosthetic technology?
2. What are the benefits that your prosthesis (microprocessor / myoeletric) provide to you? (multiple choice question with open ended comments)
3. Since you've used a prosthesis with a microprocessor knee, foot or myoelectric hand or arm, has your need for other supports and services (e.g., in home supports like cleaners, gardeners, support workers) been reduced?
4. Would you please describe how your microprocessor / myoelectric prosthesis has provided significant benefits to your quality of life, and how the use of your prosthesis has enabled you to undertake more activities than you did previously on a mechanical device (e.g., participate in work, community, care for others, live independently)?
5. Can you please share your own personal experience if your device has made a significant difference to your life?

The initial question was developed to ensure that only microprocessor and myoelectric consumers responded to the survey, thus eliminating anyone ineligible for this technology via the state-based public funding streams. This question is not reported on in the findings below.

To assist NDIS Participants to share their feedback, Limbs 4 Life created a survey using the four questions above. The survey was shared nationally via social media and the website. The survey was deidentified and personal details were not collected. Using a thematic approach, survey responses were consolidated to provide this report by way of a submission to the EAC Review.

Limbs 4 Life also facilitate a closed/private Facebook group which engages amputees and their family members. This group boasts 2.9K members nationally. We utilised this platform to seek feedback to the questions above as some community members prefer this platform for communication purposes.

Stakeholders were also encouraged to provide feedback via the survey on the EAC website consultations.health.gov.au/evidence-advisory-committee-eac/december-2025/

Question 1 | What are the benefits that your prosthesis (microprocessor / myoelectric) provided to you? *(multiple choice question/ select all that apply).*

The responses to the benefits that microprocessors and myoelectric devices provide to participants were varied, however the main benefits highlighted include:

- Greater levels of confidence (upper / lower limb amputees)
- Greater levels of independence (upper / lower limb amputees)
- Reduction in falls and personal injury (lower limb amputees)
- Increased functionality (upper / lower limb amputees)
- Increased mobility (lower limb amputees)

Respondents also reported that the devices gave them the ability to work or return to employment - 61.9%; increased ability to participate in community - 83.3%; easier to perform daily living tasks (self-care, home duties, shopping, caring for others/myself) - 80.95%. Others also reported having more endurance and feeling less physically and mentally tired since using these devices – 54.76%.

The highest responses equated to those reporting greater levels of self-confidence.

There were also a number of comments regarding upper and lower limb prosthetic sockets and the importance of having a good 'socket fit'. In fact, multiple respondents indicated that even after accessing the 'best' in prosthetic technology (microprocessor knee etc), if the socket wasn't 'fit for purpose', then the provision of high-end prosthetic technology did not make any significant difference because wear/usage was low. They followed on to say, ***"if the socket causes me pain and is uncomfortable, then it doesn't matter how good the technology is, I won't wear it."***

Question 2 | Since you've used a prosthesis with a microprocessor knee, foot or myoelectric hand or arm, has your need for other supports and services (e.g., in home supports like cleaners, gardeners, support workers) been reduced?

62.79% of respondents indicated that since gaining access to a microprocessor / myoelectric device that their need for supports and services at home had significantly reduced. Respondents reported no longer needing cleaning support; or yard / garden maintenance assistance as the device enabled them to perform those duties themselves due to the increase in functionality, mobility and confidence.

Some respondents also reported an increase in independent living. ***"I can actually meet my friends out in the community, rather than friends having to come to my home all of the time".***

Others stated that they feel safer in knowing that they can independently do tasks that they were unable to do before. ***"I can even carry some items that I didn't think I'd be able to lift again".***

"Using my myoelectric hands I can drive myself, pick up my children, go shopping and go to work. Without these hands, I would be relying on support workers to do everything for me".

"Now that I have a microprocessor knee, I don't use any support services".

Question 3 | Would you please describe how your microprocessor / myoelectric prosthesis has provided significant benefits to your quality of life, and how the use of your prosthesis has enabled you to undertake more activities than you did previously on a mechanical device (e.g., participate in work, community, care for others, live independently)?

Reponses to this question reflected and expanded the answers outlined in question 1. Reduced fear of falling, increased autonomy and safety and the ability to be able to undertake tasks independently were key highlights in the responses received. Increased volunteer or workplace hours were also indicated. Most respondents agreed that microprocessors / myoelectric devices gave them a better quality of life than the alternatives, illustrating the return on investment that these prosthetics can provide to the NDIS via the amputee community, while reducing costs on other supports.

"The fear of falls is massive for an above knee amputee. The microprocessor knee looks after that before it happens, constantly recorrecting. I am no longer concerned for my safety".

"With this knee I can participate in community, work, care for others and live independently".

"I'm totally self sufficient in all household chores (cleaning, mowing lawns, gardening etc) and I live alone."

"I have a myoelectric hand. I was originally left hand dominant. Without this device I would not be able (physically and legally) to perform my job as a flight technician on a corporate aircraft and remain employed".

"Since having this device, return to pre-amputation activities is approximately 80% capacity, where as without this prosthesis, I would be at 30% capacity."

"The increased safety and confidence have given me an opportunity to start getting back to work".

"Work, community participation, independent walking 5kms, keeping active and walking the golf course".

"My hands mean I can work, travel for work independently and ride a bike".

Question 4 | Can you please share your own personal experience if your device has made a significant difference to your life?

The response to this question attracted the most answers and is easily comparable, especially for newer amputees, who have used a basic (mechanical or body-powered prosthesis) and then advanced to a

microprocessor or myoelectric device after undertaking trials and moving through the interim prosthetic phase into the NDIS system.

Overarchingly, people reported regaining independence and 'getting their lives back'. It was evident from the responses that these devices made a positive difference to recovery and adaption to amputation, and that the devices also promoted the ability to undertake tasks independently, without the reliance on other external supports.

"I am constantly being told how well I am doing on my new prosthetic. I'm sure things wouldn't be the same or continued as well on a purely mechanical knee. "

"The microprocessor knee has given me my life back with confidence and I feel like my old self with this knee on".

"Since receiving my new prosthetic, I have been able to drive which has allowed me to socialise more. Previously, I was unable to go out on my own."

"An MPK takes away the thinking of movement. It allows me to travel and see the world like I used to before. At the end of the day I am not physically and mentally exhausted. This knee empowers me to move more confidently without worrying about every step I take and falling over. I feel like I am no longer a burden on others, my quality of life is better and I can do things on my own."

"This arm has made such a difference, I don't feel like I have a disability anymore!"

"I still mow my own lawns and other physically taxing endeavours. I doubt that I would be doing this without my microprocessor."

"Being able to return to work as a nurse is going to play a vital role in helping and improving my ability and skills also independent to do this."

"This has been the single best support that the NDIS has provided."

Recommendations

Complex assistive technology can be costly but promotes independence; helps users to regain confidence and to restore function and mobility. It is without doubt that microprocessor and myoelectric technology has positive impacts on the lives of many Australians with disability. In fact, access to complex assistive technology such as microprocessor and myoelectric devices has further advanced recovery and promoted inclusion socially and economically. However, it is important to ensure that Participants do not abandon their device due to the need of further training; that the device causes pain and is not 'fit for purpose'; and/or the end user does not fully understand the capacity of the device.

It can be reported that many participants who use complex assistive technology no longer require the range of additional supports to assist with daily living. These supports can include, but are not limited to, home cleaning services, garden maintenance, or shopping and transport assistance.

As such and following the feedback from the consultation Limbs 4 Life make the following recommendations:

1. Prosthetic trials and timelines:

Complex assistive technology such as microprocessor and myoelectric devices take time for the end-user to adjust to. If a Participant has previously used a mechanical knee unit or a body powered arm, then there can be a significant adjustment period during the trial phase in order for the end user to fully trust the device (in the case of lower limb amputees) or to adjust to the functionality (for upper limb amputees). Trials require (in all instances) sound fitting sockets which are comfortable, do not cause pain and enable the user to fully comprehend the functionality of the device.

a) Review current trial timelines to ensure that they meet consumer needs so that they can fully experience the way in which the device works and how the device can provide long term benefits.

b) Consider the implementation of a checklist which mirrors the outcome requirements of the Participant for both upper and lower limb prosthetic users. A checklist should include regular activities Participants wish to be able to perform on a day to day basis including but not limited to the six functional domains; communicating, socialising, learning, mobility, self-care and self-management. However employment tasks and recreational tasks etc could also be tailored to the checklist for each individual. This would therefore align with a Participants goals their functional capabilities. In addition, this could reduce over prescribing of complex assistive technology.

2. Education and training:

Complex assistive technology promotes mobility and functionality, but end-users need education and training to fully understand how a device works. It is not suitable for a prosthetic provider to just give a consumer an instruction manual and to tell them to take it home and read it. Hands on support must be provided prior to, and during the trial phase and post supply and fit of the device.

Review the current provision of device guidelines and educate Participants about their rights when purchasing equipment. Some Participants do not receive sufficient guidance/training in how best to utilise their prosthesis. Lack of prosthetic training is attributable to prescribing clinicians who charge for ‘prosthetic training and education’ as part of their quote.

3. Physical strength and training:

Accessing a myoelectric upper limb prosthesis for the first time (even during a trial phase) can have a physical impact on the end-user. Due to the weight of these devices, it is essential that physical muscle training exercises be provided to prevent shoulder, neck and back pain leading to rejection of the device and/or the trial of the device

Review the upper body strength of upper limb myoelectric prosthetic users prior to trialling these devices to ensure that the device can be tested at full capacity. In addition, ongoing, or maintenance exercise programs should be prescribed by a physiotherapist to prevent the end-user from long-term pain leading to device abandonment.

4. Follow up appointments and oversight:

An alarming number of microprocessor knee users have reported that they “don’t wear their prosthesis.” This can be attributed to a range of different factors, however, the common theme that we can report is that the users find walking is uncomfortable and causes them pain or that the device is heavy. Lack of comfort is due to poor socket fit, which requires intervention from the prescribing clinician/s. Participants who access complex assistive technology (prosthetics) should have 6, 12 and 18 month checks from the time that Participants takes possession of their device to ensure that the device is being used effectively and for the purpose that it was prescribed. If the device is not ‘fit for purpose’ then adjustments or modifications should be standard practice.

Not all end-users will contact their prosthetic providers if they have a problem with their device. Some will just abandon the device all together. Complex assistive technology is expensive, and every effort should be made to ensure that end-users can get the most out of their device.

Consider regular reviews for new microprocessor users, increase check-in periods to ensure that the device remains ‘fit for purpose’ could result or this could result in less abandonment of the prosthesis.

5. Myoelectric prosthetic devices:

As outlined above, upper limb strength training can increase the ability to successfully use upper limb myoelectric prostheses. The latest in upper limb technology offers a wide range of functions which have rarely been available in the past. Learning to use these devices takes time and (in most cases) Participants will not be able to master all of the features in the first instance.

Give consideration to additional training to help end-users gain better insights and understandings of grip patterns. This will enable them to achieve more tasks. An investment in a couple of extra hours of occupational therapy training support will increase usability of the devices. Follow up training should be provided to upper limb prosthetic users.