**Healthy ageing and the role of prosthetics and orthotics personnel**

*Submitted by the British Association of Prosthetists and Orthotists, May 2023*

Prostheses (artificial limbs) and orthoses (braces and splints) are externally applied devices used to assist people with physical impairments to improve their functioning and increase their potential to live healthy, productive, independent, dignified lives (WHO, 2017).

Prosthetic and orthotic services positively influence healthy ageing, providing those in need and referred to those services, with individualised prostheses or orthoses to enable them to achieve their potential to participate in society.

Prosthetists and orthotists are AHPs who combine a unique set of skills that combine knowledge in bioengineering, material science and assistive technology with underlying clinical reasoning to care for the ageing population. Prosthetists and orthotists are committed to supporting healthy ageing within the population by “creating the environments and opportunities that enable people to be and do what they value throughout their lives” (WHO, 2020).

**Prosthetics**

Prosthetists are integral to the provision of amputee rehabilitation (British Society of Rehabilitation Medicine (2018). The holistic care of a patient with lower limb loss, maximizing mobility through the effective prosthetic care does correlate with greater quality of life and general satisfaction (Wurdeman et al 2017).

Effective prosthetic care will enable patients to achieve maximum functional independence, considering the patient’s pre-amputation lifestyle, their expectations and limitations (British Society of Rehabilitation Medicine, 2018).

Applying modern technology can result in significant benefits to the ageing, including microprocessors are now routinely used in prosthetic componentry (artificial knee and ankle joints) to reduce injurious falls (Campbell et al, 2020). As well as the functional status improvements inf the quality of life for users of microprocessor knees have been reported (Thibaut et al 2022).

**Orthotics**

Orthoses help improve quality of life by reducing pain, keeping people mobile and independent and preventing more invasive and expensive interventions like surgery, amputation, or the need for social care (NHS England 2015).

Orthotists support people affected by a wide range of health conditions associated with ageing and leading to mobility impairment. These include diabetes, stroke, orthopaedic & neuromuscular conditions; so that significant health, quality of life and economic benefits for over 1.2 million NHS patients are achieved annually (Hutton J, Hurry M, 2009).

Following a stroke, orthotists are key members of the community rehabilitation team that can act early to reduce the long-term disability, risk of falls and accelerate the rehabilitation process. (Clarke and Forster, 2015). Early orthotic intervention is recommended to optimise outcomes. (Bowers et al 2007). Best practice guidelines have been provided (Health Improvement Scotland 2007).

Diabetes is a feature of our ageing population. Patients are referred to an orthotist for the provision of therapeutic footwear to effectively offload high-risk foot regions and prevent ulceration (Ahmed et al 2020).

Patients are also referred to orthotists with wide range of degenerative conditions which are alleviated by bracing, with evidence to demonstrate improvements in pain, instability, and quality of life (Steadman et al 2016).

It is recognised that the demand for Orthotists is likely to rise in line with increases in the ageing population and rising prevalence of obesity, diabetes, cardiovascular and peripheral vascular diseases (Health Education England 2017).

**References**

Ahmed S, Barwick A, Butterworth P & Nancarrow S, (2020), Footwear and insole design features that reduce neuropathic plantar forefoot ulcer risk in people with diabetes: a systematic literature review Journal of Foot and Ankle Research volume 13, Article number: 30

British Society of Rehabilitation Medicine (2018) Amputee and Prosthetic Rehabilitation – Standards and Guidelines (3rd Edition). Available from <https://www.bsrm.org.uk/downloads/prosthetic-amputeerehabilitation-standards-guidelines-3rdedition-webversion.pdf>

Bowers, Roy; Ramstrand, Nerrolyn and Jacobs, Norman, eds. (2007) Lower limb orthotic practice : orthotic management of stroke and traumatic brain injury. In: Report of a Consensus Conference on Appropriate Lower Limb Orthotics for Developing Countries. ISPO, VNM, pp. 237-242. ISBN 8789809203

Campbell J.H., Stevens PM, Wurdeman SR (2020), Retrospective analysis of four different microprocessor knee types, The Journal of Rehabilitation and Assistive Technologies Engineering

Clarke DJ, Forster A. Improving post-stroke recovery: the role of the multidisciplinary health care team. J Multidiscip Healthcare 2015;8:433–442.

Health Improvement Scotland 2007, Best practice, use of ankle-foot orthoses following stroke, <https://www.healthcareimprovementscotland.org/previous_resources/best_practice_statement/use_of_ankle-foot_orthoses_fol.aspx>

Hutton J, Hurry M (2009), Orthotic Service in the NHS: Improving Service Provision, University of York. Available from <http://www.hkscpo.org/upload/files/York_Report_Orthotic_Service_in_the%2520NHS.pdf>

NHS England 2015, Improving the Quality of Orthotics Services in England <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/11/orthcs-final-rep.pdf>

Health Education England 2017, The Future of the Orthotic and Prosthetic Workforce in England [Orthotic Report Final Version\_0.pdf (hee.nhs.uk)](https://www.hee.nhs.uk/sites/default/files/documents/Orthotic%20Report%20%20Final%20Version_0.pdf)

Meyer MJ, Teasell R, Thind A, Koval J, Speechley M. A synthesis of peer-reviewed literature on team coordinated and delivered early supported discharge after stroke. Can J Neurol Sci 2016;43:353–359.

Steadman R, Briggs K, Pomeroy S, Wijdicks C, 2016, Current state of unloading braces for knee osteoarthritis. Knee Surgery, Sports Traumatology, Arthroscopy i vol;24(1):42-50.

Thibaut A, Beaudart C, Maertens B Noordhout DE, Geers S, Kaux J-F Pelzer D, Impact of microprocessor prosthetic knee on mobility and quality of life in patients with lower limb amputation: a systematic review of the literature, European Journal of Physical Rehabilitation Medicine vol 58(3).

WHO (2017) Standards for Prosthetics and Orthotics. Geneva. Available from <https://apps.who.int/iris/handle/10665/259209>

WHO (2020) Healthy ageing and functional ability. Available from <https://www.who.int/news-room/questions-and-answers/item/healthy-ageing-and-functional-ability>

WHO (2001) International classification of functioning disability and health. Geneva

Wurdeman SR, Stevens PM, Campbell J.H,. (2017), Mobility Analysis of AmpuTees (MAAT I): Quality of life and satisfaction are strongly related to mobility for patients with a lower limb prosthesis, Prosthetics and Orthotics International

**Note** NHS England has recognised that there are many obstacles that prevent optimising orthotic care within the NHS <https://www.england.nhs.uk/wp-content/uploads/2015/11/orthcs-rep-attach-1.pdf>

As illustrated by the UK data for 2019, the prevalence of amputation is strongly correlated with ageing. This is in many cases due to vascular complications, which are often secondary to Type 2 Diabetes.

**Source** Institute for Health Metrics and Evaluation (2023) Amputation prevalent cases rate. Rehabilitation needs estimator. University of Washington. Available from <https://vizhub.healthdata.org/rehabilitation/>

**Graphics**

Amputation prevalence rate

**A picture containing screenshot, plot, line, diagram

Description automatically generated**