

# A toolkit for prosthetists and orthotists to facilitate progress in professional communication over the next 50 years

Jaap J Van Netten<sup>1</sup> , Gustav Jarl<sup>2,3</sup> , Klaas Postema<sup>4</sup> and Anita E Williams<sup>5</sup>

Prosthetics and Orthotics International  
1–8

© The International Society for  
Prosthetics and Orthotics 2020



Article reuse guidelines:

[sagepub.com/journals-permissions](https://sagepub.com/journals-permissions)

DOI: 10.1177/0309364620962325

[journals.sagepub.com/home/poi](https://journals.sagepub.com/home/poi)



## Abstract

**Background:** In this celebratory issue of *Prosthetics and Orthotics International*, we review professional communication skills in the field of prosthetics and orthotics.

**Objective:** We aim to reflect on communication skills in the past 50 years, to discuss developments in the coming 50 years, and to create a toolkit and research agenda to facilitate progress in professional communication in the next 50 years.

**Results:** Despite being a key area in prosthetics and orthotics training programmes, we found no studies on professional communication with an experimental design published in *Prosthetics and Orthotics International*. As an alternative, we provide clinical reflections on the changes in professional communication in the past 50 years, and we discuss questionnaire-based and qualitative studies that provide evidence for the importance of communication in pedorthic footwear provision. In the coming 50 years, professional communication in the field of prosthetics and orthotics may be impacted by aging populations, global mobility, information technology, technological advances and emphasis on prevention. We discuss each of these topics. To facilitate progress in professional communication, we have created a toolkit with resources for prosthetics and orthotics professionals, prosthetics and orthotics students and other interested professionals.

**Conclusions:** We hope this toolkit will inspire others to use, extend and implement it in their daily practice. As a research agenda, we strongly recommend undertaking research on interventions to improve professional communication and to study its effect on clinically meaningful outcomes.

## Keywords

Footwear, foot ulcer, multidisciplinary, patient–practitioner interaction, prosthetics and orthotics, research agenda

Date received: 6 July 2020; accepted: 1 September 2020

## Introduction

We communicate. It is crucial for our existence and survival. Our most dominant form of communication is verbal. While words are considered ‘the most powerful drug’<sup>1</sup> and ‘our most inexhaustible source of magic’<sup>2</sup>, use of words in a professional environment receives remarkably scant attention. In this celebratory issue of *Prosthetics and Orthotics International*, we have been invited to use words to reflect on professional communication skills in the field of prosthetics and orthotics (P&O). With our words, we aim to reflect on communication skills in the past 50 years, to discuss developments in the coming 50 years and to create a toolkit and research agenda to facilitate progress in professional communication over the next 50 years.

<sup>1</sup>Department of Rehabilitation Medicine and Amsterdam Movement Sciences, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

<sup>2</sup>Department of Prosthetics and Orthotics, Faculty of Medicine and Health, Örebro University, Örebro, Sweden

<sup>3</sup>University Health Care Research Center, Faculty of Medicine and Health, Örebro University, Örebro, Sweden

<sup>4</sup>Department of Rehabilitation Medicine, University Medical Center Groningen, Groningen, The Netherlands

<sup>5</sup>Directorate of Allied and Public Health, School of Health and Society, University of Salford, Salford, UK

### Corresponding author:

Jaap J Van Netten, Department of Rehabilitation Medicine and Amsterdam Movement Sciences, Amsterdam UMC, University of Amsterdam, Meibergdreef 9, 1105 AZ, Amsterdam, The Netherlands.  
Email: [j.j.vannetten@amsterdamumc.nl](mailto:j.j.vannetten@amsterdamumc.nl)

**Associate Editor:** David Rusaw

## The past 50 years

The starting point for this article is a seminal paper by Dr Sidney Fishman on education in P&O, published in this journal in 1977.<sup>3</sup> Fishman identified six areas of skills and knowledge indispensable for P&O professionals, including the area of communication skills.<sup>3</sup> Using only seven lines for his description of this area (the shortest of the six areas), both what is and what is not written are informative.

Communication can be defined as a process of exchanging information between individuals, through a common set of symbols, signs or behaviour.<sup>4</sup> However, Fishman narrows this, by focusing solely on communicating one's own 'ideas, opinions and points of view'.<sup>3</sup> Gathering information, an integral part in its exchange, is not described. Further, of the various symbols, signs or behaviour that can be used to communicate, Fishman focuses only on written and spoken words ('an adequate command of language skills'). Non-verbal communication or communication aids were not included. And while understanding others is discussed as part of other areas ('psychological sciences' and 'personal and cultural qualifications'), this separation makes communication seem more like a one-way street: from the P&O professional directed towards a patient or colleague. The intricate levels of trust and mutual understanding that can follow from person-centred two-way interactive communication, including being listened to and being informed,<sup>5</sup> is nowhere to be seen in his description of the skill of professional communication.

In the more than 40 years following this article, the lack of attention on professional communication in the field of P&O

has hardly changed. Having searched *Prosthetics and Orthotics International* for articles on this topic, the only paper with communication in its title or keywords is our own clinical note:<sup>6</sup> an expert opinion paper, without scientific data on this topic. Extending the search by including articles with 'communication' in their abstract resulted in additional 19 papers. Of these, nine were not related to the topic of professional communication skills. A further five were partly related to this topic by, for example, describing a model or scale to facilitate professional communication; however, these studies did not include any relevant outcome data.<sup>7–11</sup> Of the five remaining studies, two did not include outcomes: one compared P&O programmes (including courses on communication skills)<sup>12</sup> and the other discussed the development of a visualization aid, but not if using this aid improved communication or clinical outcomes.<sup>13</sup> The only three studies in which data on this topic were presented included an observational study and two semi-quantitative studies. In the first, it was reported that P&O professionals agreed on role expectations related to professional communication.<sup>14</sup> In the latter two, the need for good communication and the importance of training P&O professionals in communication skills was discussed, but not investigated.<sup>15,16</sup> Taking this together, no studies with an experimental design on the topic of professional communication have been published in this journal, despite communication being a key area in P&O programmes.<sup>17</sup>

Irrespective of its absence in research, the importance and complexity of professional communication has been clearly acknowledged in daily clinical practice. This has led to marked changes over the past 50 years. In Box 1, one of

### Box 1. Personal experiences – professional communication in the past 50 years.

In the seventies, there was almost no attention on communication skills during the training for healthcare professionals in the Netherlands. Around 1970, the first multidisciplinary consultancies started, via collaborations between rehabilitation physicians, P&O professionals and pedorthists. Reflecting on these consultancies, I now realize we unconsciously saw the patients as an object with a disorder that needed a device (such as a prosthesis, orthosis or pedorthic footwear). We often urged patients to use the device, to compensate for their disorder. As professionals, we decided that the device would be good for them, and we did not realize the impact of using a device. If, during follow-up, patients complained about the device, we evaluated its technical aspects. We would try to increase its functionality, and urge patients to use it. We never realized that patients might not even want to use it, and that they were actually trying to tell us they were reluctant to use it.

Gradually, we started to realize that there was more than just a patient's disorder. There is one case that I still remember: a 90-year-old woman was referred to us, because she kept having problems with her pedorthic footwear. On examination, I found her footwear to be technically perfect. I then remarked: 'I have the impression that you do not like them at all'. To that, she responded with: 'Finally a doctor who understands me. Of course, I don't like them. I am way too young to walk on this footwear'. She told me she'd rather have pain, than walk on such footwear, but she didn't dare to say so until we provided the opportunity. This was an eye opener.

We started to realize that personal values and subjective experiences play an important role in people's decision to use a device. We would ask patients to explain the advantages and disadvantages of a device from their viewpoint, and the patient decided whether to start with a prescription for a device or not. Patients who decided not to go ahead often came back some weeks later, telling us they'd changed their mind. They apparently needed the time to accept the need for a device. In these years, research in our department showed the critical influence of patients' expectations and acceptance, and the importance of good communication about those aspects.<sup>18,19</sup>

In my daily practice, I found techniques of motivational interviewing to be very helpful. They guided me to refrain from telling a patient the advantages and disadvantages, but rather have the patient tell me these themselves, with their own words, from their own perspective. This reinforced the lessons I learned that we are not just dealing with a disorder, but with a person with their own life, into which the device has to fit. To provide an optimal solution, we need to listen, to communicate.

the authors reflects on his personal experiences with professional communication in the P&O field throughout his long career.

As acknowledged in those experiences, some progress in professional communication in the field was the result of outcomes from questionnaire-based or qualitative research studies. In these studies, users and professionals reflect on the crucial role communication has in reaching positive outcomes. As a full review of such studies on all P&O-related topics goes beyond the scope of this article, we chose the topic of pedorthic footwear to illustrate the lessons on professional communication learned from such studies over the past 50 years, see Box 2 for our findings.

## The coming 50 years

Predictions of the future are inherently uncertain. However, some current global trends can be expected to continue. For example, professional communication in the P&O field will likely be impacted by aging populations, global mobility, information technology, technological advances and an emphasis on prevention of disease or complications, rather than their treatment.

## Aging populations

In the future, patients will increasingly include older people with several co-morbidities and in need of coordinated multidisciplinary healthcare interventions.<sup>37</sup> For this reason, P&O professionals can expect to continue working with multidisciplinary teams.<sup>38</sup> These teams include patients, their family, and different healthcare professionals. When communicating with professionals inside and outside the P&O field, the International Classification of Functioning, Disability and Health (ICF) is useful as it is becoming the standard language for describing health and health-related states.<sup>39</sup> Also, the ICF is useful for effective communication within the patient's assessment, as it is based on a holistic biopsychosocial perspective, including both personal and environmental factors. Different tools have been developed for implementing the ICF in P&O practice, such as core sets,<sup>40,41</sup> an ICF-based supply framework,<sup>42</sup> and the Prosthetic and Orthotic Process model.<sup>9</sup> Also, a special issue focussing on the ICF was published in *Prosthetics and Orthotics International* in 2011.<sup>43</sup> However, outcomes following implementation of such communication tools have not been investigated. Evaluation and optimization of such tools and other methods to facilitate working with an aging multimorbid population is needed.

### Box 2. Lessons on professional communication from studies on pedorthic footwear.

Pedorthic footwear is defined as 'custom-made shoes and medical grade shoes with orthopaedic/pedorthic adaptations'.<sup>20</sup> It is a frequently prescribed orthosis, for people with a variety of disorders, and its functional goals include pressure redistribution, pain reduction, foot support, stability provision and mobility enhancement.<sup>20</sup> However, footwear is also a visible orthosis, and replaces something that is normally worn.<sup>21,22</sup> As a result, factors unrelated to its functionality play an important role in people's satisfaction and their decision to wear such footwear. Since the early 2000s, multiple studies have highlighted the importance of professional communication to adequately handle these, to provide people with optimal footwear.

The earliest study where the role of communication was vital concerned evaluation of an innovative multidisciplinary footwear service.<sup>23</sup> This service was characterized by several key features that emerged from the Salford Report<sup>24</sup> as being vital in relation to achieving use of pedorthic footwear. Its central feature included discussion between the referring practitioner and the patient about footwear options, with agreement from the patient required prior to seeing the orthotist. Subsequently, clinical appointment time was allocated with the orthotist to achieve active engagement of the patient in all decision-making, and patients were provided with written information to supplement verbal explanations. This service resulted in greater use of pedorthic footwear and greater patient satisfaction, when compared to the traditional footwear service where the orthotist had little time to engage in effective communication.

Four questionnaire-based studies all point at the importance of communication in footwear provision. Three studies – one in people with degenerative disorders of the foot<sup>25</sup> and two in people with diabetes<sup>26,27</sup> – highlighted the importance of personal preferences and priorities, and hence the need for a 'good' clinical encounter; that is, without effective communication, the patient will feel disenfranchised from the healthcare process and may not use the footwear optimally. The third study, in a population with various disorders, found a direct association between good communication in the short-term (3 months after provision) and continued long-term use (measured 1.5 years after provision).<sup>19</sup> These studies were a major move forwards to acknowledging the complexity of footwear as an intervention, and stressing the importance of an individual's goals and context of use.

Deeper insights to the importance of communication were obtained from various qualitative studies. The common denominator in these studies was the importance for clinicians to relate to their patient when prescribing pedorthic footwear. This could be seen in clinician's abilities to understand and acknowledge women's social needs,<sup>22,28</sup> to discuss expectations, acceptance and a patient's willingness to compromise,<sup>29</sup> to start a dialogue about potential consequences when not wearing the footwear<sup>30</sup> and to match their communication style with a patient's preference.<sup>29</sup>

It emerges from these various studies that effective communication involves sharing of information to understand the patient, thereby enabling the patient to gain greater control over their choices, rather than being a passive receiver of an intervention partner. This aligns with the wider patient-practitioner communication literature.<sup>5,31–35</sup> Despite all technological advances, this quote from 1991 still rings true, also in the field of P&O: 'In spite of sophisticated technologies for medical diagnosis and treatment, talk remains the primary means by which the physician and patient exchange health information'.<sup>36</sup>

## Global mobility

Global mobility is increasing, meaning that more people will spend parts of their life in countries and cultures in which they did not grow up. This will increase the demands for communication skills and knowledge about cultural differences in conceptualizations of disease, disability and health. Some patients come from countries where people with disability have very low social status and disability is believed to be caused by witchcraft; this causes patients to feel discouraged and shy, and have low self-esteem.<sup>44,45</sup> When meeting these patients, it is especially important that P&O professionals show an attitude absent of judgement and encourage patients to express their wishes and expectations. Cultures may also have a different emphasis on internal and external locus of control, that is, to what extent outcomes are believed to be caused by factors inside or outside the person's own control. This results in different levels of adherence to self-care behaviours.<sup>46,47</sup> Thus, P&O professionals need to clearly communicate why self-care is needed and in what ways it is expected to benefit patients.

## Information technology

Information technology can be a valuable resource for accessing information on health, disease and P&O devices. However, patients generally do not have the education and knowledge to separate evidence-based information from advertisements and opinions. Thus, P&O professionals will likely meet knowledgeable patients demanding state-of-the-art interventions, but also patients with certain misconceptions, including unrealistic expectations of outcomes with P&O devices. This will place demands on P&O professionals to not only remain updated on recent innovations and evidence, but also to clearly communicate devices' mechanisms of action, inappropriateness of certain devices and realistic outcomes.

Online (non-physical) consultations have become more common in other parts of healthcare, and we can expect that certain consultations will become non-physical in the P&O field as well. For example, this may include consultations on how a device should be used, if it needs to be repaired or replaced, and questions on device-related issues such as skin chafing and pain. Non-physical consultations have several advantages, such as saving travel time and reducing environmental impact, and may be the preferred method by patients of working-age and patients with multiple healthcare appointments. However, this will present additional challenges for professional communication, for example, in obtaining relevant information when it is not possible to physically examine a patient or device.

## Technological advances

Technological developments of P&O devices are likely to continue in the future, meaning that P&O devices will be more technologically advanced, but may also be more

expensive.<sup>48</sup> Given that medical and technological intervention options increase faster than healthcare budgets, there is an increasing gap between what can be done and what can be afforded.<sup>49</sup> This will put demands on P&O professionals' ability to communicate priorities with patients, including having the integrity to prioritize patients based on their needs, rather than based on 'who shouts the loudest'.

## Emphasis on prevention

Historically, P&O devices were prescribed to improve functioning of individuals with a disability. However, there is an increasing emphasis on prevention, rather than treatment, of disease or complications.<sup>50</sup> As a result, more devices that aim to prevent disability over the longer-term, rather than directly improving functioning will be prescribed. For devices that aim to improve functioning, the patient's needs and the device's benefits are often immediately evident. In contrast, for devices used to prevent disability, patients' needs may be less obvious and the device's benefits may not be evident until after a substantial period of use. This makes it more difficult to motivate patients to use the device.<sup>30</sup> An example: for a patient with diabetes and a lower limb amputation following an infected foot ulcer, the need for a prosthesis and benefit of its use are obvious. In contrast, for a patient at risk of such an ulcer, the need for and benefit of using pedorthic footwear to prevent foot ulcers can be less obvious, especially as sensory neuropathy can obscure symptoms from the patient.<sup>51</sup> This was illustrated in a study where only 5% of patients with sensory neuropathy and a foot ulcer history mentioned 'protection' as important for usability of their footwear.<sup>26</sup> For P&O devices to prevent disability, communication skills of P&O professionals need to include strategies to support patients' adherence to using the devices. A number of techniques have been used in the P&O field, for example, person-centred communication, shared decision-making and motivational interviewing,<sup>6,52</sup> but research on its effectiveness and implementation is very limited.

## Toolkit and research agenda

To facilitate progress in professional communication over the next 50 years, continuing professional education and additional research on this topic are crucial. Based on our experiences, we have created a toolkit with multiple resources for P&O professionals, P&O students and other interested professionals to use (Table 1). This toolkit contains reading material such as research papers, frameworks and position statements, in addition to ideas for training, teaching and improving professional communication.

The intention of this toolkit is not to remain a static table in this article. It is available as a word document in



**Table 1.** Communication toolkit.**Communication skills training**

Many courses on professional communication skills are available worldwide, based on a variety of theoretical frameworks or approaches. We list two of the most commonly used in medicine with an example of their application in the field of P&O. We also add the link to the training videos that we developed specifically for people working with pedorthic footwear.

Motivational interviewing	Evidence-based approach to communication that enhances motivation for functional behavioural change by helping people to resolve ambivalence. Developed by clinical psychologists Millner and Rollnick (1991, Guilford Press). Courses widely on offer worldwide. For a specific application in the field of P&O, see Keukenkamp et al., 2018: <a href="https://doi.org/10.7547/16-171">https://doi.org/10.7547/16-171</a> .
Shared decision-making	Healthcare professional and patient working together towards best healthcare choices, at the intersection between evidence-based medicine and person-centred communication. See for a classic paper Charles et al., 1997: <a href="https://doi.org/10.1016/s0277-9536(96)00221-3">https://doi.org/10.1016/s0277-9536(96)00221-3</a> . For a specific application in the field of P&O, see, for example, Quigley et al. (2018): <a href="https://doi.org/10.1177/0309364617752984">https://doi.org/10.1177/0309364617752984</a> .
Communication during footwear provision	To train healthcare professionals working in the field of pedorthic footwear, we created videos to be used for training professional communication skills. These videos are part of the book 'Pedorthic Footwear' (editor-in-chief: K. Postema). Specifically, background and guidance with the videos is given in Chapter 20 ('Do's and don't's in communication'; Van Netten et al.). These videos are made available for readers of this article on: <a href="https://www.berjalan.org/pfbook/pfbook-2-4/">https://www.berjalan.org/pfbook/pfbook-2-4/</a> . Use the password 'XAVGH' to access.

**Language guidelines**

Language is a key aspect in communication, both written and spoken. The words you choose have an impact, and it is therefore important to reflect on them. To guide healthcare professionals, multiple language guidelines are available. We list some commonly used guidelines here, or guidelines we find useful in our daily practice.

The bias free language guidelines from the American Psychological Association	<a href="https://apastyle.apa.org/style-grammar-guidelines/bias-free-language/disability">https://apastyle.apa.org/style-grammar-guidelines/bias-free-language/disability</a>
Guidelines on the use of language in diabetes care and education	<a href="https://care.diabetesjournals.org/content/early/2017/09/26/dci17-0041">https://care.diabetesjournals.org/content/early/2017/09/26/dci17-0041</a>
Consensus statement on the importance of language in obesity	<a href="https://pubmed.ncbi.nlm.nih.gov/32333880/">https://pubmed.ncbi.nlm.nih.gov/32333880/</a>
United Nations Gender inclusive language	<a href="https://www.un.org/en/gender-inclusive-language/guidelines.shtml">https://www.un.org/en/gender-inclusive-language/guidelines.shtml</a>
Disability-related language style guide	<a href="https://ncdj.org/style-guide/">https://ncdj.org/style-guide/</a> (National Center on Disability and Journalism) <a href="https://adata.org/factsheet/ADANN-writing">https://adata.org/factsheet/ADANN-writing</a> (Americans with Disability Act)
Guidelines on inclusive language	<a href="https://www.linguisticsociety.org/resource/guidelines-inclusive-language">https://www.linguisticsociety.org/resource/guidelines-inclusive-language</a> (Linguistic Society of America)

**Communication frameworks to help your practice**

Communication frameworks may help to see your communication in a bigger picture. This can be very broad (such as with the Pink Book or CLAS toolkit listed below) or specific (using ICF to communicate with colleagues, using the structured footwear provision elements). We list some we find helpful.

National Institute of Health – Clear Communication	<a href="http://www.nih.gov/clearcommunication">www.nih.gov/clearcommunication</a> (and the associated 'Pink Book': <a href="http://www.cancer.gov/publications/health-communication/pink-book.pdf">http://www.cancer.gov/publications/health-communication/pink-book.pdf</a> )
National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care	See: <a href="https://www.nih.gov/institutes-nih/nih-office-director/office-communications-public-liaison/clear-communication/cultural-respect">https://www.nih.gov/institutes-nih/nih-office-director/office-communications-public-liaison/clear-communication/cultural-respect</a> With a toolkit available here: <a href="https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/CLAS-Toolkit-12-7-16.pdf">https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/CLAS-Toolkit-12-7-16.pdf</a>
Clear Communication Index	<a href="https://www.cdc.gov/ccindex/">https://www.cdc.gov/ccindex/</a> (Centers for Disease Control and Prevention)
Using the ICF framework for professional communication	See special issue in Prosthetics and Orthotics International: <a href="https://journals.sagepub.com/toc/poia/35/3">https://journals.sagepub.com/toc/poia/35/3</a> Also see Jarl and Ramstrand, 2018: <a href="https://doi.org/10.1177/0309364617729925">https://doi.org/10.1177/0309364617729925</a> Van Netten et al., 2017: <a href="https://doi.org/10.1177/0309364616650080">https://doi.org/10.1177/0309364616650080</a>
Structured footwear provision elements	

**Relevant research papers on professional communication in healthcare**

Below is a list of research papers we found useful, when writing this article and when reflecting on communication-related findings in our studies. These articles all come from the more general literature on medical communication. This list below is not meant to be exhaustive or complete, so please add more when you use this toolkit.

(Continued)

Table 1. (Continued)

- De Haes H, Bensing J. Endpoints in medical communication research, proposing a framework of functions and outcomes. *Patient Educ Couns* 2009;74(3):287–294.
- Duffy FD, Gordon GH, Whelan G, et al. Assessing competence in communication and interpersonal skills: the Kalamazoo II report. *Acad Med* 2004;79(6):495–507.
- Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Acad Med* 2001;76(4):390–393.
- Rees S, Williams A. Promoting and Supporting Self-Management for Adults Living in the Community With Physical Chronic Illness: A Systematic Review of the Effectiveness and Meaningfulness of the Patient-Practitioner Encounter. *JBI Libr Syst Rev* 2009;7(13):492–582.
- Street RL Jr. Information-giving in medical consultations: the influence of patients' communicative styles and personal characteristics. *Soc Sci Med* 1991;32(5):541–548.
- Street RL Jr, Makoul G, Arora NK, Epstein RM. How does communication heal? Pathways linking clinician-patient communication to health outcomes. *Patient Educ Couns* 2009;74(3):295–301.
- Street Jr RL, De Haes HC. Designing a Curriculum for Communication Skills Training From a Theory and Evidence-Based Perspective. *Patient Educ Couns* 2013;93(1):27–33.
- Street RL. How Clinician-Patient Communication Contributes to Health Improvement: Modelling Pathways From Talk to Outcome. *Patient Educ Couns* 2013;92(3):286–291.
- Van Dulmen S, Sluijs E, van Dijk L, et al. Patient adherence to medical treatment: a review of reviews. *BMC Health Serv Res* 2007;7:55.
- Van Dulmen S, Sluijs E, van Dijk L, et al. Furthering patient adherence: a position paper of the international expert forum on patient adherence based on an internet forum discussion. *BMC Health Serv Res* 2008;8:47.

Table 1, to be used and extended. We hope it will inspire others to implement it in daily practice, in P&O programmes at universities or schools, in professional courses or conferences, or anywhere else. We further hope others will extend this toolkit by adding resources, and sharing these via social media.

As a research agenda, we strongly recommend undertaking research on interventions to improve professional communication, and to study its effect on clinically meaningful outcomes. It is important for these studies to clearly define and describe the intervention to allow replication, and to use predefined outcomes at predefined immediate, intermediate or longer-term time points.<sup>31</sup> Interventions may concern training professionals in using models or frameworks to facilitate communication, training professionals in specific communication techniques, developing and using visualization aids or other communication tools, testing educational interventions and many more.

## Conclusion

Professional communication was regarded as a key area in the P&O programme Fishman described in this journal in 1977,<sup>3</sup> and that is still the case. However, the lack of research on this topic stands in the way of evidence-based professional communication in P&O. Professional communication remains a skill taught and refined based on expert opinion. While we celebrate 50 years of the *International Society of Prosthetics and Orthotics*, we hope the society's journal will receive many gifts in the years to come in the form of high-quality studies on this topic, to progress the field and to improve outcomes for people who rely on P&O professionals.

## Author Contributions

All authors contributed equally in the preparation of this manuscript. JJvN wrote the first and last section, made Table 1, and performed the search. GJ wrote the second section, KP wrote Box 1, AEW wrote Box 2. All authors critically reflected on sections written by others, and added to these. JJvN is the guarantor of the work.


## Declaration of Conflicting Interests

The author(s) disclosed no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

## Funding

The author(s) disclosed that they received no financial support for the research, authorship and/or publication of this article.

## ORCID iDs

Jaap J Van Netten  <https://orcid.org/0000-0002-6420-6046>

Gustav Jarl  <https://orcid.org/0000-0002-6410-2474>

## References

1. Kipling R. Speech delivered for the Royal College of surgeons. *The Times*, 15 February 1923.
2. Dumbledore A. *Harry Potter and the deathly hallows* (Movie, part 2), 2011.
3. Fishman S. Education in prosthetics and orthotics. *Prosthet Orthot Int* 1977; 1: 52–55.
4. Merriam Webster Dictionary. Communication, <https://www.merriam-webster.com/dictionary/communication> (2020, accessed 19 June 2020).
5. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Acad Med* 2001; 76: 390–393.

6. Van Netten JJ, Francis A, Morphet A, et al. Communication techniques for improved acceptance and adherence with therapeutic footwear. *Prosthet Orthot Int* 2017; 41: 201–204.
7. Hermansson LM. Structured training of children fitted with myoelectric prostheses. *Prosthet Orthot Int* 1991; 15: 88–92.
8. Fatone S, Johnson WB, Tran L, et al. Quantification of rectifications for the Northwestern University Flexible Sub-Ischial Vacuum Socket. *Prosthet Orthot Int* 2017; 41: 251–257.
9. Jarl G and Ramstrand N. A model to facilitate implementation of the International Classification of Functioning, Disability and Health into prosthetics and orthotics. *Prosthet Orthot Int* 2018; 42: 468–475.
10. Gailey R, Kristal A, Lucarevic J, et al. The development and internal consistency of the comprehensive lower limb amputee socket survey in active lower limb amputees. *Prosthet Orthot Int* 2019; 43: 80–87.
11. DeZeeuw KG and Dudek N. Orthosis comfort score: establishing initial evidence of reliability and validity in ankle foot orthosis users. *Prosthet Orthot Int* 2019; 43: 478–484.
12. Aminian G and O'Toole JM. Undergraduate prosthetics and orthotics programme objectives: a baseline for international comparison and curricular development. *Prosthet Orthot Int* 2011; 35: 445–450.
13. Kobayashi T, Orendurff MS and Boone DA. Dynamic alignment of transtibial prostheses through visualization of socket reaction moments. *Prosthet Orthot Int* 2015; 39: 512–516.
14. Mackenzie RL, Murphy G, Balasundaram AP, et al. An exploration of role expectations of the clinical prosthetist. *Prosthet Orthot Int* 2020; 44: 10–17.
15. Beaumont-White S and Ham RO. Powered wheelchairs: are we enabling or disabling? *Prosthet Orthot Int* 1997; 21: 62–73.
16. Christensen B, Ellegaard B, Bretler U, et al. The effect of prosthetic rehabilitation in lower limb amputees. *Prosthet Orthot Int* 1995; 19: 46–52.
17. International Society for Prosthetics and Orthotics. ISPO education standards for prosthetic/orthotic occupations, <https://www.ispoint.org/page/EducationStandards2> (2018, accessed 19 June 2020).
18. Van Netten JJ, Jannink MJ, Hijmans JM, et al. Patients' expectations and actual use of custom-made orthopaedic shoes. *Clin Rehabil* 2010; 24: 919–927.
19. Van Netten JJ, Jannink MJ, Hijmans JM, et al. Long-term use of custom-made orthopedic shoes: 1.5-year follow-up study. *J Rehabil Res Dev* 2010; 47: 643–649.
20. Postema K, Schott KH, Jannisse D, et al. *Pedorthic footwear: assessment and treatment*. 1st ed. Foundation Berjalan, the Netherlands: Weerselo, 2018.
21. Williams AE and Graham AS. 'My feet—visible, but ignored...'. A qualitative study of foot care for people with rheumatoid arthritis. *Clin Rehabil* 2012; 26: 952–959.
22. Williams AE, Nester CJ and Ravey MI. Rheumatoid arthritis patients' experiences of wearing therapeutic footwear – a qualitative investigation. *BMC Musculoskelet Disord* 2007; 8: 104.
23. Williams A and Meacher K. Shoes in the cupboard: the fate of prescribed footwear? *Prosthet Orthot Int* 2001; 25: 53–59.
24. Bowker P, Rocca E, Arnell P, et al. *A study of the organisation of orthotic services in England and Wales*. Salford: University of Salford, 1992.
25. Jannink MJ, Ijzerman MJ, Groothuis-Oudshoorn K, et al. Use of orthopedic shoes in patients with degenerative disorders of the foot. *Arch Phys Med Rehabil* 2005; 86: 687–692.
26. Arts ML, de Haart M, Bus SA, et al. Perceived usability and use of custom-made footwear in diabetic patients at high risk for foot ulceration. *J Rehabil Med* 2014; 46: 357–362.
27. Jarl G, Alnemo J, Tranberg R, et al. Gender differences in attitudes and attributes of people using therapeutic shoes for diabetic foot complications. *J Foot Ankle Res* 2019; 12: 21.
28. Williams AE, Nester CJ, Ravey MI, et al. Women's experiences of wearing therapeutic footwear in three European countries. *J Foot Ankle Res* 2010; 3: 23.
29. Van Netten JJ, Dijkstra PU, Geertzen JH, et al. What influences a patient's decision to use custom-made orthopaedic shoes? *BMC Musculoskelet Disord* 2012; 13: 92.
30. Paton JS, Roberts A, Bruce GK, et al. Patients' experience of therapeutic footwear whilst living at risk of neuropathic diabetic foot ulceration: an interpretative phenomenological analysis (IPA). *J Foot Ankle Res* 2014; 7: 16.
31. De Haes H and Bensing J. Endpoints in medical communication research, proposing a framework of functions and outcomes. *Patient Educ Couns* 2009; 74: 287–294.
32. Van Dulmen S, Sluijs E, van Dijk L, et al. Patient adherence to medical treatment: a review of reviews. *BMC Health Serv Res* 2007; 7: 55.
33. Van Dulmen S, Sluijs E, van Dijk L, et al. Furthering patient adherence: a position paper of the international expert forum on patient adherence based on an internet forum discussion. *BMC Health Serv Res* 2008; 8: 47.
34. Street RL Jr, Makoul G, Arora NK, et al. How does communication heal? Pathways linking clinician-patient communication to health outcomes. *Patient Educ Couns* 2009; 74: 295–301.
35. Duffy FD, Gordon GH, Whelan G, et al. Assessing competence in communication and interpersonal skills: the Kalamazoo II report. *Acad Med* 2004; 79: 495–507.
36. Street RL Jr. Information-giving in medical consultations: the influence of patients' communicative styles and personal characteristics. *Soc Sci Med* 1991; 32: 541–548.
37. World Health Organization. Ageing and health, <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health> (2018, accessed 19 June 2020).
38. De Laat FA, van Heerebeek B and van Netten JJ. Advantages and disadvantages of interdisciplinary consultation in the prescription of assistive technologies for mobility limitations. *Disabil Rehabil Assist Technol* 2019; 14: 386–390.
39. World Health Organization. *International classification of functioning, disability and health: ICF*. Geneva: World Health Organization, 2001.
40. Kohler F, Cieza A, Stucki G, et al. Developing core sets for persons following amputation based on the International Classification of Functioning, Disability and Health as a way to specify functioning. *Prosthet Orthot Int* 2009; 33: 117–129.

41. Brehm M, Bus SA, Harlaar J, et al. A candidate core set of outcome measures based on the International Classification of Functioning, Disability and Health for clinical studies on lower limb orthoses. *Prosthet Orthot Int* 2011; 35: 269–277.
42. Heerkens Y, Bougie T and Claus E. The use of the ICF in the process of supplying assistive products: discussion paper based on the experience using a general Dutch prescription guideline. *Prosthet Orthot Int* 2011; 35: 310–317.
43. Prosthetics and Orthotics International. Special issue: International Classification of Functioning, Disability and Health. *Prosthet Orthot Int* 2011; 35, <https://journals.sagepub.com/toc/poia/35/3> (2011, accessed 19 June 2020).
44. Magnusson L and Ahlstrom G. Experiences of providing prosthetic and orthotic services in Sierra Leone – the local staff's perspective. *Disabil Rehabil* 2012; 34: 2111–2118.
45. Andregard E and Magnusson L. Experiences of attitudes in Sierra Leone from the perspective of people with polio-myelitis and amputations using orthotics and prosthetics. *Disabil Rehabil* 2017; 39: 2619–2625.
46. Hjelm K, Nyberg P, Isacson A, et al. Beliefs about health and illness essential for self-care practice: a comparison of migrant Yugoslavian and Swedish diabetic females. *J Adv Nurs* 1999; 30: 1147–1159.
47. Hjelm K and Apelqvist J. Influence of beliefs about health and illness on self-care and care-seeking in foreign-born people with diabetic foot ulcers: dissimilarities related to origin. *J Wound Care* 2016; 25: 602–616.
48. Gerzeli S, Torbica A and Fattore G. Cost utility analysis of knee prosthesis with complete microprocessor control (C-leg) compared with mechanical technology in trans-femoral amputees. *Eur J Health Econ* 2009; 10: 47–55.
49. Kernick DP. Introduction to health economics for the medical practitioner. *Postgrad Med J* 2003; 79: 147–150.
50. Bus SA and van Netten JJ. A shift in priority in diabetic foot care and research: 75% of foot ulcers are preventable. *Diabetes Metab Res Rev* 2016; 32: 195–200.
51. Boulton AJ. Diabetic neuropathy: is pain God's greatest gift to mankind? *Semin Vasc Surg* 2012; 25: 61–65.
52. Keukenkamp R, Merckx MJ, Busch-Westbroek TE, et al. An explorative study on the efficacy and feasibility of the use of motivational interviewing to improve footwear adherence in persons with diabetes at high risk for foot ulceration. *J Am Podiatr Med Assoc* 2018; 108: 90–99.