# Chapter 7
# Ethical Considerations in Prosthetics and Orthotics

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## ABSTRACT

*This chapter introduces the field of advanced technology within the orthotics and prosthetics profession, a healthcare profession that combines technology and engineering science with medical and health science to produce medical devices (orthoses and prostheses) to treat medical conditions that cause physical dysfunction. The chapter sets the background to the ethical dilemmas that are encountered within the field, which technologically advanced devices cause such dilemmas and why, and then discusses the ethical dilemmas as encountered by the three stakeholders within the profession, namely the manufacturers/innovators, the prosthetic and orthotic practitioners, and the users of the devices themselves, the patients. In conclusion, the chapter looks at some solutions and recommendations to overcome or at least reduce these dilemmas.*

## INTRODUCTION

Orthotics and prosthetics is a field in medicine, healthcare and rehabilitation that combines knowledge of medical and health sciences with engineering and technology to treat a particular medical condition which causes physical dysfunction. The International Society for Prosthetics and Orthotics ([ISPO], n.d.) defines prosthetics and orthotics as those specialties within the field of healthcare technology concerned with the design, manufacture and application of prostheses and orthoses. Prostheses are externally applied devices used to replace, wholly or in part, absent or deficient

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limb segments, while orthoses are externally applied devices used to modify the structural and functional characteristics of the neuromuscular and skeletal system.

Prosthetists and orthotists are those healthcare professionals (clinicians or practitioners) responsible for evaluating a patient's specific functional and cosmetic needs, designing the prosthesis/orthosis and selecting the appropriate components, taking all the necessary measurements, fabricating, fitting, including evaluating the function of the device, and educating the patient on the appropriate use and care of the device (Nielsen & Jorge, 2013).

Since orthotic and prosthetic science incorporates knowledge of both medicine and engineering science, technology plays a major role in the delivery of such services; and since technology contributes to the provision of these services, innovation is continuous, hence the ethical questions arise: who is entitled to such services? Which devices may be supplied to service users? Is this a service where only the elite will get the best that technology has to offer, or is everyone "deserving" of the most advanced technology? When designing innovative products, are principles of best practice being implemented? What impact and consequences are innovations within the prosthetic and orthotic industry having on communities?

This chapter will discuss the above questions, so that, by the end, the reader may become more aware of the ethical problems and dilemmas that technological advances within the field of orthotics and prosthetics pose to health services providers, sometimes on a daily basis. This may also prompt the reader to reflect on ways to reach out to more people who are in need of these services, giving them more opportunities to use technologically advanced devices.

The author is an orthotist/prosthetist who has been practising for 25 years; therefore, most of the statements, thoughts and opinions making up this chapter are mainly the personal experience of the author, supported, where possible, by references from the literature.

## BACKGROUND

On the frontline of the orthotics and prosthetics industry are the orthotists and prosthetists; these are the healthcare professionals, allied to medicine, who, on a daily basis, are faced with patients who are in need of their services.

Prosthetists and orthotists work within the medical and health sector, but they are very much unique in how they practise their profession, as compared to other professions allied to medicine, such as physiotherapists, occupational therapists or podiatrists, in that after they perform their initial assessment of the patient, and the patient's functional and aesthetic needs have been established, prosthetists and