A Global and Collaborative Ecosystem for Neurotechnology Integration: A Multi-Stakeholder Initiative for Clinicians, Researchers and Manufacturers.

Marriott, L[1]. Hamilton, T[2,3]. Martinet, P[2,3]. Wilks, M[4]. Watt, A[1].

[1] Hobbs Rehabilitation, UK [2] Australian Institute of Neuro-rehabilitation, Australia [3] Perron Institute for Neurological and Translational Science, Australia [4] Sheltering Arms Institute, Richmond, USA

email: lauramarriott@hobbsrehabilitation.co.uk

Introduction

Neurotechnology has the potential to transform patient care, yet its complexity poses a challenge for clinicians who are striving to keep pace with, and contribute towards, rapid advancements in the field[1]. This knowledge gap, combined with a scarcity of evidence for decision making [2] and limited access to quality education, contributes towards poor adoption of neurotechnology in neurorehabilitation. Research highlights that more intensive therapy yields better results, but the lack of clear education and clinical guidelines for neurotechnology application means that current doses of therapy can often be inadequate, resulting in suboptimal patient outcomes.

Aims

This project aims to establish a collaborative ecosystem that bridges the gap between clinicians, researchers, and neurotechnology manufacturers. The initiative focuses on:

- Promoting collaboration to integrate neurotechnology into clinical practice through bespoke education materials.
- Enhancing clinicians' understanding of neurotechnology applications using e-learning platforms, case studies and practical study days.
- Developing real-world solutions that benefit patients, healthcare professionals, and manufacturers through a problem solving approach along the entire continuum.
- Supporting the creation of global clinical guidelines for neurotechnology use in rehabilitation based on real world data from clinician feedback and a record of outcomes.

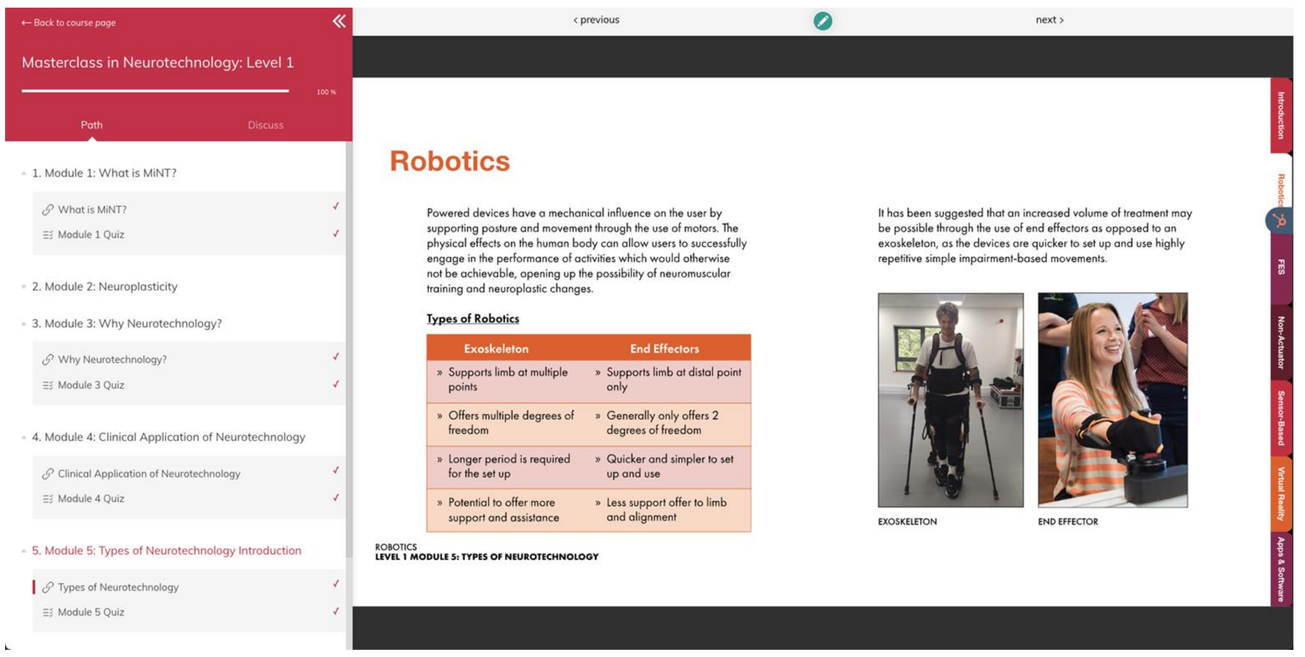


Fig 2. *MiNT Level 1 Module 5: Types of Neurotechnology* (Image source: themintacademy.co.uk)



Fig 1. *Clinical Consultancy hosted by The MiNT Academy at Hobbs Rehabilitation, Bristol*

Methods

- **Ecosystem Development:** The collaborative ecosystem will be created through an ongoing partnership of workshops between experts in the field including peer review, formal data analysis and external validation of created materials. Design a structured framework for collaboration, drawing from an existing UK-based model.
- **Clinical Education Pathway:** Establish a targeted training program on neurotechnology applications aligned with patient-centred goals based on the International Classification of Functioning, Disability, and Health (ICF), and delivered through an accessible e-learning Platform (The MiNT Academy), progressing clinicians through an organic learning journey specific to the neurotechnology they are utilising.
- **Data Utilisation:** Leverage real-world data to track outcomes, inform research, and improve device adoption through a clinical reflection and data gathering Logbook. Information will be used to formulate trends in device use and pathologies in relation to ICF goals.
- **Stakeholder Engagement:** Foster partnerships among clinicians, researchers, and manufacturers to drive appropriate innovation and optimise efficient neurotechnology use in healthcare settings.

Conclusion

By creating a collaborative ecosystem, this initiative will:

- Enhance clinicians' ability to integrate neurotechnology seamlessly and confidently into rehabilitation.
- Improve measurable patient outcomes through informed clinical practice and higher treatment intensity.
- Accelerate the adoption of neurotechnology, fostering innovation in rehabilitation science with clinical consultancy partnerships.
- Provide a scalable model for global healthcare systems, leading to standardized clinical guidelines and best practices.

This initiative will empower stakeholders to build effective partnerships, ensuring neurotechnology is utilised to its full potential for improving patient care worldwide.

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[2] Ming J, He Y, Yang Y, Hu M, Zhao X, Liu J, Xie Y, Wei Y, Chen Y. Health technology assessment of medical devices: current landscape, challenges, and a way forward. Cost Eff Resour Alloc. 2022 Oct 5;20(1):54. doi: 10.1186/s12962-022-00389-6. PMID: 36199144 PMCID: PMC9533595.