

Dr. Rickard Brånemark, MSc, MD, PhD

Current Affiliations:

Research Affiliate: K. Lisa Yang Center for Bionics, MIT; Cambridge, MA, USA.

Associate professor: Department of Orthopaedics, Gothenburg University, Sweden.

Honorary surgeon, Ukraine Armed Forces

Founder and board member: Integrum AB; Mölndal, Sweden.

Dr. Rickard Brånemark is an orthopedic surgeon and a leading global authority on orthopedic osseointegration and advanced amputee care. With a career dedicated to the biomechanical and biological integration of skeletal implants, he has pioneered the transition from traditional mechanical prosthetics to neurally integrated bionic systems. A central figure in the clinical application of bone-anchored limb reconstruction, Dr. Brånemark served as the lead surgeon for the historic 2013 team that treated the first patient with an above-elbow amputation using a neurally integrated bionic limb prosthesis. This work—integrating percutaneous osseointegrated implants with implanted muscle and nerve electrodes—enabled the first successful long-term use of a mind-controlled prosthesis with sensory feedback. This milestone was the subject of his landmark 2020 study published in the *New England Journal of Medicine*.

Dr. Brånemark's research and surgical innovations have been recognized with several of the most prestigious honors in the field, including:

- The Hanger Prize (2007) for outstanding contributions to amputee treatment.
- The UCSF Presidential Chair Award (2016) for leadership in orthopedic innovation.
- The Brian and Joyce Blatchford Prize (2017) for clinical excellence in prosthetics.
- The Per Uddén Prize (2017) for the development of osseointegrated implants that significantly improve function and mobility.
- The Henry Wallman Prize (2019) for excellence in translational medical research.

He has published more than 100 scientific peer-reviewed papers on biomechanics, interface analysis, and long-term clinical outcomes. In addition to his academic research, he founded the technology platform that transitioned these surgical innovations into regulated medical devices. Dr. Brånemark is also deeply committed to humanitarian work, having traveled multiple times to Ukraine to provide specialized surgical care to war victims with complex amputations.

Bionic Limb Reconstructions

Bionic limb reconstruction represents the clinical evolution of osseointegration from dental rehabilitation to complex orthopedic anchorage. This progression relies on foundational biomaterials research on stable skeletal interface and load-bearing dynamics. Bionic limb reconstructions integrate percutaneous osseointegrated implants with implanted muscle and nerve electrodes, transitioning from passive mechanical attachment to mind-controlled systems with sensory feedback. Novel biological constructs can improve the way we use mind control systems to interact with the brain in a natural way.

