

Barrett's history



Bill Townsend

Barrett Founder & CEO

Pictured here in 1987, Bill co-invented (US Patent# 5,193,963) the precursor to Burt®.

Photo courtesy NASA Jet Propulsion Laboratory.

The origins of Burt® and Barrett Technology begin with Bill's pursuit of his PhD at the Massachusetts Institute of Technology Artificial Intelligence Laboratory (now called MIT CSAIL), funded in part by NASA. While there, Bill was initially discouraged from designing a robot intended to interact with people because of the perceived generic danger posed by robots, which were all industrial at the time. Bill felt that by applying thoughtful design and human factors, such as natural backdrivability, a robot could be built whose benefits far outweighed any risk. Bill proved the naysayers wrong and built the world's most advanced[†] (WAM®) robotic Arm.

Bill founded Barrett in 1988 and licensed his technology to MAKO Surgical (now a division of Stryker Medical) for use in their haptically-guided surgical robots. SensAble Technologies also licensed Bill's technology to develop the first desktop haptic device, called the PhanTom.

Barrett was first pulled into the field of neuro-rehabilitation in the early 2000s when the Rehabilitation Institute of Chicago (RIC, and now called the Shirley Ryan AbilityLab) purchased a WAM® Arm and then adapted the arm for rehabilitation for recovery from stroke and traumatic brain injury (TBI). Around the same time, Barrett received similar orders from Korea and China for the same purpose.

This convinced Barrett to develop a purpose-built rehabilitation arm in the 2010s that was initially called Proficio® and later renamed simply Burt®. Assisted by the Shirley Ryan AbilityLab and Spaulding Rehabilitation Hospital, Barrett worked diligently to make Burt the greatest, easiest to use rehabilitation robot in the world. Thus far, Burt has been an incredible success, with systems sold all across the United States and internationally.

[†] Guinness World Records, Millennium Edition, pp170-171.

Are robotic modalities valuable in therapy?

RESEARCH SAYS YES

Robots are showing a **positive impact on the effectiveness of functional motor tasks** since the robot improves upper-extremity therapy through a three-dimensional space.

-Veldes 2020

Robotic tools offer patients **various forms of feedback** (visual, auditory, haptic).

-Duret 2019

Patients receiving robot-assisted therapy, as compared with those receiving usual care, **had significant improvement in motor function and social participation** at 12 weeks, as measured on the Stroke Impact Scale.

-Lo 2010

Robots can haptically assess sensorimotor performance, administer training, quantify the amount of training, and **improve motor recovery**.

-Reikensmeyer 2004

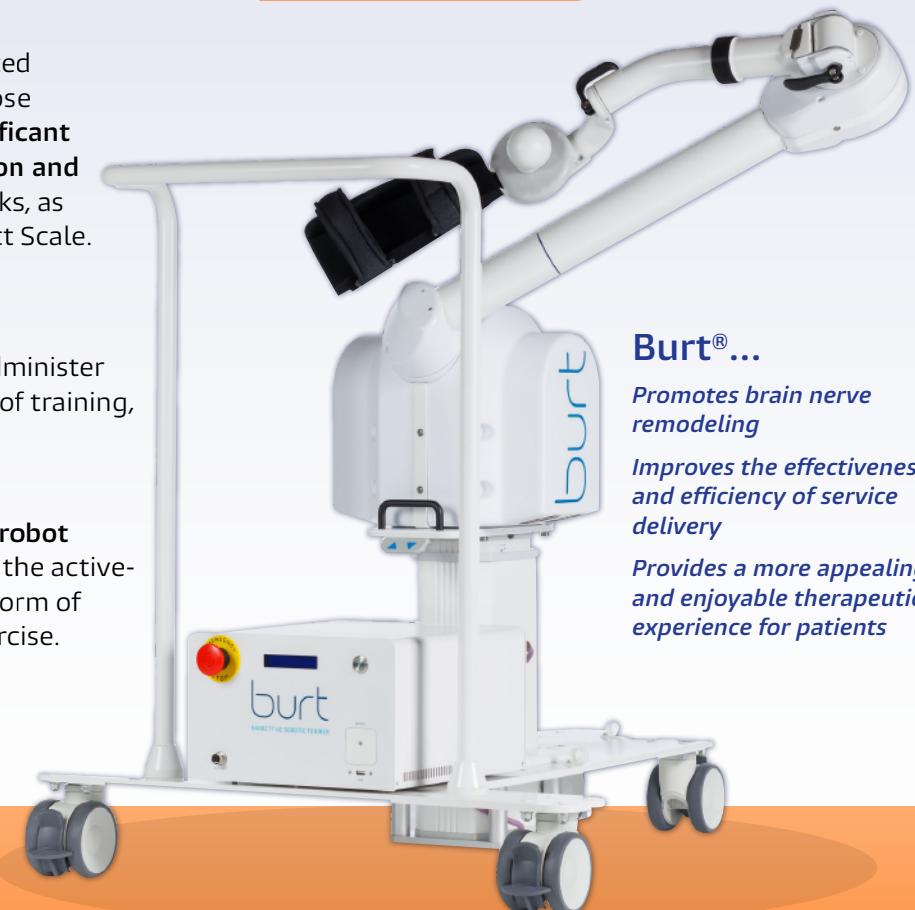
Greater strength gains in the robot group could have been due to the active-constrained mode, which is a form of maximal-effort resistance exercise.

-Lum 2002

burt
®

Barrett Upper-extremity Robotic Trainer

CREATED BY



Burt®...

Promotes brain nerve remodeling

Improves the effectiveness and efficiency of service delivery

Provides a more appealing and enjoyable therapeutic experience for patients



medical.barrett.com

Document M1687 Rev AE

This is Burt® >>>



Burt® will change the way your therapy gym works

Burt® is an upper-limb therapy robot. It allows a patient to float weightlessly on a cushion of air with Barrett's GravityCradle™ supporting the patient while applying gentle forces to resist, assist, give subtle queues, and paint a realistic game/activities environment that matches what is visually projected in front of them.

The motorized Burt® can handle patients at all stages of recovery, but is especially effective with the most challenging cases. And because Burt® is run by a computer, you can apply computerized assessments for range-of-motion and strength resulting in on-screen reports that can be saved as PDFs, documenting improvements over time.

Burt® is the most indispensable tool for the therapist who wants the best for their patients.

The User Friendly Robot

For programs looking to have the “just right fit” that increases repetitions, keeps patients engaged, tangibly tracks progress all while maximizing therapy time, Burt® is an essential addition to your therapy gym!

How Burt® is Better

- **Easy set up** (less than 1 minute)
- Quick 30-second **left/right handedness swapping**
- **Patient safety** ensured by Burt® system's frictionless backdrivability in all 3 planes
- **Therapist safety** ensured by letting Burt® support the load so you can drive patient recovery; OTs otherwise suffer 3X[‡] more injuries than their peers
- Graded to **full gravity support** over a **huge workspace**
- **Multiple therapy modes**—graded support, robotic assistance/resistance, and locking planes
- **Gaming software leveraging cognitive rehabilitation strategies** to work on attention, memory, and visual neglect
- **3 planes of upper extremity facilitation**—transverse, sagittal, and frontal
- **Facilitate faster consistent treatment** leading to better recovery
- Burt® is your **nexus** to patient goals and recovery
- **18 activities**, including **assessments** and the **LaundryLoader™ IADL** (with more in development), to drive repetition and track outcomes



www.bls.gov/iif/nonfatal-injuries-and-illnesses-tables/case-and-demographic-characteristics-table-r100-2020.htm

Who is Burt® good for?



ANY PATIENT DEMONSTRATING...

- Limited upper-extremity volitional movement or sensory deficit
- Impaired proprioception
- Decreased proximal trunk control and stability
- General physical debility

Other good candidates for Burt® include those patients who will benefit from increased therapeutic activity engagement and cognitive challenges to improve processing and discrimination.

BURT® BENEFITS SEVERAL DIAGNOSES...

▪ Stroke	▪ Cerebral palsy
▪ Brain injury	▪ Peripheral neuropathy
▪ Spinal-cord injury	▪ Central-cord syndrome
▪ Multiple sclerosis	▪ Upper-motor neuron lesions
▪ Parkinson's disease	▪ Osteoarthritis
▪ Brachial plexus injuries	▪ Joint replacement

Designed and Assembled in the USA.

Barrett Medical

div Barrett Technology LLC

320 Nevada Street
Ground Floor, Building Rear
Newton, MA 02460

medical.barrett.com
617-252-9000

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