

PARO Therapeutic Robots



PARO

The PARO neurological therapeutic robot is an **FDA Class II Medical Device** that is classified as biofeedback equipment. It provides psychological, physiological and social effects to human beings through physical, social, and verbal interaction similar to animal or pet interaction.

Dr. Sandra Peterson of UT Tyler documented hoped for, but unexpected neuroplasticity results in her PARO treatment research.

"Belle," normally sat, staring in silence. She did not usually speak. During her first therapy with PARO, "Belle" cried and hugged the robotic seal. Dr Peterson and the staff were pleased because any emotional reaction was progress. The second session with PARO was even more astounding. "Belle" began talking to PARO and then started talking to the nurse. The staff immediately contacted her family and her daughter rushed to the facility in disbelief. It was the first time "Belle's" daughter had heard her mother speak in 12 years.

Robot Therapy

The results of multiple clinical trials (including Randomized Control Trials) have shown the following desirable therapeutic effects using PARO:

- **Psychological** — relaxation, motivation, lower anxiety, positive mood, better quality of life, more positive verbal communications, attentive engagement.
- **Physiological effect** — calming (increase oxytocin), lower blood pressure, reduction of pharmacological interventions.
- **Social effect** — spontaneous talking to PARO, group conversation and shared enjoyment of PARO between patients and with care giver or therapist.

PARO can be introduced to UK hospital wards after research addresses infection control concerns.

Dr Dodds said: "There are similarities to pet therapy, but PARO does not carry the user bias of a cat or dog and is easier to supervise. Unlike animals, PARO always behaves, has rechargeable batteries, is always available and lasts as long as a pet. The most important aspect is the improvement PARO brings to patients' quality of life."

About PARO

PARO is in the 9th generation of development and has been used in Japan and throughout Europe since 2003. PARO was intentionally designed to look like a baby harp seal, an animal not familiar to most users. People can accept PARO more easily with little expectation of natural behaviors. PARO has artificial antibiotic fur that covers a hard inner body which holds the computer to control proprietary software to generate PARO's animal-like behavior. The built-in AI of PARO simulates believable physical behaviors to mimic animal and human interactions.

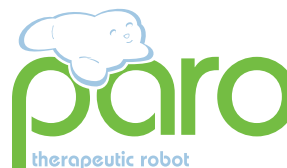
How PARO works

PARO has touch, light, sound, temperature, and posture sensors, so it can perceive people and its environment. PARO detects petting versus hitting or poking by its touch sensors and can make positive or negative responses. With the light sensor, PARO recognizes changes in light, like when someone walks in front of it. Posture sensors allow PARO to react positively to a hug or negatively to being on its back. Repeated sounds can also be recognized for direction and even a name or greeting can cause a response. PARO can learn to behave in a way that the user prefers, and to respond to a new name. For example, if you stroke it every time you touch it PARO will remember your previous action and try to repeat that action to be stroked. If you hit it, PARO remembers its previous actions and tries not to repeat that action. By interacting with PARO, people may be amused, relaxed, entertained,

distracted and motivated, and as a result, it can help to initiate a therapeutic result and a more positive emotional state.

PARO users throughout the World include adult, senior citizen and child users that live in apartments or housing that does not allow animal companions. It is also being used for treating adult and child patients in care facilities like hospitals, special needs schools, nursing homes, clinical practices and other assisted living or long-term care. PARO has also been used in Post-Traumatic Stress Disorder (PTSD) management and coping therapies when service animals are not practical.

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PARO Robots US, Inc
150 East Pierce Road, Suite 550
Itasca, IL 60143
Direct: (847) 435-9882
Office: (847) 241-6692
www.parorobots.com
sales@parorobots.com

