BTS NIRVANA

Virtual Reality system for the rehabilitation in patients affected by neuromotor pathologies

BTS Bioengineering

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Virtual Reality system for the rehabilitation in patients affected by neuromotor pathologies

BTS NIRVANA is an innovative therapeutic system aiding the rehabilitation process of patients affected by neuro-motor diseases by multisensorial stimulation.

The system offers a set of exercises for trunk, upper and lower limbs. The motor exercises are changed into an interactional tool with virtual scenes. All the exercises provide visual and audio feedback that increase the patient motivation.

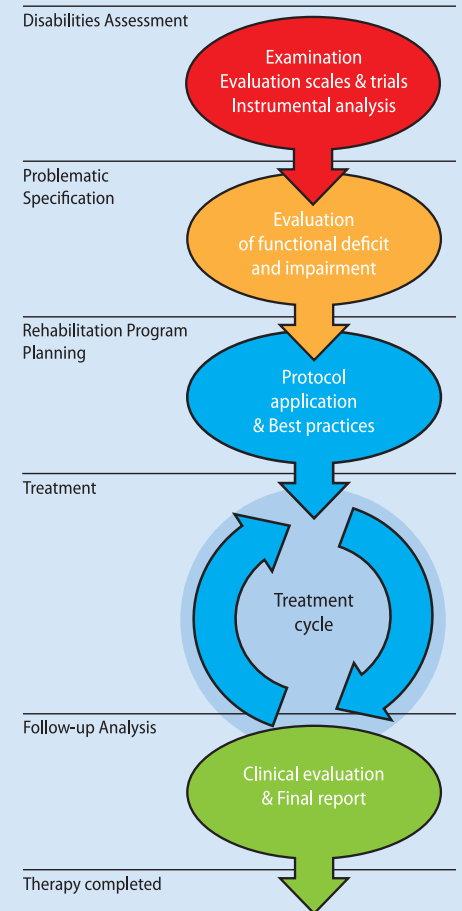**An innovative system for motivational therapeutic approach**
BTS NIRVANA is the first markerless system based on optoelectronic infrared sensors, with whom the patient can interact simply through his movement.
Each exercise is characterized by several modalities and incremental levels of difficulty,

so the therapist can use different rehabilitative solutions that are pre-defined or he can create new ones, accordingly to the patient requirements.

An essential support for rehabilitation centers
BTS NIRVANA can easily fit into the everyday processes of any rehabilitation center, actually improving any physical therapy process, and enrich its technologic equip offer.

Disabilities Assessment
- Examination
Evaluation scales & trials
Instrumental analysis

Problematic Specification
- Evaluation of functional deficit and impairment

Rehabilitation Program Planning
- Protocol application & Best practices

Treatment
- Treatment cycle

Follow-up Analysis
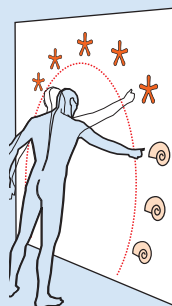- Clinical evaluation & Final report

Therapy completed

Exercise typologies and software features

BTS NIRVANA rehabilitation protocols (developed by Ospedale Valduce - Villa Beretta, Costamasnaga, Italy), define virtual reality settings for exercise programs, aimed at neuromotor re-education.

These are particularly useful in patients presenting attentive and motor problems resulting from:
- Sub acute stroke
- Traumatic brain injuries
- Parkinson's disease
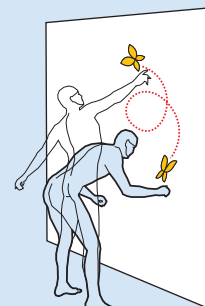- Multiple sclerosis
- Paraparesis
- Peripheral nerve damage.

1

Sprites
In the "Sprites" typology the patient is required to perform specific movements aimed at reaching, touching or grabbing a series of objects.
By interacting with the projection, the patient activates some visual or audio feedback.
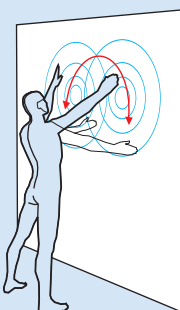
2

Follow me
The "Follow me" typology exerts the online motor control.
It includes exercises based on following one or few objects that are moving over the projection plane. Some exercises require additional specific movements once the object has been reached.

3

Motion
The "Motion" typology includes exercises focused on movement quantity.
The patient is motivated to cover the widest possible projection surface (i.e. sweeping out the objects) or, on the contrary, he is motivated to keep a certain still position to exert the limb and trunk control.
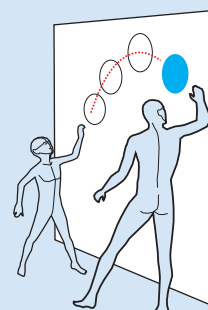
4

Hunt
This "Hunt" category includes exercises requiring the patient to reach objects that appear, with random order and for a limited time, on the projection surface. If the patient succeeds in hitting the target he activates a visual transformation and an audio feedback; otherwise, the object disappears.
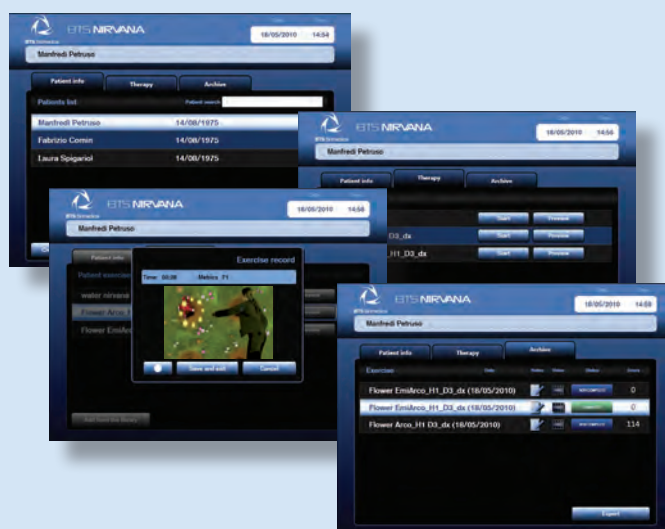
5

Games
The "Games" typology includes a library of effects that can be used by the therapist to define new exercises, personalized on the patients requirements. The effect listed allows one or more patients to interact each other by playing with the images (i.e. balls) projected on the surface using both lower limbs and upper limbs.

An easy and fulfilling management of patient's rehabilitation treatment.
BTS NIRVANA is supplied with a user-friendly interface that simplifies the patient's database management. All the software menus are managed through the touch screen, very functional and intuitive.

1
The patient database containing the personal data .

2
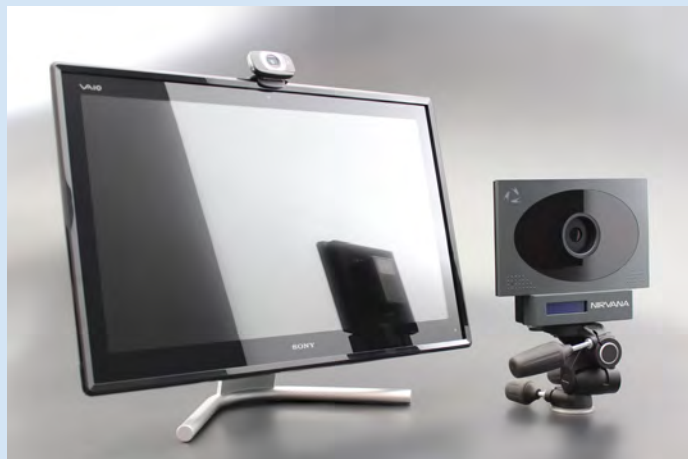Menu for the rehabilitation program planning and for the ongoing therapy management.

3
Real time visualization for scoring and video recording .

4
Work sessions library to visualize score and performed exercises list and to print the reports.
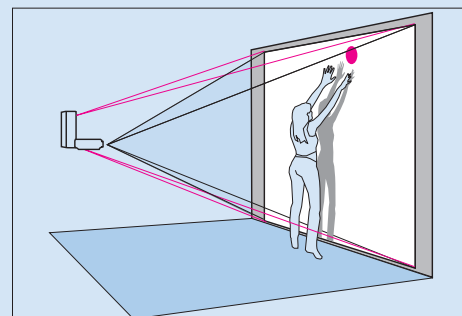
BTS NIRVANA

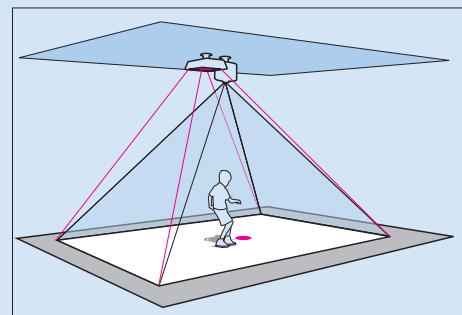## Virtual Reality system for the rehabilitation in patients affected by neuromotor pathologies

Hardware components*	Std. Equipment	Add-ons
1 or 2 BTS NIRVANA markerless infrared sensors	●	
Workstation All-in-one touch screen	●	
1 or 2 Projectors (4000 ANSI lumen)		●
1 or 2 camera supports (different models available)	●	
BTS NIRVANA software	●	
Webcam	●	
BTS FREEEMG 1000 (2 channels)		●

Installation

min. 2.5 m (8 feet)

min. 2.8 m (9 feet)

*
Technical features and equipment may be subject to change without notice.
Images shown in this brochure are indicative only, color or model may differ from the picture shown.

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