



IVS promotes brain plasticity

IVS | Intensive Visual Simulation
A unique technology dedicated to motor
planning and central control of movement

@ | **Dessintey**

Motor control principles

Action planning quickly altered in patients



For many Stroke or CRPS patients, Action planning is altered or non-existent. They lose awareness of their own body, but also the memory of motor functions.

Without representation of the movement, i.e. without this essential stage of action planning, it cannot be effective and accurate.

“The problem is not the repetition
of movement but the ability to plan
what to do.

It's not a problem of muscle power,
it's a problem of control of the body.”

Dr. Franco MOLTENI
Clinical Director - Villa Beretta
Rehabilitation Center, Italy

Inspired by “Visuomotor Simulation Training” approaches

Action Observation - Motor Imagery - Mirror Therapy

Specific visuomotor neurons are involved both in the vision and recognition of action as well as in the production of movement.

Interventions for Improving Upper Limb function after stroke			
Intervention	UL Function	UL Impairment	ADL
Mirror therapy	+	+	+
Mental practice	+	+	○
Repetitive task training	○		
Robotics		+	+
Brain stimulation: tDCS		+	○
Brain simulation: rTMS			
CIMT	+		
Bobath therapy			

IVS3

- Moderate GRADE evidence of no benefit or harm
- +
- Moderate GRADE evidence of harm
- Low or very low GRADE evidence
- Lack of evidence

Ref: Interventions for improving Upper Limb function after stroke.
POLLOCK A, *et al.*, Cochrane database Syst Rev. 2014 (Impact Factor: 7.89)

“Seeing a movement
is almost like doing it.”

IVS replaces the image of the affected
limb with a positive image of movement
performed by the healthy limb.



IVS3 for Upper Limbs



IVS4 for Lower Limbs

- Upper or Lower Limb movement observation with IVS automatically induces a cortical sensorimotor activation.
- Reinstating coherence between what the patient intends to do and the sensations he perceives, it prompts relearning.



A patient-centric solution developed with clinicians



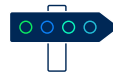
Evaluations



Free session



Over 800 exercises



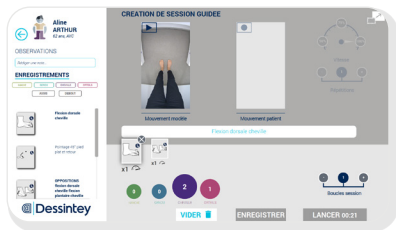
Guided session
Algorithm-based therapy



Progress
& activity reports



Presentation



IVS Intensive Vi

Positive visual feedback



IVS3 for Upper Limbs

Vision plays an essential role in the early stages of reconstructing body image and motor control. With an intense immersion, IVS3 allows the patient to reintegrate a healthy functional limb and to focus on the representation of movement.

Rehabilitation

Mo
Reco

Bo
Aware

Spasticity

IVS relies on brain plasticity prior to the therapeutic pathway stimulation, movement and bolster patient

Visual Simulation

...ck promotes relearning

...n Objectives

...tor
...very

...dy
...ness

Pain
Treatment

...nciples. Integrating IVS among
...mulates the central control of
...s' abilities in action planning.



IVS4 for Lower Limbs

Adapted to wheelchairs, IVS4 allows patients to work seated to learn basic movements and more complex coordinations, then in a standing position for a functional approach to balance and walking.



The technological platform

Personalized therapy programs

Showcasing more than 15 years of research, IVS integrates a smart therapy-based algorithm assistance to make the therapists' day-to-day work easier.

Based on the evaluation performed by the therapist, IVS offers a variety of exercise sequences.

It recognizes the best suited movements to the patient's impairments.

IVS manages the planning of sessions and patient's overall program.

An "augmented assistant" facilitates the preparation of the session

Complementarity

IVS is used in a combination of technologies

IVS3
for Upper
Limbs



- FES
- tDCS
- Robot-assisted therapy
- Muscle strengthening
- Task-oriented therapy
- CIMT

IVS4
for Lower
Limbs



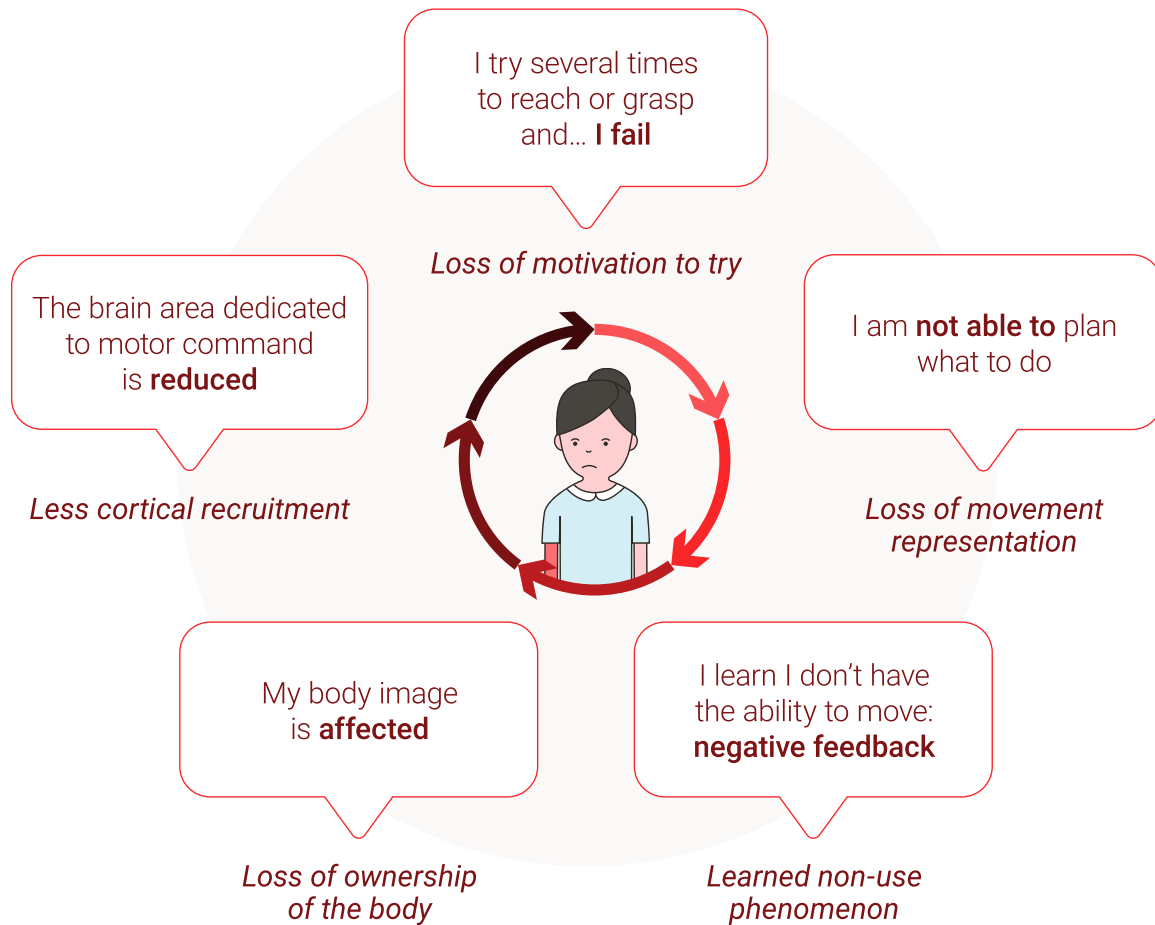
- FES
- Robot assisted therapy - Exoskeleton
- Trunk reinforcement & balance therapy
- Active and passive mobilization
- Standing & Muscle strengthening

Focus on stroke

Trying to move with motor deficiency

In my daily life

Vicious circle of failure: **a cascade effect**

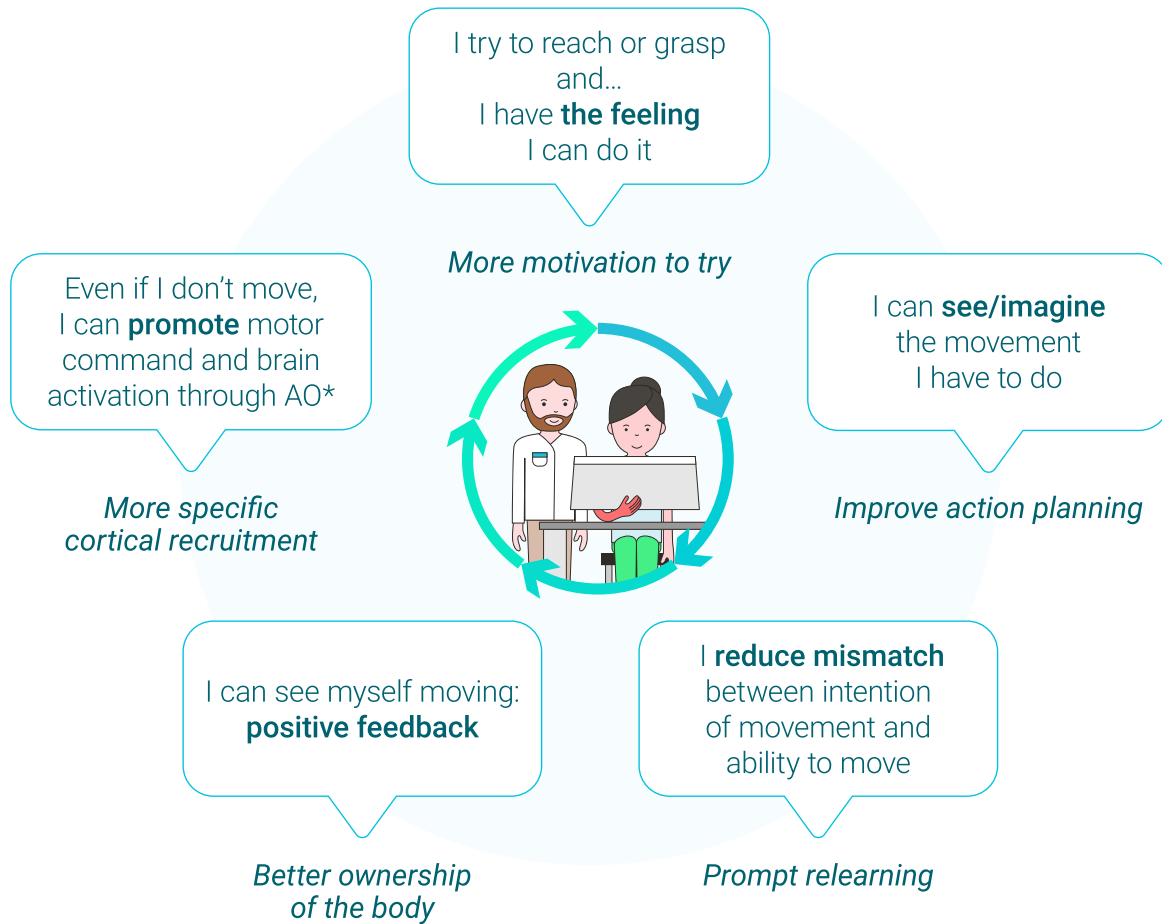


with

During "Intensive Visual Simulation" training

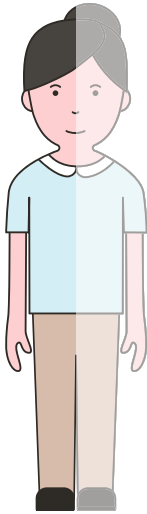
Restoring coherence between movement intention & vision: **a virtuous circle**

IVS



*: Action Observation

IVS | Indications



- Stroke
- Brain injury
- Multiple sclerosis
- CRPS
- Amputee
- Cerebral palsy
- SCI
- Immobilization
- Plexus injury

Inclusion criteria

- Flaccid limbs
- Spasticity
- Hemineglect
- Apraxia
- Body image disorders
- Bimanual impairments
- Aphasia
- Cognitive disorders
- Attention deficits
- Learning disabilities
- Pain
- Allodynia...



IVS is a unique
& patented technology

- 1 High level of **clinical evidence on VST approaches** (both for Upper & Lower Limbs)
- 2 Neurological **lateralized stimulation**
- 3 **“Enhanced assistant” with diversified exercises**
- 4 **Intensive therapy** with few exclusions criterias
- 5 **Ultra-easy to handle:** 30 sec. to start a session
- 6 **Complementary** to conventional approach & robotic devices



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Intensive Rehabilitation
Technologies



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