

CLINICAL CASE STUDIES

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PROLOGUE

Dear Colleague,

First and foremost, I would like to express my gratitude for introducing the field of non-invasive neuromodulation of the autonomic nervous system through NESA® microcurrents. I deeply appreciate your dedication to your patients and to your professional journey. I am thankful for your openness and courage in a society increasingly dominated by ultra-short videos and instant gratification. Thank you for your time, commitment, and enthusiasm.

We are the NESA Clinical Management team, consisting of Fabiola Molina, María González, and José Alejandro Medina—three passionate advocates for high-quality clinical care. Our mission is to provide our patients with the very best therapeutic options, ranging from the most straightforward to the most innovative. Our foundation? Patient-centred clinical reasoning supported by robust scientific evidence.

Without sound clinical reasoning, healthcare professionals remain vulnerable to the fluctuations of scientific evidence, which is often unstable. Scientific progress is characterised more by revisions than by affirmations, obliging clinicians to remain grounded in fundamental principles. And what could be more fundamental than bioelectricity? What could be more universal than history-taking and physical examination?

In the absence of sufficient scientific evidence, the clinician's journey can become a labyrinth, leaving advances in practice to chance or personal intuition.

At NESA, we recognise these challenges, and this work stands as tangible evidence of our commitment. This clinical case manual has been meticulously compiled by María and Fabiola, serving as an excellent complement to the collection of clinical protocol manuals. The protocol manuals themselves arise from clinical reasoning and the most reliable scientific evidence available from NESA. This document, in turn, embodies the interplay between comprehensive clinical reasoning on autonomic dysfunction and the systematic approach employed by scientists in their laboratories.

In our youth, many clinicians romantically claim that “protocols are meant to be broken.” With maturity, however, we recognise the value of standardisation and of slightly narrowing the palette for the novice painter. Ultimately, we learn that from structure and defined discipline comes creativity—creativity that challenges established order and takes a small step forward along the long road of progress.

This manual includes at least one brief example of an experienced clinician who chose to bypass a fundamental protocol in order to align with his clinical reasoning.

Within these pages, you will find an opportunity to explore the multifaceted aspects of dysautonomias and their diverse manifestations. A representative sample is provided to illustrate the scope of NESA's contribution. But let us be clear—this is merely the beginning.

Dear colleague, I apologise sincerely for encroaching upon your valuable time with these reflections (and for deviating from protocol myself). Above all, on behalf of NESA, I wish to extend our heartfelt gratitude for your courage and enthusiasm, together with my best wishes to you and your patients. I look forward to seeing you at the upcoming NESA training sessions.

With warm regards,

Dr José Alejandro Medina García
NESA Clinical Director

INTRODUCTION

Getting Started – NESA® Guide

What does it entail?

This Protocol Manual serves as a concise guide for the standardisation of non-invasive NESA neuromodulation, based on extensive clinical experience and clinical trials. It is particularly valuable for hospitals and clinics requiring established treatment guidelines, whether due to limited familiarity with the technology or challenges in training healthcare personnel in clinical reasoning. As this concerns a medical device, the responsibility for implementing the protocols rests with the attending physician or healthcare professional, who must apply them in conjunction with the patient's medical history and their own clinical judgement.

The protocols presented herein aim to alleviate patients' symptoms and promote more versatile adaptive responses within the body by optimising autonomic nervous system function. Under no circumstances should the patient's pathology or condition be regarded as curable.

Who is the intended audience?

Physicians, physiotherapists, nurses, psychologists, speech and language therapists, podiatrists, and other university-qualified healthcare professionals.

Structure of the guide

NESA Multidisciplinary protocols

Protocols applicable across various specialties, which have demonstrated a favourable degree of effectiveness, include those addressing sleep, pain, fatigue, and anxiety, all of which focus on the modulation of the autonomic nervous system.

Fundamental protocols by clinical specialty

A collection of standardised protocols developed by experts with extensive experience, grounded in interventions that have consistently demonstrated positive outcomes.

Advanced protocols by clinical specialty

Recommendations for the management of complex clinical cases should serve as guidance within a framework of sound clinical reasoning. Implementation without appropriate clinical judgement may compromise patient outcomes.

Frequently Asked Questions and Troubleshooting



Warning

The lack of fundamental training in clinical reasoning and/or continuing education (such as NESA Academy courses, NESA literature reviews, or community engagement) significantly limits the clinical outcomes that can be achieved.

FOUNDATIONAL CLINICAL REASONING

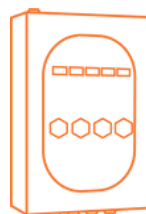
Principles of Responsible Usage



ASSESS



REASON



APPLY

Evaluate the patient and establish a therapeutic objective before selecting a protocol.

Adjust parameters: Use the tables as an initial reference and modify the location, frequency, and duration according to the patient's response.

Monitor clinical changes: Regularly ask the patient about any changes or sensations in order to adjust the programme for optimal outcomes. An objective assessment using questionnaires or supplementary tests is recommended every 10 to 30 sessions, depending on the specific case.

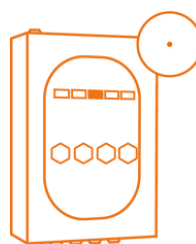
Document each session meticulously: Record the parameters, targeted electrode placement, patient-reported sensations during the session, and overall outcomes, including the date, to support clinical decision-making and track progression.



**Assessment of the
medical history**



Goals



**Select the programme
and position the
electrodes**



Re-evaluation

When embarking on the use of a new technology, such experiences are quite common

- Failure to apply the electrode
- Incorrect placement of electrodes on gloves and anklets (refer to the kits)
- Always maintain consistent programming
- Do not relocate the C7 targeting electrode

FOUNDATIONAL CLINICAL REASONING

Number of sessions and treatment frequency

Suggested frequency

The treatment frequency should be determined according to the therapeutic objective.

An induction phase, characterised by a high frequency of 2 to 5 sessions per week, is recommended during the initial treatment period until the desired results are achieved. As the patient progresses, and provided that a fixed protocol has not been established, the frequency of sessions may be gradually reduced, leading to the initiation of a maintenance phase. Depending on influencing factors, it may be appropriate either to conclude treatment or to proceed with a second, more extended maintenance phase.

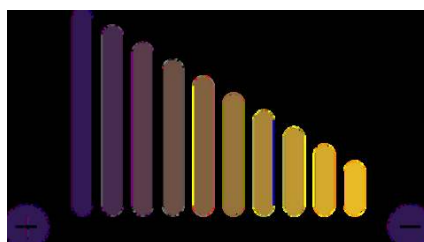
When used as a supplementary treatment to a primary intervention (such as surgery or other therapies), it may be administered with the same frequency as the primary treatment (including a single session), provided that a direct clinical effect of XSignal is not expected, but rather to enhance the effectiveness of the primary treatment.

INDUCTION PHASE (1–4 months)

HIGH FREQUENCY
5–4–3 sessions per week

MEDIUM FREQUENCY
3–2 sessions per week

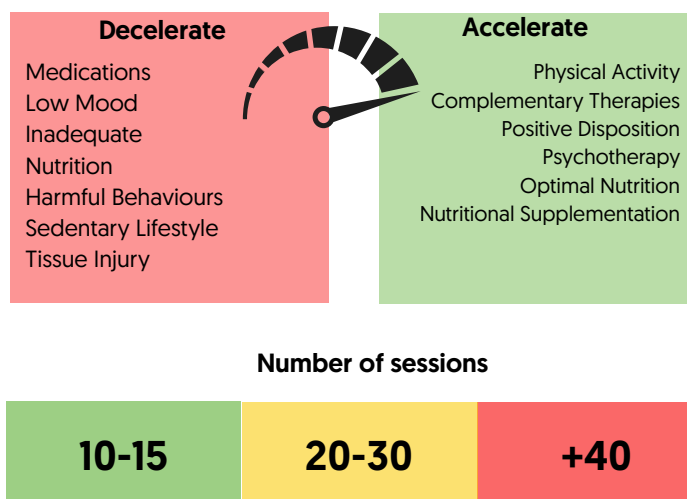
MAINTENANCE PHASE (≥ 2 months; indefinite)



LOW FREQUENCY
2–1 sessions per week
REMISENCE AND REHABILITATION
SESSIONS
AFTER COMPLETING NESA IN
ADDITION TO OTHER THERAPIES

Suggested frequency

The number of sessions required to modulate a patient's autonomic nervous system will depend on various factors and conditions. The diagrams below summarise these factors and indicate what can be expected from the treatments administered.



FOUNDATIONAL CLINICAL REASONING

PROGRAMMES

Low-intensity programme with stimuli applied over time.

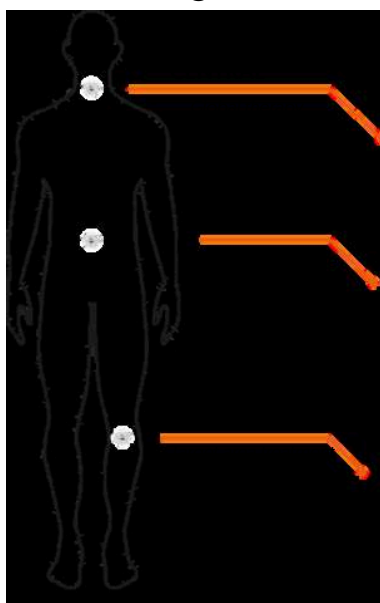
Programmes that stimulate isolated electrodes to elicit responses along specific body planes.

Programmes to be applied after electrode placement, which produce measurable results.

Targeted action programmes within the cranial region, encompassing both cerebral structures and the cranial nerves associated with the cephalic area.

	FUNCTION	SUGGESTED DURATION	LOCATION
Start PROGRAM 1	Homeostasis	15-45'	Central
Location PROGRAM 2	Ventral	15-30'	Central – Metamerie – Focal
PROGRAM 3	Dorsal	15-30'	Central – Metamerie – Focal
PROGRAM 4	Sagittal	15-30'	Central – Metamerie – Focal
Action PROGRAM 5	Resource Optimizer	15-60'	Central – Metamerie – Focal
PROGRAM 6	Analgesia	15-60'	Central – Metamerie – Focal
PROGRAM 7	Autonomic Nervous System	15-120'	Central – Metamerie – Focal
Tuning PROGRAM 8	Central Nervous System	15-30'	Central – Metamerie – Focal
PROGRAM 9	Facial and Trigeminal Nerves	15-120'	Central-cephalic region

Steering electrode



First Initial Phase

In the initial phase of treatment, the targeting electrode is positioned centrally to elicit both central and peripheral responses, thereby establishing a primary global contact.

Second Specific Phase

Following observation of the patient's initial response to treatment, the intervention is administered to targeted metamerie regions, in alignment with the objectives established for the specific case.

Third Impulse Phase

If the patient does not respond to the treatment as anticipated, the microcurrent may be directed to a specific point. If the response is excessively intense, it can be adjusted by reverting to metamerie treatment.

Professional accountability

Protocols serve as guidelines rather than prescriptions. The healthcare professional using this technology bears full responsibility for prescribing, monitoring, and adjusting treatment, based on clinical reasoning and the individual analysis of each patient.

Subsequent actions

- Review the principles on campus at <https://nesacamp.thinkific.com/>
- Complete the foundational module online
- Implement a pilot protocol and document progress
- Share your questions and findings with the NESA community (join the Telegram group [ES/EN] and/or email clinical@nesaworld.es with any queries)

EXPLANATORY GUIDE ON THE UTILIZATION OF THE MANUAL

How should I use this manual?

The NESA protocol manual serves as a fundamental introductory guide to support the development of clinical reasoning within the context of the autonomic nervous system. Readers are encouraged to establish their own criteria and rationale for adapting protocols to each patient's case history as they advance in daily practice and participate in other NESA training programmes, including the Expert and Clinical Guidelines Campus.

Warning: Protocols may not be suitable for all patients and should be tailored and adjusted to each individual case.

How should I read the protocols?

The protocols outlined in this manual are grounded in empirical clinical practice and scientific research. They are formulated within clearly defined frameworks that encompass all clinical reasoning variables relevant to the use of NESA, including programmes, application duration, number of sessions, electrode placement targeting, and evaluation recommendations.

Description of the clinical methodology

In patients experiencing pain, the extent of altered sensitivity is often unclear. Progression typically moves from central to local and subsequently to metameric. The electrode should be positioned at the site where changes are first observed. If a particular location induces discomfort, treatment should revert to more central or metameric areas until the patient progresses through the sessions.

Surveys and assessments

to objectively evaluate the patient's progress*



Recommended questionnaires and assessments:

- Pittsburgh
- Actigraphy

Time

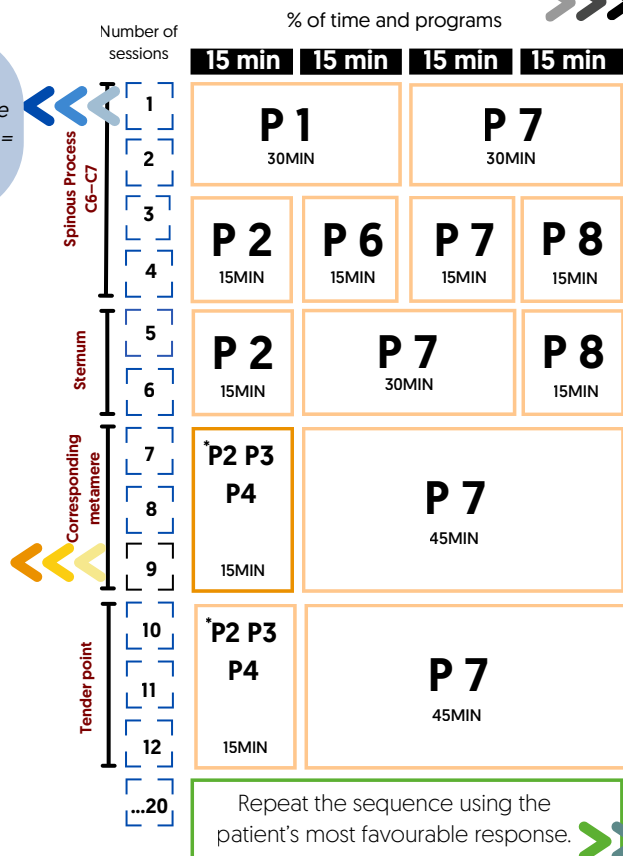
The application duration for each programme is specified, with a minimum of 15 minutes. Sessions are standardised at 60 minutes.

Number of sessions

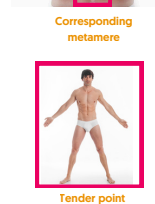
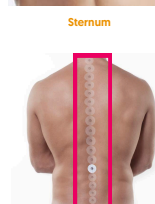
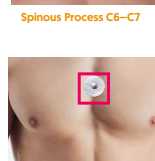
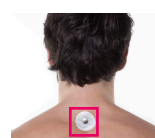
The final grid indicates the suggested quantity [...20] = 20 sessions.

Programmes

Each box denotes the programme used at the specified time. Select according to the region to be treated (P2 – Ventral, P3 – Dorsal, P4 – Sagittal). Other indications are denoted by [*] and [**].



ANATOMICAL NOTES:
DIRECTIONAL ELECTRODE



Guiding electrode

Location of the targeting electrode

The precise location is indicated to the left of the session number. For additional guidance, anatomical reference images are provided.

The spinal column image refers to the metameric level and should be selected according to the clinical case.

The full-body image should also be chosen in a focused manner, based on the clinical case.

Results documentation

Document the patient's response to each setting to facilitate selection of the most appropriate option thereafter.

NOTES:

- Most protocols adhere to this structure, with the exception of certain specialised protocols in which the procedure is explicitly outlined.
- Questionnaires should be administered in the patient's native language; translation is not appropriate. They must be obtained in their original version, which can readily be found online by searching for the questionnaire name and language. A selection is also available for download in Spanish or English from the Clinical Guidelines Campus.

SPECIFIC CLINICAL CASE STUDIES



1st CLINICAL CASE: HERPES ZOSTER AND FACIAL PARALYSIS

Sex: Male | Age: 56 years

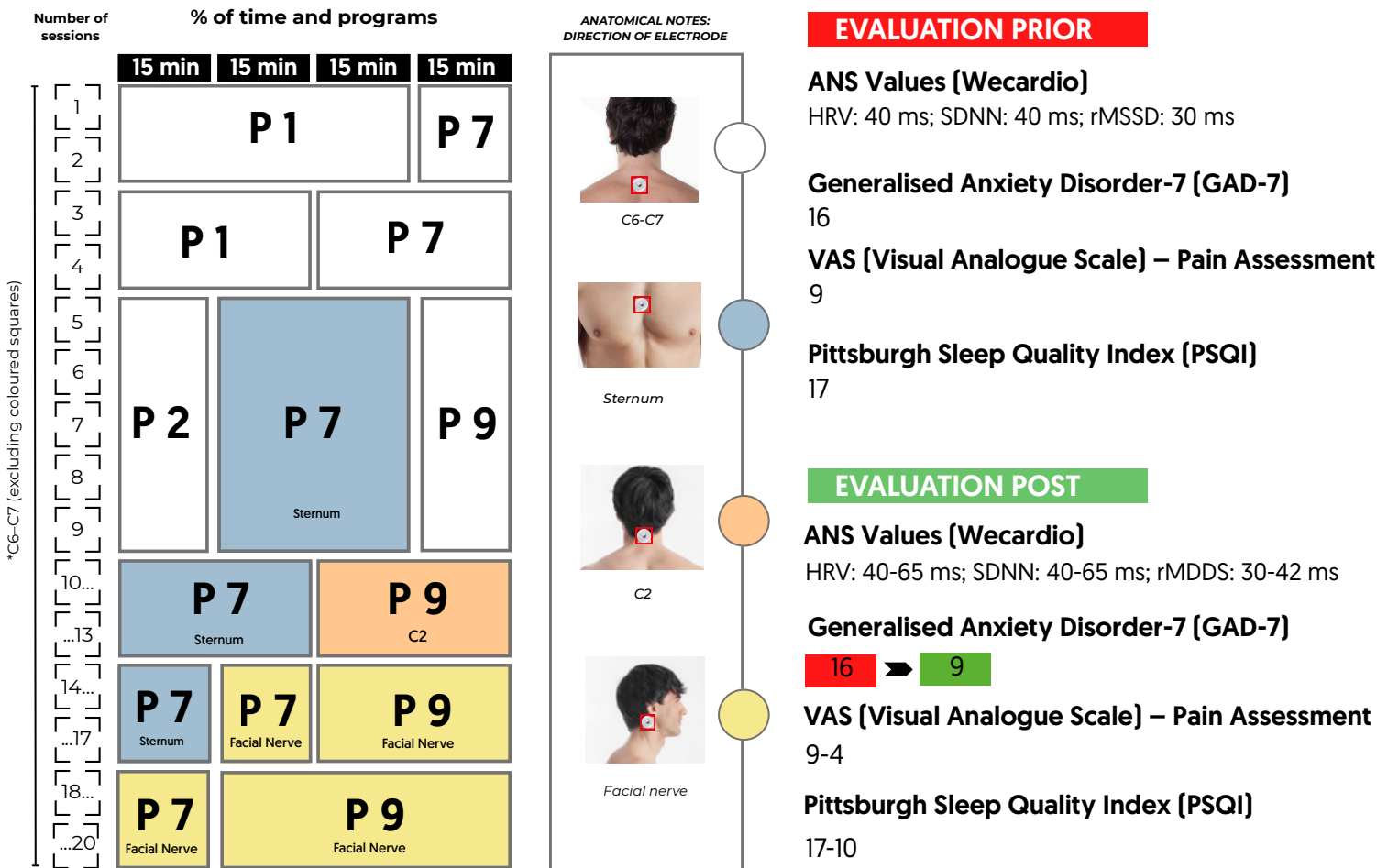
PERTINENT BACKGROUND

- A patient presents for consultation following a two-month history of Herpes Zoster, which has resulted in subsequent facial palsy.
- The patient reports pain on the right side of the face, associated with the trigeminal nerve, together with alterations in tear production and facial muscle function. He describes a diminished quality of life due to persistent pain and expresses concerns regarding work-related stress and anxiety.
- He maintains healthy habits, including balanced nutrition and regular exercise, and has no relevant comorbidities.

TARGETS AND TEMPORAL-FREQUENCY FORECASTING

- Alleviate discomfort.
- Enhance the resources and function of the mimetic muscles.
- Improve the management of stress and anxiety.
- Schedule: 60-minute passive sessions, three times per week for four weeks, followed by twice per week for an additional four weeks, for a total of 20 sessions.

CLINICAL CASE: HERPES ZOSTER AND FACIAL PARALYSIS



Sex: Female | Age: 57 years

- The patient presented to the clinic with sleep disturbances following an emotional event that occurred four years earlier. She reported multiple nocturnal awakenings due to nocturia and episodes of bruxism.
- She describes herself as an anxious individual who frequently experiences nervousness and has recently developed memory difficulties, raising concerns about her engineering career.
- She maintains healthy habits, including balanced nutrition, regular exercise, and meditation, and her interests include travel. She has no relevant comorbidities.

- Improve sleep quality.
- Reduce the frequency of nocturnal urination.
- Alleviate symptoms of anxiety and bruxism.
- Schedule: 60-minute passive sessions, twice weekly for five weeks and once weekly for a further five weeks, for a total of 15 sessions.

3rd CLINICAL CASE: PELVIC DYSFUNCTION FOLLOWING CAESAREAN SECTION

Sex: Female | Age: 38 years

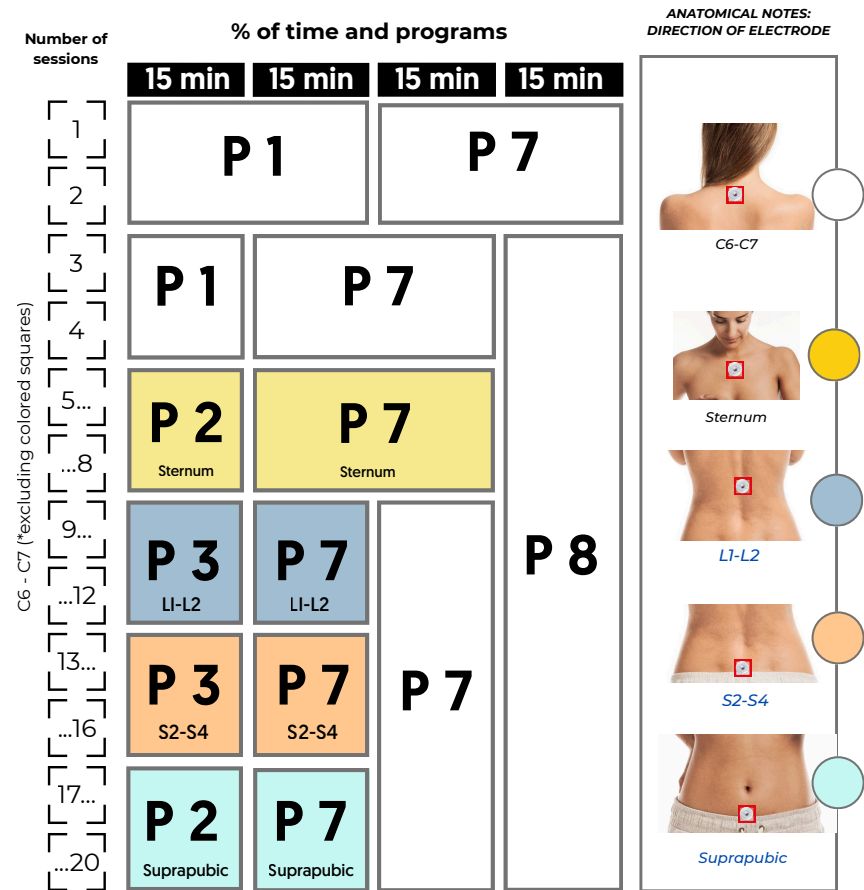
PERTINENT BACKGROUND

- The patient presented to the clinic upon referral from her gynaecologist, with pelvic symptoms following a caesarean section performed eight months earlier. She reported bloating, haemorrhoids, and pelvic pain.
- Her medical history indicates urinary urgency and frequency, together with nocturia. She also reports pain during sexual intercourse [dyspareunia]. Abdominal diastasis is evident. She experiences daily fatigue, which she attributes to poor sleep quality [despite her baby sleeping through the night].
- She has previously undergone pelvic floor treatment. She maintains healthy habits (nutrition, exercise) and has no relevant comorbidities.

TARGETS AND TEMPORAL-FREQUENCY FORECASTING

- Improve sleep quality and reduce associated fatigue.
- Reduce the frequency of urination during both day and night; alleviate urinary urgency.
- Alleviate symptoms of pelvic congestion and constipation.
- Alleviate pelvic discomfort.
- Schedule: 60-minute passive sessions, twice weekly for seven weeks and once weekly for six weeks, for a total of 20 sessions.

CLINICAL CASE: PELVIC DYSFUNCTION FOLLOWING CAESAREAN SECTION



EVALUATION PRIOR

ANS Values (Wecardio)

HRV: 54 ms; SDNN: 54 ms; rMDDS: 43 ms

Pittsburgh Sleep Quality Index (PSQI)

12

Number of nighttime urinations

3/4

Number of daytime voids

8/9

EVALUATION POST

ANS Values (Wecardio)

HRV: 54-57 ms; SDNN: 54-57 ms; rMDDS: 43-52 ms

Pittsburgh Sleep Quality Index (PSQI)

12-3

Number of nighttime urinations

3/4- 0/1

Number of daytime voids

8/9 - 4/5

Upon completing the 20 sessions, the patient reported an improvement in previously unexplained concerns, including pelvic congestion, defecation, and sexual intercourse. In addition to experiencing no discomfort, she noted an increase in sexual desire.

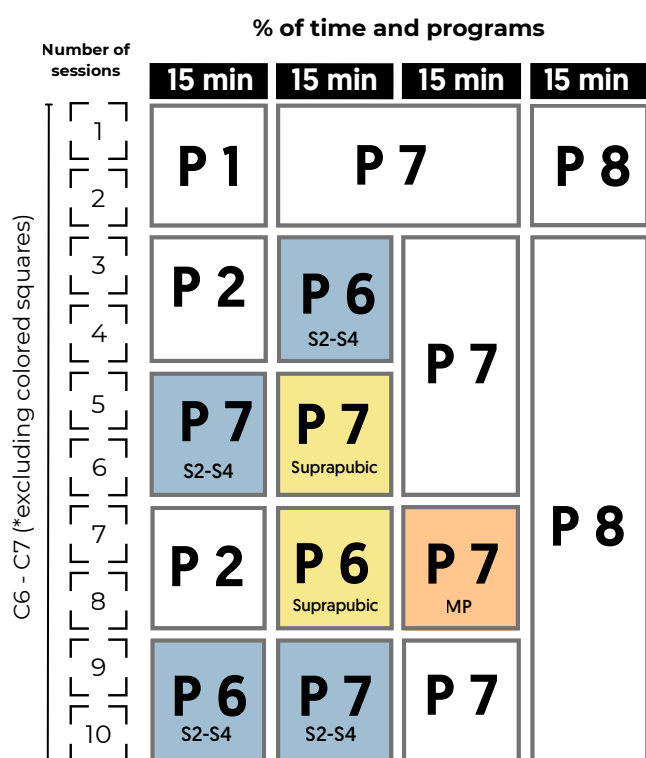
✍️ Author: Ms. María González Bueso

4th CLINICAL CASE: ENDOMETRIOSIS: PELVIC DISCOMFORT AND GASTROINTESTINAL SYMPTOMS**Sex: Female | Age: 32 years****PERTINENT BACKGROUND**

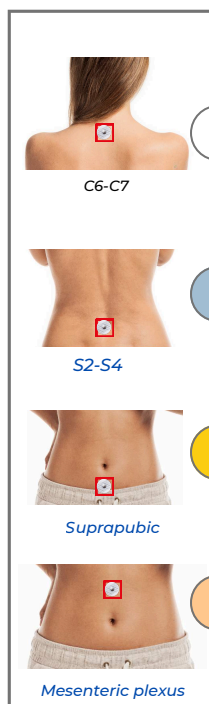
- The patient was diagnosed with endometriosis after enduring 8-9 years of pelvic pain. Upon arrival, she reported discomfort in her abdomen, lower back, and sciatic nerves, as well as digestive issues. Her prolonged illness and quest for a diagnosis have resulted in anxiety symptoms, including shortness of breath, chest tightness, and sudden palpitations.
- She has attempted various treatments without success. At the time of the consultation, she is using painkillers and has recently discontinued oral contraceptives to initiate fertility treatment.
- She is a nurse with extensive knowledge of her illness, which heightens her awareness of the significance of maintaining good routines and habits, such as diet and exercise, while simultaneously rendering her hypervigilant regarding her health.

TARGETS AND TEMPORAL-FREQUENCY FORECASTING

- Alleviate pelvic discomfort.
- Enhance digestive function and the associated symptoms.
- Alleviate symptoms associated with anxiety.
- Schedule: 60-minute passive sessions, conducted twice weekly for four weeks and once weekly for two weeks, totaling ten sessions.

CLINICAL CASE: ENDOMETRIOSIS: PELVIC DISCOMFORT AND GASTROINTESTINAL SYMPTOMS

ANATOMICAL NOTES:
DIRECTION OF ELECTRODE

**EVALUATION PRIOR****ANS Values (Wecardio)**

HRV: 55 ms; SDNN: 55 ms; rMDDS: 45 ms

Generalised Anxiety Disorder-7 (GAD-7)

15

Visual Analog Scale (VAS)

8

Quality of Life (SF-36)

34

EVALUATION POST**ANS Values (Wecardio)**

HRV: 55-75 ms; SDNN: 55-75 ms; rMDDS: 45-60 ms

Generalised Anxiety Disorder-7 (GAD-7)

15-5

Visual Analog Scale (VAS)

8-1

Quality of Life (SF-36)

34-41

- Ten sessions were conducted, yielding positive outcomes. Following a trial period to initiate assisted reproduction treatment, she engaged in additional sessions utilizing NESA microcurrents to reinforce the results.

5TH CLINICAL CASE: FECAL INCONTINENCE FOLLOWING LONG COVID

Sex: Male | Age: 65 years

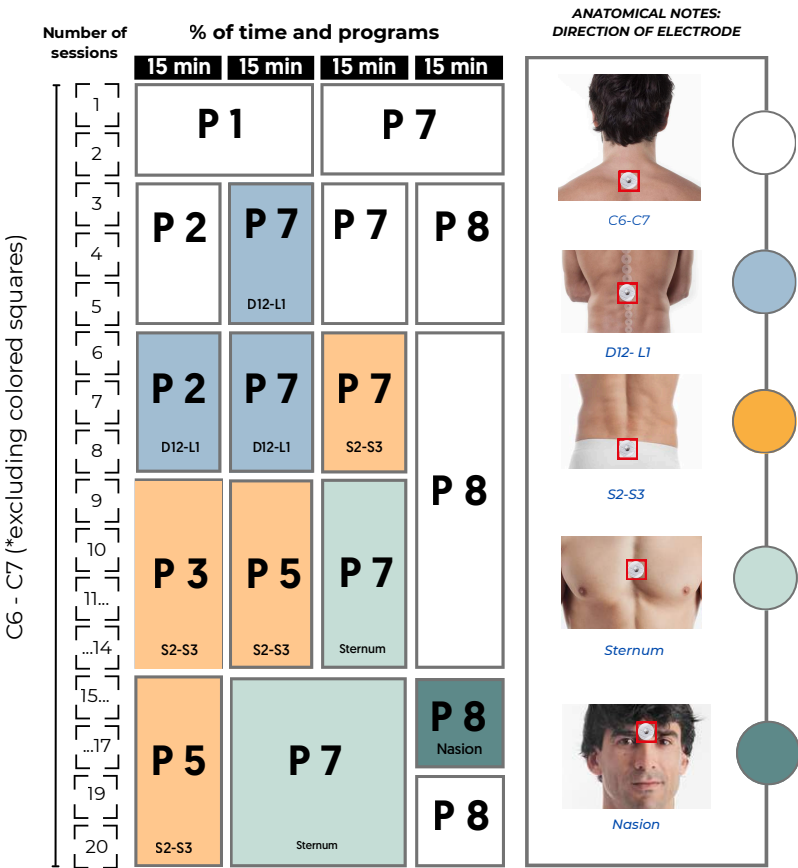
PERTINENT BACKGROUND

- A patient presents to the clinic with fecal incontinence, experiencing one episode per day since contracting COVID-19 four months ago. He reports a range of symptoms persisting for several weeks, with the most significant impact on his quality of life being the urge fecal incontinence. Upon reviewing his medical history, we note the fatigue he experiences and the anxiety he associates with his defecation symptoms, which hinders his ability to maintain a normal social life due to the insecurity it causes.
- He has undergone targeted tests (digestive and coloproctological) with negative outcomes.
- He has no prior medical conditions or surgical history.

TARGETS AND TEMPORAL-FREQUENCY FORECASTING

- Enhance occurrences of fecal incontinence.
- Enhance overall fatigue.
- Enhance symptoms associated with anxiety.
- Schedule: 60-minute passive sessions, conducted three times per week for four weeks and two times per week for an additional four weeks. This totals 20 sessions.

CLINICAL CASE: FECAL INCONTINENCE FOLLOWING LONG COVID



EVALUATION PRIOR

ANS Values (Wecardio)

HRV: 17 ms; SDNN: 17 ms; rMDDS: 25 ms

Generalised Anxiety Disorder-7 (GAD-7)

12

Borg Scale

8

EVALUATION POST

ANS Values (Wecardio)

HRV: 17-35 ms; SDNN: 17-35 ms; rMDDS: 25-35 ms

GAD-7 (Generalized Anxiety Disorder)

12-3

Borg Scale

8-3

Upon completing 20 sessions, the patient reported a notable improvement in mood and a reduction in fatigue, together with increased confidence when away from home, as he experienced no episodes of loss. This progress enabled him to regain his social life.

👉 Author: Ms. María González Bueso

Sex: Male | Age: 65 years

- A patient was referred to the clinic by a neurosurgeon due to constipation following lumbar surgery performed two months earlier. He reported infrequent bowel movements despite adherence to healthy habits and the guidance of a digestive surgeon, as well as the presence of hard stools. These symptoms resulted in abdominal discomfort and difficulty with defecation, leading to anticipatory anxiety, which he identified as a significant source of stress.
- He had undergone targeted digestive and coloproctological investigations, all of which yielded negative results.
- He has no relevant comorbidities. His surgical history includes a previous lower lumbar fusion.

- Improve functional constipation, bowel movement frequency, and stool consistency.
- Alleviate symptoms associated with anxiety and stress.
- Schedule: 60-minute passive sessions, twice weekly for six weeks and once weekly for eight weeks, for a total of 20 sessions.

EVALUATION PRIOR

HRV: 55 ms; SDNN: 55 ms; rMDDS: 45 ms

38

1

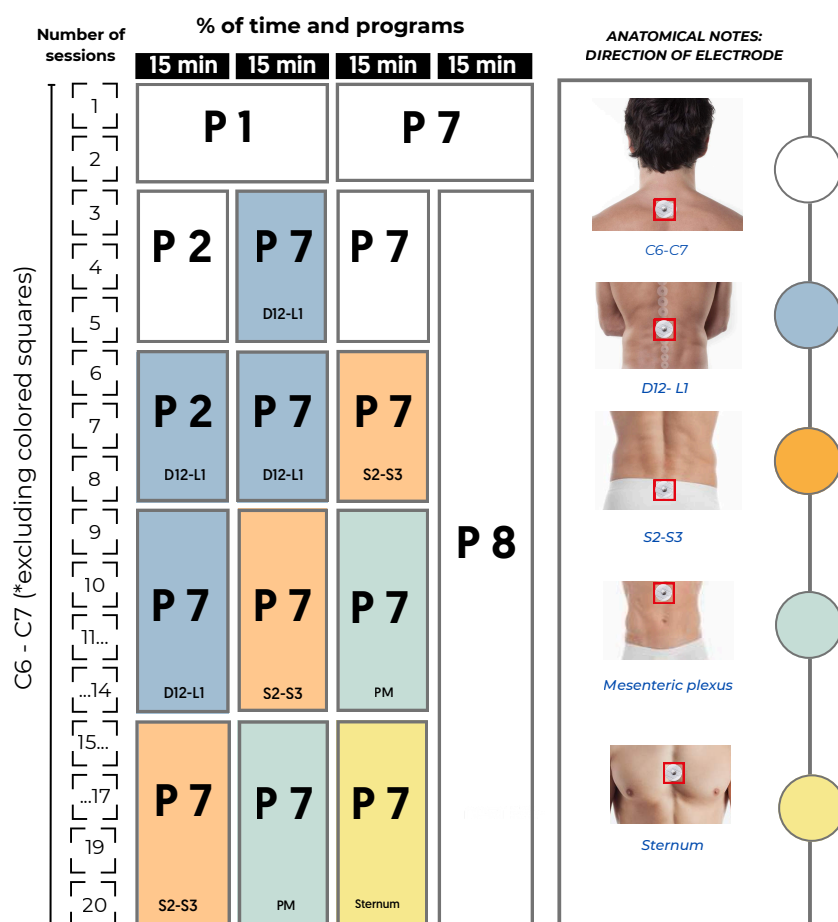
Every three days (one to two per week)

HRV: 55-62 ms; SDNN: 55-62 ms; rMDDS: 45-73 ms

38-16

1-3

Daily or every other day (occasionally multiple bowel movements per day)



Upon completing 20 sessions, the patient reported a complete return to normal bowel rhythm and function.

Sex: Female | Age: 48 years

- The patient presented to the clinic following referral from a maxillofacial surgeon (not the one who performed the procedure) due to altered oral sensation, characteristic of Burning Mouth Syndrome, after undergoing orthognathic surgery four months earlier. She reported burning, dryness, and a sensation of tightness, accompanied by tingling, more pronounced on the left side.
- Since that time, she has experienced poor sleep, ceased exercising, is currently on sick leave, and her social interactions have significantly diminished. She reports a persistent low mood accompanied by episodes of anxiety and demonstrates hypervigilance regarding her symptoms.
- She has attempted various pharmacological treatments, including analgesics, lorazepam, and pregabalin (Lyrica), without success, in addition to physiotherapy interventions. On examination, the patient exhibited allodynia and demonstrated optimal biomechanics of the temporomandibular joint.

- Reduce sensitivity [allodynia] and dryness.
- Improve sleep quality.
- Improve mood.
- Schedule: 60-minute passive sessions, three times per week for two weeks, followed by once per week for three weeks, for a total of twelve sessions.

14

Sex: Male | Age: 56 years

- A patient presented to the clinic with episodes of urinary urgency, occasionally accompanied by increased frequency. He reported isolated incidents of urge urinary incontinence. During the consultation, he disclosed difficulties with erections. Both symptoms had developed following his wife's cancer diagnosis, which resulted in two emotionally taxing years. His anxiety persists, and he describes his nervousness as constant.
- The urologist excluded any organic pathology. No prior treatments had been undertaken.

- Improve micturition dynamics [urgency and frequency].
- Alleviate symptoms associated with anxiety.
- Schedule: 60-minute passive sessions, conducted twice weekly for six weeks and once weekly for eight weeks, for a total of 20 sessions.

EVALUATION PRIOR

HRV: 33 ms; SDNN: 33 ms; rMDDS: 42 ms

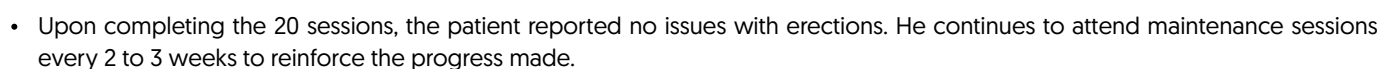
14

Intervals of one and a half hours between urinations, succeeded by an urgent need to void.

HRV: 33-52 ms; SDNN: 33-52 ms; rMDDS: 42-58 ms

14-5

Space urination intervals are set at two and a half hours.



9th CLINICAL CASE: PROSTATITIS

Sex: Male | Age: 49 years

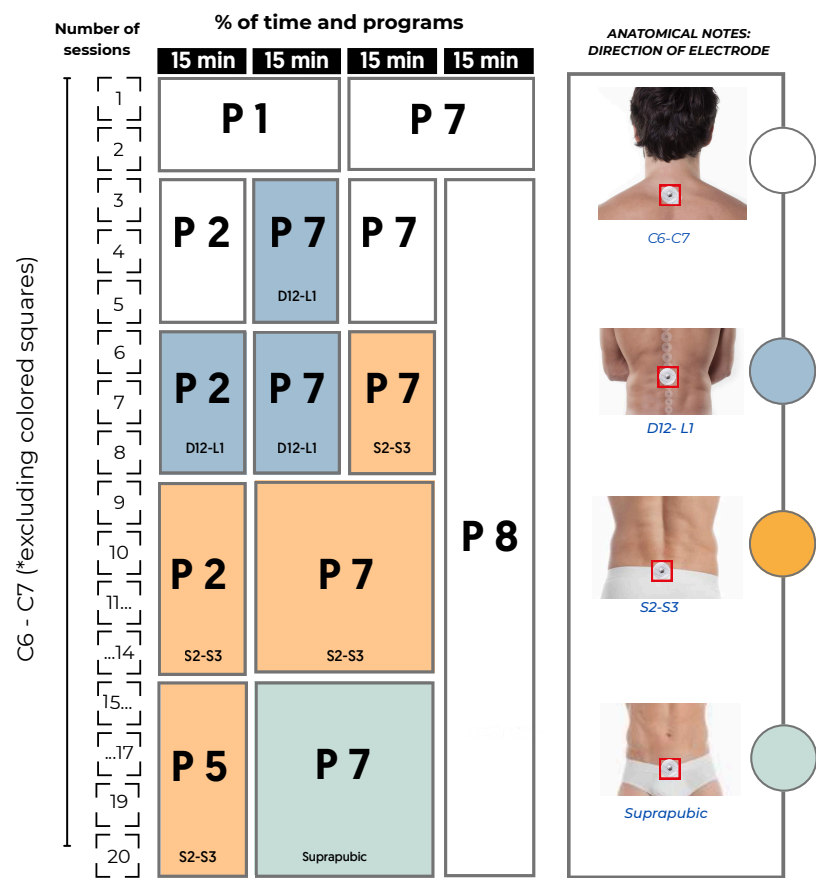
PERTINENT BACKGROUND

- A patient presented to the clinic following referral from a urologist with persistent discomfort in the hypogastric and retropubic regions, accompanied by difficulty initiating urination, a weak (and occasionally interrupted) stream, and a sensation of incomplete bladder emptying, which had been ongoing for two months. The patient acknowledged experiencing work-related stress but did not associate it with the onset of his symptoms.
- Urodynamic studies confirmed a reduced urine flow rate and intensity, as well as the presence of post-void residual urine. Sphincter function, bladder storage capacity, bladder contraction, and prostate size were all within normal limits. The urologist excluded any organic pathology. The patient had not received any prior treatment. Pharmacological intervention will be considered if there is no response to neuromodulation with NESA® microcurrents.

TARGETS AND TEMPORAL-FREQUENCY FORECASTING

- Enhance micturition dynamics.
- Enhance symptoms at the hypogastric and retropubic regions.
- Schedule: 60-minute passive sessions each time. Three times per week for four weeks and twice per week for four weeks. A total of 20 sessions.

CLINICAL CASE: PROSTATITIS



EVALUATION PRIOR

ANS Values (Wecardio)
HRV: 65 ms; SDNN: 65 ms; rMDDS: 56 ms

Persistent sensation of unease
7/10

Urinary frequency
One-hour intervals (visit the restroom as a precaution due to sensations in the retropubic area)

EVALUATION POST

ANS Values (Wecardio)
HRV: 65-68 ms; SDNN: 65-68 ms; rMDDS: 56-60 ms

Intermittent sensation of discomfort
2/10

Urinary frequency
Space urination occurs every two to three hours.

- Upon completion of 20 sessions, minimal changes were observed in ANS-related values. Nevertheless, the patient reported a notable reduction in discomfort, together with improved micturition dynamics characterised by increased urine flow, fewer interruptions, a sensation of complete emptying, and a greater voided volume.

10th CLINICAL CASE: McARDLE DISEASE - CHRONIC FATIGUE

Sex: Female | Age: 63 years

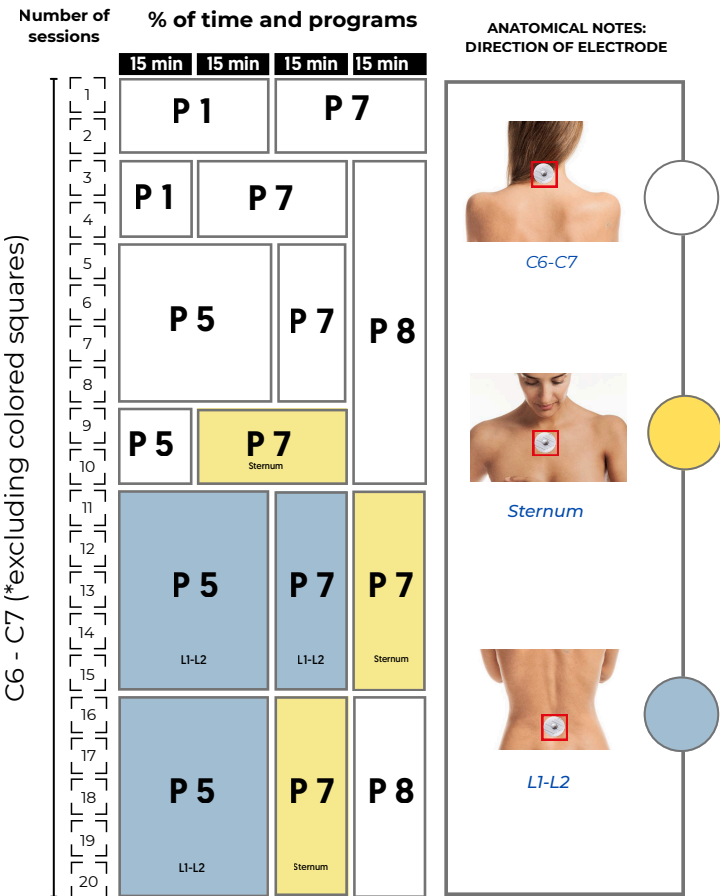
PERTINENT BACKGROUND

- The patient was diagnosed with McArdle syndrome 15 years ago. She reports chronic generalized fatigue that hinders her ability to engage in evening activities, accompanied by a pervasive sense of tiredness from midday onward. Additionally, the patient notes experiencing significantly more pronounced cramps in her lower limbs.
- He is under the close supervision of a neurologist and maintains dietary management with the assistance of an endocrinologist.
- She upholds healthy nutrition, exercise, and rest practices. Now retired, her passion for travel is significantly constrained by her physical condition.

TARGETS AND TEMPORAL-FREQUENCY FORECASTING

- Enhance chronic fatigue
- Alleviate cramps in the lower extremities.
- Enhance mood.
- Schedule: 60-minute passive sessions, conducted three times per week for four weeks and two times per week for an additional four weeks, culminating in a total of 20 sessions.

CLINICAL CASE: McARDLE DISEASE - CHRONIC FATIGUE



EVALUATION PRIOR

ANS Values (Wecardio)
HRV: 49 ms; SDNN: 49 ms; rMDDS: 38 ms

Borg Scale (Fatigue)
8

SF-36 (Quality of Life)
45

EVALUATION POST

ANS Values (Wecardio)
HRV: 49-56 ms; SDNN: 49-56 ms; rMDDS: 38-62 ms

Borg Scale (Fatigue)
8-3

SF-36 (Quality of Life)
45-73

Upon completing 20 sessions, the patient continued with a frequency of twice weekly. As the results stabilised, this frequency was reduced to once weekly, then once every two weeks, and subsequently extended to one session every three weeks. After several months of NESA® non-invasive neuromodulation, the frequency was tailored to the patient's condition, with increases during periods of heightened fatigue, typically coinciding with travel or seasonal transitions.

11th CLINICAL CASE: PYODERMA GANGRENOSUM

Sex: Male | Age: 60 years

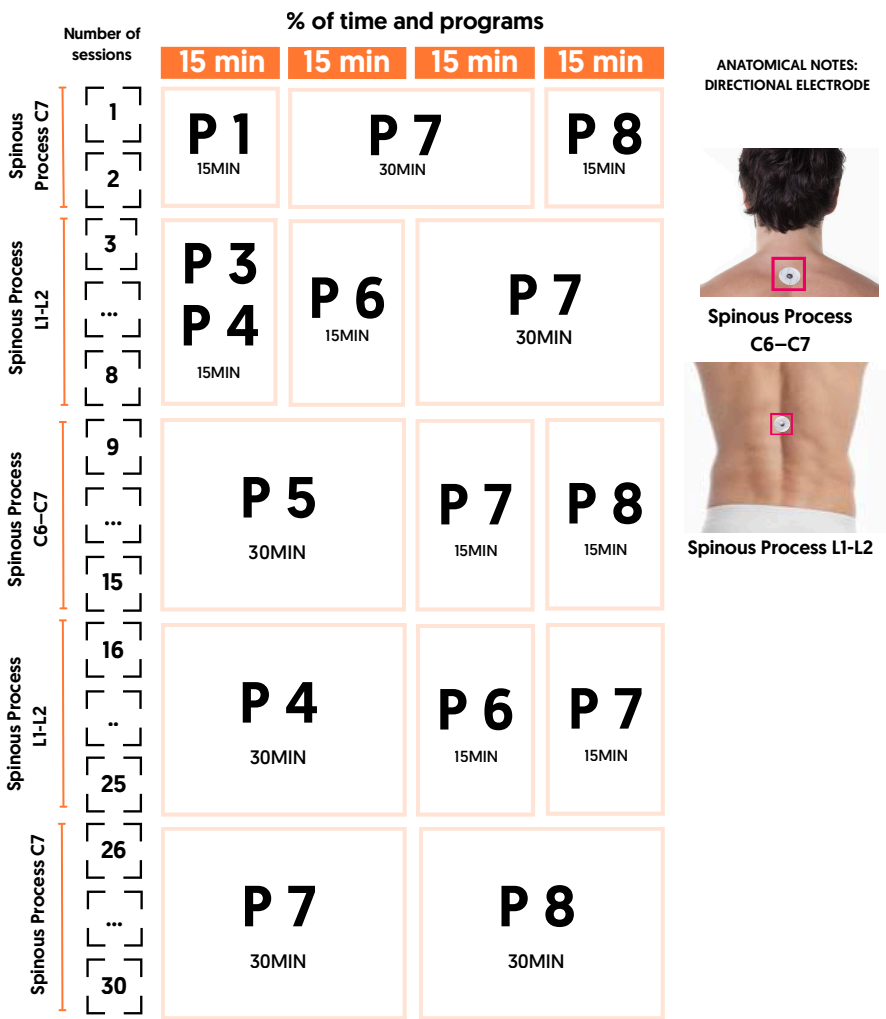
PERTINENT BACKGROUND AND CONTEMPORARY HISTORY

- Crohn’s disease. Acute pyoderma gangrenosum affecting both legs.
- Type 2 diabetes mellitus with mild retinopathy.
- Hypertension and chronic kidney disease associated with the use of calcineurin inhibitors.
- Recurrent pyoderma gangrenosum.
- Previous therapeutic failures: methotrexate, azathioprine, mycophenolate mofetil, infliximab, dapsone.

OBJECTIVES AND TIME ESTIMATION

- Alleviate discomfort.
- Improve trophism of lesions.
- Improve anxiety management.
- Medium- to long-term plan: 30 induction-phase sessions plus maintenance.

CLINICAL CASE: PYODERMA GANGRENOSUM



EVALUATION PRIOR

Daily Morphine
200mg

Daily Diazepam
80mg

Pittsburgh Sleep Quality Index (PSQI)
17 [21 being the most unfavorable state]

EVALUATION POST

Daily Morphine
20mg

Daily Diazepam
Suspended

Pittsburgh Sleep Quality Index (PSQI)
12 [21 being the most unfavorable condition]

11th CLINICAL CASE: PYODERMA GANGRENOSUM

BEFORE



AFTER



12th CLINICAL CASE: POTS AND PERSISTENT COVID-19

Sex: Female | Age: 57 years

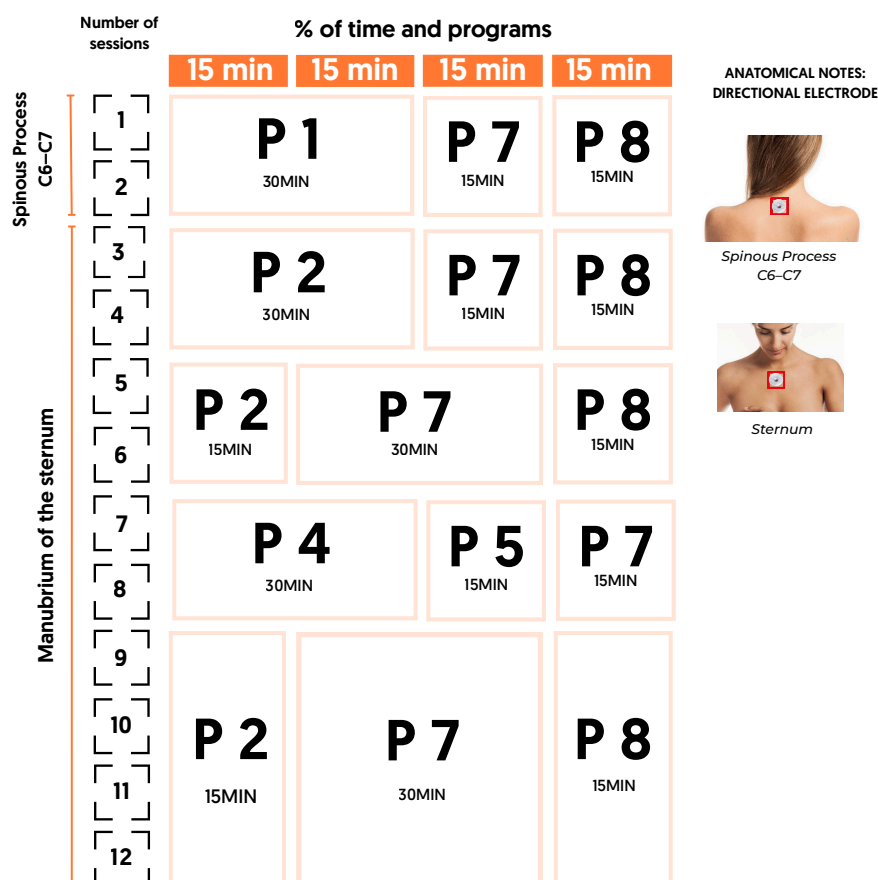
PERTINENT BACKGROUND AND CONTEMPORARY HISTORY

- Athlete (cyclist) presenting with presyncopal episodes associated with postural changes and physical exertion.
- Symptoms developed following a COVID-19 infection.
- Particularly restrictive upon awakening and during prolonged periods of sitting, including cycling, with incidents of falls resulting from these episodes.

OBJECTIVES AND TIME ESTIMATION

- Reduce the intensity and frequency of episodes.
- Improve quality of life.
- Plan: 10 to 20 sessions.

CLINICAL CASE: POTS AND PERSISTENT COVID-19



EVALUATION PRIOR

ANS values (WeCardio)

SDNN: 34 ms ; rMDDS: 24 ms

EVALUATION POST

ANS values (WeCardio)

SDNN: 67 ms; rMDDS: 94 ms

MAIN CONCLUSIONS

The patient reported complete resolution of the episodes and a return to normal activities, including cycling.

13th CLINICAL CASE: FIBROMYALGIA

Sex: Female | Age: 59 years

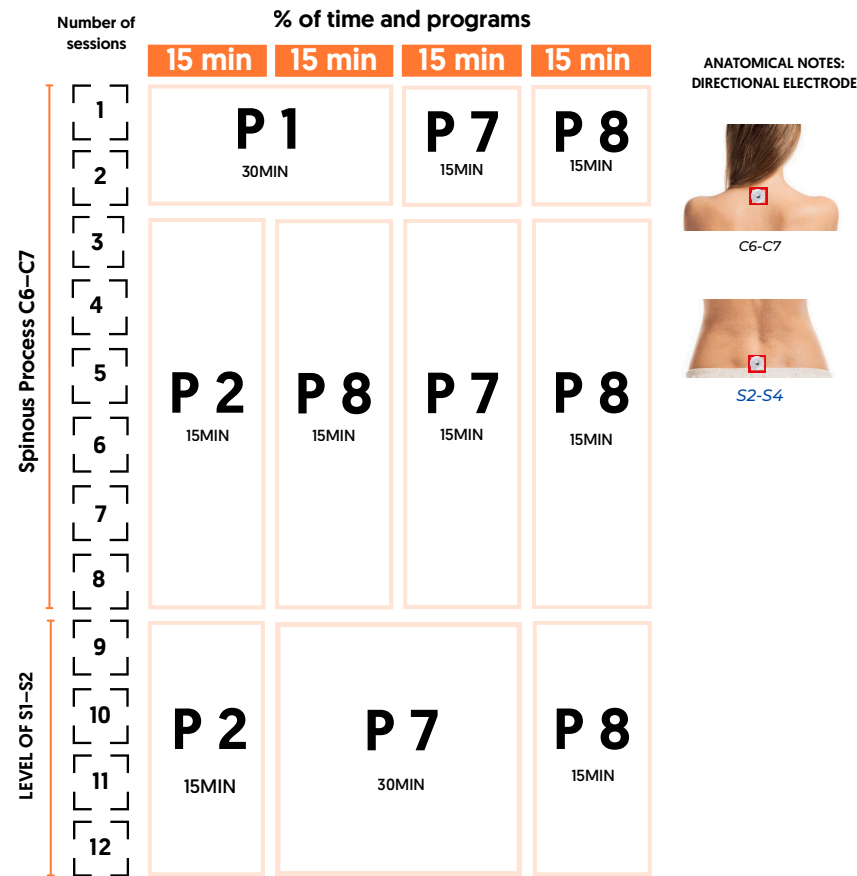
PERTINENT BACKGROUND AND CONTEMPORARY HISTORY

- Patient referred with axial and peripheral joint pain unresponsive to level 2 analgesics.
- Symptoms began more than 20 years ago.
- Reports inadequate sleep.
- Pain disrupts basic activities of daily living.

OBJECTIVES AND TIME ESTIMATION

- Manage pain to reduce its impact on the patient’s quality of life.
- Improve sleep quality.
- Improve overall quality of life.
- Plan: 20 to 40 sessions.

CLINICAL CASE: FIBROMYALGIA



EVALUATION PRIOR

ANS Values (WeCardio)
SDNN: 42 ms ; rMDDS: 36 ms

Pittsburgh Sleep Quality Index (PSQI)
17

Pain Assessment
VAS: 7; Lattinen: 9

EVALUATION POST

ANS Values (WeCardio)
SDNN: 94 ms; rMDDS: 103 ms

Pittsburgh Sleep Quality Index (PSQI)
17

Pain Assessment
VAS: 3; Lattinen: 4

MAIN CONCLUSIONS

She reported a significant improvement in pain, a change she had not experienced at any time since the onset of her condition. Between the third and eighth sessions, Programme 8 was introduced out of the established order, owing to the pronounced central sensitisation indicated by the patient’s elevated level of verbal expression.

14th CLINICAL CASE: QUALITY OF LIFE IN SYSTEMIC LUPUS ERYTHEMATOSUS

Sex: Female | Age: 59 years

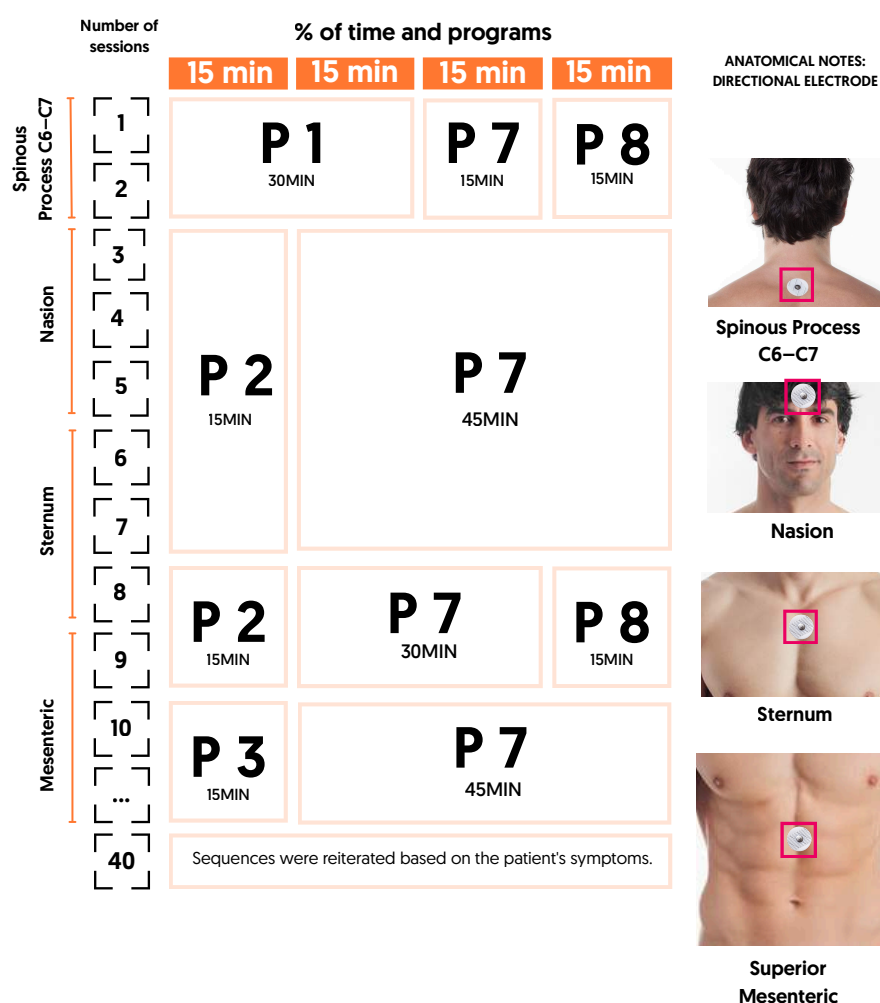
PERTINENT BACKGROUND

- The patient was diagnosed with lupus at the age of 26, accompanied by photosensitivity. A decade ago, she began to experience renal complications, and five years ago underwent a kidney transplant, with the non-functioning kidneys left in situ. She has also been affected by Sjögren's syndrome, irritable bowel syndrome, overactive bladder, and widespread pain.
- Current management includes immunosuppressants and corticosteroid therapy. She also reports anxiety, sleep disturbances (including nightmares and only two hours of sleep accompanied by anxiety), and fatigue.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Improved anxiety management and sleep quality.
- Reduction of fatigue and discomfort.
- Improvement of overactive bladder symptoms.
- Schedule: Four sessions in the first week, three in the second and third weeks, followed by a frequency assessment. The estimated total was between 20 and 40 sessions. The patient ultimately completed 25 sessions at a frequency of two to three times per week, 10 sessions once weekly, and 5 sessions every three weeks, incorporating rest periods.

CLINICAL CASE: LUPUS ERYTHEMATOSUS



PRE- AND POST-ASSESSMENTS

Pittsburgh Sleep Quality Index (PSQI)

19 - 13

Generalised Anxiety Disorder-7 (GAD-7)

17 - 12

CACV (Overactive Bladder Assessment)

17 - 10

Lattinen Pain Scale (Chronic Pain)

10 - 9

MAIN CONCLUSIONS

The patient ultimately completed a 40-session treatment over 11 months. She reported ongoing discomfort prior to treatment, which improved significantly during the induction phase. Throughout the maintenance phase, she experienced fluctuations, yet noted a relative improvement compared with her condition before therapy.

From the second week onwards, treatment was supplemented with NESA® Drivers, which was subsequently sustained.

15th CLINICAL CASE: ENHANCEMENT OF SYMPTOMS IN LONG COVID

Sex: Female | Age: 40 years

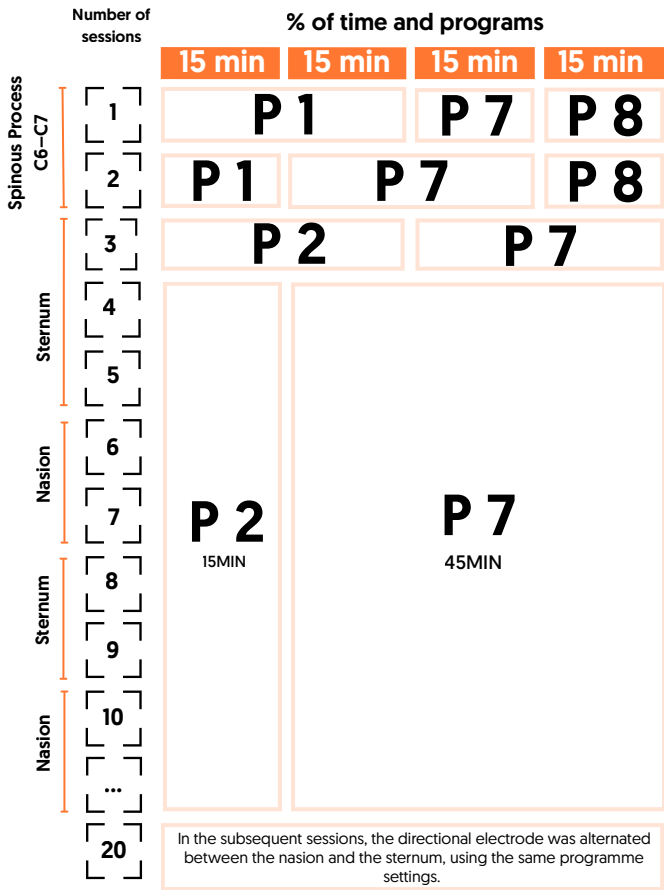
PERTINENT BACKGROUND

- A patient with a history of whiplash in 2017 reported numbness in both legs, fatigue in the upper limbs, a persistent burning sensation in the neck, and insomnia following the administration of his first dose of the COVID-19 vaccine in July 2021.
- Medical diagnosis: dysautonomia – post-acute sequelae of SARS-CoV-2 infection.

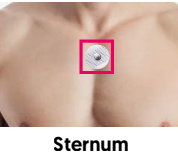
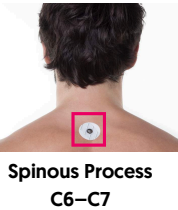
OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Improve sleep quality.
- Alleviate anxiety.
- Improve neuropathic pain management.
- Improve overall quality of life.
- Plan: The patient has shown progress over the past few years, with an anticipated total of 20 to 30 sessions. The final schedule was set at 20 sessions, delivered three times per week initially, and reduced to twice per week from the 10th session onwards.

CLINICAL CASE: CHRONIC COVID



ANATOMICAL NOTES:
DIRECTIONAL ELECTRODE



PRE- AND POST-ASSESSMENTS

Pittsburgh Sleep Quality Index (PSQI)

16-2

Generalised Anxiety Disorder-7 (GAD-7)

11-6

LANSS (Neuropathic Pain)

15/9 - 0/0

EQ-5D (Quality of Life)

0.7361/6 - 1/10

MAIN CONCLUSIONS

The patient began to show improvement after the twelfth session, achieving near-complete resolution of the pain and numbness she had experienced for a year during the final three sessions. The treatment lasted a total of three months.

Eighteen months after completing these treatments, the patient experienced a relapse in sleep quality and was subsequently treated again, with favourable outcomes.

16th CLINICAL CASE: INSOMNIA AND QUALITY OF LIFE

Sex: Male | Age: 54 years

PERTINENT BACKGROUND

- The patient began experiencing nightmares, nocturnal panic attacks, difficulty sleeping, and multiple awakenings ten months ago, associated with a job change and subsequent anxiety. Two months later, he was placed on sick leave. He does not report fatigue but continues to experience heightened anxiety.
- History of prostate cancer treated with prostatectomy, and bone oedema with talar necrosis, currently asymptomatic but characterised by persistent regional pain.
- Current medication: noctamid and trazodone.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Improve sleep quality.
- Improve anxiety management.
- Alleviate foot discomfort.
- Expected duration: 10 to 20 sessions are anticipated, with results typically achieved after 12 sessions.

CLINICAL CASE: INSOMNIA AND QUALITY OF LIFE

PRE- AND POST-ASSESSMENTS

Pittsburgh Sleep Quality Index (PSQI)

18 - 6

Generalised Anxiety Disorder-7 (GAD-7)

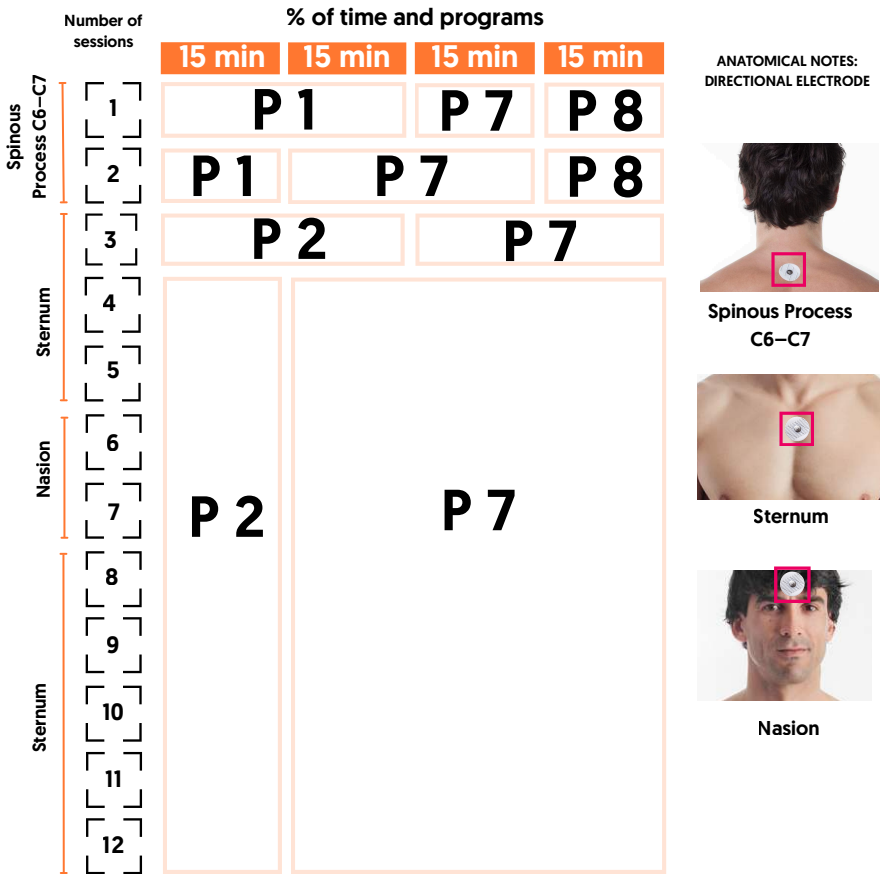
13 - 1

OURA RING (Sleep Assessment)

Please refer to the annex on the following page.

MAIN CONCLUSIONS

The patient participated in three isolated magnetic therapy sessions for foot pain, achieving very favourable results. He voluntarily discontinued medication prior to commencing treatment. From the initial sessions, he noted an improvement in sleep; therefore, no alterations were made to the schedule. Two sessions were attempted with the electrode positioned at the nasion; however, results were more favourable when the patient was positioned on the handlebars. Maintenance was carried out with drivers.



16th CLINICAL CASE: RESTORATION OF SLEEP AND ENHANCEMENT OF QUALITY OF LIFE**PRECEDING OURA STATISTICS:**

Week of 30 April 2025 to 5 May 2025						
PATIENT	OURA OUTCOMES					MEDIA (MIN)
DATE RANGE	01/05/25	02/05/25	03/05/25	04/05/25	05/05/25	
TOTAL HOURS (MINUTES)	256	317	245		359	294,25
TOTAL HOURS	4 h 16 min	5 h 17 min	4 h 5 min		5 h 59 min	4 h 54 min
REM (MIN)	55	40	56		39	47,5
DEEP (MIN)	66	98	40		68	68
LATENCY (MIN)	10	4	4		11	7,25
AWAKENINGS (FREQUENCY)	1	2	2		3	2

THE OURA DATA ARE PRESENTED BELOW:

Week of 27 May 2025 to 2 June 2025						
PATIENT	OURA OUTCOMES					MEDIA (MIN)
DATE RANGE	29/05/25	30/05/25	31/05/25	01/06/25	02/06/25	
TOTAL HOURS (MINUTES)	400	404	481	370	388	408,6
TOTAL HOURS	6 h 40 min	6 h 44 min	8 h 1 min	6 h 10 min	6 h 28 min	6 h 48 min
REM (MIN)	60	99	141	61	81	88,4
DEEP (MIN)	57	49	96	62	58	64,4
LATENCY (MIN)	10	6	4	6	7	6,6
AWAKENINGS (FREQUENCY)	2	0	1	1	2	1,2

KEY FINDINGS FROM THE STATISTICS

In the preliminary evaluation of sleep quality using the Oura Ring, it was observed that the patient experienced a limited number of hours of sleep; nevertheless, sleep latency, deep sleep duration, and the frequency of awakenings were considered satisfactory.

In the second post-treatment assessment, there was a significant increase in both REM sleep and total nightly sleep duration, while the frequency of awakenings showed a slight decrease.

In some patients reporting markedly poor sleep quality, objective measurements may not fully correspond to subjective perception. However, clinical experience indicates that NESAS® microcurrents can improve this condition, particularly when the treatment targets anxiety and vagal tone.

17th CLINICAL CASE: MÉNIÈRE DISEASE - SYMPTOM IMPROVEMENT

Sex: Female | Age: 50 years

PERTINENT BACKGROUND

- A patient with a history of recurrent low back pain, anxiety, and intermittent headaches presented for consultation due to debilitating episodes of vertigo that had persisted for the past six months. Two weeks earlier, he was diagnosed with Ménière's disease.
- History: Knee replacement; elevated BMI.
- Current medication: serc 24 mg, dizinel 20 mg, diazepam 10 mg.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

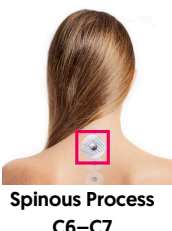
- Reduce vertigo.
- Reduce anxiety.
- Improve quality of life.
- Improve sleep quality.
- Plan: 20 to 30 sessions were anticipated, at a frequency of three per week. The patient ultimately completed 27 sessions. Assessments were performed at baseline, during session 12, and at session 25.

CLINICAL CASE: MÉNIÈRE DISEASE

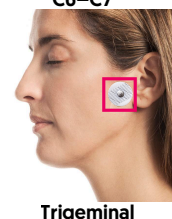
		Number of sessions				% of time and programs			
						15 min	15 min	15 min	15 min
Spinous Process C6-C7	1	P 1				P 1	P 2	P 7	P 8
	2	P 2				P 2	P 7		P 9
	3	P 2				P 2	P 7	P 8	P 9
Trigeminal	4						High		
	5	P 7				P 7	P 9		P 9
	6								
Sternum	7	P 2				P 2		P 7	
	8								
	9	P 8				P 8		P 9	
Spinous Process C4	10								
	11						High		
	27	P 8				P 8	P 9		P 9

The sequences were alternated as necessary in recent weeks. During the period of anxiety, the program was placed on hold.

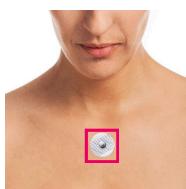
ANATOMICAL NOTES:
DIRECTIONAL ELECTRODE



Spinous Process C6-C7



Trigeminal



Sternum



Spinous Process C4

PRE- AND POST-ASSESSMENTS

Vertigo Disability Questionnaire (VDQ)

68- 50- 26

Generalised Anxiety Disorder-7 (GAD-7)

17- 10- 6

Pittsburgh Sleep Quality Index (PSQI)

12- 7- 6

EQ-5D

0.739/5 - 0.739/7 - 0.452/4

MAIN CONCLUSIONS

The patient's vertigo symptoms showed improvement with each session, allowing her to remain free of vertigo for up to three weeks. However, during the third week, she experienced a setback that induced anxiety, leading to a resurgence of severe vertigo attacks. Following an increase in the frequency of sessions, her condition stabilized. She concluded the sessions by ceasing all medication. Individual sessions are advised if needed.

18th CLINICAL CASE: PALLIATIVE ADAPTATION TO NERVE ROOT INVOLVEMENT

Sex: Male | Age: 39 years

PERTINENT BACKGROUND

- Surgery for an L5-S1 lumbar disc herniation was performed in 2021. The patient underwent physical therapy for cervicobrachialgia, but without lasting improvement. The compression test yielded a positive result. Neurodynamic exercises resulted in irritation. He had been experiencing pain and a reduction in strength in his right arm for two months.
- Awaiting neurosurgical consultation. Intermittent right-sided tinnitus. Anxiety present.
- Pregabalin 75 mg administered twice daily. Tramadol as a rescue medication for severe pain. Intermittent use of diazepam.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Neuropathic pain.
- Anxiety.
- Sleep quality.
- Plan: The patient was informed of the potential presence of a cervical hernia, pending confirmation, and of the palliative objective of alleviating symptom intensity, which may be difficult to address if actual structural damage

CLINICAL CASE: NERVE ROOT INVOLVEMENT

PRE- AND POST-ASSESSMENTS

Pittsburgh Sleep Quality Index (PSQI)

11 - 8

Generalised Anxiety Disorder-7 (GAD-7)

8 - 2

LANSS

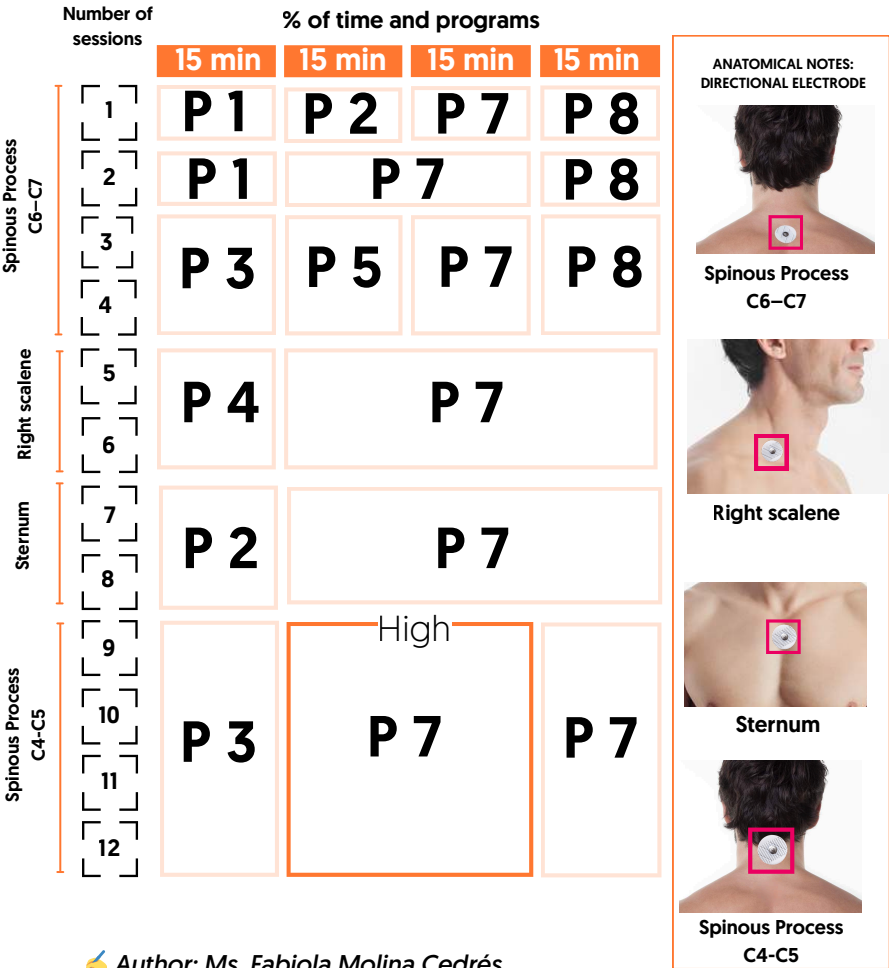
10 - 11

Medication

The patient is not adhering to the medication regimen at the conclusion of treatment.

MAIN CONCLUSIONS

Although not captured in the questionnaires, the patient reported improved arm strength and reduced pain intensity, which now occurred only at night. He felt more at ease overall. Two months after completing the initial series of sessions described herein, the patient returned due to a recurrence of symptoms and was treated again, with identical outcomes.



19th CLINICAL CASE: TRIGEMINAL NEURALGIA

Sex: Male | Age: 38 years

PERTINENT BACKGROUND

- The patient was diagnosed with trigeminal neuralgia a year ago, attributed to anxiety. He experiences frequent headaches and bruxism, for which he utilizes a splint. He travels from Scotland to Tenerife for a month exclusively for neuromodulation treatment.
- Sleep apnea issues. The patient neglects to wear a splint in Scotland throughout the treatment month on the island. Diabetic. He has been on carbamazepine for a year, experiencing inconsistent relief.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Trigeminal Neuralgia.
- Bruxism.
- Anxiety.
- Sleep Quality.
- Headaches.
- Expected duration: 15 sessions throughout your month-long stay in Tenerife, averaging 4 to 5 sessions per week.

CLINICAL CASE: TRIGEMINAL NEURALGIA

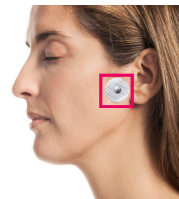
		Number of sessions				% of time and programs			
						15 min	15 min	15 min	15 min
Spinous Process C6-C7	1	P 1				P 7			
	2	P 1				P 8			
	3	P 2				P 9			
Trigeminal	4	High				P 7			
	5	P 7				P 9			
	6	P 7				P 9			
Manubrium	7	P 2				P 7			
	8	P 2				P 7			
	9	P 8				P 9			
Spinous Process C6-C7	10	P 8				P 9			
	11	High				P 8			
	12	P 8				P 9			
Trigeminal	13	P 8				P 9			
	14	P 8				P 9			
	15	P 8				P 9			

The sequences were alternated as required in recent weeks. During the period of heightened anxiety, the programme was temporarily suspended.

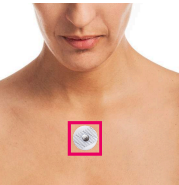
ANATOMICAL NOTES:
DIRECTIONAL ELECTRODE



Spinous Process C6-C7



Trigeminal



Sternum

PRE- AND POST-ASSESSMENTS

Pittsburgh Sleep Quality Index (PSQI)

18 - 7

Bruxism

35 - 26

LANSS (neuropathic pain)

24/10 - 22/6

HIT-6 (Headache Impact Test)

78 - 72

Generalised Anxiety Disorder-7 (GAD-7)

21 - 7

MAIN CONCLUSIONS

The patient continues to experience pain, albeit with reduced intensity. His anxiety and sleep quality have markedly improved. He reports that, despite not using the splint, he no longer wakes with the same level of jaw pain as previously. Given the circumstances, the patient considers the conductors to be part of maintenance treatment.

20th CLINICAL CASE: STRESS-INDUCED FACIAL PARALYSIS

Sex: Male | Age: 33 years

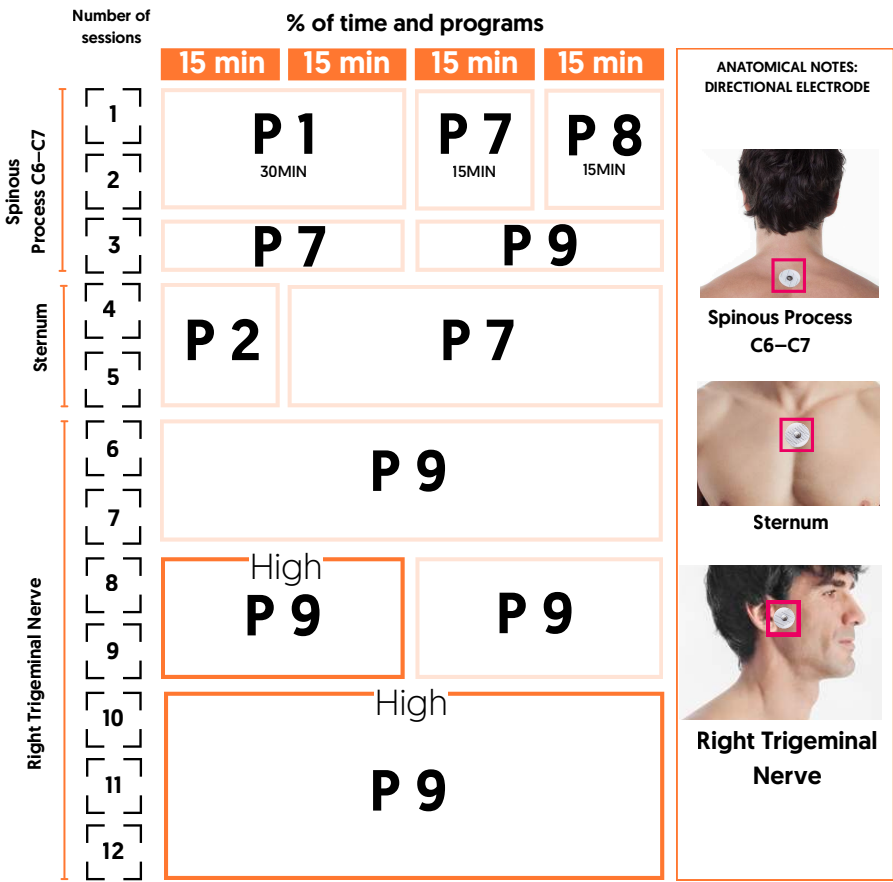
PERTINENT BACKGROUND

- Diagnosed with facial palsy, she experienced a gradual loss of function on the right side. She attributes this condition to work-related stress, which she usually manages effectively.
- The patient is evidently affected by her inability to convey emotions through facial expressions.
- No pain or hypoesthesia. Mild allodynia in the mandibular region.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Restore facial mobility on the right side.
- Reduce anxiety.
- Expected outcome: The patient is expected to complete 20 to 30 sessions to achieve stable improvement. The schedule includes four sessions in the first week, three sessions in the second and third weeks, and two sessions in the fourth week. At this point, a reassessment will be conducted to determine the next steps. Below are the results following completion of this course. The patient will then continue with maintenance, although this has not yet been assessed.

CLINICAL CASE: FACIAL PALSY



PRE- AND POST-ASSESSMENTS

eFACE
53,3%. - 93%

Generalised Anxiety Disorder-7 (GAD-7)
11 - 4

MAIN CONCLUSIONS

The patient successfully completed the initial series of 12 sessions, achieving near-complete mobility on the right side of his face. The only remaining issue was incomplete closure of the right eye. Weekly maintenance sessions were planned for a further 6 weeks to address this.

21st CLINICAL CASE: CHRONIC AEROPHAGIA AND DEPRESSION

Sex: Female | Age: 66 years

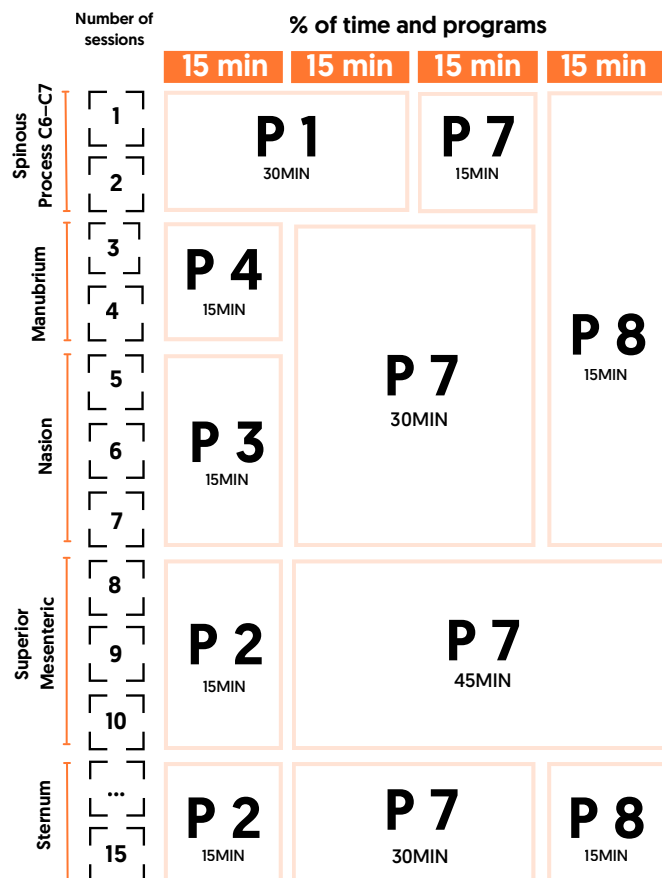
PERTINENT BACKGROUND

- Psychiatric patient diagnosed with depression and anxiety. Hospitalised multiple times. Reports fatigue, sensations of heat, generalised pain, and a fear of being struck by water in the shower.
- Severe aerophagia: the patient exhibits belching every minute. Her psychiatrist attributes this to anxiety. History of cardiac disease.
- Current medication: diazepam 10 mg, stilnox 10 mg, emconcor, flatoril, quetiapine 100 mg, mirtazapine 15 mg, venlafaxine 300 mg.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Anxiety.
- Fatigue.
- Sleep quality.
- Aerophagia.
- Plan: Long-term treatment, expected duration 4–7 months [20–40 sessions], three times weekly during the initial induction phase, followed by once weekly for maintenance.

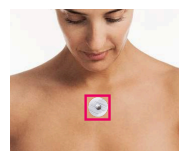
CLINICAL CASE: AEROPHAGIA AND ANXIETY



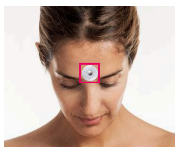
ANATOMICAL NOTES:
DIRECTIONAL ELECTRODE



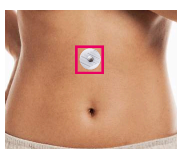
Spinous Process
C6–C7



Manubrium



Nasion



Superior
Mesenteric

PRE- AND POST-ASSESSMENTS

Aerophagia

Onset: Severe (20–40 occurrences per hour)
End: Mild (0–3 occurrences per hour)

Generalised Anxiety Disorder-7 (GAD-7)

21 - 17

Pittsburgh Sleep Quality Index (PSQI)

18 - 11

PAS (Exhaustion)

43 [Severe Fatigue]. - 39 [Severe Fatigue]

MAIN CONCLUSIONS

During the sessions, the patient reported an improved mood; however, by the end she indicated no overall progress, although her family expressed a different opinion. The most notable improvement was in her aerophagia, for which she no longer required medication. Family members also observed that the patient now expresses a willingness to engage in activities she had previously avoided. Continuation of treatment was recommended, but it was ultimately discontinued due to the patient's refusal.

22nd CLINICAL CASE: ANXIETY AND GENERALIZED DISCOMFORT

Sex: Female | Age: 55 years

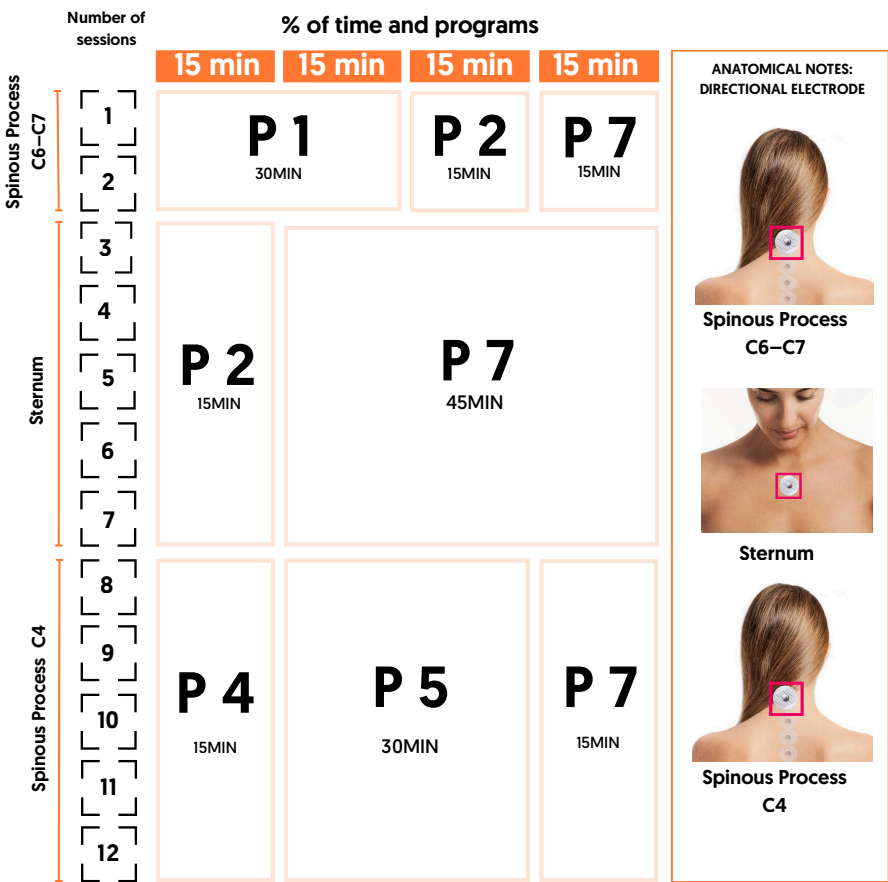
PERTINENT BACKGROUND

- The patient reported pain in the left shoulder and right elbow, accompanied by generalised tenderness in both arms. Physiotherapy sessions had not alleviated these symptoms.
- Gastrointestinal history includes irritable bowel syndrome, hiatal hernia, and constipation.
- Paresthesias were present in both hands. The patient denied experiencing anxiety but appeared visibly agitated.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY

- Discomfort in the upper extremities.
- Sleep quality.
- Anxiety [characterised as a physical condition affecting the patient].
- Expected duration: 10 to 20 sessions. Treatment begins with 4 sessions in the first week, followed by 3 sessions in the second and third weeks, and 2 sessions in the fourth week. A reassessment will take place at that time.

CLINICAL CASE: ANXIETY AND GENERALIZED DISCOMFORT



PRE- AND POST-ASSESSMENTS

Pittsburgh Sleep Quality Index (PSQI)

12 - 9

Generalised Anxiety Disorder-7 (GAD-7)

12 - 4

Lattinen Pain Scale (Chronic Pain Assessment)

11 - 3

MAIN CONCLUSIONS

The patient noted a reduction in pain within the first weeks. By the third week, she had commenced arm exercises and experienced increased strength. She appeared significantly calmer. After completing 12 sessions, treatment was concluded, resulting in marked improvement.

23rd CLINICAL CASE: COMBINED TREATMENT FOR PLANTAR FASCIOSIS

Sex: Female | Age: 62 years

PERTINENT BACKGROUND

- A physical education professional engaged in high-intensity activities presented with a one-year history of pain in the sole of his foot. He has been performing eccentric exercises as part of his treatment regimen, supplemented with shockwave therapy, vacuum therapy, and laser therapy. Despite these interventions, the pain intensified after eight consecutive months of treatment, leading to increased pain-related fear.
- Ultrasound revealed neoangiogenesis in the affected region of the right plantar fascia, in contrast to the healthy area.

OBJECTIVES AND PROJECTIONS REGARDING TREATMENT DURATION AND FREQUENCY.

- Discomfort in the right plantar fascia.
- Plan: Non-invasive treatment with NESA is expected to require 10 to 20 sessions to desensitise the area and address the patient's apprehension regarding pain. A combined approach with ultrasound-guided EPI may also be considered. The full treatment plan comprises 20 NESA sessions and 3 EPI sessions, commencing in week 3 of the regimen. Initially, the frequency will be three times per week, transitioning to twice weekly from week 4, with the final three sessions delivered once weekly.

CLINICAL CASE: PLANTAR FASCIOSIS

PRE- AND POST-ASSESSMENTS

Visual Analog Scale (VAS)

8 - 2

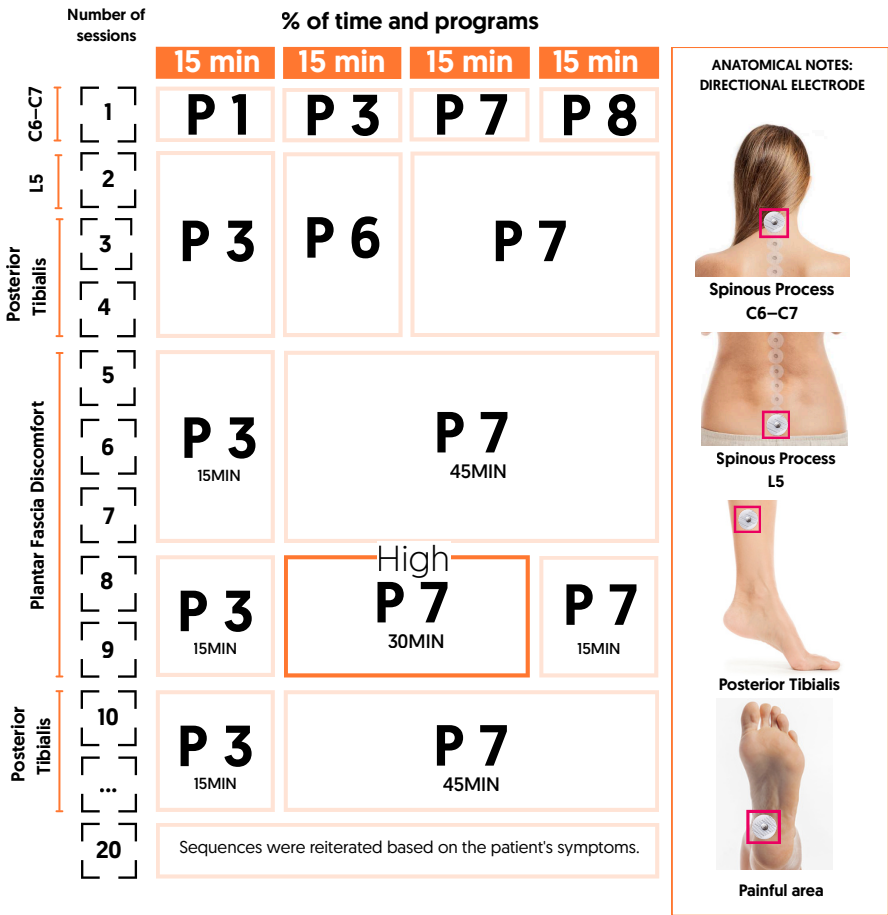
EQ-5D (Quality of Life)

0,2676. - 0,7947

Doppler echo (Neovascularisation) – Refer to the poster on the following page

MAIN CONCLUSIONS

After a year of being unable to engage in normal activities, the patient reported improvement following two months of treatment. Ultrasound findings indicated a reduction in maladaptive neovascularisation. One month after completing treatment, the patient resumed her rigorous athletic activities, being able to run and ski once again without discomfort.



23rd CLINICAL CASE: COMBINED THERAPY FOR PLANTAR FASCIITIS

CASE REPORT

COMBINING PHYSIOTHERAPY TECHNIQUES: TREATMENT OF PLANTAR FASCIITIS WITH NESA NEUROMODULATION AND ELECTROLYSIS

(1) Contreras, M. (2) González, M. (2) Molina-Cedrés, F. (3) Medina, R.
1. Sinapsis Physical Therapy Clinic
2. Sapiens Physical Therapy Clinic
3. University of Las Palmas de Gran Canaria

INTRODUCTION

A 62-year-old female patient, retired physical education teacher, with a moderate to high level of physical exercise. She begins with pain in the calcaneal area of her right foot in June 2021, at which time she goes to the traumatologist. She performs a shock wave session, which the patient describes as very painful. She underwent an MRI with a finding of bone edema in the right calcaneus and thickening of the plantar fascia on that side and it was decided to stop the shock wave sessions. Subsequently, she performs 14 physiotherapy sessions in which vacuum, radiofrequency, laser and manual therapy are applied. The patient reports no improvement after 2 months of treatment.



PATIENT INFORMATION AND CLINICAL FINDINGS

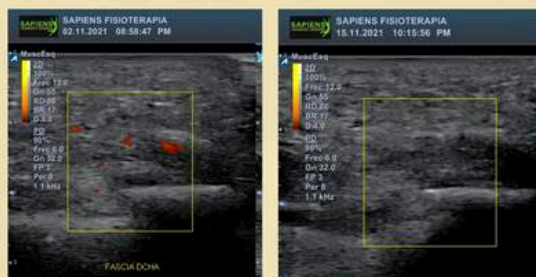
Patient comes to consultation referring pain in the calcaneus, especially in the area of insertion of the fascia and limited walking capacity, although without needing external aid. Pain on support is the one that most affects the patient, but there is also lancinating, intermittent pain at rest, both on the underside of the calcaneus and on both sides of it. At the time of starting treatment she presents:

- Pain VAS 8.
- EQ5D questionnaire 0.2676.
- Ultrasound: angiogenesis, loss of the fibrillar pattern and thickening of the fascia compared to the fascia of the healthy side.

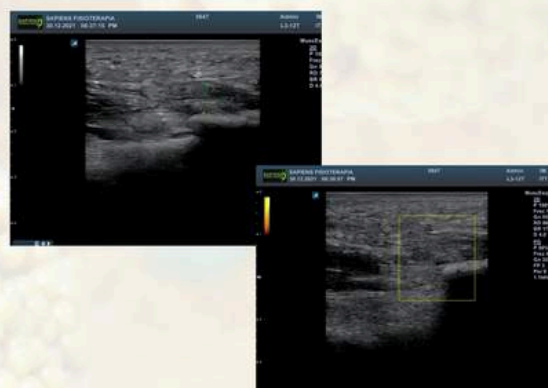
The patient expressed her fear of pain, especially after the application of shock waves, so we decided to start treatment with NESA neuromodulation to reduce the sensitivity of the area and assess invasive possibilities later according to evolution, due to the ultrasound image, that shows. A passive treatment is started with the aim of improving the pain that appears at rest with neuropathic characteristics and decreasing its sensitivity to pain. During the treatment we progressed with the directing electrode from central, to metamer in L5, then in the Posterior Tibial Nerve and finally in the Baxter Nerve (Local), in successive sessions.

As of the sixth session, the pain at rest disappears, but the point of pain continues at the insertion of the fascia. Two weeks after starting treatment and having performed 8 sessions of NESA microcurrents, we valued again ultrasound:

- The thickness of the fascia does not show improvement, but the vascularization does.



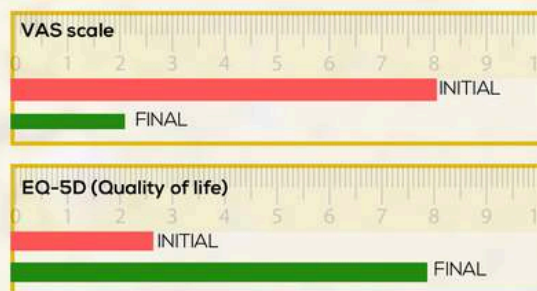
We perform percutaneous electrolysis focused on the insertion of the fascia. We continue with neuromodulation with NESA microcurrents and after a week we repeat the electrolysis. During this week, the patient reports notable improvement in support. Two weeks later, a third EPI treatment is performed.



The patient with pain in the sole of the foot went from VAS 8 to VAS 2 after a combined treatment with 20 sessions of NESA neuromodulation, 3 ultrasound-guided electrolyses in the areas with the greatest loss of fibrillar pattern, and pain education. The treatment lasted 2 months in total.

The patient's quality of life, accustomed to constant physical activity, improves, as shown by the EQ-5D questionnaire, which goes from a limited quality of life (0.2676) to a much better perception of it (0.7947).

The ultrasound shows disappearance of the initial neovascularization, improvement of the fibrillar pattern, but not of the thickening.



DISCUSSION AND CONCLUSIONS

Plantar fasciosis presents as a disabling dysfunction that affects the patient's quality of life, and sometimes resists improvement with conventional treatment. That is why there is a need to combine several strategies for its approach. In this particular case, the application of NESA non-invasive neuromodulation at the beginning, allowed to improve the neuropathic symptoms that he presented. In a second phase, the application of percutaneous electrolysis made it possible to reduce pain focused on the insertion of the fascia. NESA microcurrents are presented as a new possibility to enhance and complement conventional fasciosis treatments, although it is necessary to generate more studies to have a higher degree of evidence.

- Viñas Calvo A. Tratamiento fisioterápico en la fasciosis plantar: revisión sistemática e intervención basada en la evidencia. Physical therapy on plantar fasciosis: a systematic review and evidence-based intervention [Internet]. 2019 Jun [cited 2022 Feb 21]. Available from: <https://gredos.usal.es/handle/10366/138111>
- Raquel Medina-Ramírez, et al. (2021). Nesa Non-Invasive Neuromodulation: A New Frontier of Treatment of the Autonomic Nervous System in Physiotherapy. CPO Orthopaedics, 5(4), 01-04.
- García Padrós D. Electrolysis Percutánea Intratrasfascial EPI® como medida terapéutica para la fasciosis plantar. 2017 Jun [cited 2022 Feb 21]. Available from: <http://disposi.ub.edu/dspace/handle/2445/114208>

IMPORTANT LINKS

NESA® CAMPUS: <https://nesacamp.thinkific.com/>

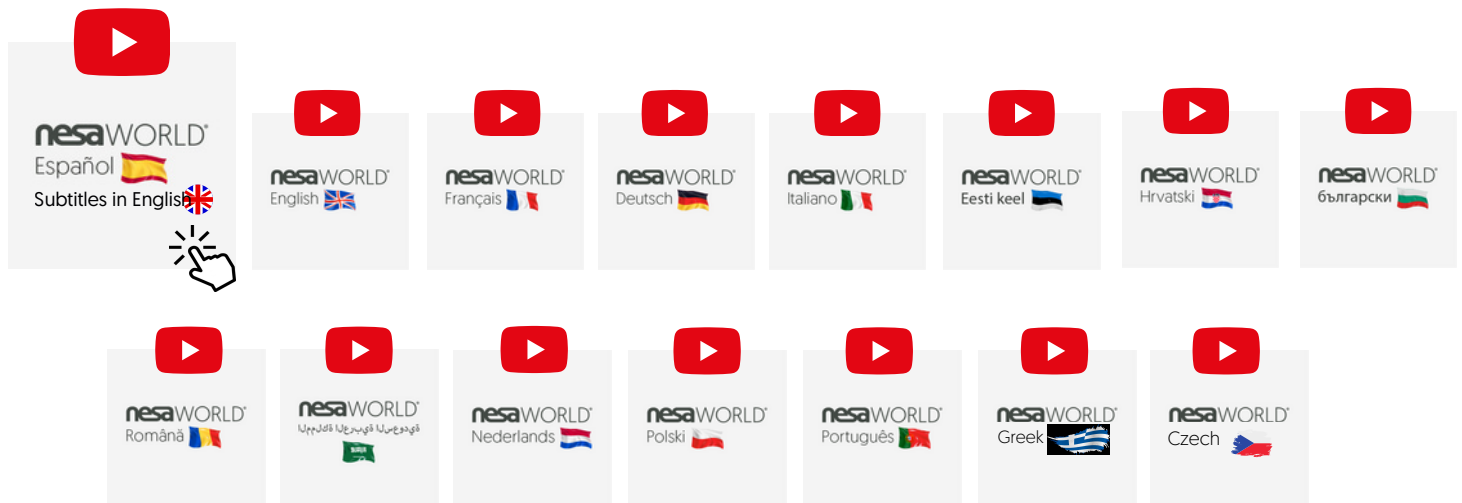


On Campus, you will find:

- SharePoint NESA®: provides all the documents, videos, and images required for daily use.
- NESA® Introductory Campus: designed to assist you in developing clinical reasoning with your patients, thereby supporting up to 70% of clinical outcomes.
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FAQs: Frequently Asked Questions and Responses

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3. Scientific Evidence FAQs [CLICK HERE](#)
4. Clinical FAQs [CLICK HERE](#)
5. Patient FAQs [CLICK HERE](#)
6. Training and Events FAQs [CLICK HERE](#)

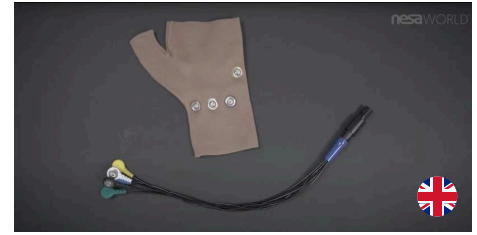
LINKS OF INTEREST



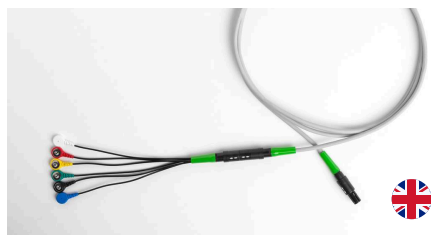
1. PROGRAMMING THE NESA X SIGNAL®
(Essential – 3 minutes)



2. HOW TO WEAR GLOVES AND ANKLE BRACES
(Important – 2 minutes)



3. HOW TO ADJUST GLOVE AND ANKLE BRACE SIZES



4. CABLE PLACEMENT PROCEDURES
(Important – 1 minute)



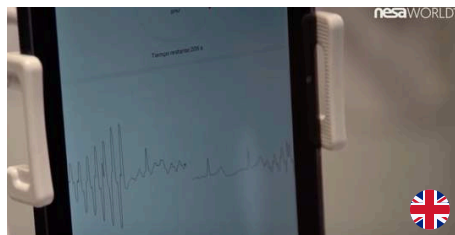
5. METHODS FOR SECURING CABLES DURING OPERATION (Important – 1 minute)



6. INSTRUCTIONS FOR USING THE INTERNATIONAL BATTERY CHARGER



HOW TO SUBMIT AN APPLICATION TO NESA®



HOW TO USE THE NESA X SIGNAL® AND THE WECARDIO ELECTROCARDIOGRAPH

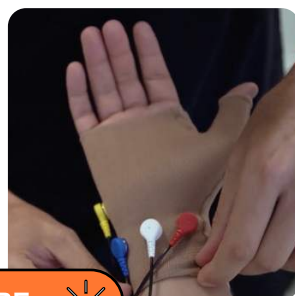
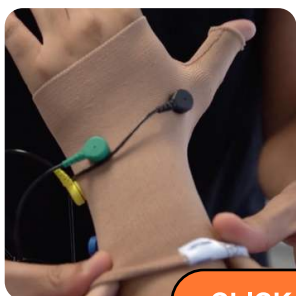


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