



SPECIALTY 07 · ANS

Dentistry & Stomatology

Dental anxiety, TMJ, bruxism and orofacial pain.

8 SHEETS

What NESA modulates (and what it doesn't)

NESA does not treat or cure any of the conditions covered in these sheets. Its non-invasive neuromodulation acts on the autonomic nervous system (ANS) to help relieve the symptoms associated with its dysregulation —dysautonomia— that accompanies each condition. It does not replace diagnosis, medication or the professional's judgement: it supports them.

IN PLAIN WORDS, FOR THE PATIENT



Your body runs on electricity

Every heartbeat, movement and thought travels as a tiny electrical signal along your nerves.



The ANS is your autopilot

The autonomic nervous system quietly runs your heart, breathing, digestion and sleep — without you thinking about it.



It has an accelerator and a brake

The "sympathetic" switches you on; the "parasympathetic" calms you down. Health is when they take turns at the right time.

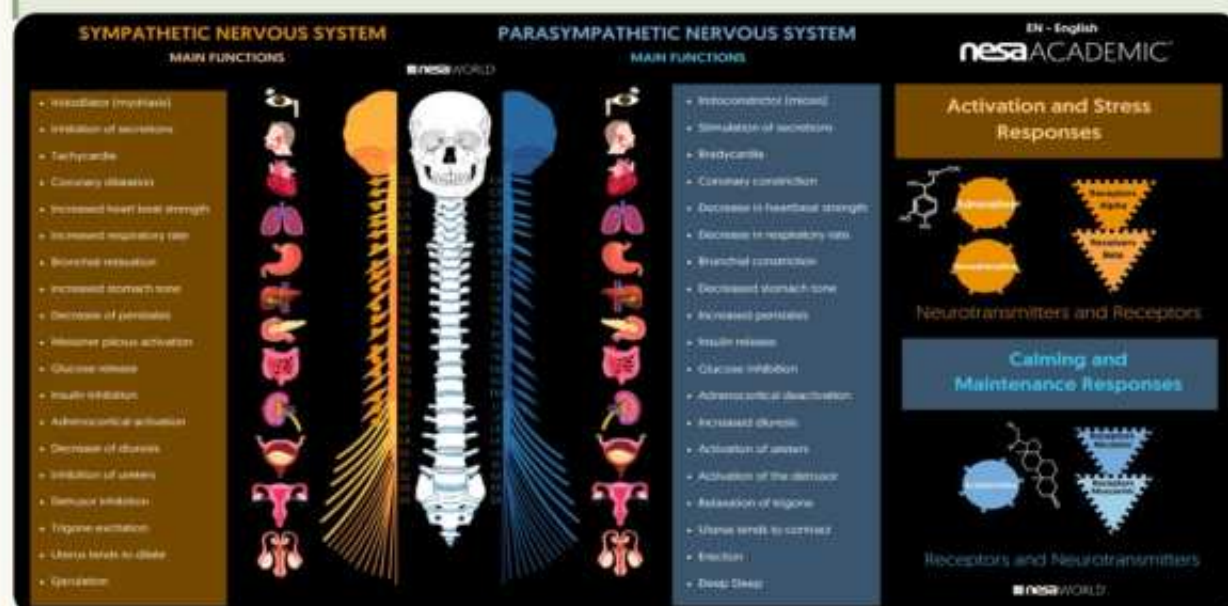


NESA speaks that language

Very gentle microcurrents through hands and feet help the accelerator and brake find their balance again.



Safe and imperceptible. No needles, no heat: the current is so faint it stays below what you can feel. Most people notice nothing during the session.



Main functions of the sympathetic and parasympathetic branches: the physiological ground —the ANS— on which NESA neuromodulation acts.

REFERENCE Goldstein DS, Robertson D, Esler M, Straus SE, Eisenhofer G. *Dysautonomias: clinical disorders of the autonomic nervous system*. Ann Intern Med. 2002;137(9):753–763. • Thayer JF, Lane RD. *A model of neurovisceral integration in emotion regulation and dysregulation*. J Affect Disord. 2000;61(3):201–216.



Dental anxiety: before and during treatment

When just thinking about the dentist puts you on edge and the appointment feels like an uphill climb.

1 PHASE 1 Do you recognise this?

- ✓ Racing heart just thinking about it
- ✓ Tension and a knot in your stomach
- ✓ Everything feels more intense during treatment
- ✓ Sweaty hands
- ✓ Wanting to put off the appointment
- ✓ A bad night before the visit

“ Do you go on alert before going to the dentist?

“ Do you go through treatment very tense and with more pain than expected?

3 PHASE 3 The loop

- 1 Fear or anticipation before the appointment.
- 2 The accelerator fires: tension and alertness.
- 3 A harder visit and more perceived pain → more fear.

↻ AND IT STARTS AGAIN

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the **accelerator** and the **brake**.

~ Helps **engage the brake** before and during the appointment, so you arrive and stay calmer.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

♥ With your dentist

NESA **does not replace** your dentist or surgeon: it supports their care (explanation, anaesthesia, sedation if appropriate, relaxation).

✓ What you may notice

- ✓ Arriving more relaxed
 - ✓ Going through the visit less tense
 - ✓ Less perceived pain
 - ✓ Better rest the night before
- It may help; results vary from person to person.*

2 PHASE 2 What happens in the nervous system

Picture a *body alarm* that goes off before anything happens, and keeps ringing. Your nervous system has an “accelerator” and a “brake”, and right now they are out of balance.

⚡ Accelerator

Sympathetic - sets off the alert, tightens the muscles and amplifies pain.

⏸ Brake

Parasympathetic - switches off the alarm and lets the mouth relax.

Fear keeps the **accelerator high**: in that state it is hard to relax and pain feels stronger.



Arriving at and going through the visit calmer.

Post-surgical recovery: implants, extractions and surgery

When, after dental or maxillofacial surgery, you want the area to close and heal as soon as possible.

1 PHASE 1 Do you recognise this?

- ✓ Discomfort or pain in the area
- ✓ Swelling
- ✓ Wanting to get back to normal
- ✓ Recovery slower than expected
- ✓ Poor rest
- ✓ Worry about it all going well

“ Are you recovering from dental surgery and want to heal well?

“ Do you notice swelling or discomfort you would like to settle sooner?

3 PHASE 3 The loop

- 1 Surgery or a wound in the area.
- 2 Accelerator high and blood supply closed.
- 3 Prolonged inflammation and slow recovery → more discomfort.

↻ AND IT STARTS AGAIN

2 PHASE 2 What happens in the nervous system

Picture *building work that heals better when the blood supply flows well and tension drops*. Your “accelerator” and “brake” regulate that blood supply.

⚡ Accelerator

Sympathetic · closes the blood supply and prolongs inflammation.

⏸ Brake

Parasympathetic · opens the blood supply and gives rest to heal.

With the **accelerator high** (pain, stress, a bad night) tissue takes longer; the **brake** opens the blood supply.



More blood supply and rest: ground for healing.

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the accelerator and the brake.

~ Helps give way to the brake for more blood supply and better rest, the ground on which the area heals.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

♥ With your surgeon

NESA **does not replace** the aftercare from your oral and maxillofacial surgeon or implantologist (instructions, medication, hygiene, reviews).

✓ What you may notice

- ✓ A smoother recovery
 - ✓ Less discomfort
 - ✓ Better rest
 - ✓ More peace of mind in the process
- It may help; results vary from person to person.*



Osseointegration: helping the implant take hold

When you need the implant or bone graft to take hold well and integrate.

1 PHASE 1 Do you recognise this?

- ✓ You are about to have, or have had, an implant
- ✓ You want it to integrate well
- ✓ A recovery you would like to support
- ✓ Bone graft
- ✓ You worry about tobacco or stress
- ✓ Follow-up reviews

“ Do you want your implant or graft to take hold as well as possible?

“ Are you looking to support bone integration during recovery?

3 PHASE 3 The loop

- 1 Implant or graft placed.
- 2 The blood supply follows the balance of the ANS.
- 3 Better or slower integration → the outcome of treatment.

↻ AND IT STARTS AGAIN

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the accelerator and the brake.

~ Helps open the blood supply (brake), the ground on which bone and implant integrate better.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

♥ With your implantologist

NESA **does not replace** your implantologist or surgeon (Ziacom): technique, loading times, checks and stopping tobacco are their decisions.

✓ What you may notice

- ✓ A more favourable recovery
 - ✓ Support for integration
 - ✓ More blood supply to the area
 - ✓ Supporting the treatment outcome
- It may help; results vary from person to person.*

2 PHASE 2 What happens in the nervous system

Picture a new plant that roots better when it is watered well — the blood supply. Your nervous system regulates that supply with its “accelerator” and “brake”.

⚡ Accelerator

Sympathetic · closes the blood supply that nourishes bone and gum.

🛑 Brake

Parasympathetic · opens the blood supply and nourishes the area.

Integration depends on the **blood supply**, regulated by the ANS: the brake opens it and nourishes bone and gum.



Helping the implant and bone integrate better.



Post-operative inflammation and pain

When, after the procedure, the area is swollen and sore and you want it to settle sooner.

1 PHASE 1 Do you recognise this?

- ✓ Swelling in the area
- ✓ Throbbing pain
- ✓ Tenderness
- ✓ Local warmth
- ✓ Discomfort opening or chewing
- ✓ A recovery that drags on

“ Do the swelling or pain after the procedure drag on?

“ Would you like the area to settle sooner?

3 PHASE 3 The loop

- 1 Surgery in the area.
- 2 Useful inflammation that **drags on** (accelerator high).
- 3 Sustained pain and swelling → **slow recovery**.

↻ AND IT STARTS AGAIN

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the **accelerator** and the **brake**.

~ Helps give way to the **brake** for more balanced control of inflammation and a more manageable pain.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

♥ With your surgeon

NESA **does not replace** your surgeon or dentist's instructions (anti-inflammatories, cold, hygiene, rest) nor change your medication.

✓ What you may notice

- ✓ Less swelling
 - ✓ A more bearable pain
 - ✓ Better rest
 - ✓ A more comfortable recovery
- It may help; results vary from person to person.*

2 PHASE 2 What happens in the nervous system

Picture a *defensive fire*, useful at first, that is best not left *burning*. The “**accelerator**” and the “**brake**” regulate how long that fire lasts.

⚡ Accelerator

Sympathetic · keeps the fire and the pain going.

🛑 Brake

Parasympathetic · modulates inflammation and raises the pain threshold.

Inflammation is a normal defence; the problem is when it **drags on**. The brake helps modulate it.



Modulating inflammation and a more manageable pain.



Bruxism: clenching and grinding your teeth

When you clench or grind your teeth (especially at night or with stress) and your jaw pays for it.

1 PHASE 1 Do you recognise this?

- ✓ Tired jaw on waking
- ✓ Worn or sensitive teeth
- ✓ You clench under stress
- ✓ Morning headache
- ✓ Clicking
- ✓ Your sleep partner has told you

“ Do you wake with a tired jaw or a headache?

“ Do you clench or grind, especially at night or with stress?

3 PHASE 3 The loop

- 1 Stress or poor sleep.
- 2 Accelerator high: a clenching muscle.
- 3 Wear, pain and a bad night → more tension.

↻ AND IT STARTS AGAIN

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the accelerator and the brake.

~ Helps lower the tone and improve sleep so the jaw clenches less, especially at night.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

With your dentist

NESA **does not replace** the occlusal splint or your dentist's treatment (adjustment, stress management).

What you may notice

- ✓ A less loaded jaw
 - ✓ Fewer headaches
 - ✓ Better rest
 - ✓ Waking more relaxed
- It may help; results vary from person to person.*

2 PHASE 2 What happens in the nervous system

Picture a jaw fist that clenches on its own when the body is tense. Your nervous system, with its “accelerator” and “brake”, sets that tone.

⚡ Accelerator

Sympathetic - raises the tone of the chewing muscle, which will not let go.

⏸ Brake

Parasympathetic - lowers the tone and lets the jaw rest.

Bruxism is linked to a **high** accelerator of the trigeminal-jaw complex (stress, poor sleep).



Lowering the tone so the jaw can rest.



Orofacial pain and TMJ (temporomandibular disorder)

When your face or jaw hurts on opening and chewing, and the pain does not fit a single tooth.

1 PHASE 1 Do you recognise this?

- ✓ Pain in the face, jaw or joint
- ✓ Headache
- ✓ Pain that moves around
- ✓ Clicking or locking on opening
- ✓ Difficulty chewing
- ✓ Tension that worsens with stress

“ Does your jaw or face hurt on opening or chewing?

“ Does it click, lock, or does the pain not fit one tooth?

3 PHASE 3 The loop

- 1 Sustained tension and pain.
- 2 A more sensitive nervous system (accelerator high).
- 3 More orofacial pain and poorer function → more sensitisation.

↻ AND IT STARTS AGAIN

2 PHASE 2 What happens in the nervous system

Picture a facial alarm system with the volume turned up: it goes off at everything. The “accelerator” turns that volume up and the “brake” turns it down.

⚡ Accelerator

Sympathetic - turns up the “volume” of pain and muscle tension.

⏸ Brake

Parasympathetic - turns the volume down and relaxes the area.

There is **sensitisation** (the nervous system turns up the volume) plus sustained muscle tension.



Turning down the volume of facial pain.

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the accelerator and the brake.

~ Helps turn down the volume of pain and tension, the ground on which jaw function improves.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

♥ With your TMJ clinic

NESA **does not replace** your dentist, TMJ clinic or physiotherapist (splint, exercises, physiotherapy, medication): it is treated as a team.

✓ What you may notice

- ✓ A more manageable pain
- ✓ A looser jaw
- ✓ Fewer headaches
- ✓ Better function when chewing

It may help; results vary from person to person.



Trigeminal neuralgia: the electric pain of the face

When you get bursts of electric pain in the face, very strong and brief.

1 PHASE 1 Do you recognise this?

- ✓ Brief, intense bursts of pain
- ✓ Set off by washing or by the air
- ✓ Fear of it coming back
- ✓ Triggered by talking or chewing
- ✓ "Trigger" zones that bring it on
- ✓ It affects eating and daily life

“ Is your facial pain electric, in brief and extremely strong bursts?

“ Is it set off by simple gestures like talking or washing?

3 PHASE 3 The loop

- 1 Trigeminal nerve hyperexcitable.
- 2 Accelerator high that amplifies.
- 3 Bursts at any touch → more alert and fear.

↻ AND IT STARTS AGAIN

2 PHASE 2 What happens in the nervous system

Picture a bare wire in the face that throws off sparks at the slightest touch. The “accelerator” keeps the alert up and the “brake” helps calm the signal.

⚡ Accelerator

Sympathetic · keeps the alert up and amplifies the burst.

🛑 Brake

Parasympathetic · calms the signal and raises the threshold.

The trigeminal nerve becomes **hyperexcitable** and fires pain without proportionate damage.



Calming a nerve that fires at any touch.

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the accelerator and the brake.

~ Helps lower the hyperexcitability and the alert so the nerve fires less easily.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

♥ With your neurologist

NESA **does not replace** the plan of your neurologist, maxillofacial surgeon or pain clinic (specific medication, injections, surgery if appropriate) nor avoid investigating the cause.

✓ What you may notice

- ✓ Less frequent bursts
 - ✓ Less intense bursts
 - ✓ More quality of life
 - ✓ Less fear of the next episode
- It may help; results vary from person to person.



Sleep, rest and oral recovery

When you sleep poorly or clench at night and your mouth feels it the next day.

1 PHASE 1 Do you recognise this?

- ✓ Hard to fall asleep or you wake up
- ✓ You wake up tired
- ✓ Slower oral recovery
- ✓ You clench at night
- ✓ More pain or inflammation by day
- ✓ Morning headache

“ Does your sleep not rest you and your mouth fares worse the next day?

“ Do you clench at night or wake up in pain?

3 PHASE 3 The loop

- 1 Accelerator high at night (stress, pain, bruxism).
- 2 Light sleep that does not restore.
- 3 Less oral repair → more pain and inflammation by day.

↻ AND IT STARTS AGAIN

4 PHASE 4 How NESA fits in

Non-invasive, painless microcurrents, with electrodes on the hands and feet, help your nervous system rebalance the accelerator and the brake.

~ Helps engage the brake for more restorative rest, the ground on which pain, inflammation and recovery improve.

The electrodes go on the hands and feet, not in the mouth: they regulate the nervous system of the whole body, which in turn influences the mouth.

5 PHASE 5 With your professional & what you may notice

♥ With your dentist

NESA **does not replace** your dentist or doctor's guidance (sleep hygiene, a splint if there is bruxism, night pain management).

✓ What you may notice

- ✓ Sleeping a little better
 - ✓ Waking more rested
 - ✓ Better oral recovery
 - ✓ Fewer morning headaches
- It may help; results vary from person to person.

2 PHASE 2 What happens in the nervous system

Picture a light that will not switch off at night, just when the mouth should be repairing. At night the “brake” should be in charge.

⚡ Accelerator

Sympathetic - stays high at night and sleep does not restore.

⏸ Brake

Parasympathetic - should lead at night; deep sleep is repair.

If the accelerator stays high at night (stress, pain, bruxism), sleep is light and does not restore.



Rest that repairs the mouth at night.

Scientific bibliography

A selection of literature documenting the involvement of the **autonomic nervous system** —vagal tone, heart-rate variability (HRV) and the cholinergic anti-inflammatory reflex— in the symptoms of the conditions addressed. It supports the physiological rationale of the approach; it does not represent a claim of NESA's clinical efficacy for each indication. Ordered by specialty.

Foundations · ANS, HRV & the anti-inflammatory reflex

1. Thayer JF, Lane RD. *A model of neurovisceral integration in emotion regulation and dysregulation*. J Affect Disord. 2000;61(3):201–216.
2. Thayer JF, Åhs F, Fredrikson M, Sollers JJ, Wager TD. *A meta-analysis of heart rate variability and neuroimaging studies*. Neurosci Biobehav Rev. 2012;36(2):747–756.
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1. Nashed A, Lanfranchi P, Rompré P, et al. *Sleep bruxism is associated with a rise in arterial pressure and sympathetic activation*. Sleep. 2012;35(4):529–536.
2. Chinthakanan S, Laosuwan K, Boonyawong P, et al. *Reduced heart rate variability and increased sympathetic activity in temporomandibular disorders*. Arch Oral Biol. 2018;90:125–129.
3. Appukuttan DP. *Strategies to manage patients with dental anxiety and dental phobia*. Clin Cosmet Investig Dent. 2016;8:35–50.

The references support the physiological relationship between the autonomic nervous system and the symptoms described. Use of NESA under professional supervision; it does not replace treatment or medication.



***We modulate the autonomic nervous system.
Everything else follows.***

Non-invasive neuromodulation of the autonomic nervous system. One root,
many clinical expressions.

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