



SPECIALTY 02 · ANS

Speech & Language Therapy

Voice, speech, swallowing and the neurology of language.

16 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.

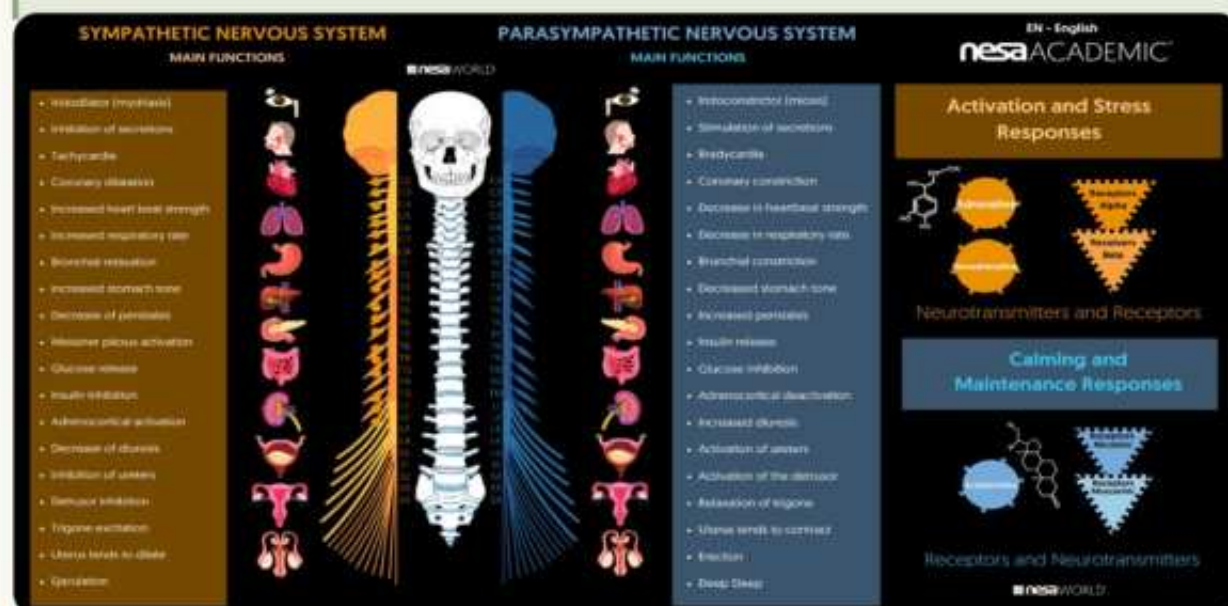


NESA speaks that language

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.

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Childhood stammering and the nervous system

Your child knows what they want to say, but the words get stuck.

1 STEP 1 Does this sound familiar?

- ✓ Repeats syllables or sounds
- ✓ Gets "stuck" on a word
- ✓ Stretches sounds ("mmummy")
- ✓ Tension in the face or neck when speaking
- ✓ Avoids talking or certain words
- ✓ More blocks when anxious

Do they know what they want to say but it won't come out?

Do they block more when rushed or nervous?

3 STEP 3 The traffic light, step by step

- 1 They want to speak and the body fires up.
- 2 The word gets stuck on red.
- 3 The block brings more tension and fear of talking.

AND THE NEXT TIME IS HARDER

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system switch the 'brake' back on.

~ A calmer body when speaking lets words come out with fewer blocks.

2 STEP 2 What happens in the nervous system

Imagine a *traffic light* for words that stays on red. Their nervous system has an 'accelerator' and a 'brake', and when they speak the two don't co-ordinate in time.

⚡ Accelerator

Sympathetic - fires up too much just as they speak.

🛑 Brake

Parasympathetic - doesn't arrive in time: the word blocks.

In stammering, the accelerator spikes just as the word comes out.



A calmer body so the words can flow.



Electrodes on hands and feet: painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: it prepares a calmer body so their fluency techniques work better.

✓ What you may notice

- ✓ Calmer speech
 - ✓ Fewer blocks
 - ✓ More confidence
- Results vary from person to person.*



Language delay and the nervous system

Your child finds it harder to understand and put words together than other children their age.

1 STEP 1 Does this sound familiar?

- ✓ Says fewer words than expected
- ✓ Finds it hard to follow instructions
- ✓ Short or unclear sentences
- ✓ Gets frustrated when not understood
- ✓ Struggles to focus on the activity
- ✓ Seems "in their own world" amid noise

“ Do they find it hard to follow what you say?

“ Do they get very distracted when it's noisy?

3 STEP 3 Why learning is harder

- 1 The body is highly aroused (lots of noise).
- 2 It's hard to attend and listen well.
- 3 Less new language gets in.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system turn down that background noise.

~ With less inner noise, they're more available to attend and learn in sessions.

2 STEP 2 What happens in the nervous system

Imagine *a radio that's hard to tune amid the static*. When the body is highly switched on, that 'noise' drowns out the language signal.

⚡ Accelerator

Sympathetic · high arousal: lots of background noise.

🛑 Brake

Parasympathetic · when it kicks in, the noise drops and focus improves.

With so much inner noise, it's **hard** to attend, listen and learn language calmly.



A more settled child learns language more easily.



Electrodes on hands and feet · painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: a more settled child gets more from their language stimulation.

✓ What you may notice

- ✓ Better attention
 - ✓ More urge to communicate
 - ✓ More from each session
- Results vary from person to person.*



Trouble with speech sounds and the nervous system

Your child swaps or drops sounds, and it's hard to understand them.

1 STEP 1 Does this sound familiar?

- ✓ Swaps one sound for another
- ✓ Drops letters or syllables
- ✓ Hard to understand what they say
- ✓ Effort or tension when pronouncing
- ✓ Tires when talking a lot
- ✓ Embarrassed to repeat

“ Do people outside the family struggle to understand them?

“ Do they tense their mouth when speaking?

2 STEP 2 What happens in the nervous system

Imagine *the mouth's orchestra playing out of tune*. Tension stiffens the lips and tongue and throws them out of sync.

⚡ Accelerator

Sympathetic · tension that stiffens lips and tongue.

⏸ Brake

Parasympathetic · relaxes and lets the movements co-ordinate.

With a tense mouth, the 'players' don't play in time and the sound comes out off-key.

3 STEP 3 How it goes out of tune

- 1 Tension stiffens the lips and tongue.
- 2 The movements fall out of sync.
- 3 The sound comes out altered or unclear.



A relaxed mouth shapes each sound more easily.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system release that tension.

~ With a more relaxed mouth, they co-ordinate the speech movements they practise more easily.



Electrodes on hands and feet · painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: articulation practice goes further on a relaxed body.

✓ What you may notice

- ✓ Clearer speech
 - ✓ Less effort
 - ✓ Easier to understand
- Results vary from person to person.*



Childhood apraxia of speech and the nervous system

Your child knows the word, but their mouth can't make the movement.

1 STEP 1 Does this sound familiar?

- ✓ Knows what to say but can't get it out
- ✓ Says the word differently each time
- ✓ Great effort to speak
- ✓ Gropes for the mouth position
- ✓ More errors on longer words
- ✓ Gets frustrated and tries again

“ Does the same word come out differently each time?

“ Does their mouth seem to 'search' for the position?

3 STEP 3 The speech route

- 1 The brain plans the movement.
- 2 Overload makes the route falter.
- 3 The word comes out different or half-formed.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system stay more regulated.

~ More regulated, they plan and repeat the movements they practise more reliably.



Electrodes on hands and feet · painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: motor speech therapy is the foundation; NESA supports regulation.

✓ What you may notice

- ✓ More consistent movements
 - ✓ Less frustration
 - ✓ Better progress
- Results vary from person to person.



A regulated system plans speech more clearly.

⚡ Accelerator

Sympathetic · overload that disrupts planning.

⏸ Brake

Parasympathetic · calm that helps planning with less interference.

With the system overloaded, the speech route falters and breaks up.



Feeding & swallowing and the nervous system

Your child finds it hard to swallow or eat safely, and mealtimes are tense.

1 STEP 1 Does this sound familiar?

- ✓ Struggles to swallow some textures
- ✓ Very long meals or refusal
- ✓ Eats a narrow range of foods
- ✓ Coughs or chokes when eating
- ✓ Tension and tears at the table
- ✓ Afraid to try new things

“ Are mealtimes full of tension?

“ Do they often cough or choke when swallowing?

3 STEP 3 Why it jams

- 1 The body is on alert around food.
- 2 The swallowing 'brake' doesn't engage.
- 3 Swallowing becomes hard and unsafe.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system make room for the 'brake'.

~ With the brake present, they face food with more calm and co-ordination.

2 STEP 2 What happens in the nervous system

Imagine a *swallowing lift that jams*. Swallowing is run mostly by the 'brake'; when the 'accelerator' takes over, it sticks.

⚡ Accelerator

Sympathetic - alert and tense: the lift jams.

⏸ Brake

Parasympathetic (vagus) - co-ordinates a smooth swallow.

When tension takes over, the swallow loses co-ordination and food feels frightening.



A calmer body approaches food with more safety.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: feeding and swallowing therapy is the foundation; NESA supports the calm.

✓ What you may notice

- ✓ Calmer mealtimes
- ✓ Better swallow co-ordination
- ✓ Less tension

Results vary from person to person.



Drooling and the nervous system

Your child drools a lot, which is uncomfortable and stands out socially.

1 STEP 1 Does this sound familiar?

- ✓ Drools through the day
- ✓ Chin or clothes often wet
- ✓ Hard to close the lips fully
- ✓ Mouth often open
- ✓ Skin irritation
- ✓ Social discomfort

“ Are their chin or clothes often wet?

“ Do they struggle to keep their lips closed?

3 STEP 3 Why it drips

- 1 The nervous system is out of tune.
- 2 Saliva control becomes too loose.
- 3 Drooling and discomfort appear.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system regulate better.

~ Better regulation can support a more controlled flow of saliva.

2 STEP 2 What happens in the nervous system

Imagine *a tap left dripping*. Saliva is regulated by the nervous system; when it's out of tune, the tap stays open more than it needs to.



Accelerator

Sympathetic · the saliva control is out of tune.



Brake

Parasympathetic · helps a better-tuned control.

With the system out of tune, the 'tap' stays more open than it needs to be.



A regulated system helps control saliva better.



Electrodes on hands and feet · painless microcurrents.

5 STEP 5 With your therapist & what you may notice

With your therapist

NESA **does not replace** your speech therapist: lip-closure and oral-control exercises remain the foundation.

What you may notice

- ✓ Less drooling
- ✓ Better lip closure
- ✓ More comfort

Results vary from person to person.



Hoarse voice and the nervous system

Your child often goes hoarse and strains their voice when talking or shouting.

1 STEP 1 Does this sound familiar?

- ✓ Often hoarse or rough voice
- ✓ Shouts a lot when playing
- ✓ Throat-clearing or sore throat
- ✓ Strains the voice when talking
- ✓ Loses the voice by day's end
- ✓ Voice that fades

“ Do they go hoarse often?

“ Do they push or squeeze the voice when speaking?

3 STEP 3 How the voice strains

- 1 Tension squeezes the vocal cords.
- 2 The voice comes out strained and rough.
- 3 The throat gets overworked and hoarseness sets in.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system release that underlying tension.

~ With less tension, the voice comes out with less effort while the therapist re-trains its use.

2 STEP 2 What happens in the nervous system

Imagine a guitar string pulled too tight. Tension squeezes the vocal cords and the voice comes out strained.

⚡ Accelerator

Sympathetic - tension that squeezes the vocal cords.

⏸ Brake

Parasympathetic - loosens for an easier voice.

With a tense throat, the voice turns rough and gets overworked.



A relaxed throat lets the voice out with ease.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: voice re-education and vocal habits remain the foundation.

✓ What you may notice

- ✓ Less hoarse voice
 - ✓ Less effort to speak
 - ✓ A more comfortable throat
- Results vary from person to person.



Communication in autism and the nervous system

Your child finds communicating hard, and sometimes the world overwhelms them.

1 STEP 1 Does this sound familiar?

- ✓ Finds it hard to start communicating
- ✓ Gets overwhelmed and hard to settle
- ✓ Less contact or back-and-forth
- ✓ Becomes overloaded by noise or light
- ✓ Struggles to attend amid stimulation
- ✓ Needs routines to feel calm

“ Do they get overwhelmed easily when there's a lot going on?

“ Is it hard for them to attend and communicate when overloaded?

2 STEP 2 What happens in the nervous system

Imagine *the world's volume turned right up*. The 'accelerator' on alert raises the sensory volume, leaving little room to communicate.



Accelerator

Sympathetic · turns up the sensory 'volume'; overload.



Brake

Parasympathetic · lowers the volume, making room to communicate.

With the volume so high, **there's little room to attend and communicate.**

3 STEP 3 When the world gets louder

- 1 The surroundings raise the sensory volume.
- 2 The body goes on alert (overload).
- 3 There's little room to communicate.



With the volume lower, there's room to communicate.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help their nervous system turn down that baseline volume.

~ More regulated, they're more available to communicate and learn with the therapist.



Electrodes on hands and feet · painless microcurrents.

5 STEP 5 With your therapist & what you may notice

With your therapist

NESA **does not replace** your speech therapist: communication and language intervention remains the foundation.

What you may notice

- ✓ More regulation
 - ✓ More readiness to communicate
 - ✓ Fewer meltdowns
- Results vary from person to person.*



Difficulty swallowing and your nervous system

Swallowing has become hard and unsafe, and you're afraid of choking.

1 STEP 1 Does this sound familiar?

- ✓ Struggle to swallow liquids or solids
- ✓ Coughing or choking when eating
- ✓ Feeling food gets stuck
- ✓ Long, tiring meals
- ✓ Fear of choking
- ✓ Avoid certain foods

“ Are you afraid of choking when you eat?

“ Do you feel food gets stuck when you swallow?

3 STEP 3 Why swallowing is hard

- 1 Neurological damage disrupts the swallow.
- 2 The swallowing 'brake' arrives with less power.
- 3 Swallowing becomes slow and unsafe.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system recover its regulation.

~ Better regulation can support more co-ordinated swallowing, alongside your therapist's work.

2 STEP 2 What happens in the nervous system

Imagine a *swallowing lift* that's lost its power. Swallowing depends heavily on the 'brake' (the vagus).



Accelerator

Sympathetic - tension that takes co-ordination from the swallow.



Brake

Parasympathetic (vagus) - co-ordinates a safer swallow.

Regulating the nervous system can support a more co-ordinated swallow.



A regulated system supports a more co-ordinated swallow.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

With your therapist

NESA **does not replace** your speech therapist: swallowing therapy (manoeuvres, textures, exercises) is the foundation.

What you may notice

- ✓ More co-ordinated swallowing
- ✓ Safer meals
- ✓ Less effort

Results vary from person to person.



Difficulty articulating and your nervous system

You speak more slowly or are harder to understand; your mouth doesn't respond as it used to.

1 STEP 1 Does this sound familiar?

- ✓ Slow or slurred speech
- ✓ Quiet or monotone voice
- ✓ Asked to repeat
- ✓ Hard to articulate
- ✓ Tire when talking
- ✓ Mouth and tongue feel sluggish

“ Are you often asked to repeat?

“ Does talking tire you more than before?

3 STEP 3 Why articulation is hard

- 1 The brain-to-mouth signal arrives weak.
- 2 The muscles respond slowly.
- 3 Speech comes out less clear and firm.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system stay more regulated.

~ More regulated, you support the control and stamina of speech you work on in therapy.

2 STEP 2 What happens in the nervous system

Imagine a remote control with worn-out batteries. The speech muscles respond slowly or out of sync.

⚡ Accelerator

Sympathetic - tension and fatigue that sap control.

⏸ Brake

Parasympathetic - a regulated system supports motor control.

A more regulated system supports better speech control while you train in therapy.



A regulated system supports firmer speech.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: articulation, breathing and voice exercises are the foundation.

✓ What you may notice

- ✓ Slightly clearer speech
 - ✓ A firmer voice
 - ✓ Less fatigue when talking
- Results vary from person to person.



Aphasia and your nervous system

You know what you want to say, but the words won't come.

1 STEP 1 Does this sound familiar?

- ✓ Know the idea but not the word
- ✓ Swap or mix up words
- ✓ Hard to follow long sentences
- ✓ Frustration when communicating
- ✓ Block when rushed or nervous
- ✓ Reading or writing is hard

“ Is the word often ‘on the tip of your tongue?’

“ Do you block more when you get nervous?

3 STEP 3 The bridge under repair

- 1 The idea is clear.
- 2 Stress cuts the lanes to the word.
- 3 The word doesn't arrive or comes out wrong.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system bring the stress down.

~ With less stress, you face language therapy better placed to relearn.

2 STEP 2 What happens in the nervous system

Imagine *a word-bridge under repair*. Stress ‘closes lanes’ between the idea and the word.

⚡ Accelerator

Sympathetic - stress closes lanes on the bridge.

⏸ Brake

Parasympathetic - with calm, rehab rebuilds more effectively.

With less stress, you **approach** language therapy more calmly and ready to relearn.



Facing therapy more calmly helps rebuild the bridge.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: language rehabilitation is the foundation that rebuilds the bridge.

✓ What you may notice

- ✓ Calmer therapy
 - ✓ Less frustration
 - ✓ Better readiness
- Results vary from person to person.*



Tense or tired voice and your nervous system

Your voice tires, fades or turns hoarse, especially under stress.

1 STEP 1 Does this sound familiar?

- ✓ Voice that tires or fades
- ✓ Hoarseness by day's end
- ✓ Effort or squeezing to speak
- ✓ Tense throat or a lump
- ✓ Frequent throat-clearing
- ✓ Worse under stress

“ Does your voice worsen when you're stressed?

“ Does your throat feel tight when you speak?

3 STEP 3 How the voice tenses

- 1 Stress raises the accelerator.
- 2 The larynx tenses.
- 3 The voice comes out squeezed and tires.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system switch on the 'brake' and release laryngeal tension.

~ With a more relaxed larynx, the voice comes out with less effort while the therapist re-trains your technique.

2 STEP 2 What happens in the nervous system

Imagine a *string pulled too tight*. Stress keeps the 'accelerator' high and tenses the larynx.



Accelerator

Sympathetic - stress that tenses the larynx.



Brake

Parasympathetic - eases the tension and frees the voice.

With a tense larynx, the voice comes out squeezed and tires.



A relaxed larynx gives a freer voice.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

With your therapist

NESA **does not replace** your speech therapist: vocal re-education and voice hygiene are the foundation.

What you may notice

- ✓ A less forced voice
 - ✓ Less vocal fatigue
 - ✓ A more comfortable throat
- Results vary from person to person.*



Professional voice and your nervous system

You use your voice all day, and by the end it gives out or disappears.

1 STEP 1 Does this sound familiar?

- ✓ Voice that fades by day's end
- ✓ Recurring hoarseness or voice loss
- ✓ Effort to project
- ✓ Dry or overworked throat
- ✓ Voice feels 'on the edge'
- ✓ Worse in stressful spells

“ Does your voice give out by the end of the day?

“ Do you get frequent hoarseness or voice loss?

3 STEP 3 How it overheats

- 1 Heavy voice use, no pauses.
- 2 Tension 'heats' the larynx.
- 3 The voice gives out or disappears.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system recover its braking pauses.

~ Those pauses help 'cool' the vocal tension and protect the voice alongside your technique.

2 STEP 2 What happens in the nervous system

Imagine a *vocal engine that overheats*. Heavy use and sustained tension 'heat it up' with no braking pauses.

⚡ Accelerator

Sympathetic - heavy use and tension; the voice heats up.

⏸ Brake

Parasympathetic - braking pauses that 'cool' the tension.

Without braking pauses, the voice tires and gets injured.



Braking pauses that protect your working tool.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: vocal technique, warm-ups and voice hygiene are the foundation.

✓ What you may notice

- ✓ A voice that lasts longer
 - ✓ Less fatigue by day's end
 - ✓ Fewer episodes of voice loss
- Results vary from person to person.*



Stammering and your nervous system

Before you even speak you fear blocking, and that makes you block more.

1 STEP 1 Does this sound familiar?

- ✓ Repeat or stretch sounds
- ✓ Tension anticipating speech
- ✓ More blocks under pressure
- ✓ Blocks when starting to speak
- ✓ Avoid words or situations
- ✓ Tired of 'being on guard'

“ Do you fear blocking before you even speak?

“ Do you avoid phone calls or certain words?

3 STEP 3 The cycle of fear

- 1 You anticipate the block and tense up.
- 2 The tension makes the block more likely.
- 3 The block feeds more fear.

🔄 AND IT REPEATS NEXT TIME

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system lower that anticipatory arousal.

~ With less arousal, you reach speech more calmly and break the cycle alongside your therapist.



Electrodes on hands and feet · painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: fluency techniques and work on avoidance are the foundation.

✓ What you may notice

- ✓ Less anticipatory tension
 - ✓ More fluency
 - ✓ More confidence when speaking
- Results vary from person to person.*



Reaching speech more calmly helps break the cycle.



Orofacial tension and your nervous system

You clench or grind your teeth, breathe through your mouth and carry tension in your jaw.

1 STEP 1 Does this sound familiar?

- ✓ Clench or grind your teeth
- ✓ Breathe through the mouth
- ✓ Poor tongue posture
- ✓ Tense or sore jaw
- ✓ Tension in face and neck
- ✓ Worse with stress or at night

“ Is your jaw tense or sore?

“ Do you clench or grind, especially under stress?

3 STEP 3 How the fist closes

- 1 Stress keeps the accelerator high.
- 2 The jaw clenches (a closed fist).
- 3 Grinding and tension set in.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system switch on the 'brake'.

~ With the brake on, orofacial tension drops and myofunctional work goes further.

2 STEP 2 What happens in the nervous system

Imagine *the jaw as a clenched fist*. Sustained stress 'closes the fist': clenching, grinding, orofacial tension.

⚡ Accelerator

Sympathetic - sustained stress that 'closes the fist'.

⏸ Brake

Parasympathetic - relaxes and opens the jaw.

With the 'accelerator' high, orofacial tension persists day and night.



A relaxed jaw lets you breathe and work better.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: myofunctional exercises (tongue, lips, nasal breathing) are the foundation.

✓ What you may notice

- ✓ Less clenching and grinding
 - ✓ A looser jaw
 - ✓ Better nasal breathing
- Results vary from person to person.*



Quiet voice in Parkinson's and your nervous system

Your voice has become very quiet, and people keep asking you to repeat.

1 STEP 1 Does this sound familiar?

- ✓ Very quiet or weak voice
- ✓ Asked to repeat
- ✓ Monotone or flat voice
- ✓ Don't notice how quiet it is
- ✓ Tire when projecting
- ✓ Hard to be heard in a group

“ Are you often asked to speak up?

“ Do you feel you speak normally but aren't heard?

3 STEP 3 Why the volume drops

- 1 Rigidity lowers the loudness of the voice.
- 2 The body doesn't sense how quiet it is.
- 3 You speak quietly without realising.

4 STEP 4 How NESA fits in

Gentle, non-invasive and painless microcurrents, with electrodes on the hands and feet, help your nervous system stay more regulated.

~ More regulated, you support the vocal effort and stamina you train with your therapist.

2 STEP 2 What happens in the nervous system

Imagine *the voice's volume left turned down*. Parkinson's rigidity lowers it, and it's hard to notice.

⚡ Accelerator

Sympathetic - rigidity and dysautonomia that sap intensity.

🛑 Brake

Parasympathetic - a regulated system supports vocal effort.

Regulating the nervous system supports work on voice and loudness.



A regulated system supports a voice that's heard.



Electrodes on hands and feet - painless microcurrents.

5 STEP 5 With your therapist & what you may notice

♥ With your therapist

NESA **does not replace** your speech therapist: intensive voice and loudness therapy (such as LSVT) is the foundation.

✓ What you may notice

- ✓ A slightly more audible voice
 - ✓ Less vocal fatigue
 - ✓ Better consistency
- Results vary from person to person.*

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

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Speech therapy · Voice, swallowing & neurology

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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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