

TENS Treatment Protocols

The primary aim of TENS is to provide symptomatic pain relief by exciting sensory nerves and thereby stimulating either the Pain Gate Mechanism and/or the Endogenous Opioid system.

The following is meant to serve as guidelines. Adjustments and parameters are to ultimately be decided by the treating physician or therapist.

Treatment Ranges

It is difficult to find support for the concept that there is a single frequency that works best for every patient, but the following ranges appears to cover the majority of individuals.

Pain management via the Pain Gate Mechanism involves excitation of the A beta sensory fibers, which reduces the transmission of the pain stimulus from the 'c' fiber through the spinal cord to other parts of the body.

A beta fibers appear to respond optimally to stimulation at relatively high rates:

Frequency: 90 – 130 Hz

Pulse Width: 80 – 120 μ s (Adjusts the width until a comfortable level is reached)

Pain management via the Endogenous Opioid system involves excitation of the A delta fibers which causes the release of an endogenous opiate (encephalin) in the spinal cord - hence reducing the activation of the pain sensory pathways.

A delta fibers appear to respond optimally to stimulation at relatively high rates:

Frequency: 2 – 5 Hz

Pulse Width: 150 – 200 μ s (Adjusts the width until a comfortable level is reached)

Pain management can also be achieved by stimulating both nerve types (A-delta, A-beta) at the same time by employing **burst** mode stimulation. Burst pulses at higher rates will excite A beta fibers and the pain gate mechanism, but by virtue of the rate of the burst – longer pulse width and cycle times, each burst will produce excitation in the A delta fibers, therefore stimulating the opioid mechanisms.

Burst settings:

Frequency: 90 – 130 Hz

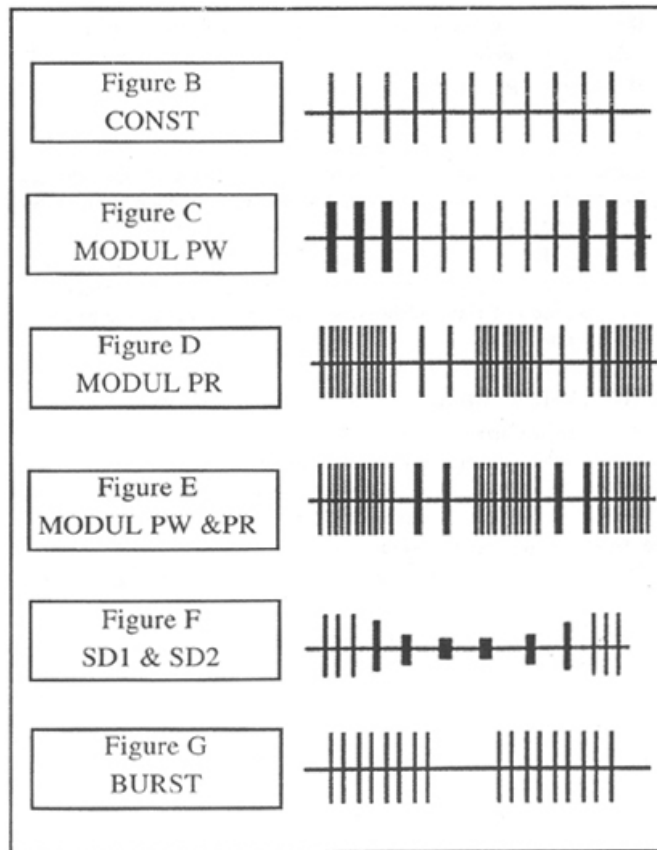
Pulse Width: 40 - 60 μ s (Adjusts the width until a comfortable level is reached)

Other Considerations:

Intensity: general rule of thumb - strong but not painful

Time: minimal effective dosage – 30 minutes

Modulation: The modulation of phase/pulse characteristics has been added to delay perceptual accommodation to current flow. Modulation features allow for variation in the aforementioned treatment ranges for optimal effect and comfort.



Common Conditions that Warrant TENS Therapy

Systemic Pain

Bursitis	Phantom Limb Syndrome
Cancer	Raynaud's Syndrome
Causalgia	Rheumatoid Arthritis
Multiple Sclerosis	Synovitis
Neuralgia	Diabetic Peripheral
Osteoarthritis	Neuropathy

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Head and Neck Pain

Cluster Headaches	Suboccipital Headaches
Dental Disorders	TMJ Syndrome
Migraine Headaches	Torticollis
Spondylosis	Trigeminal Neuralgia
Sprains/Strains	Whiplash

Abdominal Pain

Diverticulosis	Labor
Dysmenorrhea	Postoperative Pain

Back Pain

Facet Syndrome	Radiculitis
Intercoastal Neuralgia	Sprains/Strains
IVD Syndrome	Thoracodynia
Lumbago	Whole Back Pain
Lumbosacral Pain	

Lower Extremity Pain

Ankle Pain	Passive Stretch Pain
Foot Pain	Sciatica
Fractures	Sprains/Strains
Ischialgia	Tendonitis
Knee Pain	Thrombophlebitis

Upper Extremity Pain

Epicondylitis	Sprains/Strains
Frozen Shoulder	Subdeltoid Bursitis
Hand Pain	Wrist Pain
Peripheral Nerve Injury	