

BEsT TENS Precautions and Contraindications Decision Making

CONTRAINDICATIONS <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3031347/>

Contraindication	Rationale	Evidence
Implanted Devices		
Pacemaker, Cardioverter defibrillator, Neuro-stimulators(brain or SC), Bone growth stimulators, Indwelling BP monitors	<ul style="list-style-type: none"> • TENS has been shown to interfere with these devices and should be avoided over or close to these areas • For use with pacemakers, discuss the situation with a cardiologist and perform an initial TENS trial with Holter/ECG monitoring 	MODERATE
Body Regions		
Carotid sinus	<ul style="list-style-type: none"> • Stimulation of baroreceptors may cause a drop in HR/BP • Stimulation of the vagus and phrenic nerves may cause a laryngeal spasm 	LOW
Damaged skin	<ul style="list-style-type: none"> • Decrease skin impedance results in high current flow that may cause additional pain and tissue damage 	STRONG
Reproductive organs, genitalia	<ul style="list-style-type: none"> • The risk of TENS for gametogenesis are unknown. • Stimulation of reproductive organs or genitalia requires special training 	ABSENT
Transcranial application	<ul style="list-style-type: none"> • Risks are not fully understood • Risk of seizure • Only therapists with advanced skills should apply transcranially 	MODERATE
Eyes, oral cavity	<ul style="list-style-type: none"> • Effects of currents unknown • No know indication 	ABSENT
Conditions		
Cancer- local site Distant to local site, see precautions	<ul style="list-style-type: none"> • The effect of TENS on cancer cells/metastasis is unknown • Abnormal growths should be regarded as malignant until a diagnosis is rendered Patients presenting with both undiagnosed pain and a history of cancer in the last 5 years should not receive TENS • TENS may be used for patients in palliative care when benefits of pain reduction outweigh risks • Application of TENS at sites distant to the site of cancer is a precaution and not contraindicated. 	LOW
Pregnancy-torso	<ul style="list-style-type: none"> • The effects of electrical current passage through the uterus have not been determined • The greatest risk is during the first trimester • Stimulation over the abdomen may lead to unwanted uterine contraction • Endogenous opiates are stimulators of myometrial Contractions • TENS is effective for labor pain 	MODERATE
Epilepsy (head, neck and shoulder regions)	<ul style="list-style-type: none"> • TENS may induce seizures. 	MODERATE
Thrombosis/Thrombophlebitis	<ul style="list-style-type: none"> • TENS may increase circulation increasing risk of dislodging a thrombus. 	MODERATE
Hemorrhage	<ul style="list-style-type: none"> • Increase bleeding may occur in patients with current or recent hemorrhage or hemorrhagic condition 	MODERATE
Recently radiated tissues	<ul style="list-style-type: none"> • Tissue may respond atypically due to radiation induced inflammation or scar tissue. Possibility of remaining malignant cells 	MODERATE
Infection, Osteomyelitis, Tuberculosis	<ul style="list-style-type: none"> • May result in the spread of compartmentalized infections 	LOW

PRECAUTIONS <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3031347/>

Precaution	Rationale	Evidence
Pain		
Undiagnosed pain	<ul style="list-style-type: none"> • Postponing proper treatment and risk of worsening of underlying condition 	N/A
Conditions		
Cancer- distant to local site (Local site- see contraindications)	<ul style="list-style-type: none"> • Application of TENS at sites distant to the site of cancer is a precaution and not contraindicated. • TENS may be used for patients in palliative care when benefits of pain reduction outweigh risks. • Patients 5 years in remission are removed from the contraindication/precaution list. 	LOW
Pregnancy-over acupuncture points at the knee, hand, ankle	<ul style="list-style-type: none"> • TENS over acupuncture points has been demonstrated to increase uterine contraction 	MODERATE
Cognitive Impairment	<ul style="list-style-type: none"> • A patient needs to be able to perceive a safe intensity. • Consider referral to physical therapy and/or training a caregiver in appropriate use 	MODERATE
Cardiovascular disease	<ul style="list-style-type: none"> • Do not apply to chest • Use at sites other than the chest wall 	MODERATE
Impairments/Body Regions		
Extreme edema	<ul style="list-style-type: none"> • May adversely affect conduction of current to deeper tissues 	N/A
Extreme adipose	<ul style="list-style-type: none"> • May adversely affect conduction of current to deeper tissues 	N/A
Previous adverse TENS experience	<ul style="list-style-type: none"> • Refer to physical therapy to further evaluate 	N/A
Visual impairment	<ul style="list-style-type: none"> • If using independently will not be able to determine unit settings 	N/A
Trans thoracic applications	<ul style="list-style-type: none"> • Application of current across the chest (heart) is not necessary for pain relief • Alternative electrode placements should be sought. 	N/A
Impaired sensation, scar tissue	<ul style="list-style-type: none"> • Patients may be unable to provide feedback to properly set TENS intensity • Consider referral to physical therapy 	MODERATE

Level of Research Evidence

Strong	Clinical reports are consistent and suggest a potential for adverse reactions should TENS be used in the presence of this condition or on this body area. These clinical reports are supported by experimental evidence and/or by a strong biophysical rationale for the adverse reaction.
Moderate	The potential harmful effect has been demonstrated in experimental research using appropriate cell culture or animal models or when applied to health human subject; however, clinical evidence is either lacking or conflicting.
Low	There is a sound biophysical rationale to explain how TENS might cause an adverse reaction; however, there is no research evidence, either animal or clinical, to substantiate this response, or the evidence is contradictory.
Absent	No research, either experimental or clinical, has been found, and there is no known biophysical rationale to explain how the adverse reaction may occur.
N/A	These obvious precautions are included by the BEsT team. They are not documented in the attached references.

References

Electrophysical Agents- Contraindications and Precautions: An evidenced based Approach to Clinical Decision Making in Physical Therapy. *Physiother Can.* 2010;Fall62(5)1-80

Bellew JW, Michlovits SL, Nolan, TP. *Modalities for Therapeutic Intervention*, 6th edition. FA Davis. Philadelphia, PA.2016. Chapter 11.