

Background

- **Limb spasticity** is often associated with **pain, limited range of motion, and impaired functional mobility**
 - Consequence of upper motor neuron injury
- Current management approaches are invasive, temporary, or have adverse effects
 - Includes conservative and interventional therapies: pharmacologic therapy, physical therapy, botulinum toxin, intrathecal therapy, extracorporeal shockwave therapy, surgery
- **Cryotherapy** reduces metabolism, inflammation, and tissue damage
- **Cryoneurolysis:** cold temperatures applied directly to target nerves
 - Causes **axonal degeneration** while preserving nerve layers
 - Inhibits neuronal signaling for weeks-months
 - **Inhibits spasticity** by decreasing nerve conduction & muscle spindle excitability

Methods

- Study Design: systematic review of five medical databases using PRISMA 2020 guidelines
- Inclusion criteria: RCT, single-arm study, case report, or retrospective study with pre- and post-intervention results of cryoneurolysis in patients with diagnosed limb spasticity
- Outcome of interest: **muscle spasticity**
 - Modified Ashworth Scale (MAS) score: grades intensity of spasticity

Cryoneurolysis decreases limb spasticity and improves functional mobility and range of motion.

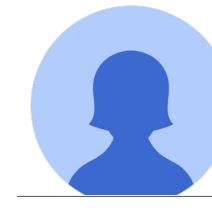


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ROWAN - VIRTUA
School of
Osteopathic Medicine



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Results & Discussion

- Six out of the 160 retrieved studies satisfied inclusion requirements
- **Cryoneurolysis consistently showed improvements** in:
 - MAS scores
 - Gait metrics
 - Functional mobility
 - Range of motion
- Improvements measured in upper and lower extremity spasticity
 - From various etiologies (TBI, MS, stroke)
- Benefits typically lasted **several months to over one year** post-cryotherapy
- No significant adverse effects or complications were reported
- Limitations: need for larger studies with diverse populations

Conclusion

- Preliminary findings suggest that cryoneurolysis is a minimally invasive and safe procedure that is shown to reduce spasticity
- Even though the outcomes of small studies seem promising, high quality prospective trials are required to show long-term effectiveness with current spasticity modalities/therapies
- Integration of ultrasound and advanced imaging allows precise targeting of deeper nerves