



## STRUCTURE & FUNCTION EDUCATION

### Systemic Effects of Dry Needling – Home Study

---

#### I. Welcome

- a. Video: Welcome Message from Instructor
- b. Video: How to Use this Course
- c. Survey: Before We Begin (goals, experience, roadblocks)
- d. Video: Introduction (2 minutes)

#### II. The Healing Process – Inflammation

Objectives: Upon completion of this module, the student will be able to:

- Describe how inflammatory mediators influence acute inflammation.
- Describe how inflammation drives the healing process
- Define the specialized functions of IL-1/ TNF in driving acute inflammatory responses

- a. Video: The Healing Process: Acute Inflammation – Mediators (14 minutes)
- b. Read: The Inflammatory Response to Cell Death  
[Rock KL, Kono H. The inflammatory response to cell death. Annu Rev Pathol. 2008;3:99–126. doi:10.1146/annurev.pathmechdis.3.121806.151456](#)
- c. Read: Physiology and immunology of the Cholinergic anti-inflammatory pathway  
[Tracey KJ. Physiology and immunology of the cholinergic antiinflammatory pathway. J Clin Invest. 2007;117\(2\):289–296. doi:10.1172/JCI30555](#)

#### III. Healing – Tissue Regeneration and Remodeling

Objectives: Upon completion of this module, the student will be able to:

- Define how dry needling influences regeneration.
- Describe how dry needling stimulates satellite cell proliferation
- Explain the unique stimulus of mechanotransduction and the body's response to it

- a. Watch: The Healing Process – Tissue Generation (7 minutes)
- b. Read: Degeneration/Regeneration as a Mechanism Contributing to the Effect of Manual Acupuncture-Induced Injury on Rat Skeletal Muscle  
[Degeneration/Regeneration as a Mechanism Contributing to the Effect of Manual Acupuncture-Induced Injury on Rat Skeletal Muscle By Kamal Ameis, Annapurni Jayam Trouth, Vernon Bond and Yasmine Kanaan. Published: October 10th 2011 DOI: 10.5772/24801](#)

#### IV. Systemic Effects – HPA Axis

Objectives: Upon completion of this module, the student will be able to:

- Describe how dry needling stimulates the HPA Axis.
  - Explain how HPA axis stimulation impacts the inflammatory process
  - Define the unique effect of the HPA axis on pain management
- 
- a. Watch: HPA Axis (16 minutes)
  - b. Read: Electroacupuncture therapy in inflammation regulation: current perspectives  
[Park JY, Namgung U. Electroacupuncture therapy in inflammation regulation: current perspectives. J Inflamm Res. 2018;11:227–237. Published 2018 May 17. doi:10.2147/JIR.S141198](#)
  - c. Read: Anti-Inflammatory Actions of Acupuncture  
[Zijlstra FJ, van den Berg-de Lange I, Huygen FJ, Klein J. Anti-inflammatory actions of acupuncture. Mediators Inflamm. 2003;12\(2\):59–69. doi:10.1080/0962935031000114943](#)
  - d. Read: Cholinergic control of inflammation  
[Rosas-Ballina M, Tracey KJ. Cholinergic control of inflammation. J Intern Med. 2009;265\(6\):663–679. doi:10.1111/j.1365-2796.2009.02098.x](#)

#### V. Conclusions

- a. Watch: Conclusion (3 minute)
- b. Quiz: Systemic Response to Dry Needling (10 Questions)
- c. Survey: Course Evaluation