

# Injury

- Macrotrauma
- Microtrauma
- Biochemical

## Joint Complex Neurogenic inflammation/healing

*Inflammation begins*

- Neutrophil
- Lymphocyte
- Macrophage
- Platelet
- Mast cell
- Fibroblast
- Endothelial cell

- LTB4, LTB5
- PGE1, PGE2, PGE3
- PGI2, PGI3
- Lipoxins
- Resolvins
- Docosatrienes
- TXA1, TXA2, TXA3
- 5-HT
- Histamine
- IL-1, IL-6, TNF
- IL-10
- Growth factors
- Opioids

- ATP
- K<sup>+</sup> ions
- Hydrogen ions
- Bradykinin

- Substance P
- CGRP

- Norepinephrine
- Prostaglandins

Brain-limbic:  
Pain

Thalamus

Hypothalamus

Adrenal

Brainstem:  
Autonomic  
symptoms

- Epinephrine
- Glucocorticoids

- Limbic
- HYP
- PAG
- NRM
- LC

DLF (+, -)

Anterolateral Pathway

SNS  
terminal

PVG

Extrafusal muscle fibers

Intrafusal muscle fibers