

# Arbetsfysiologi – kramp, fatigue och effekter på kognition

Varför blir muskler trötta? Perifer och central fatigue

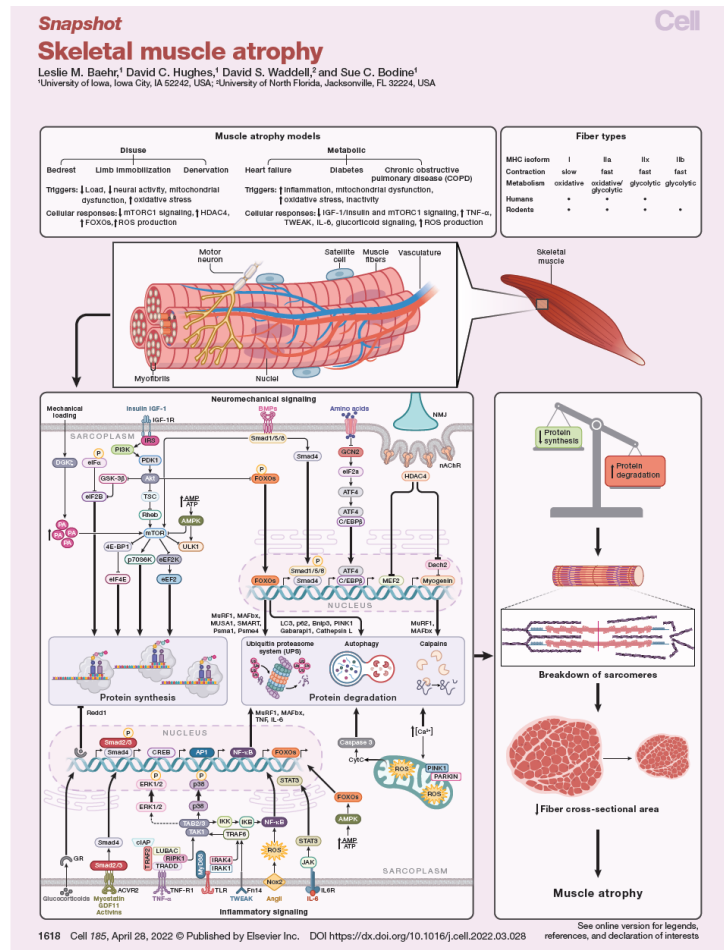
Muskelkramp Perifera och centrala mekanismer

Exerokiner

# Muskeln adapterar till den typ av belastning som den utsätts för

|             | Tension | Metabol aktivitet |
|-------------|---------|-------------------|
| Stretching  | ++++    | +/-               |
| Koncentrisk | + → +++ | +++++             |
| Excentrisk  | +++++   | ++                |
| Inaktivitet | +/-     | +/-               |

# Muskelnedbrytning vid vila

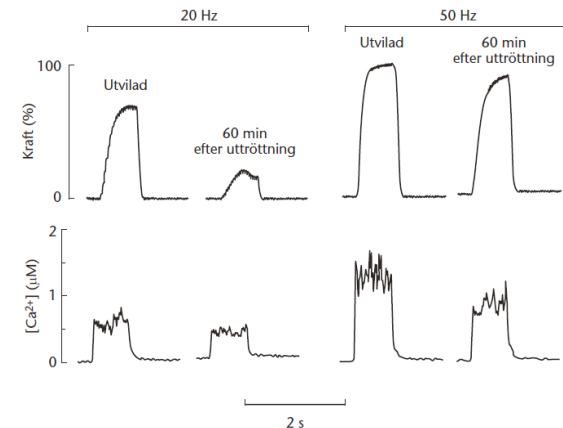
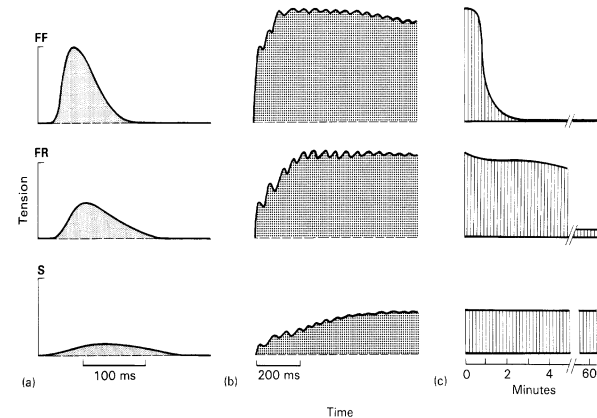


# Muskeltrötthet (Fatigue)

## Central och perifer fatigue

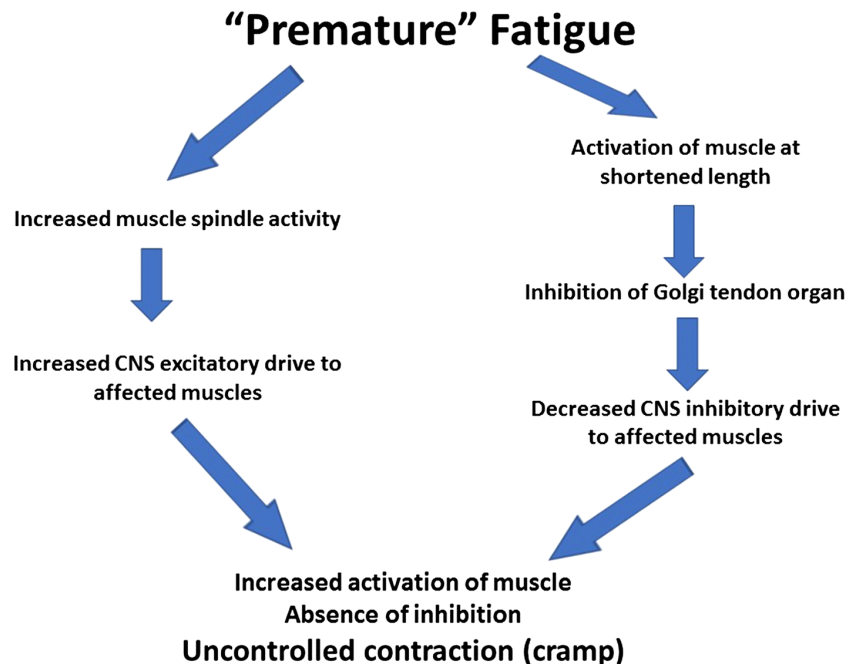
### Perifer fatigue

- 1) Minskad kraftutveckling
- 2) Minskad förkortningshastighet
- 3) Förlångsammad relaxation



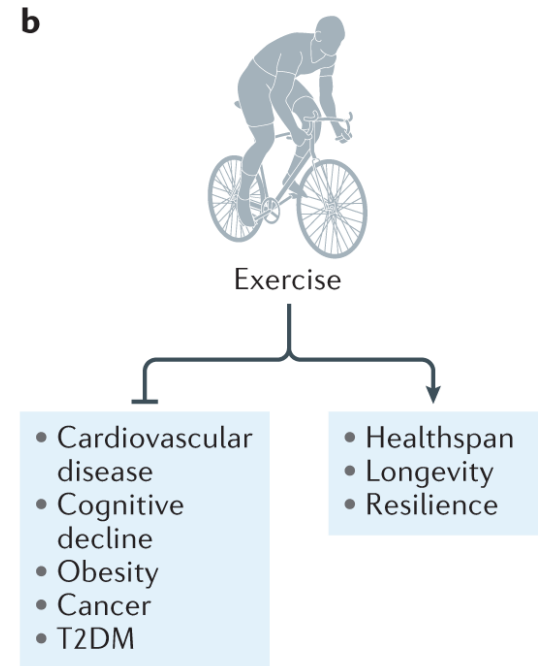
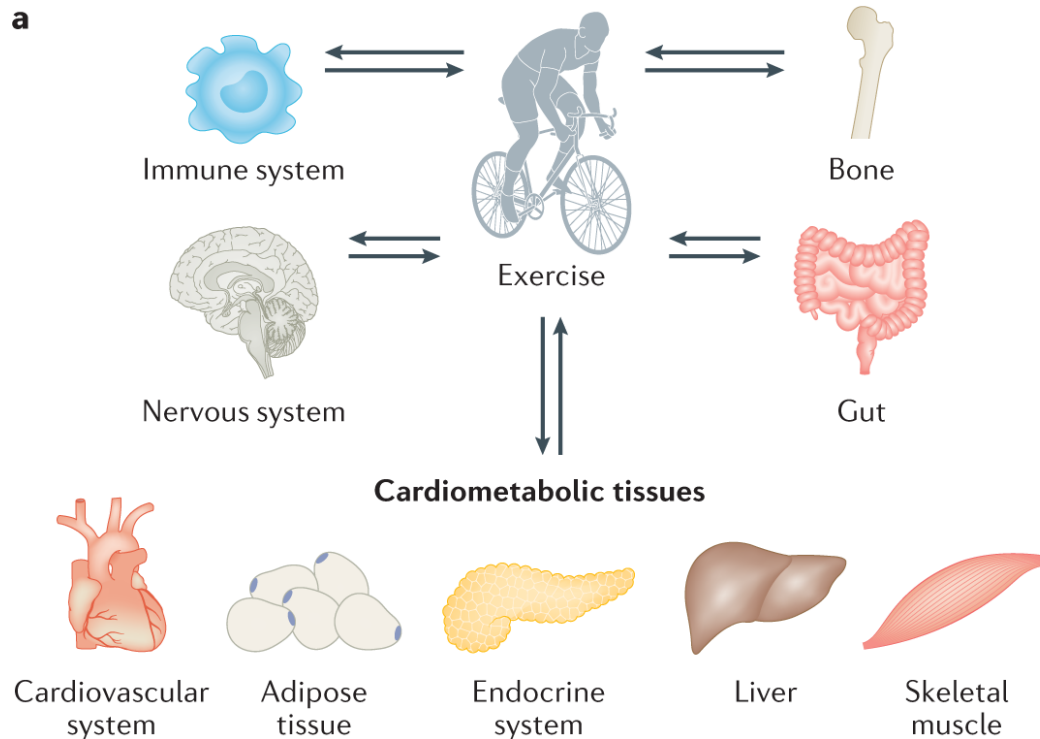
# Kramp

- Ej Rigor
- Perifert, eller centralt ursprung?



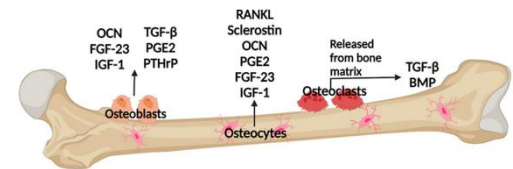
Maughan and Shirreffs 2019  
Sports Med 49:5115-24

# Fysisk aktivitet resulterar i frisättning av en rad gynnsamma substanser



Chow et al 2022 Nature Endocrin 18:272-289

Furrer et al 2023 "The molecular athlete: Exercise physiology from mechanisms to medals" Physiol Rev 103: 1693-1787



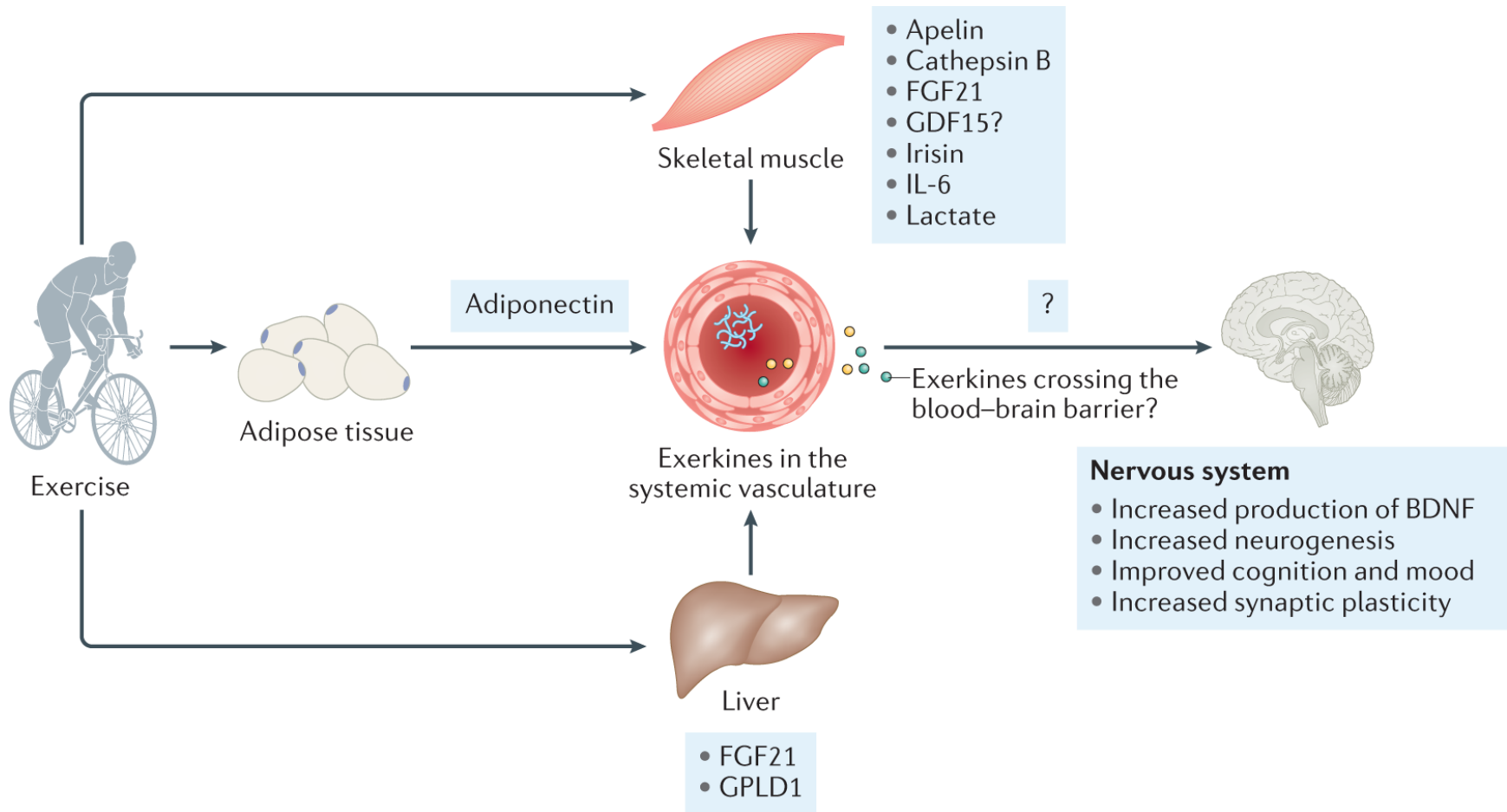
Shimonty et al 2023 Calcified Tissue Int 113:21-38

# **Hormone secreted by bones may help us escape danger**

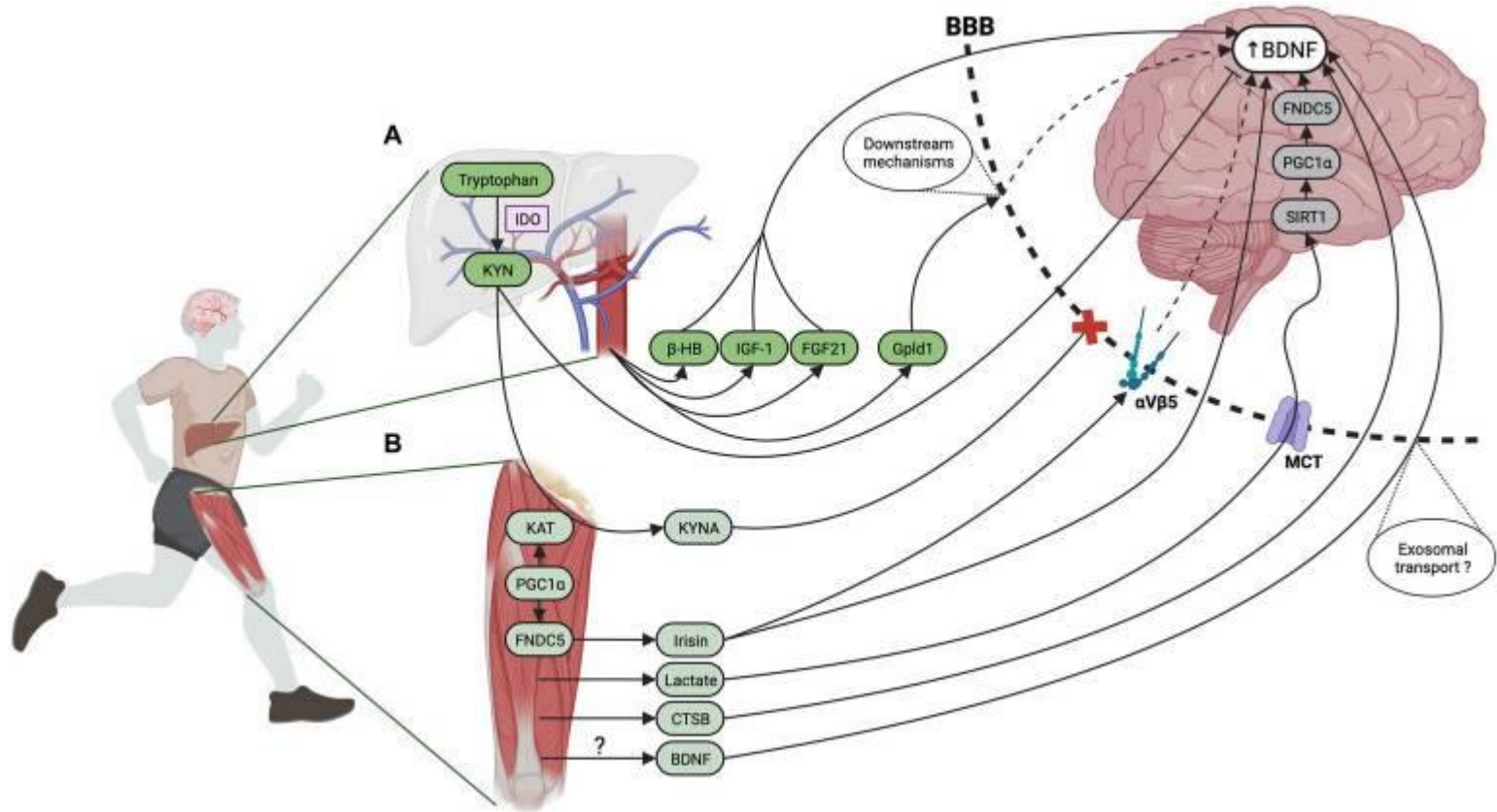
Osteocalcin, not adrenaline, may be key to  
the body's “fight or flight”



# Fysisk aktivitet ger ökning av BDNF nivåer i hjärnan



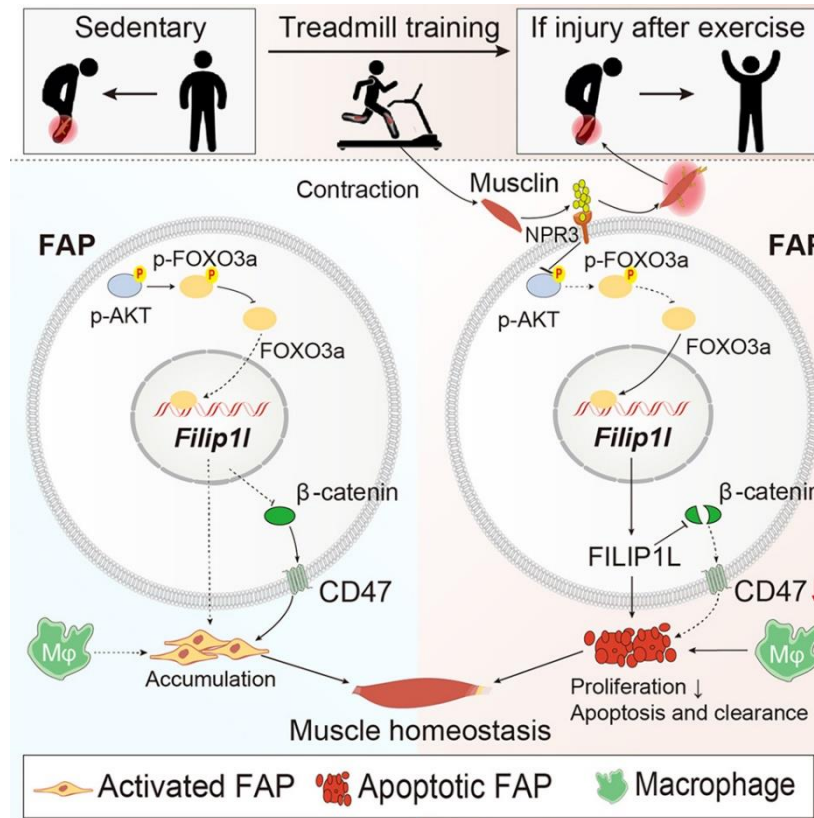
# BDNF bidrar till ökad plasticitet i hjärnan och förbättrad kognition



Cefis et al 2023 Front Mol Neurosci

<https://doi.org/10.3389/fnmol.2023.1275924>

# Musclin underlättar läkning efter muskelskada



## SYMPOSIUM REVIEW

## Mimicking exercise: what matters most and where to next?

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