

Effect of voluntary exercise on persistent inflammatory pain and stress

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Science News

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Moderate Exercise Yields Big Benefits

Date: January 4, 2008

Source: Mayo Clinic

Summary: What's the key to looking and feeling better and enhancing your health? Exercise. Moderately strenuous exercise, about 30 minutes a day, can lead to enormous benefits in terms of your mood, health, weight and the ability to live an independent and fulfilling life. The exercise doesn't need to be athletic or difficult. Studies have shown that simply walking at a brisk pace for 30 minutes or more on most days can lead to significant health improvements. Add simple strengthening exercises two or three times a week and the benefits are even greater.

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Exercise Therapy for Chronic Pain

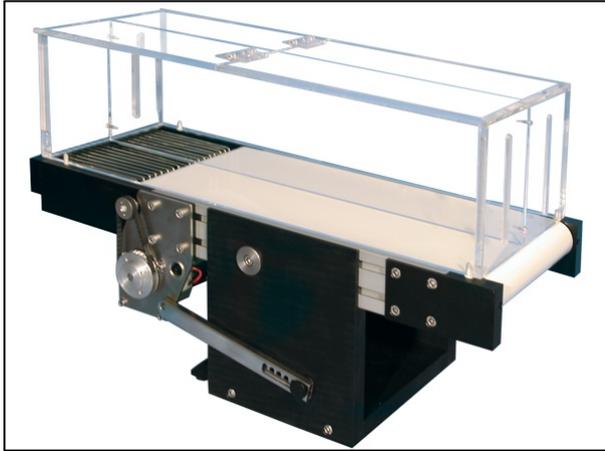


Heather R. Kroll, MD^{a,b}

INTRODUCTION

For people with chronic pain, the prospect of doing exercise may seem like an overwhelming and impossible task. And yet, exercise therapy is frequently prescribed for patients with a wide variety of chronic pain problems. Exercise provides multiple benefits for patients including improvements in strength, flexibility, and endurance; decrease in cardiovascular and metabolic syndrome risk; improved bone health; improved cognition and mood; and often most importantly for the patient, improved pain control (Box 1). It therefore might seem that patients should be eager to participate in an exercise program. However, patients with chronic pain frequently present with significant levels of fear-avoidance behaviors and are often resistant to

Literature

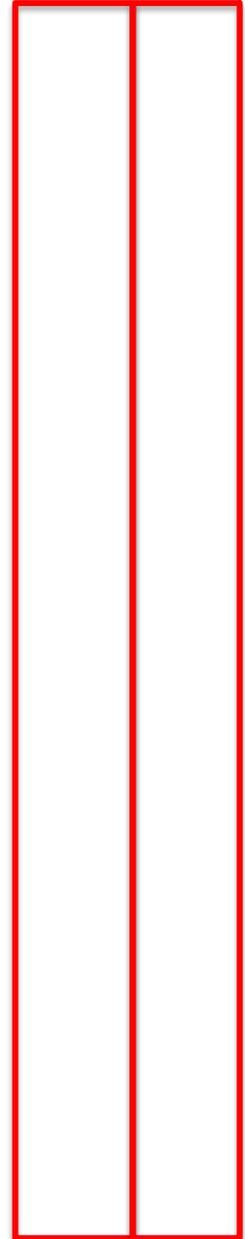
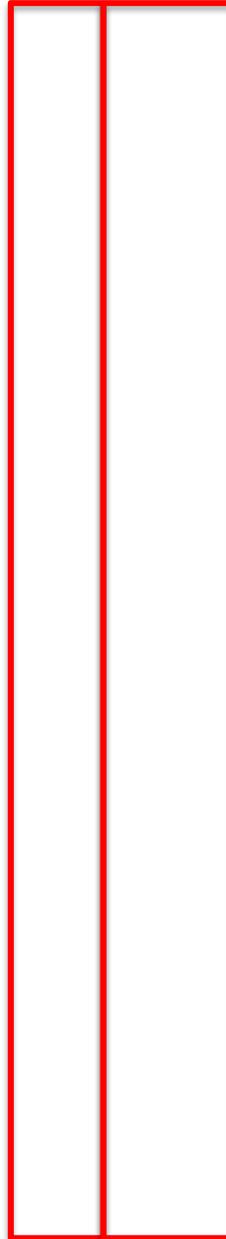


Forced running

- Increase anxiety and stress (Leasure & Jones, 2008; Griesbach et al. 2012; Ke et al. 2011; Moraska et al. 2000)
- Endocrine and immune system impairment (Moraska et al. 2000)
- Exacerbate inflammation (Cook et al. 2013)

Exercise and Pain - Rats

REF



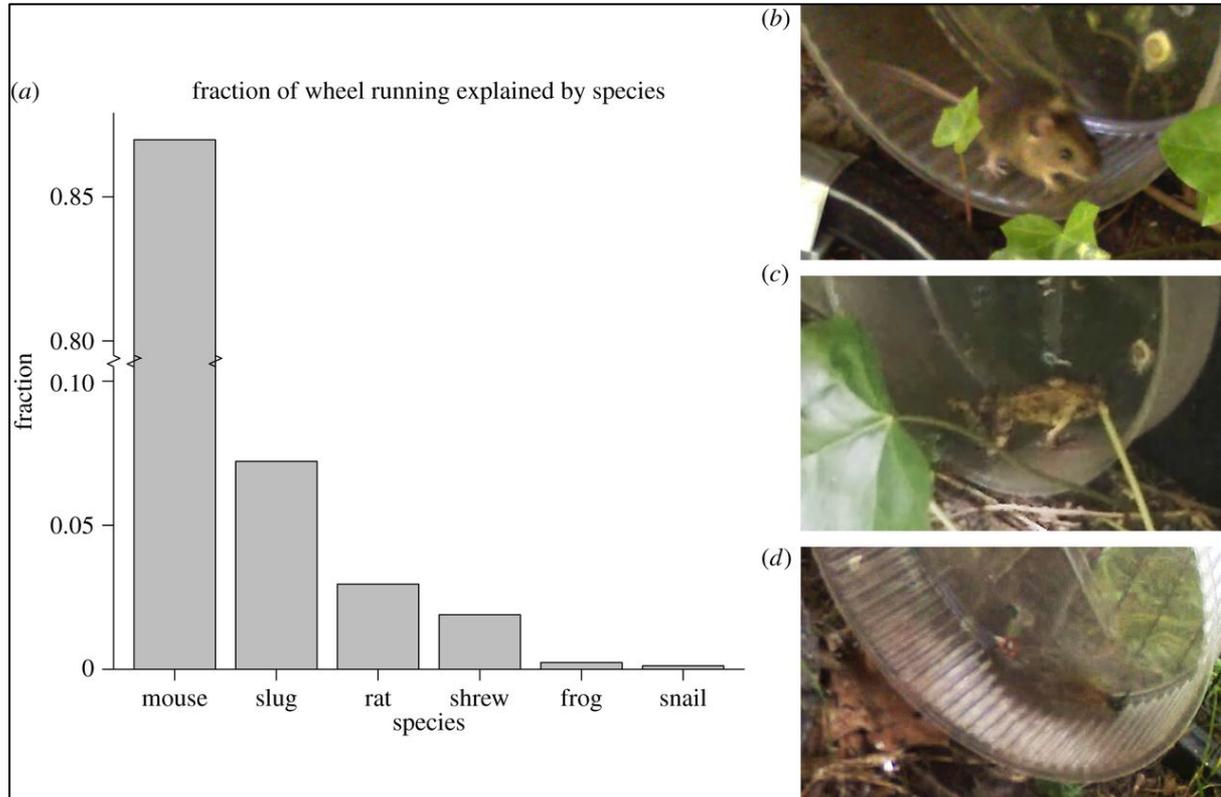
shold; RF=response frequency

Wheel running in the wild

Johanna H. Meijer and Yuri Robbers

Laboratory for Neurophysiology, Department of Molecular Cell Biology, Leiden University Medical Centre, Einthovenweg 20, PO Box 9600, 2300 RC Leiden, The Netherlands

PROCEEDINGS
OF
THE ROYAL
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Meijer JH, Robbers Y. 2014 Wheel running in the wild. Proc. R. Soc. B 281

Methodology



- Male Long Evans rats (n=6-12 per group)

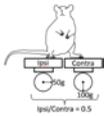


- CFA-induced persistent inflammation (ankle), sham injection



- Voluntary running = Running wheel, 2hrs/day, 4days/wk, 3wks

Outcomes



- Hypersensitivity = Static weight bearing, thermal latency



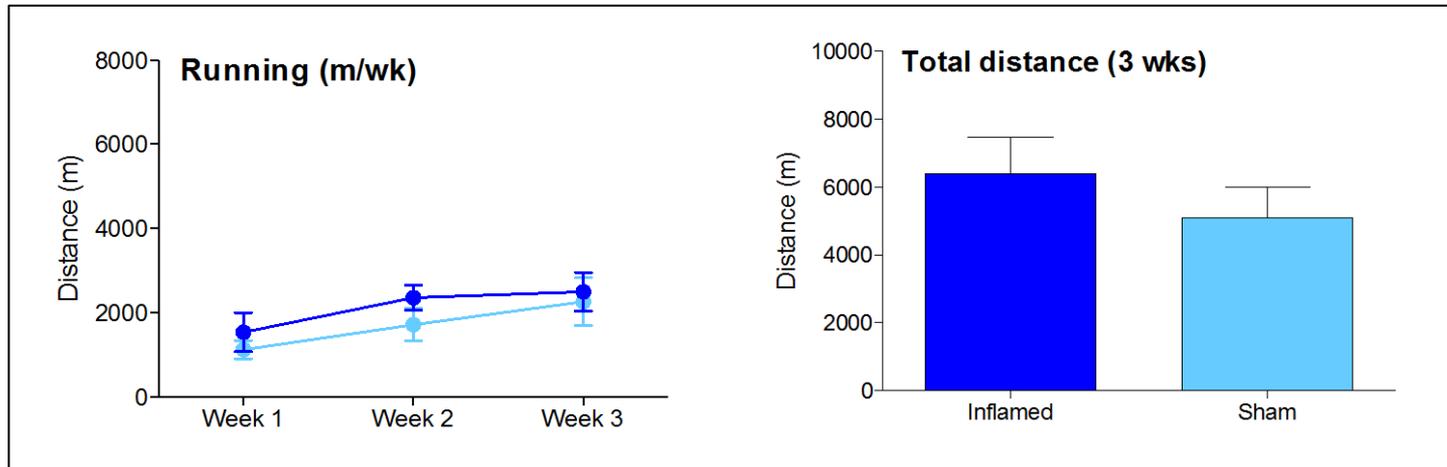
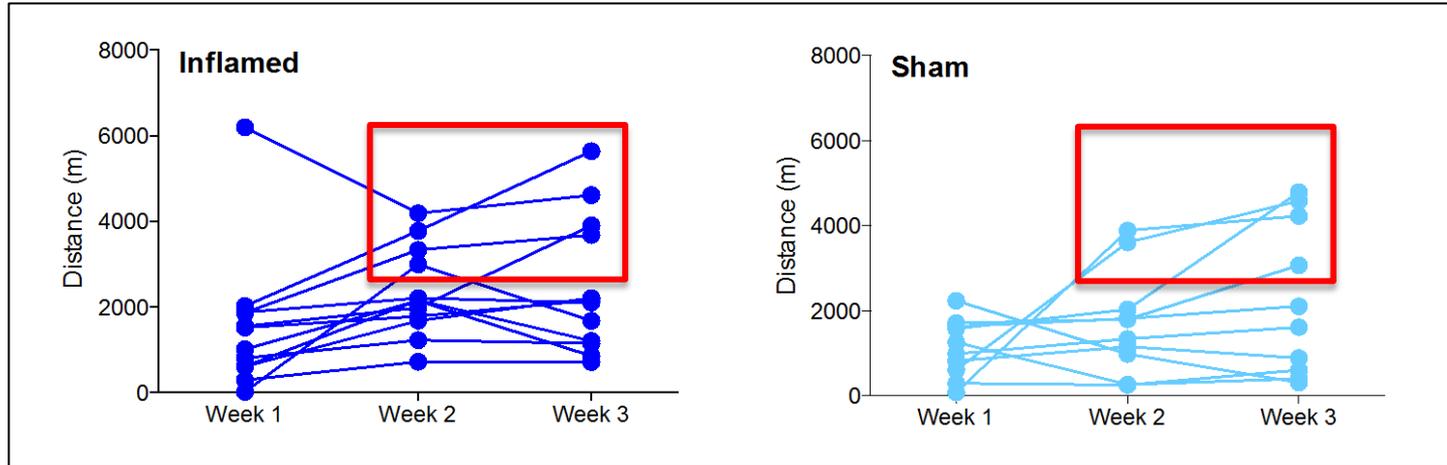
- Inflammation = Ankle swelling, range of motion



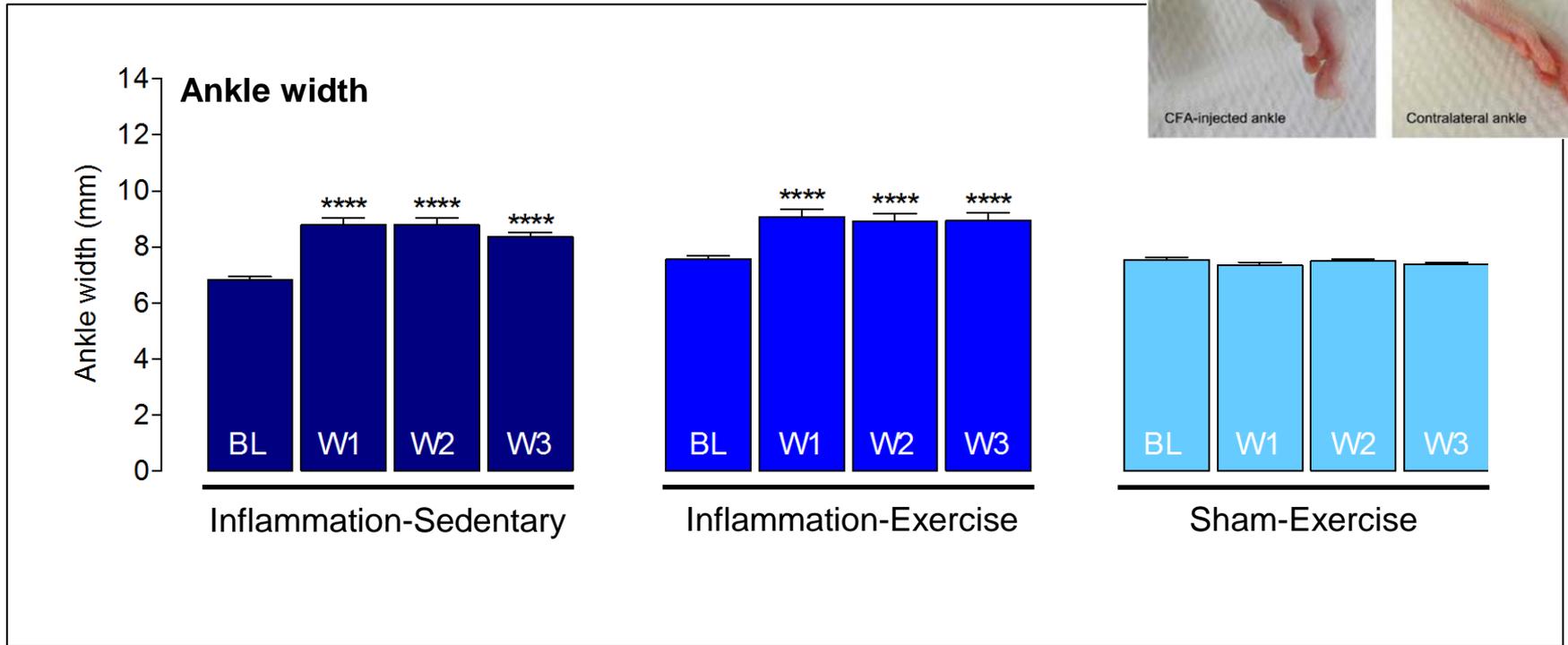
- Stress = Plasma corticosterone

} Tested 24h
post-exercise

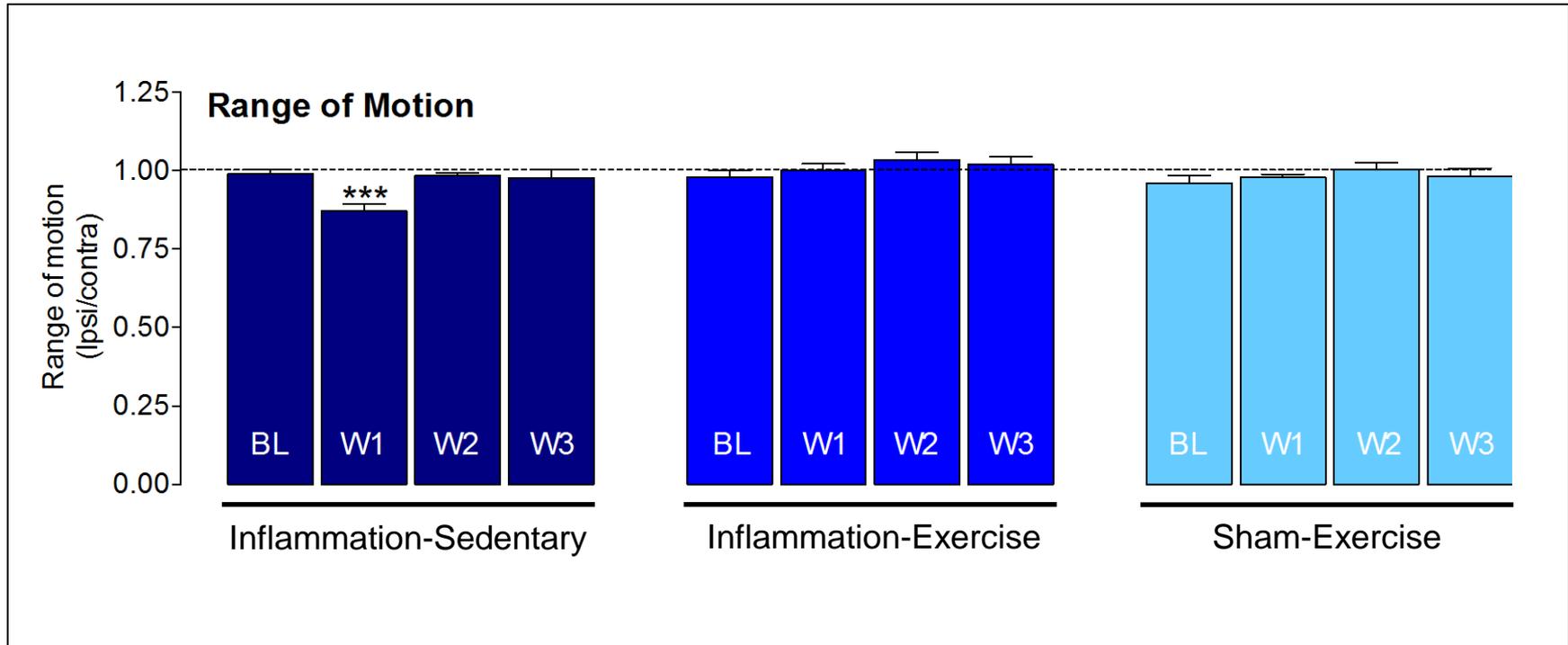
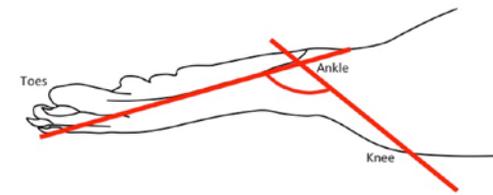
Voluntary running



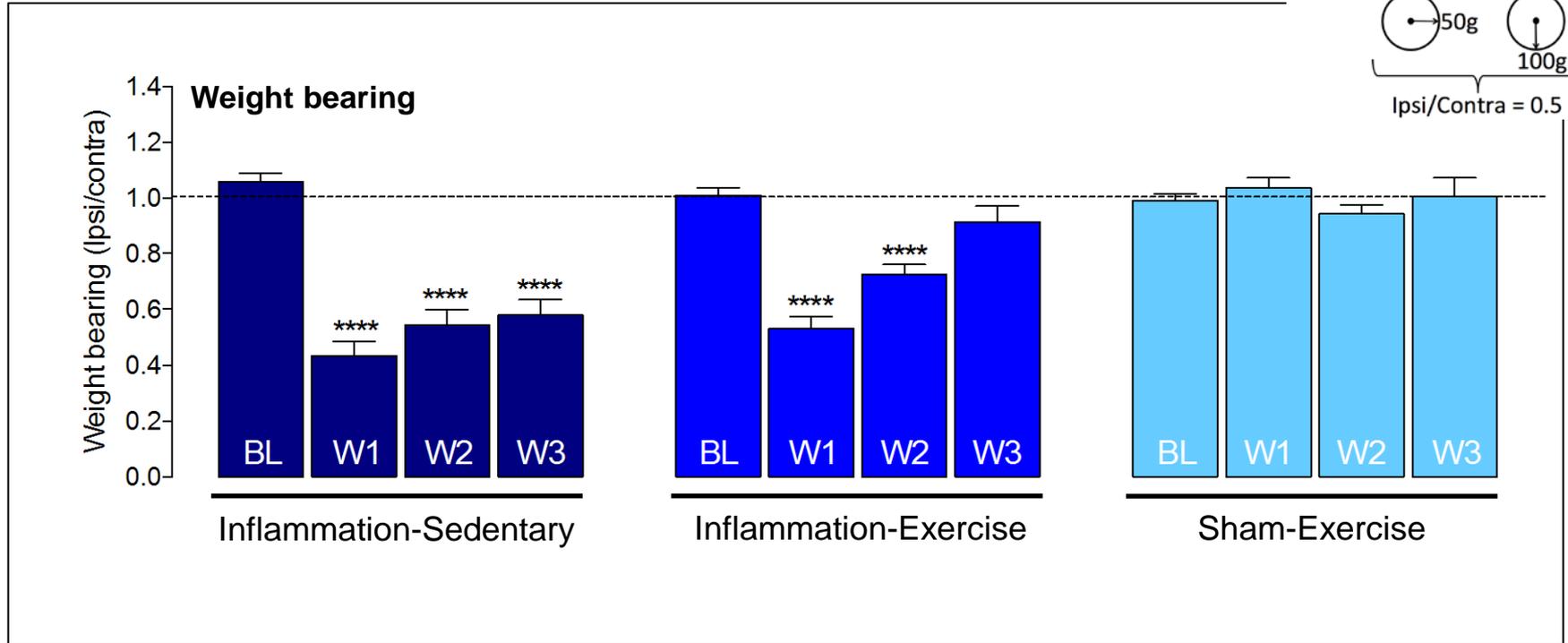
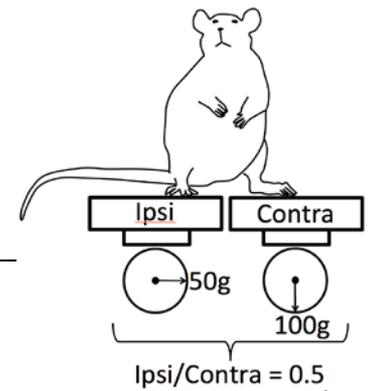
Inflammation



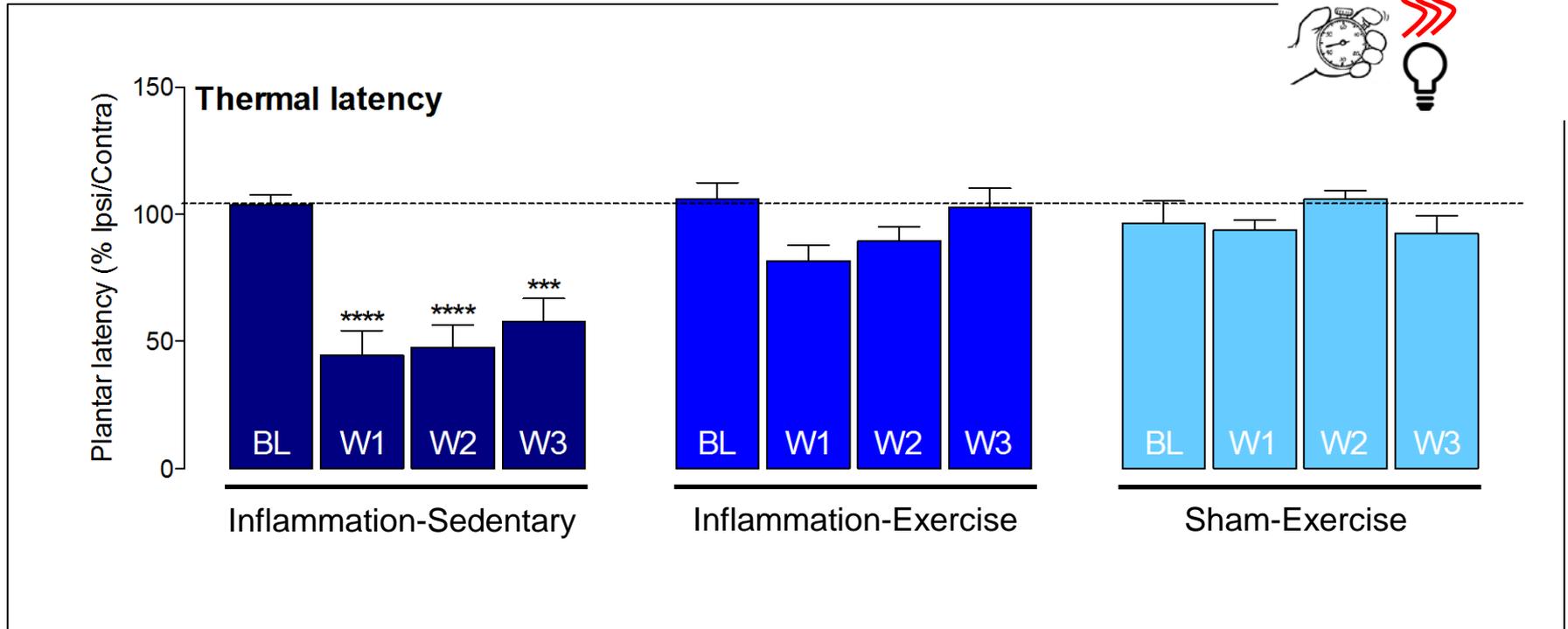
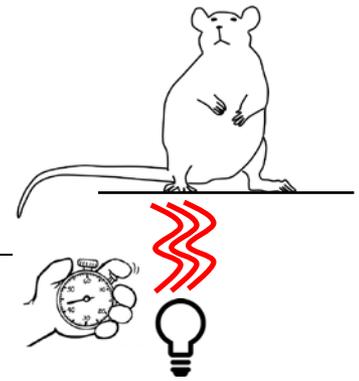
Inflammation

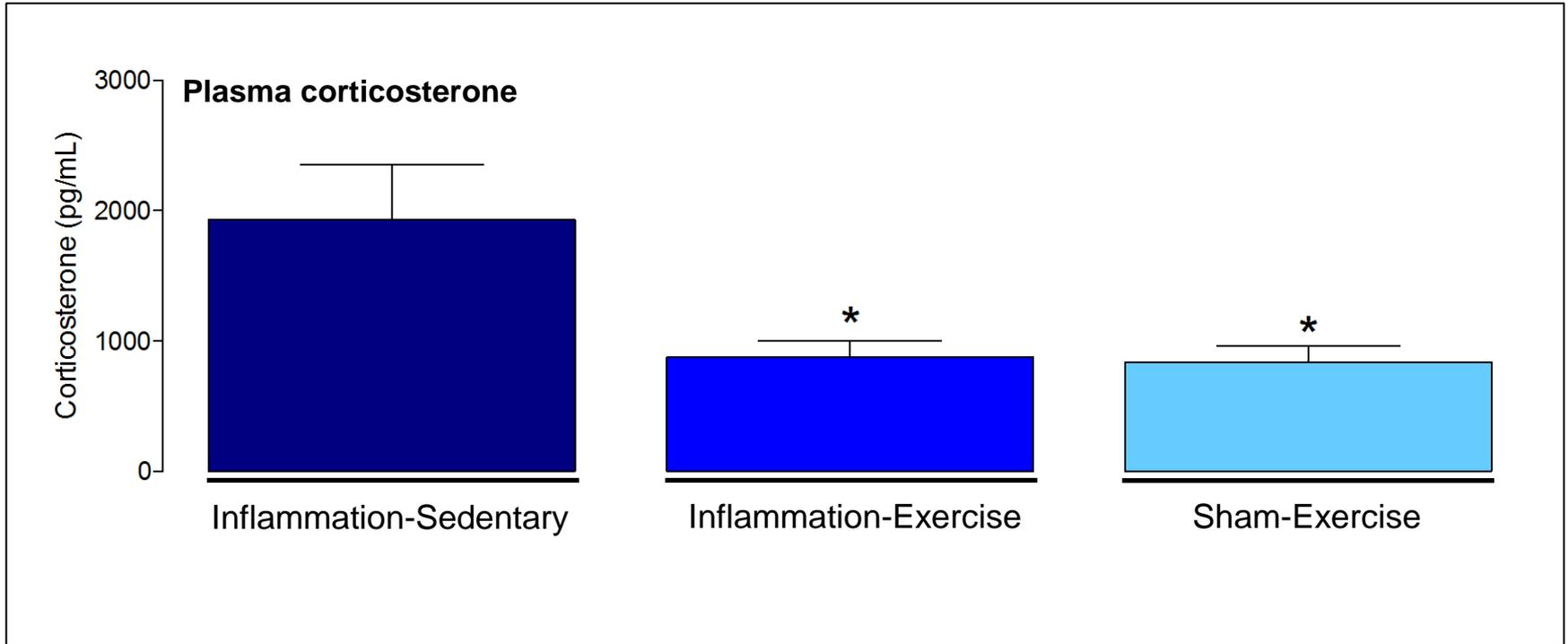
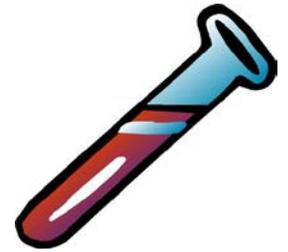


Hypersensitivity

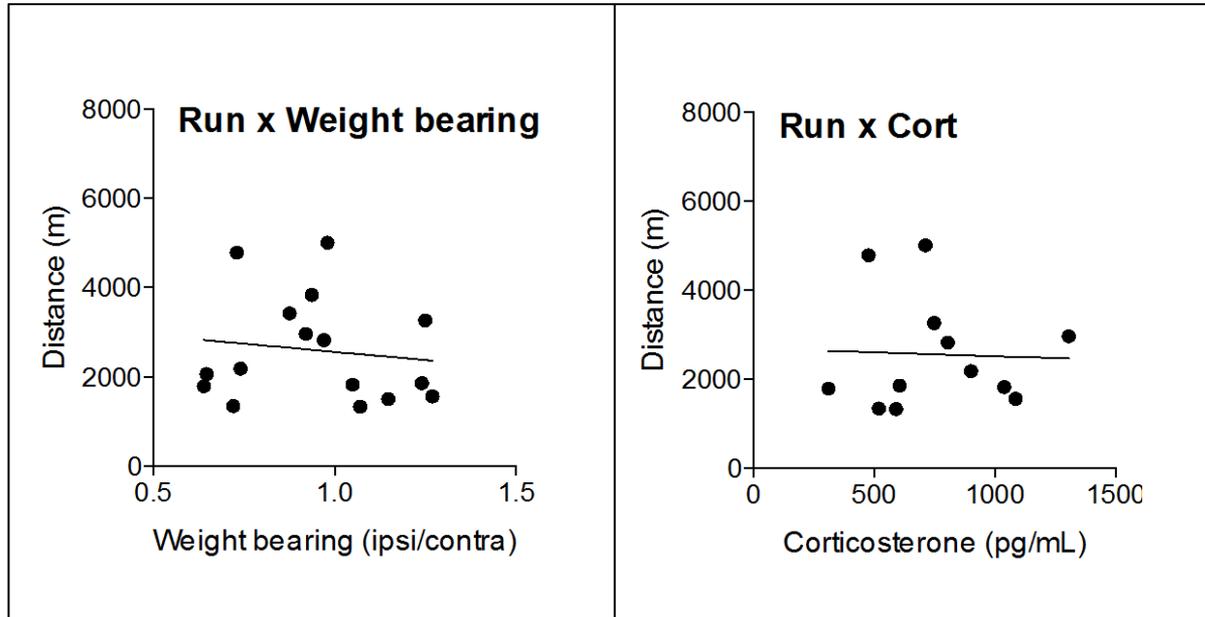


Hypersensitivity





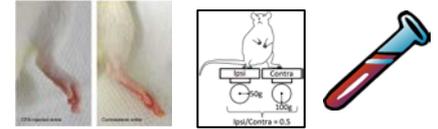
Correlations: Exercise, pain and stress



Access to exercise rather than amount of exercise

Summary

Persistent inflammation is painful and stressful.



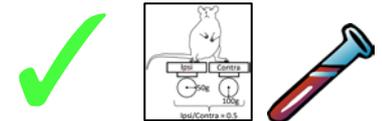
Rats exercise voluntarily, even with persistent hind limb pain.



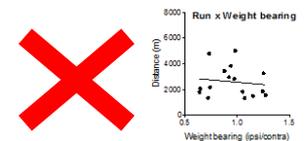
Voluntary exercise does not improve inflammation (swelling).



Voluntary exercise improves nociceptive hypersensitivity and stress.



It's not amount of exercise, but regular access.



Thank you!



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