

# New Developments in Sport and Health Sciences Research at Exeter

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Deputy Head of Department

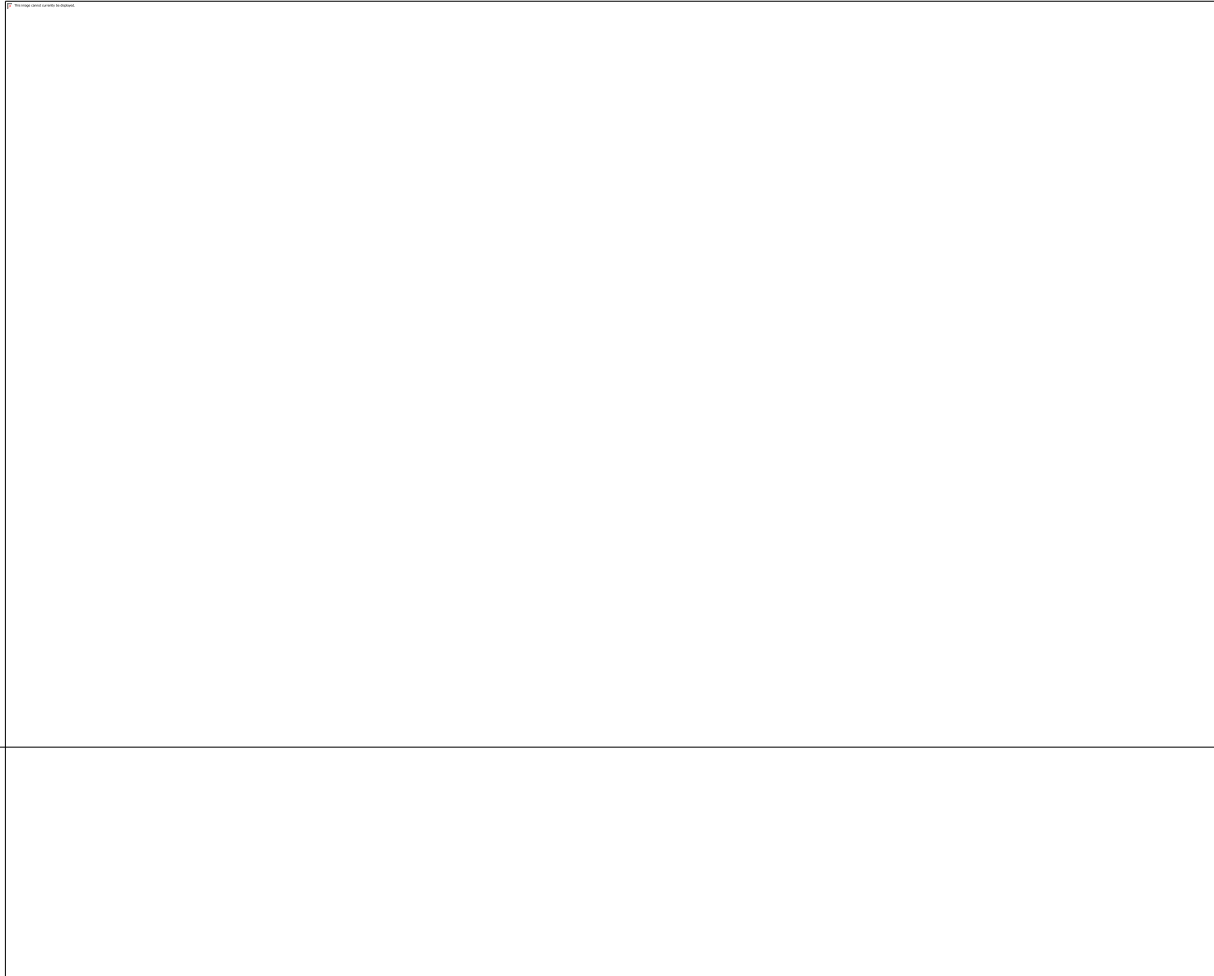


# Exeter Sport and Health Sciences Research

- Physical activity and health
- Skill acquisition
- Biomechanical predictors of injury
- Training smart



# Physical Activity decreases Mortality



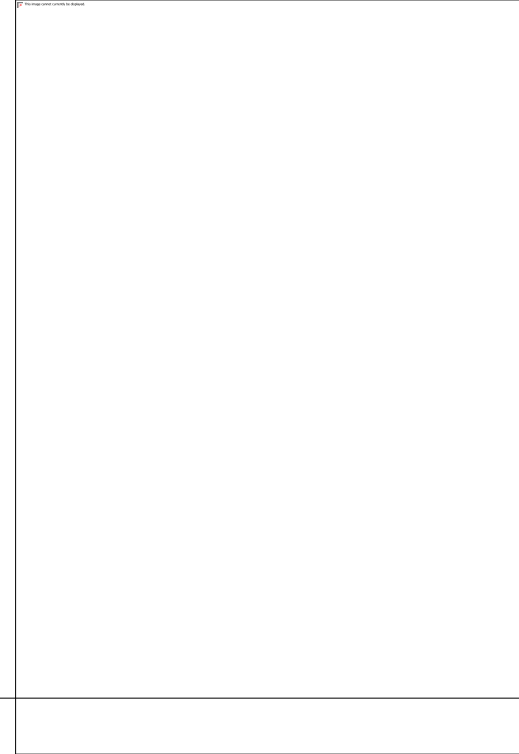
Byberg L et al. BMJ 2009;338:bmj.b688



Byberg et al, 2009

# Physical activity and health across the lifespan

**BTG Grant**



# Physical Activity Measurement

When and how  
much?

An empty rectangular box with a thin black border, intended for notes or data related to the question 'When and how much?'. It is positioned to the left of the central box.A large, empty rectangular box with a thin black border, occupying the center of the page. It is intended for extensive notes or data related to the overall topic of physical activity measurement.

Where?

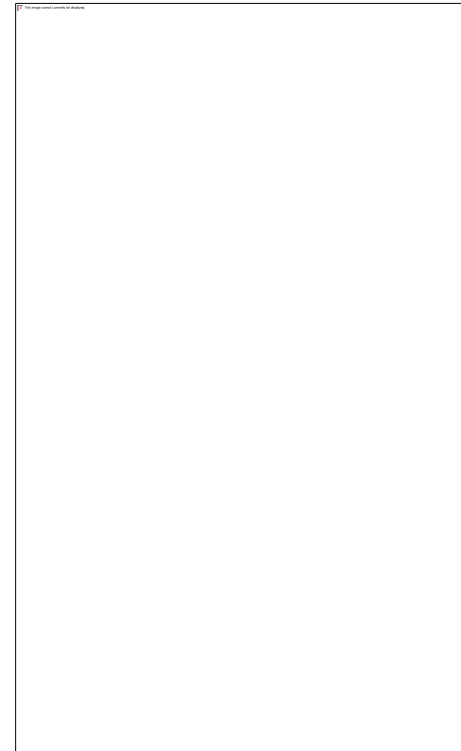
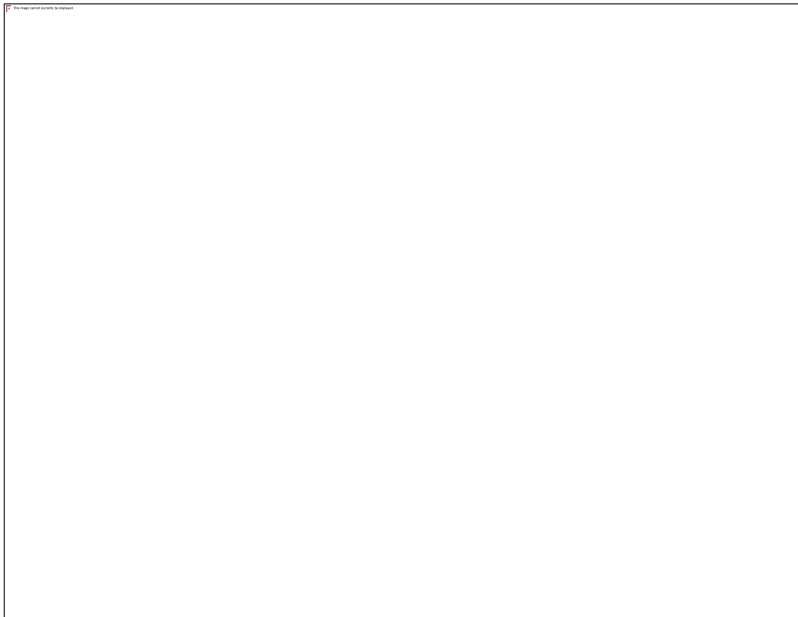
An empty rectangular box with a thin black border, intended for notes or data related to the question 'Where?'. It is positioned to the right of the central box.

# Hand-Eye Co-ordination: The Quiet Eye

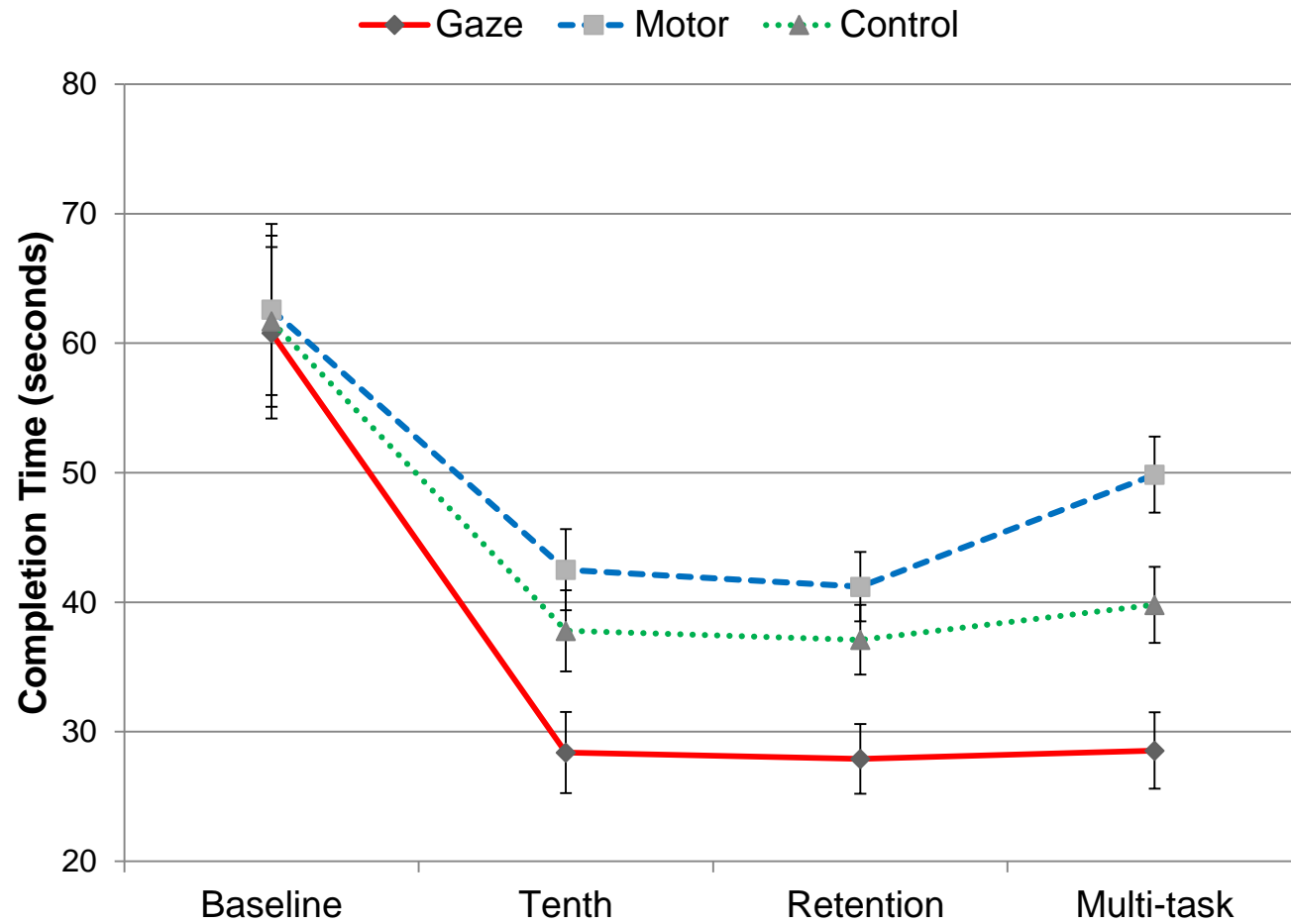


# Quiet Eye Training

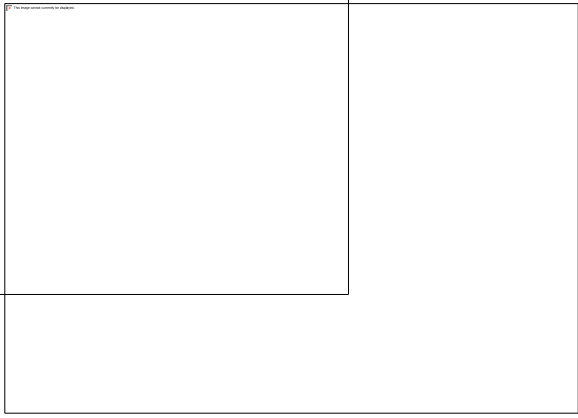
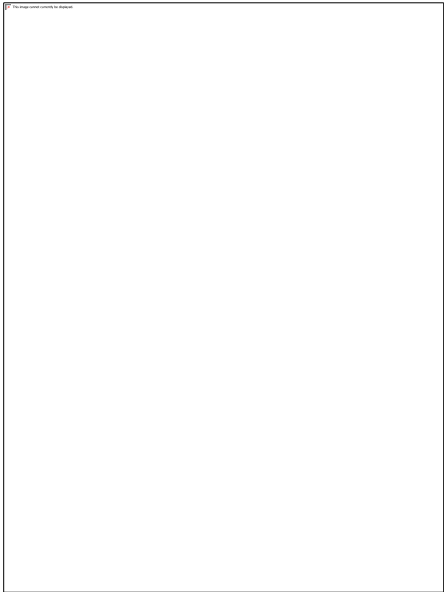
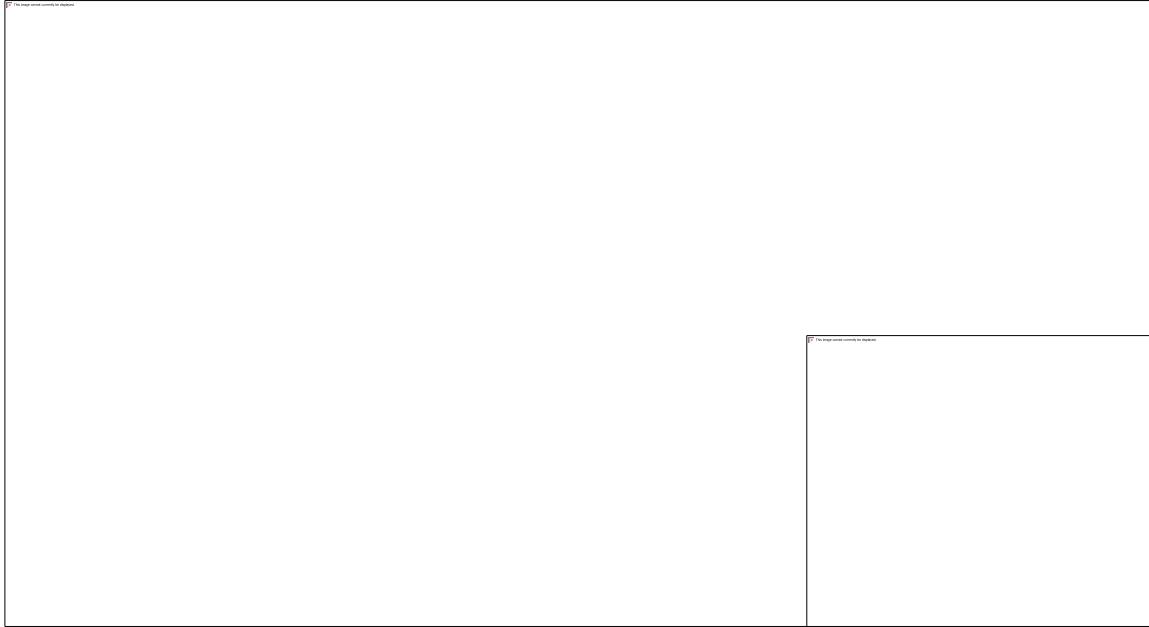
- Verbal instructions and video feedback
- Affects learning and robustness



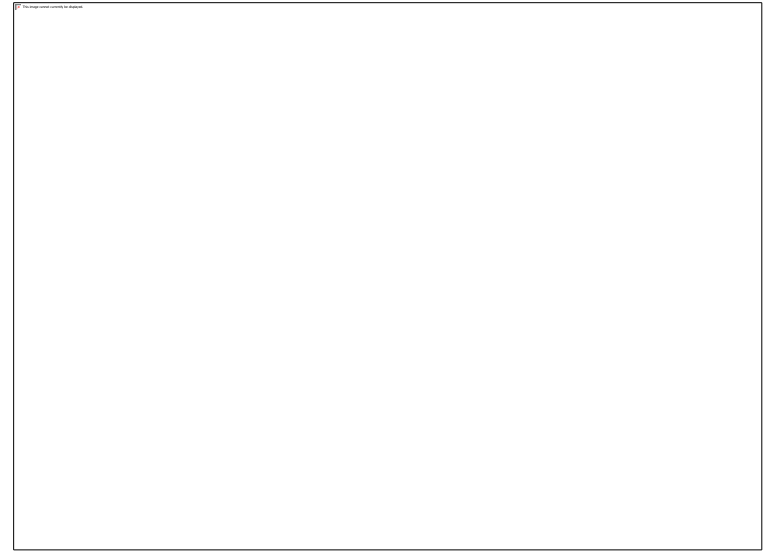
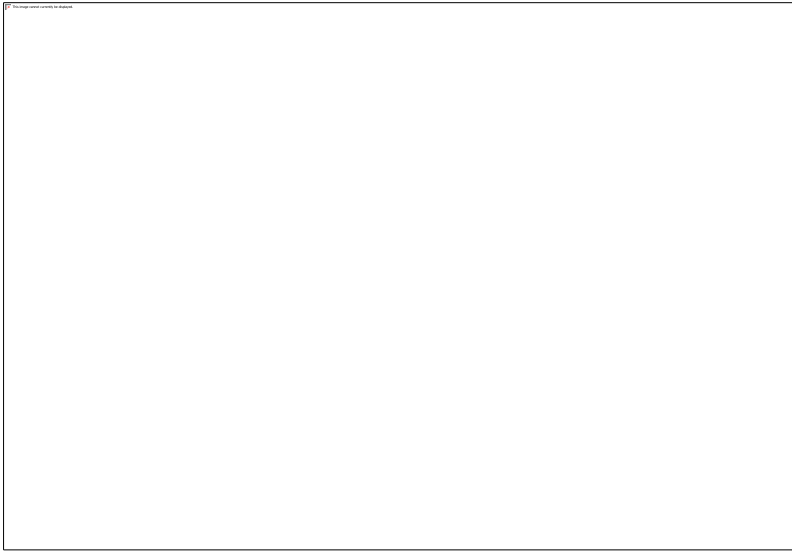
# Surgery Skill Learning (Wilson et al, 2012, Surgical Endoscopy)



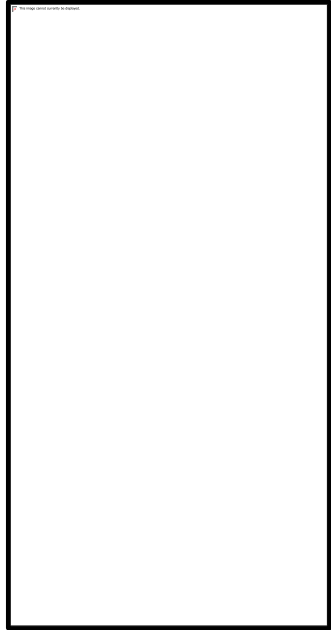




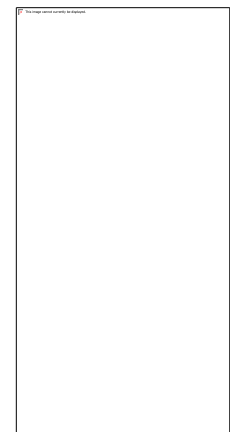
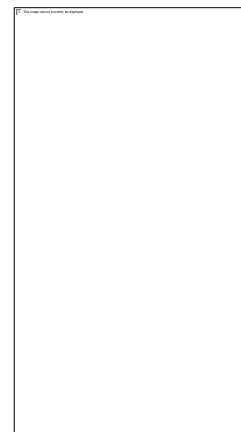
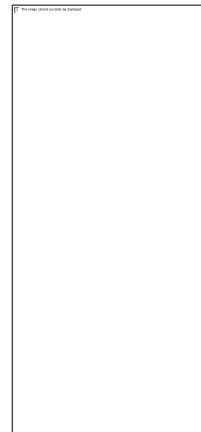
# Curse of the Metatarsal



# Biomechanical Measurements

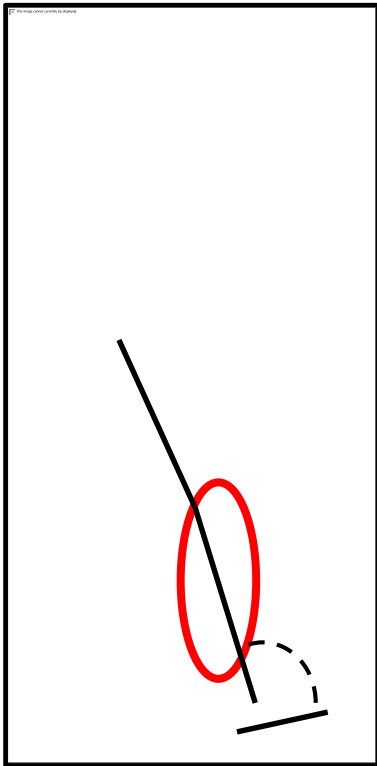


- ankle and knee flexion
- rearfoot inversion-eversion
- tibial rotation



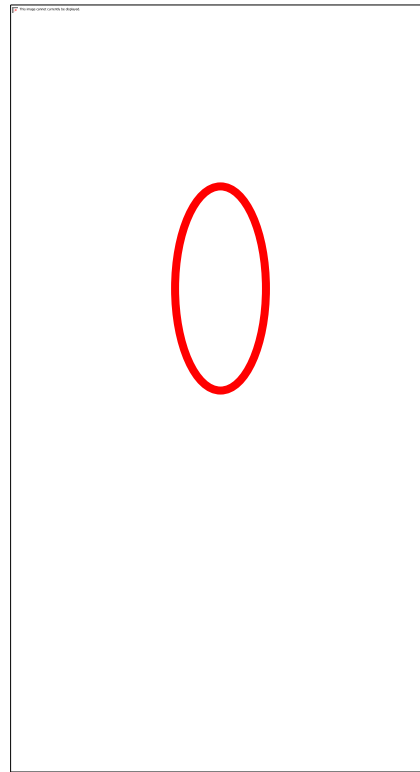
# Third metatarsal fracture risk

**Movement**



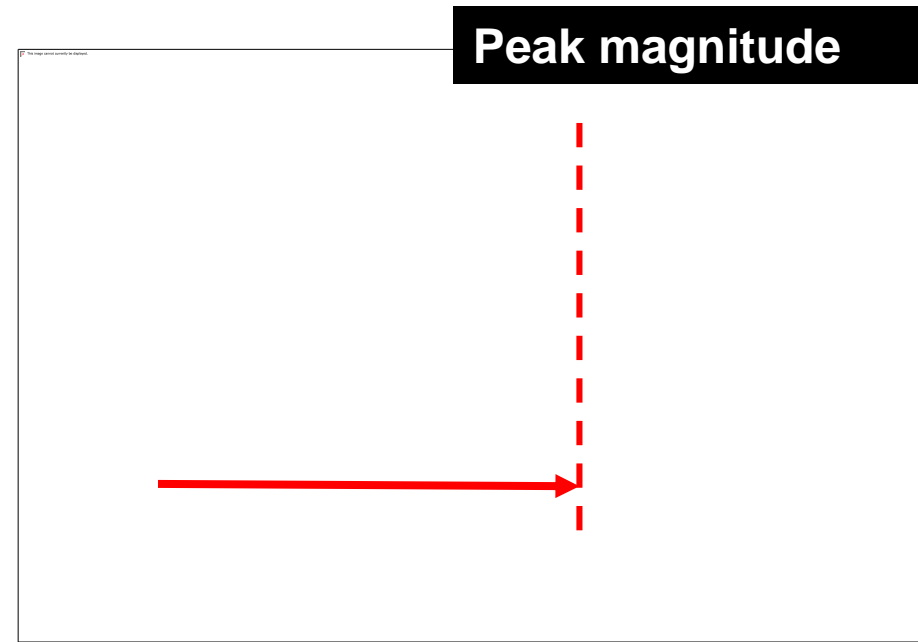
**greater ankle  
plantar-flexion  
at touchdown**

**Pressure**



**greater M3 load**

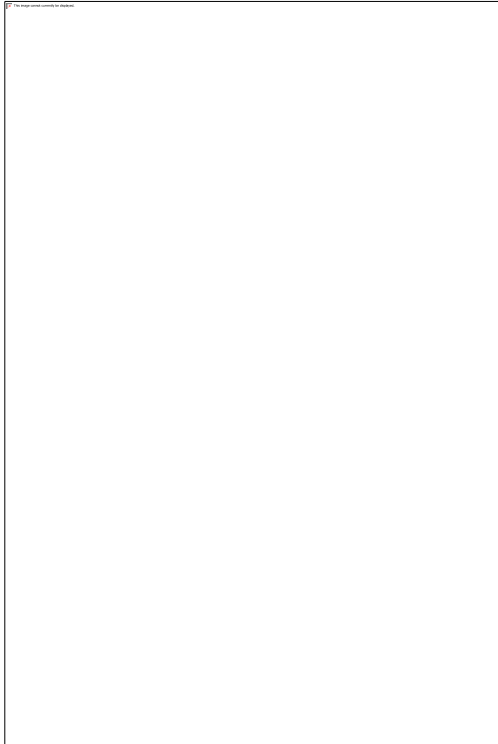
**Timing**



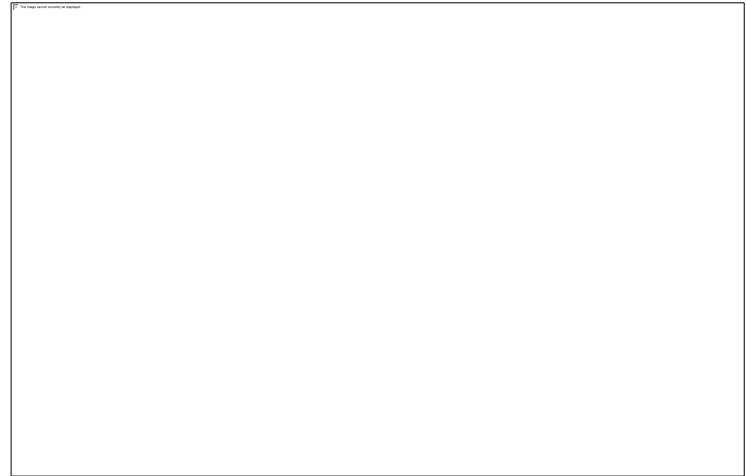
**later timing of peak M3 load**

# Training Smart

- Hypoxia

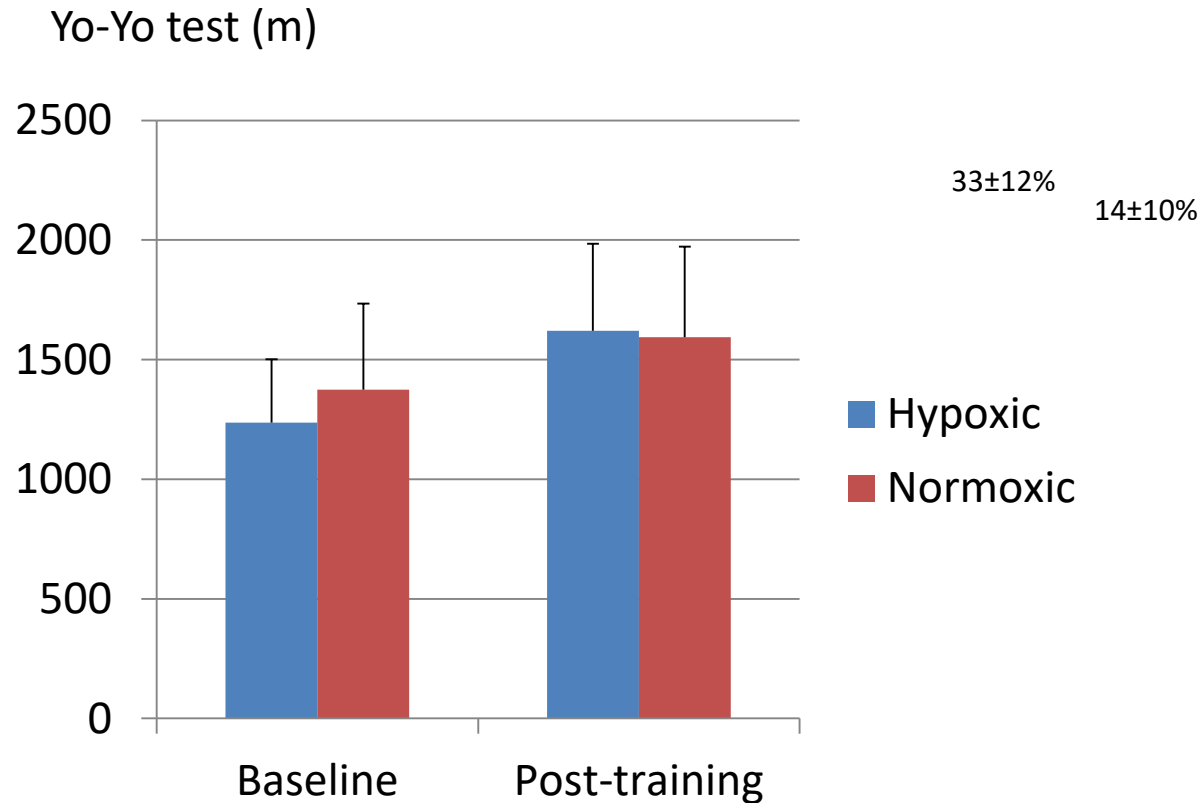


- Polyphenols



# Hypoxic Repeated Sprint Training

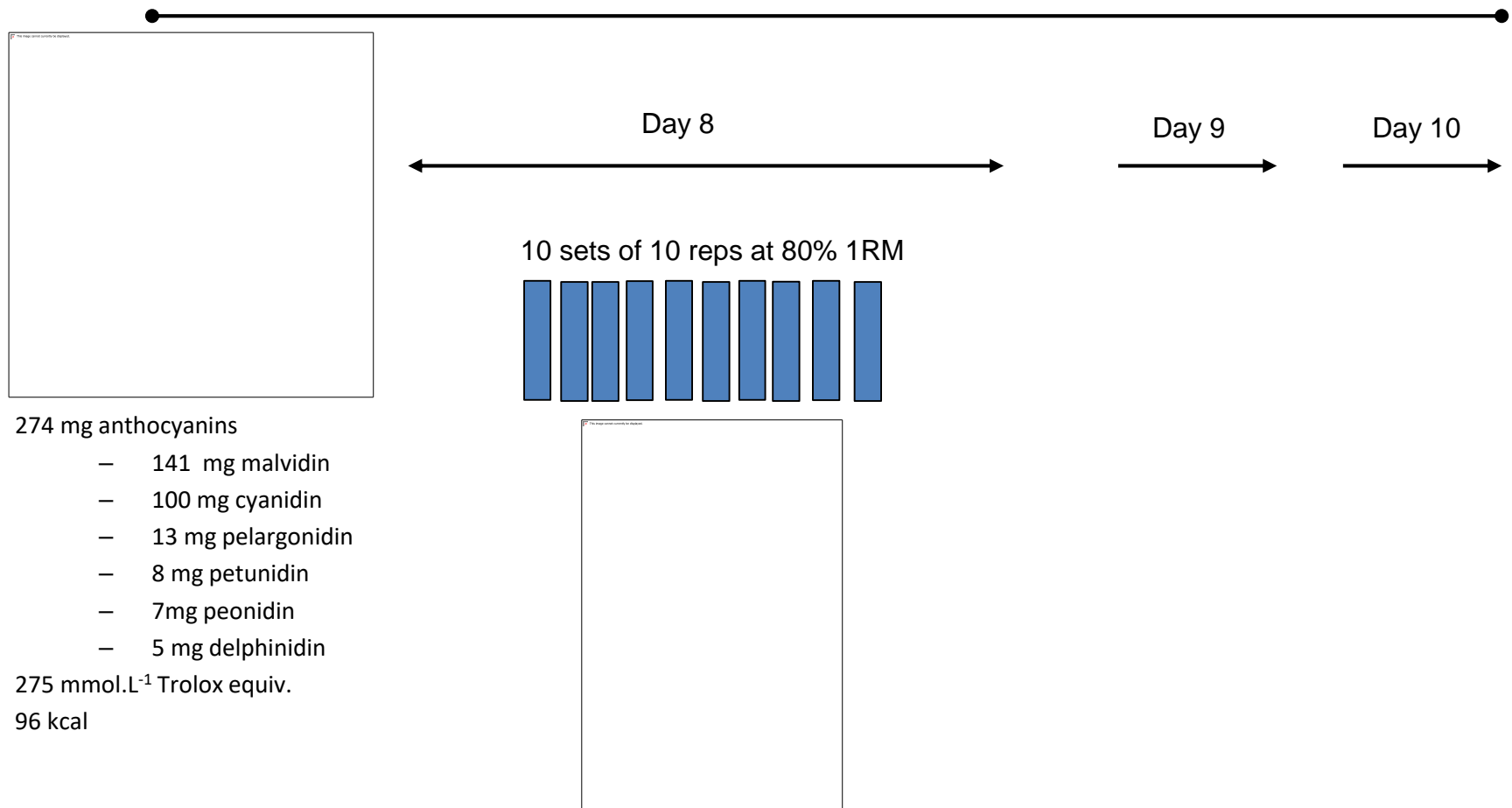
(Galvin et al, 2013)



# Cherries Improve Muscle Recovery

(Bowtell et al, 2011)

Montmorency cherry or placebo supplementation for 10 days



274 mg anthocyanins

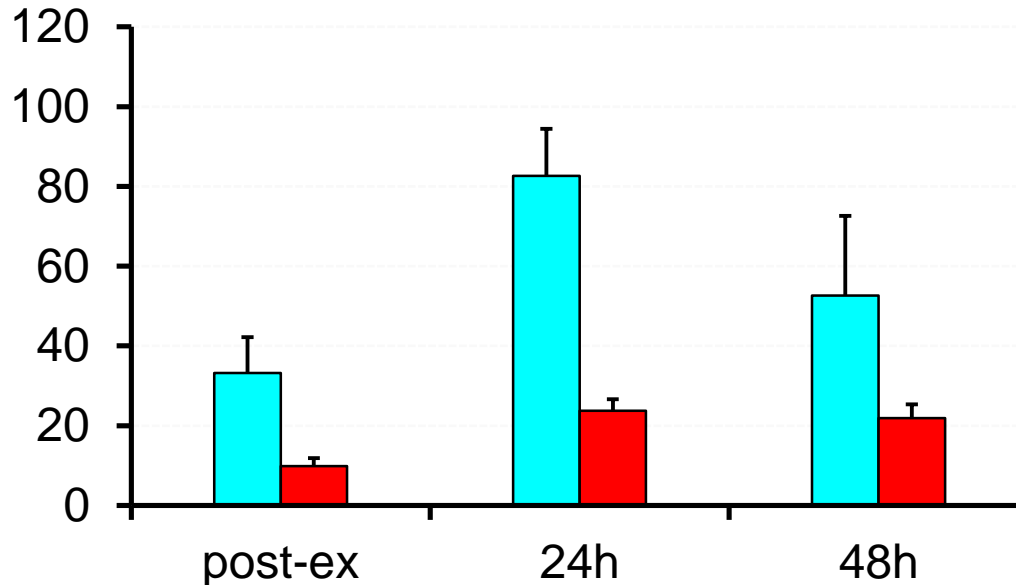
- 141 mg malvidin
- 100 mg cyanidin
- 13 mg pelargonidin
- 8 mg petunidin
- 7mg peonidin
- 5 mg delphinidin

275 mmol.L<sup>-1</sup> Trolox equiv.

96 kcal

# Markers of Oxidative Damage

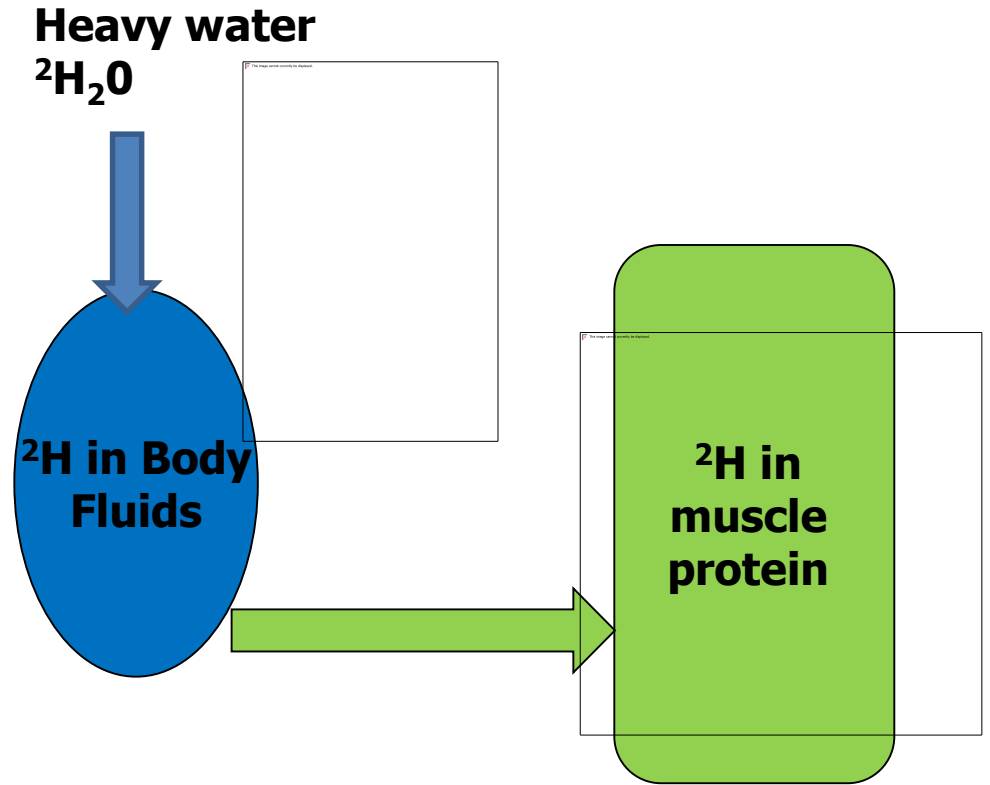
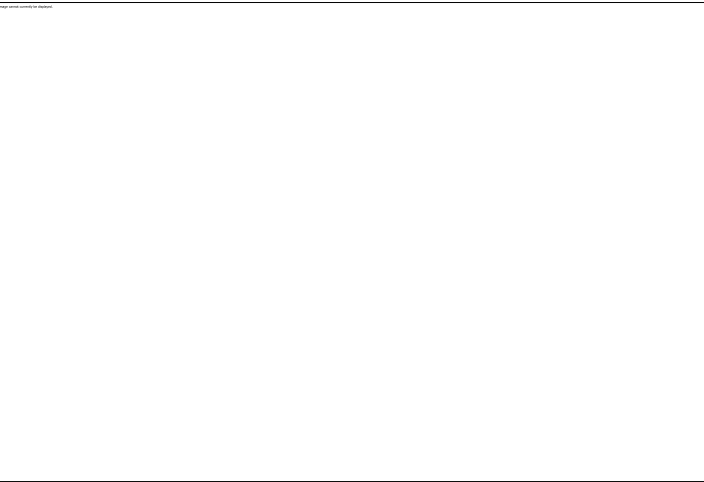
## Protein Carbonyls (%)



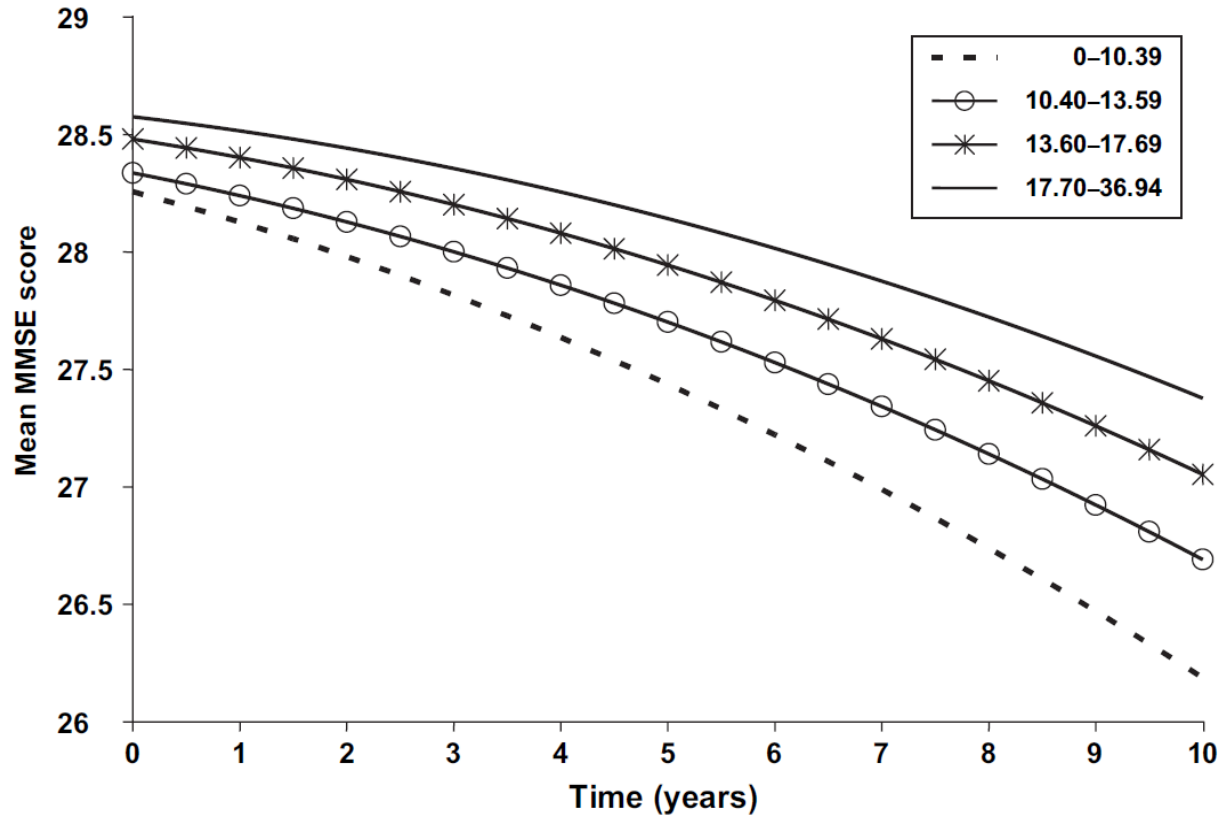


# Health Applications:

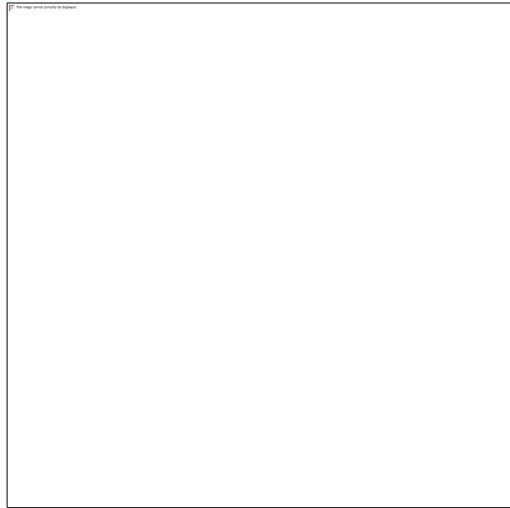
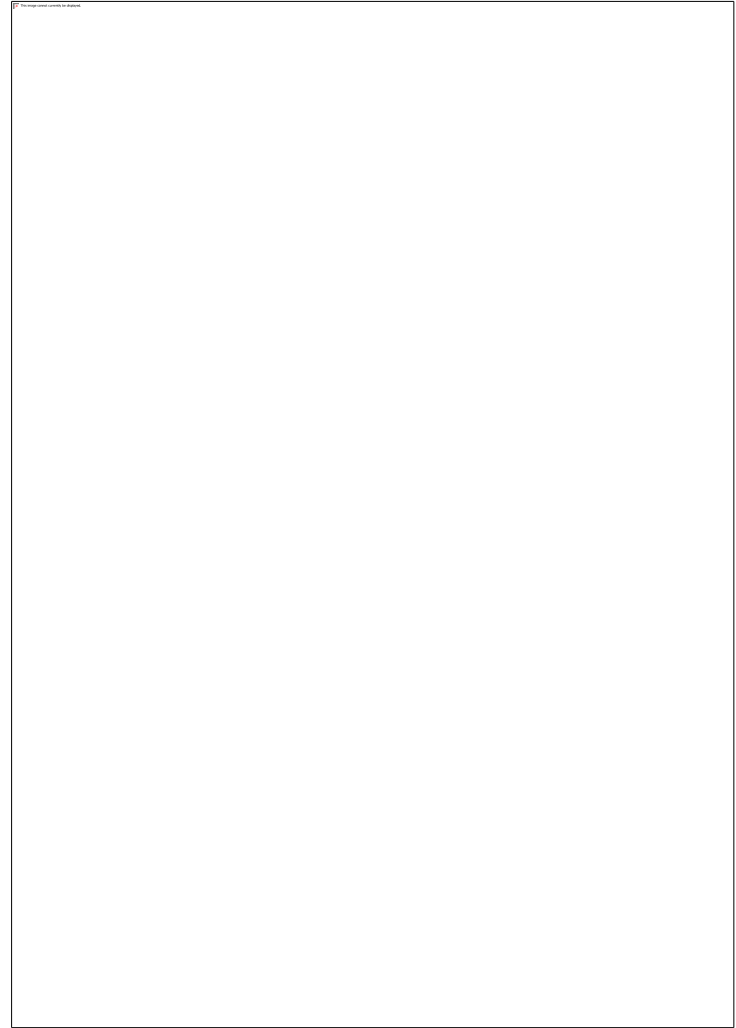
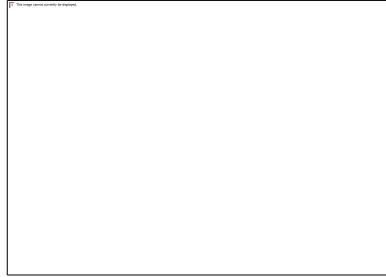
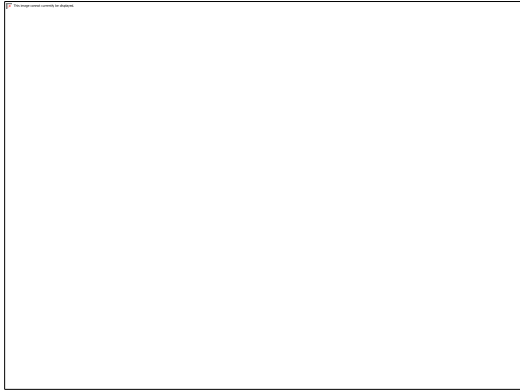
## Prevent age-related muscle loss



# Health Applications: Preserve Brain Function



# Enhanced Cognitive Function and Brain Activation



**Breadth of expertise**

**Cutting edge equipment**

**World class experts**

**Translational research**

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