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Physical activity level more than maturity status is a key parameter to improving fatigability and muscular fitness for health in preadolescents and adolescents: a cross-sectional study

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Physical activity level more than maturity status is a key parameter to improving fatigability and muscular fitness for health in preadolescents and adolescents: a cross-sectional study

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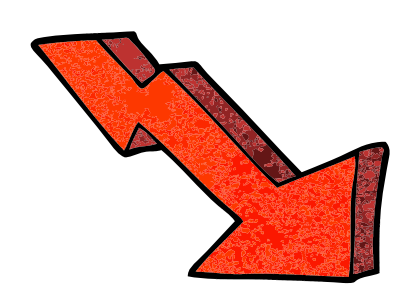
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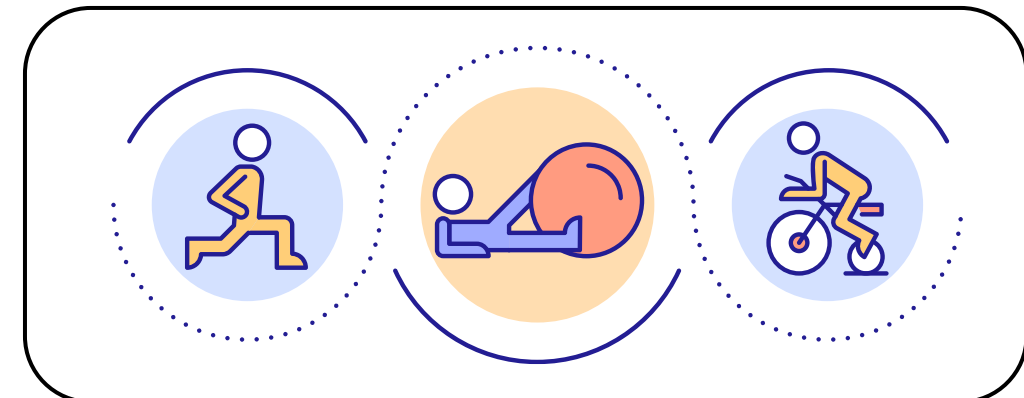
⁵Montferrand Sports Association, Clermont Ferrand, France

Introduction



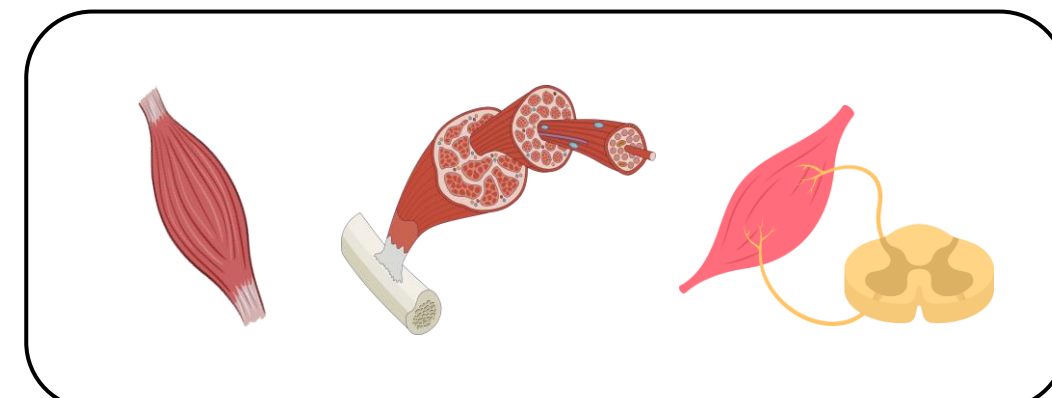
Low level of physical activity (PA)

Physical Activity (PA)



(Faigenbaum et al., 2023)

Muscular fitness



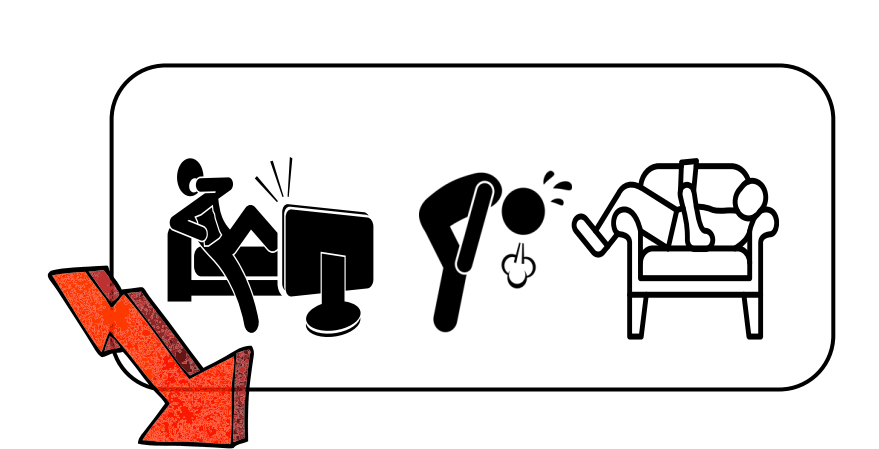
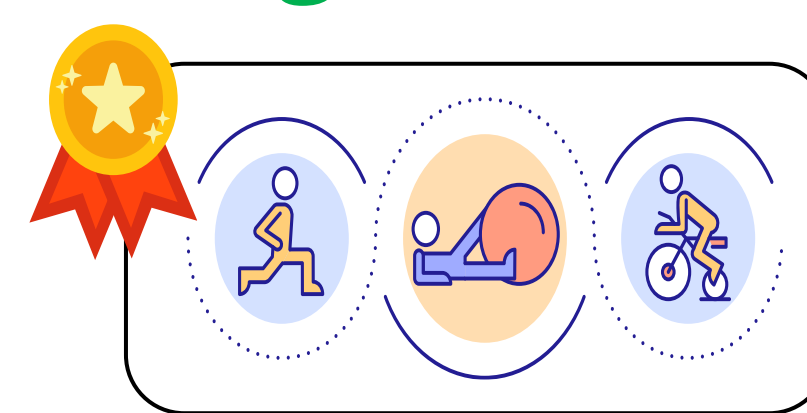
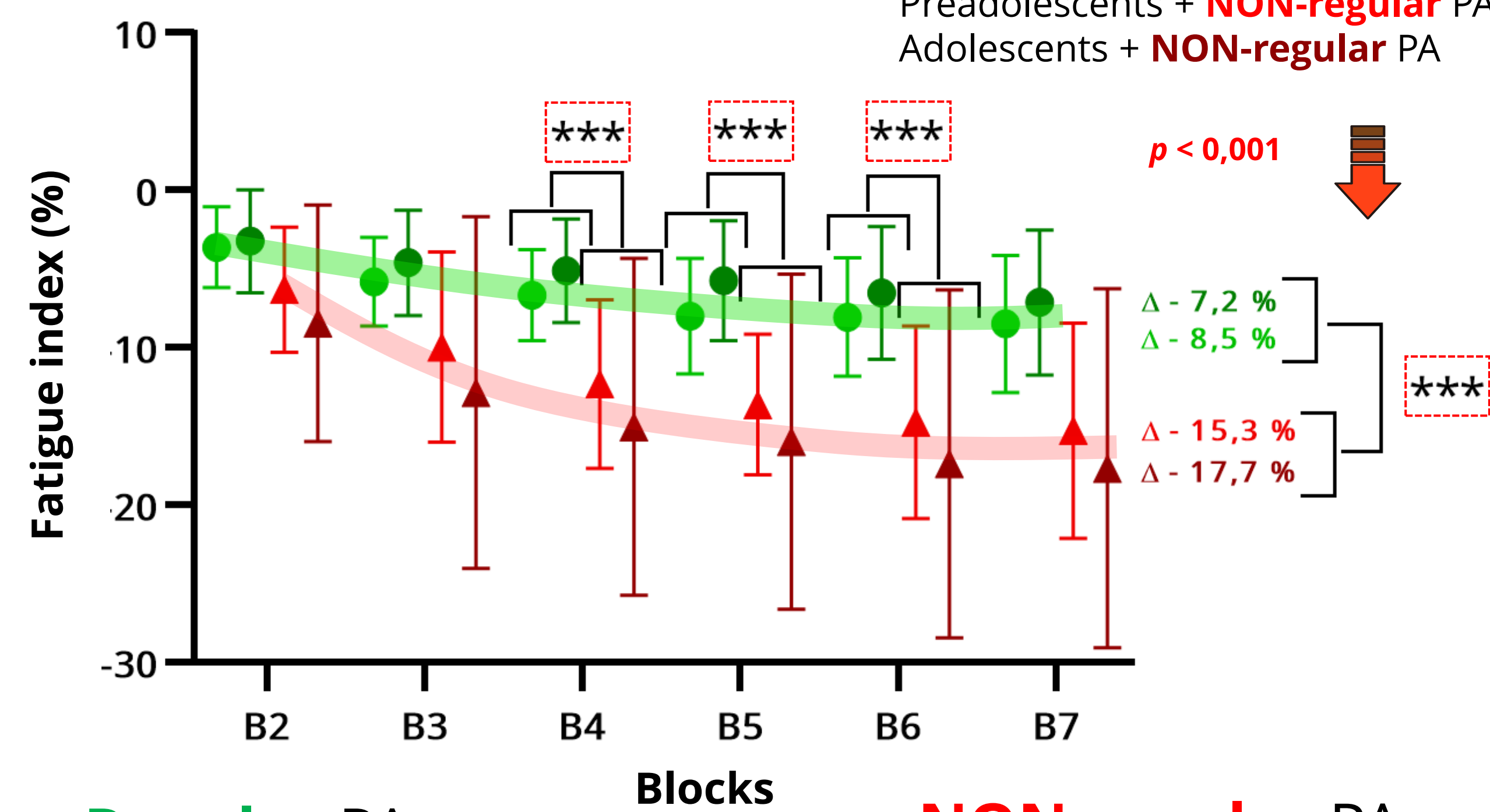
Health

Aim: Interaction effect between PA status (**with regular versus without regular PA**) and maturity status (**preadolescents versus adolescents**) on **fatigability** and **muscular fitness** in **preadolescents** and **adolescents**

Results & discussion

Preadolescents + **regular** PA
Adolescents + **regular** PA

Preadolescents + **NON-regular** PA
Adolescents + **NON-regular** PA



Independently of maturity status

Method

32 preadolescents & adolescents

n = 15
(12.5 ± 0.5 y)

n = 17
(15.1 ± 0.6 y)

≈ 5-7 years of rugby experience

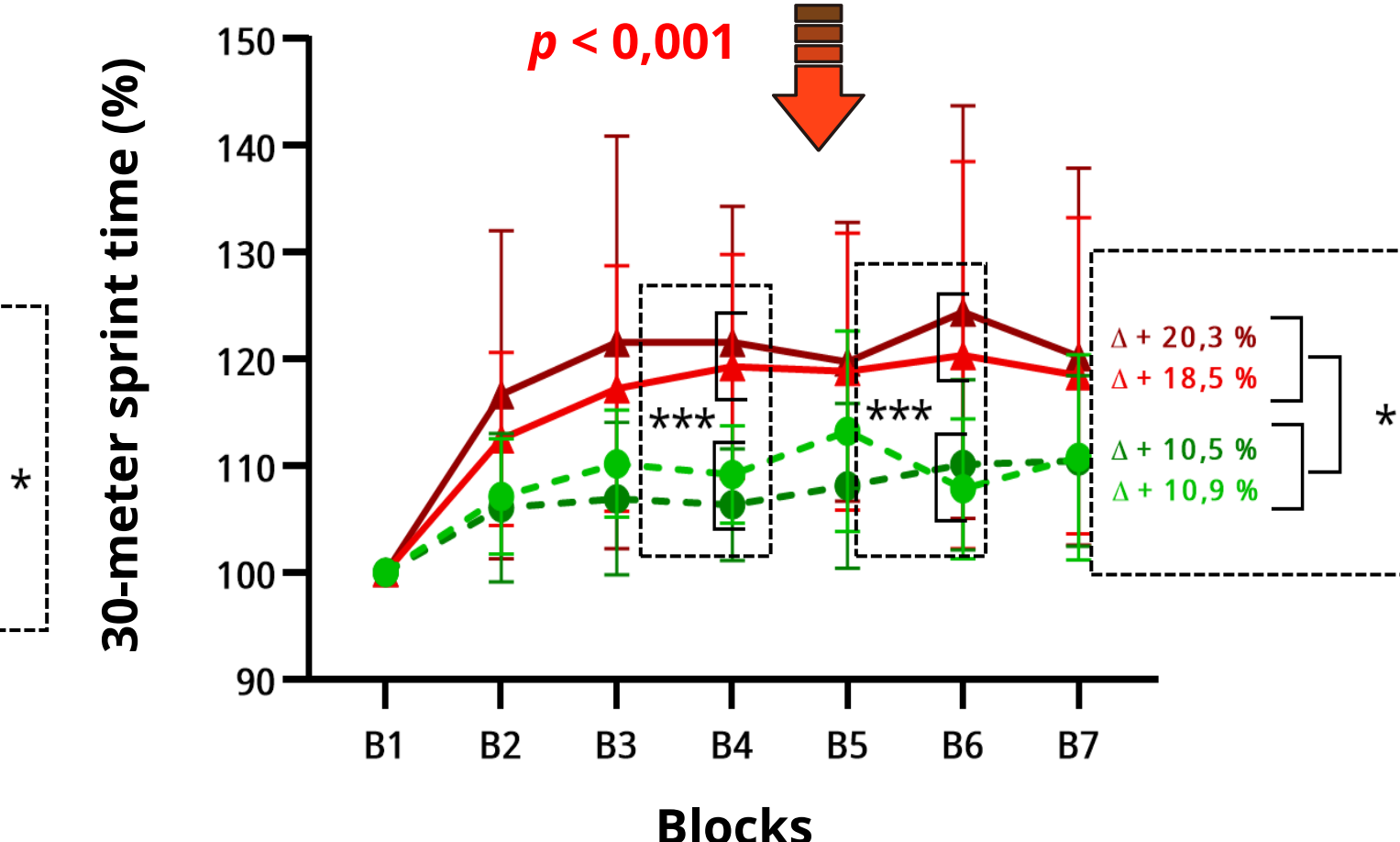
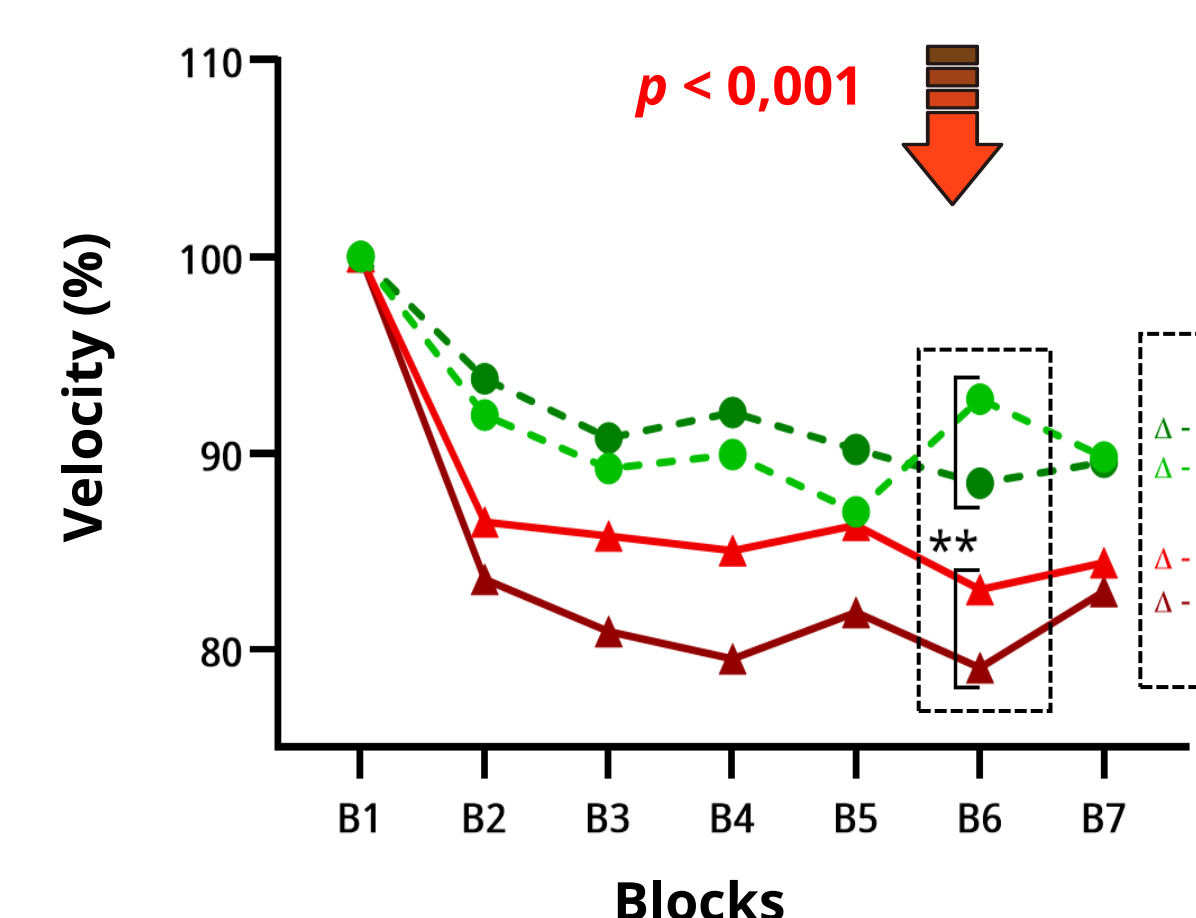
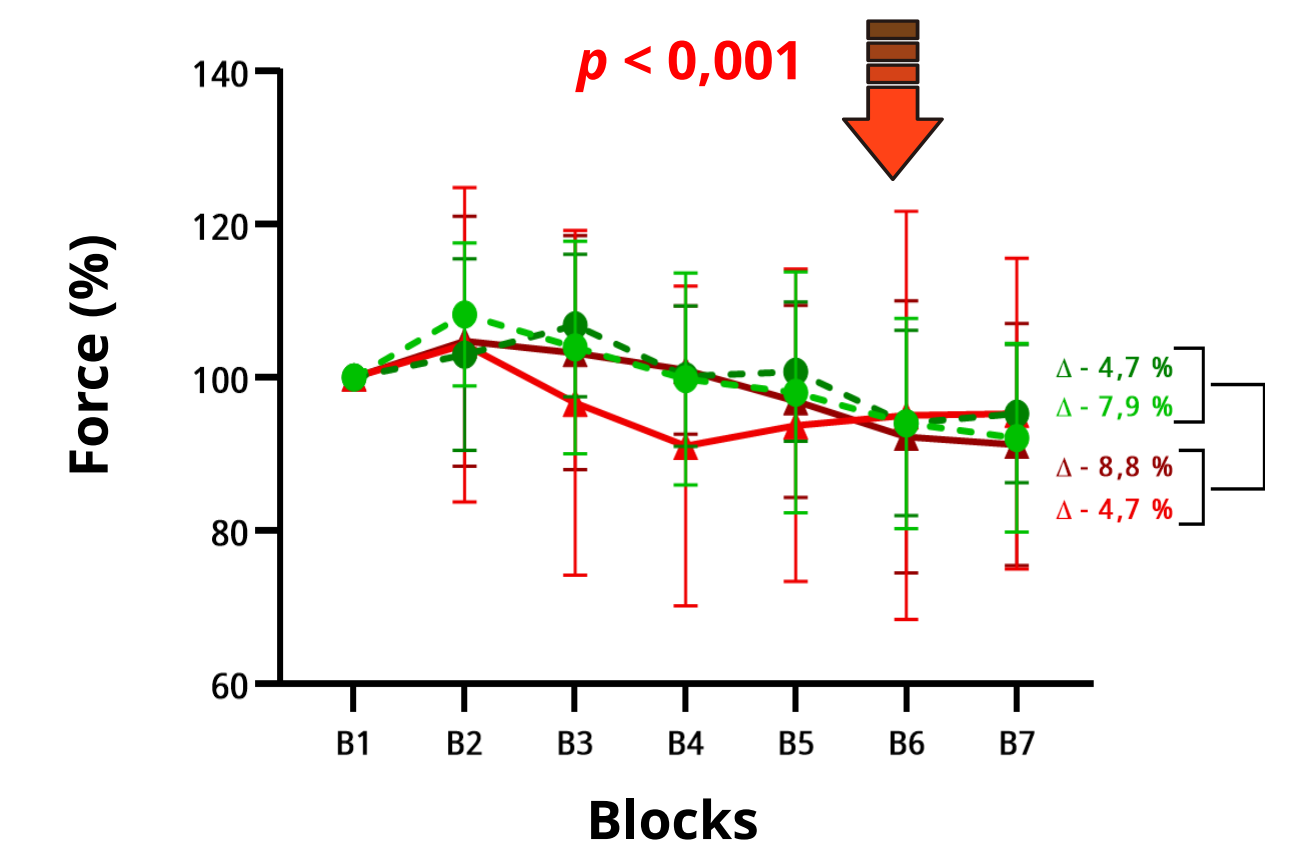
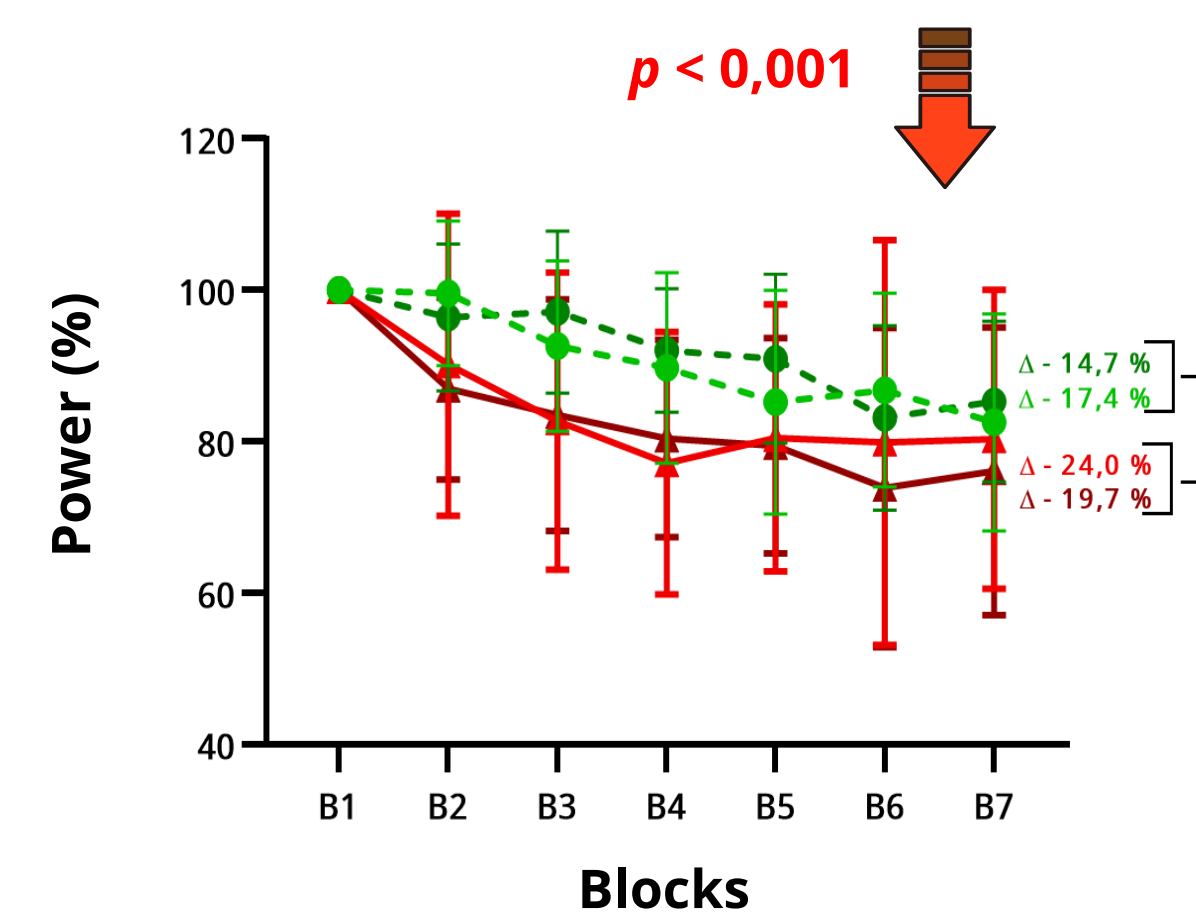
≈ 8-10 years of rugby experience

25 preadolescents & adolescents

n = 13
(12.2 ± 1.6 y)

n = 12
(15.5 ± 0.6 y)

PA ≤ 4 h/week (PA at school included)



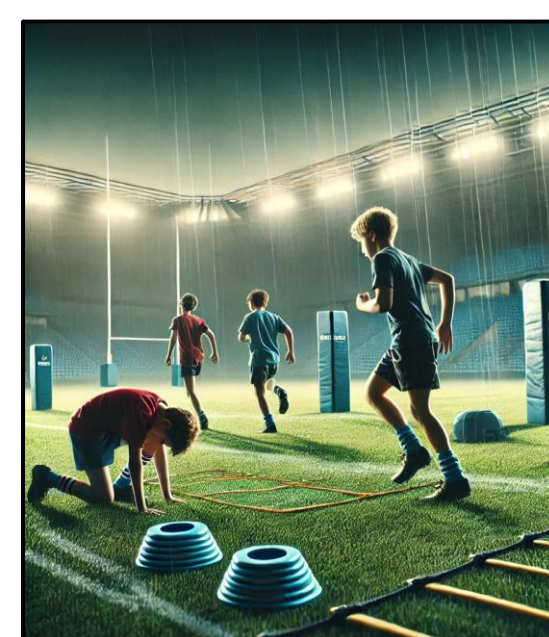
NON-regular PA

Greater **decline** in muscular fitness

Regular PA → **Positive** adaptations

Circuit training session (« blocks ») – generate **fatigue**

- a. 1 x 30-meter **force-velocity** sprint test
- b. 1 min of passive **recovery**
- c. 5 min of **high-intensity intermittent** exercise



Seven times

Fatigability : **Fatigue Index**

(Glaister et al., 2008 - Morin et al., 2011a)



Key messages

- This study **confirms** the importance of participating in **regular PA** during **adolescence** to improve **resistance to fatigability** and **muscular fitness** for **health**
- When the level of **PA** is **below** the **WHO recommendations**, **greater exercise fatigability** and **poorer muscular fitness** are observed

Faigenbaum AD, et al., (2023). May the Force Be with Youth: Foundational Strength for Lifelong Development. *Curr Sports Med Rep* 22, 414–422.

Glaister M, et al., (2008). The reliability and validity of fatigue measures during multiple-sprint work: an issue revisited. *J Strength Cond Res* 22, 1597–1601.

Morin J-B, et al., (2011). Performance and fatigue during repeated sprints: what is the appropriate sprint dose? *J Strength Cond Res* 25, 1918–1924.