

# The persistence of the placebo effect after disclosure during a motor task

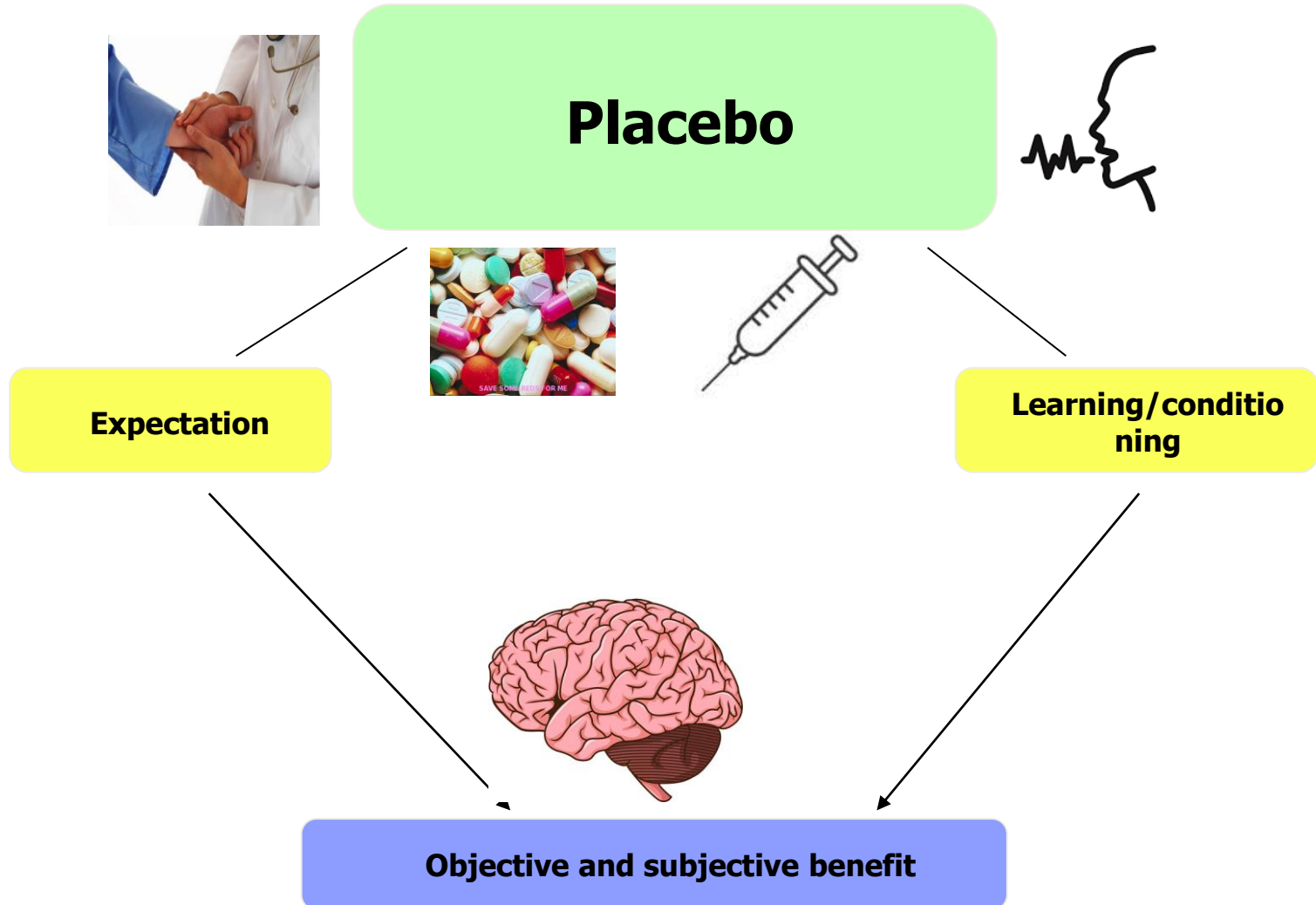


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di VERONA**

# Defining placebo effects



# Placebo effects in motor performance

....BUT  placebos require **deception**  in order to be effective....



# Open-label (or “honest”) placebos

Open label placebo: can honestly prescribed placebos evoke meaningful therapeutic benefits?

Ted J Kaptchuk, professor of medicine and Franklin G Miller, professor of medical ethics

## The Role of Patient Beliefs in Open-Label Placebos

**Kari A. Leibowitz,**  
Department of Psychology, Stanford University

**Emerson J. Hardebeck,**  
Department of Psychology, Stanford University; Department of Psychology, University of Seattle.

**J. Parker Goyer,**  
Department of Psychology, Stanford University

**Alia J. Crum**  
Department of Psychology, Stanford University

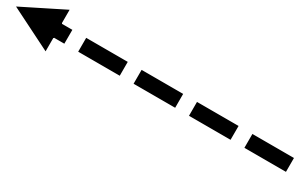
Conditioned placebo analgesia persists when subjects know they are receiving a placebo

**Scott M. Schafer, M.A.<sup>1</sup>, Luana Colloca, M.D., Ph.D.<sup>2</sup>, and Tor D. Wager, Ph.D.<sup>1</sup>**

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RESEARCH ARTICLE  
Why do open-label placebos work? A randomized controlled trial of an open-label placebo induction with and without information about the placebo  
allergic rhinitis  
Miller



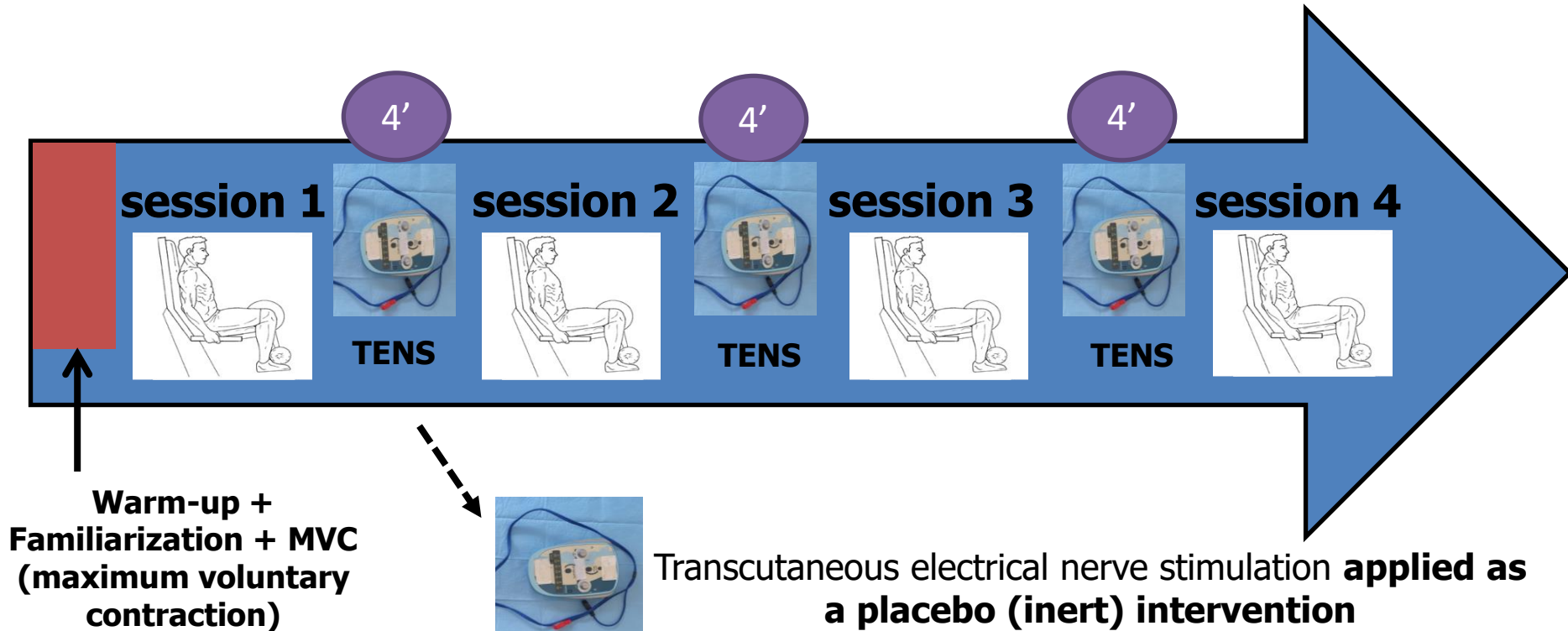
# Main questions: truthful placebos in the motor domain

- I. Can we translate these findings in motor performance and observe an effect after disclosing a placebo intervention?
- II. Can we leverage this effect to boost individuals' self-efficacy?

# Experimental Protocol

**54 healthy volunteers**

- Control group (C): N= 18
- Placebo Group (P): N= 18
- Placebo-overt Group ( $P_{ov}$ ): N= 18



# Experimental set-up and motor task



Load cell

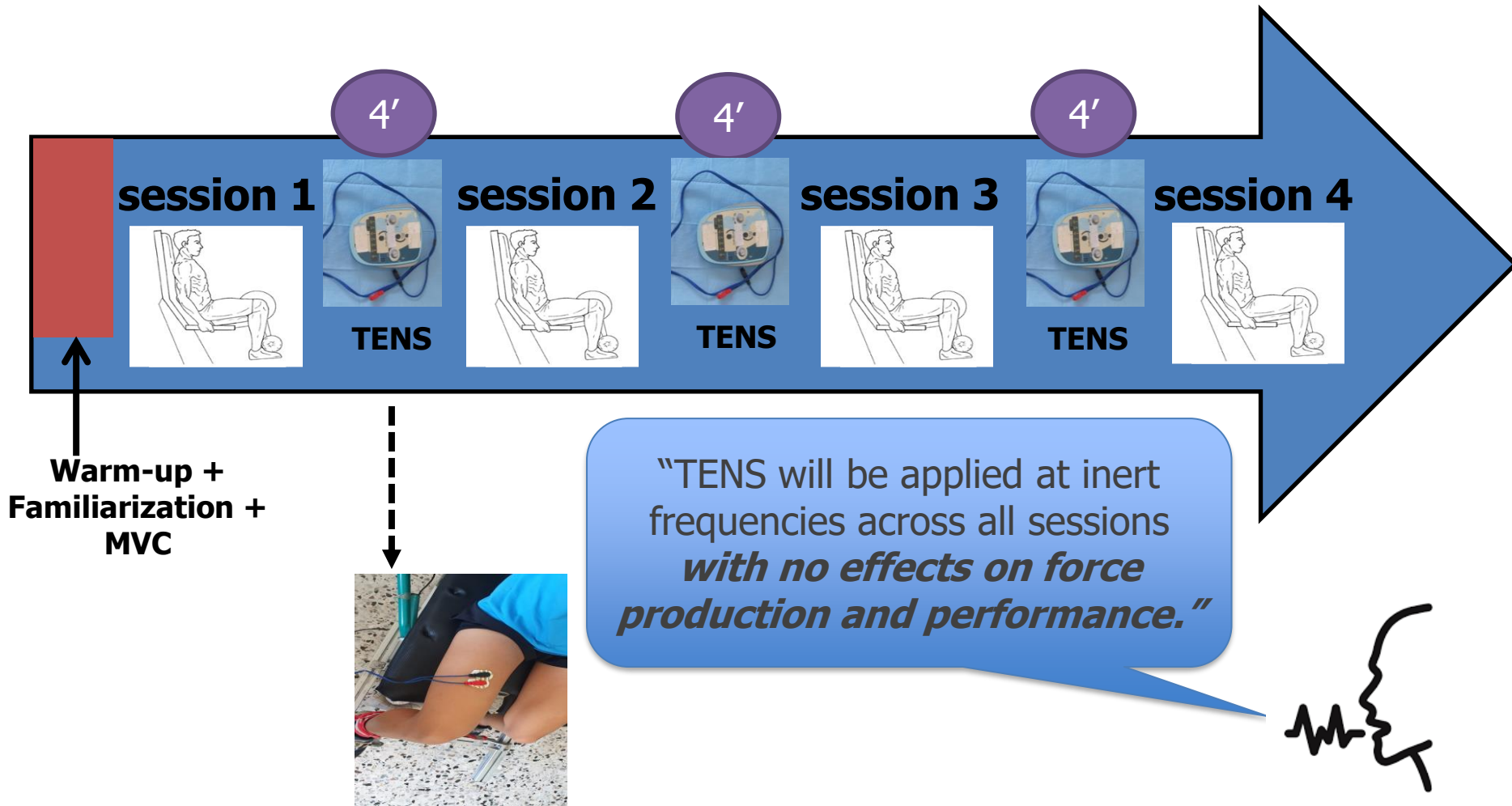
- **Maximal isometric leg-extension with the right leg**
- **10 maximal contractions (2.5 sec each) spaced out by 30 sec rest for each of the 4 sessions**



Visual feedback system for subjects to track their performance during the task

# Experimental Groups

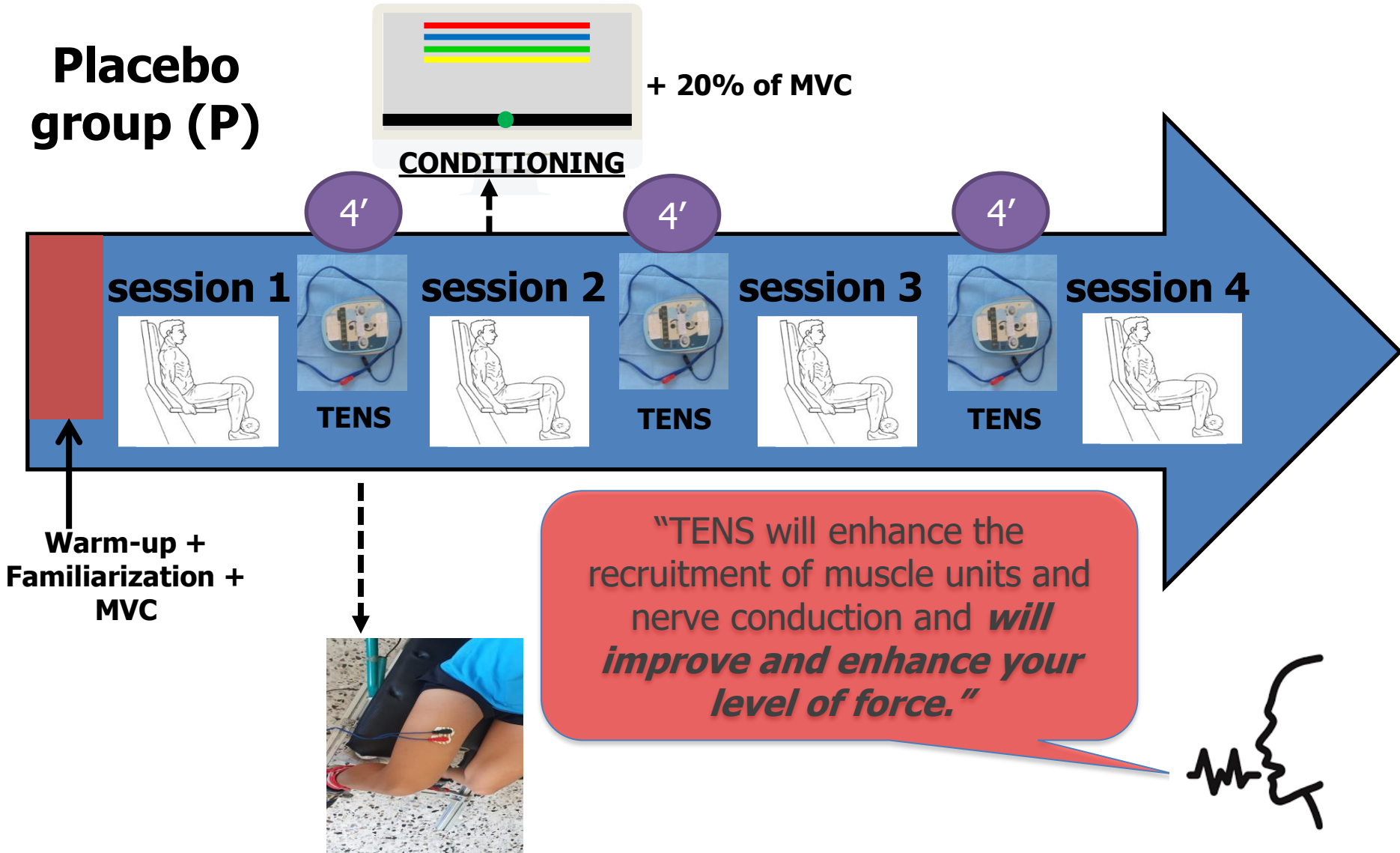
## Control group (C)





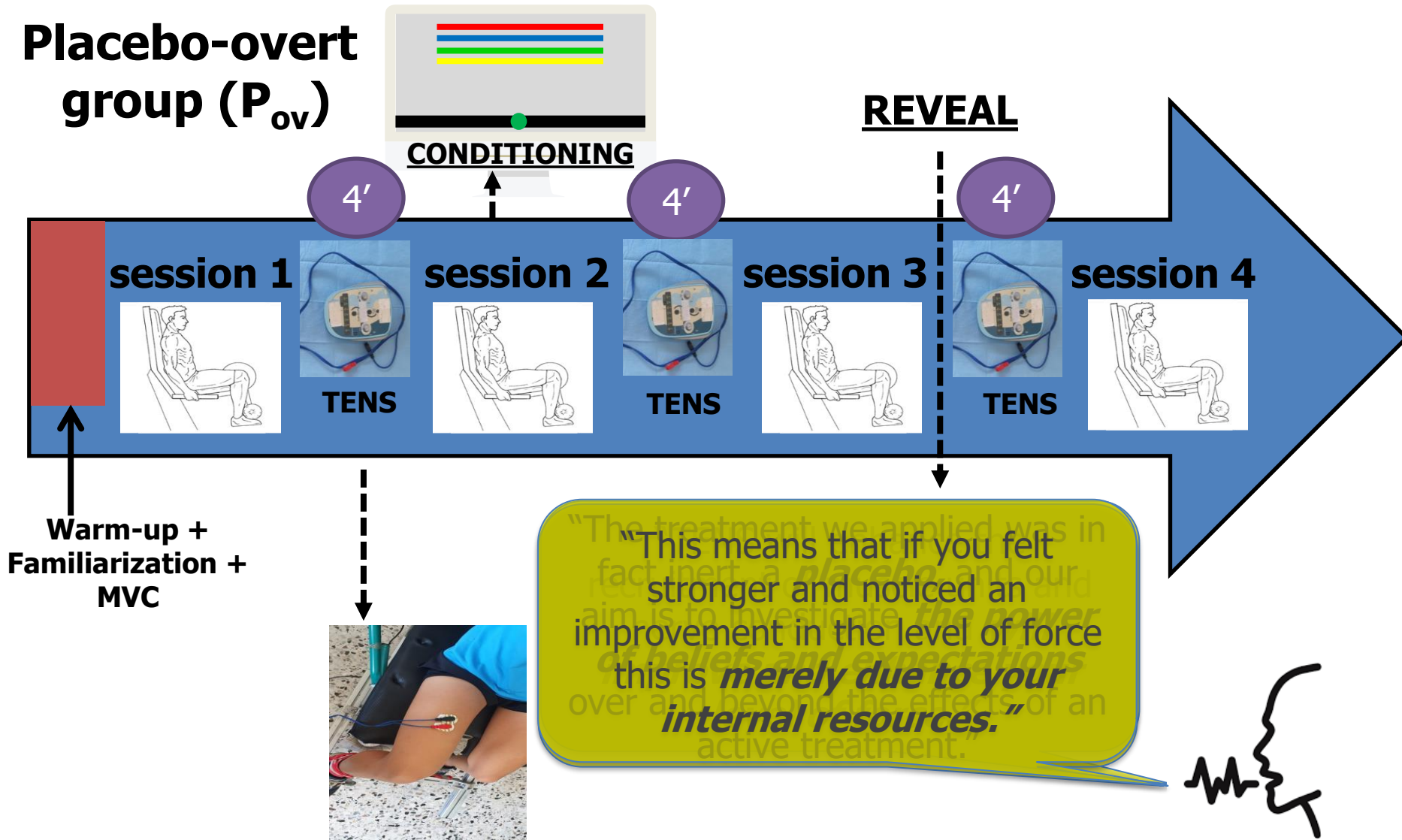
# Experimental Groups

## Placebo group (P)



# Experimental Groups

## Placebo-overt group ( $P_{ov}$ )



# Outcome Measures

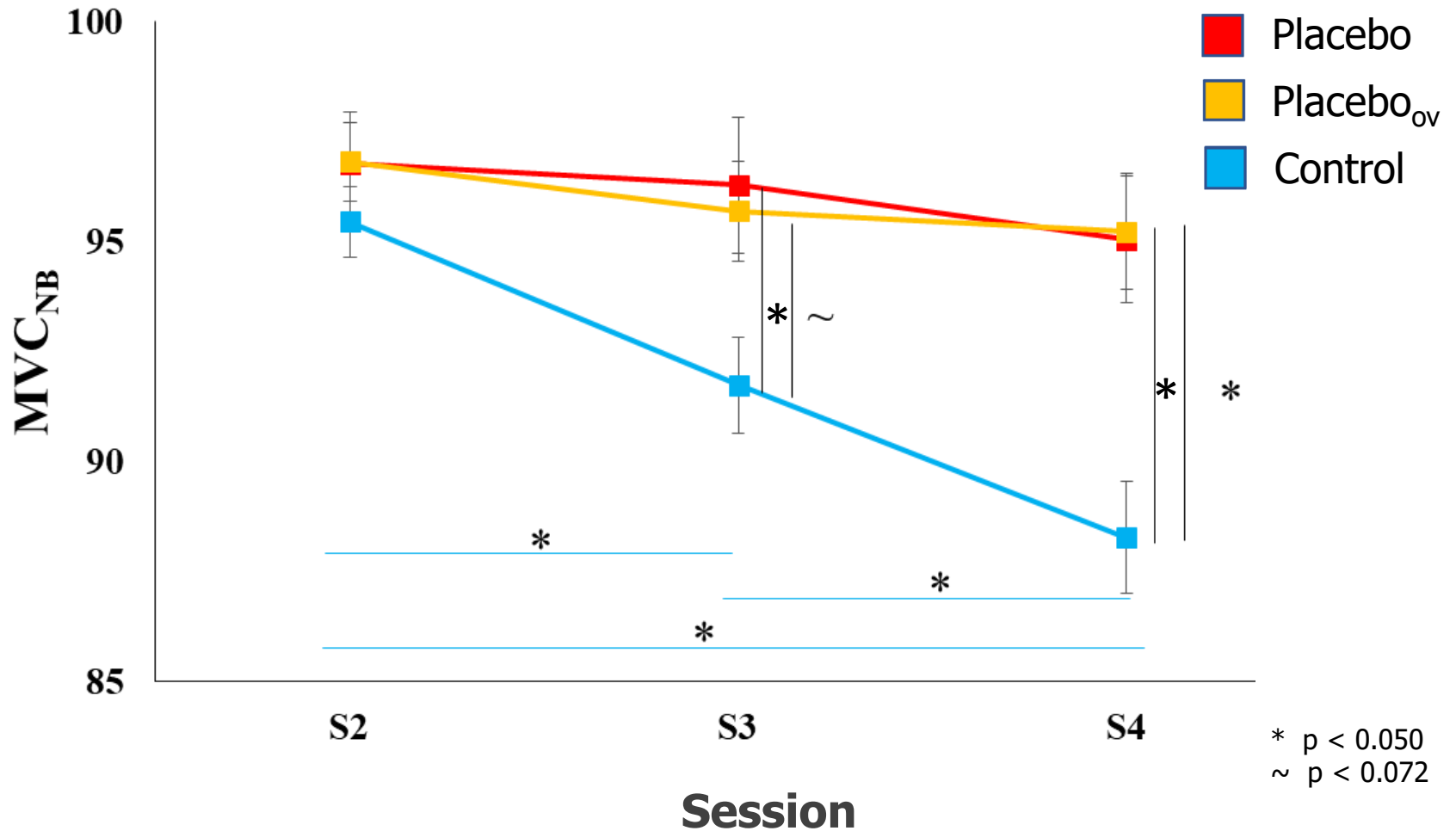
## Behavioral

- **Force:** Maximum Voluntary Contraction (MVC) normalized to baseline

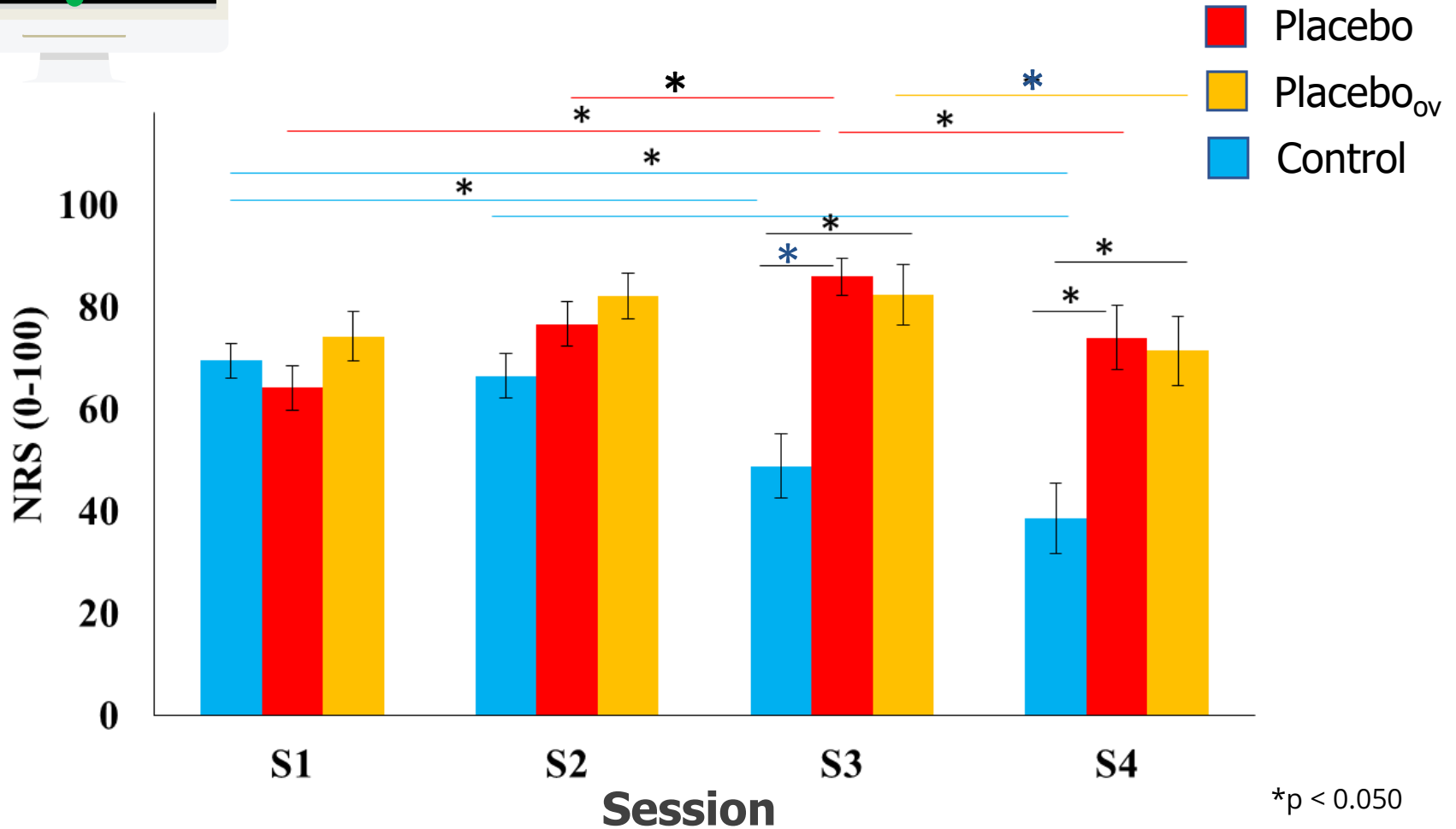
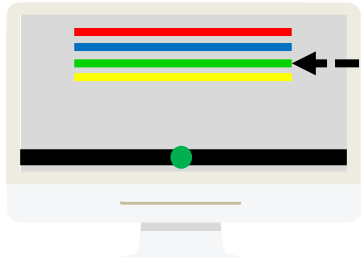
## Subjective

- **Task-specific self-efficacy:** Self-efficacy scale (0-100%)

# Force (normalized to baseline)



# Self-efficacy in reaching 100% MVC line

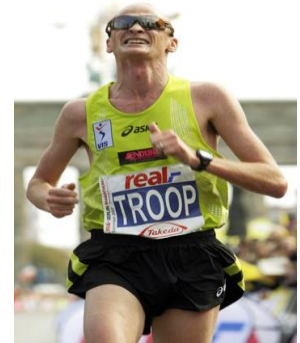


# These findings indicate that....

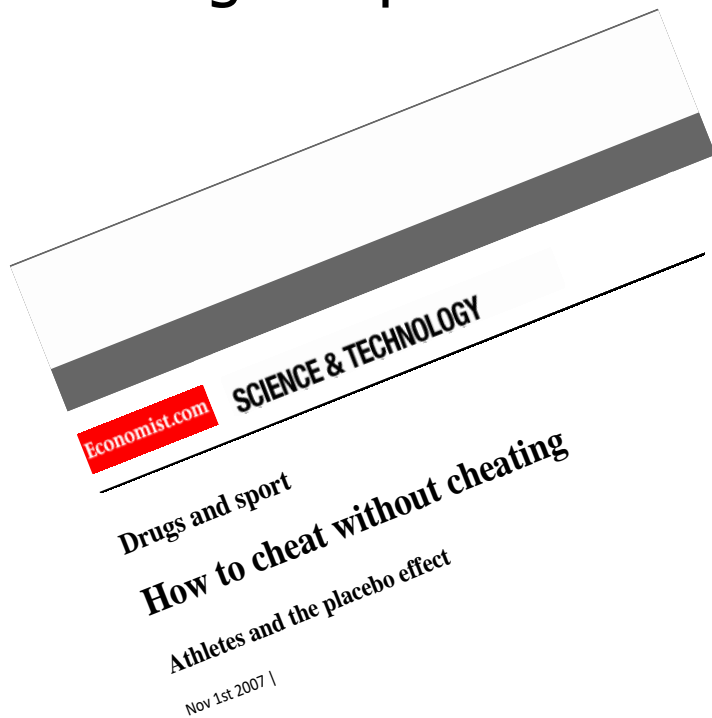
- **No drop in force** in Placebo and Placebo<sub>ov</sub> groups (vs Control) and no difference in the force trend in Placebo<sub>ov</sub> as compared to Placebo in session 4.
- Both placebo groups exhibited **higher levels of self-efficacy**, with no difference in self-efficacy scores even after disclosure.

# So what?

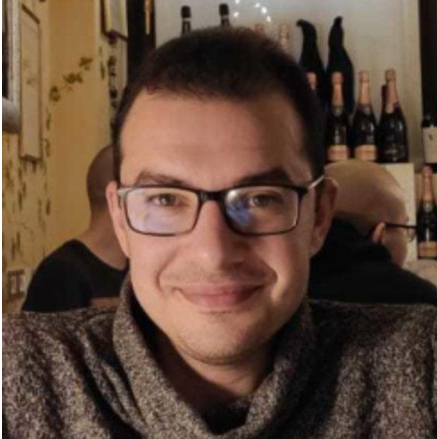
- Foster future research on ways to truthfully deliver placebos to overcome ethical barriers and promote an ethical usage of placebos



- Exploit these protocols in sports and clinical domains to boost self-efficacy and improve outcome



# Thank you!!



Bernardo  
Villa-Sanchez



Mirta Fiorio



Mehran  
Emadi Andani



Angela Marotta



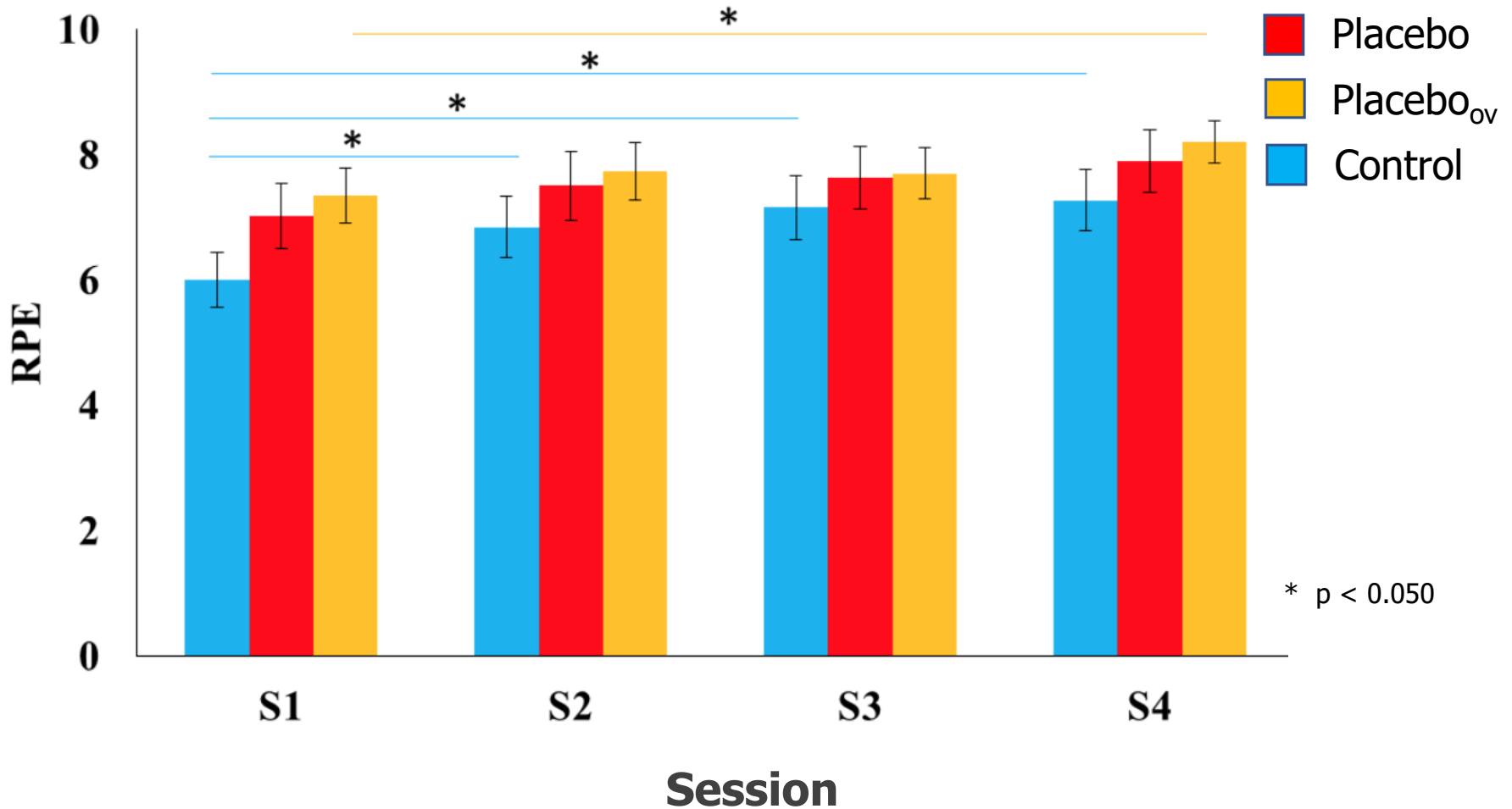
Marco Bonetto





# Rate of perceived exertion (Borg)

Results (subjective)



# Placebo effects in physical performance

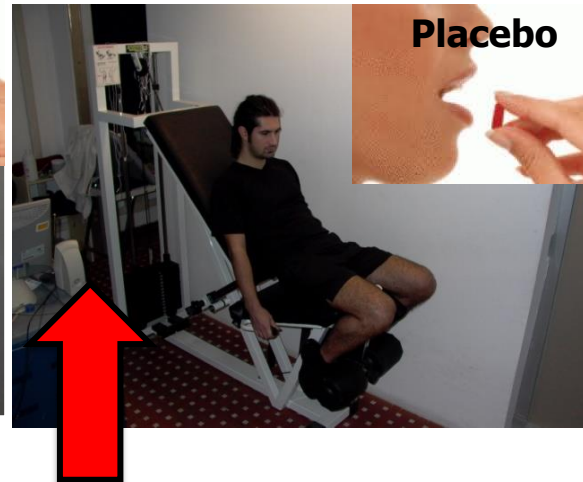
*Background*

## Conditioning



**Load to be lifted is surreptitiously reduced during conditioning**

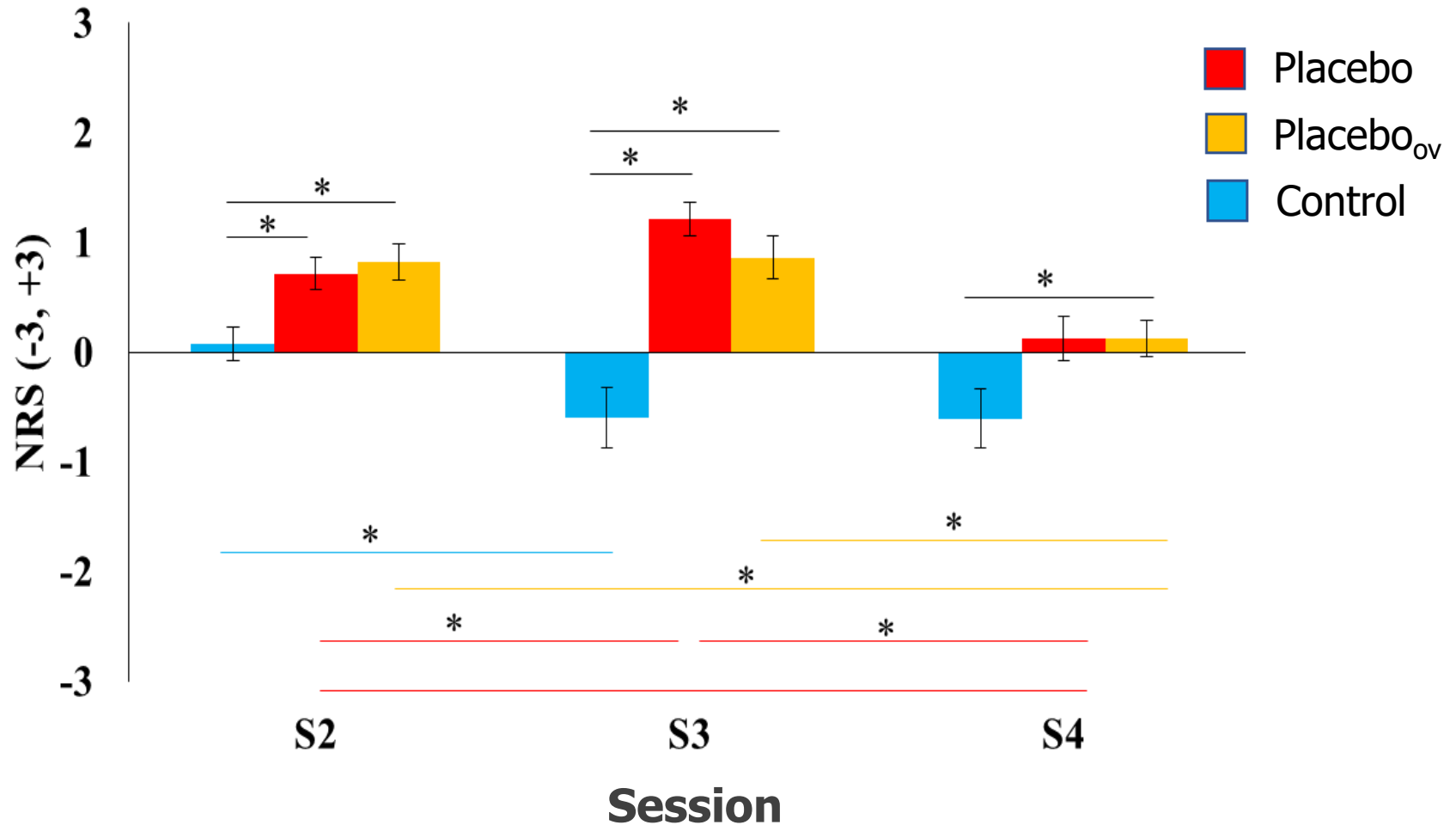
## Final test trial



**Load restored to its original weight**

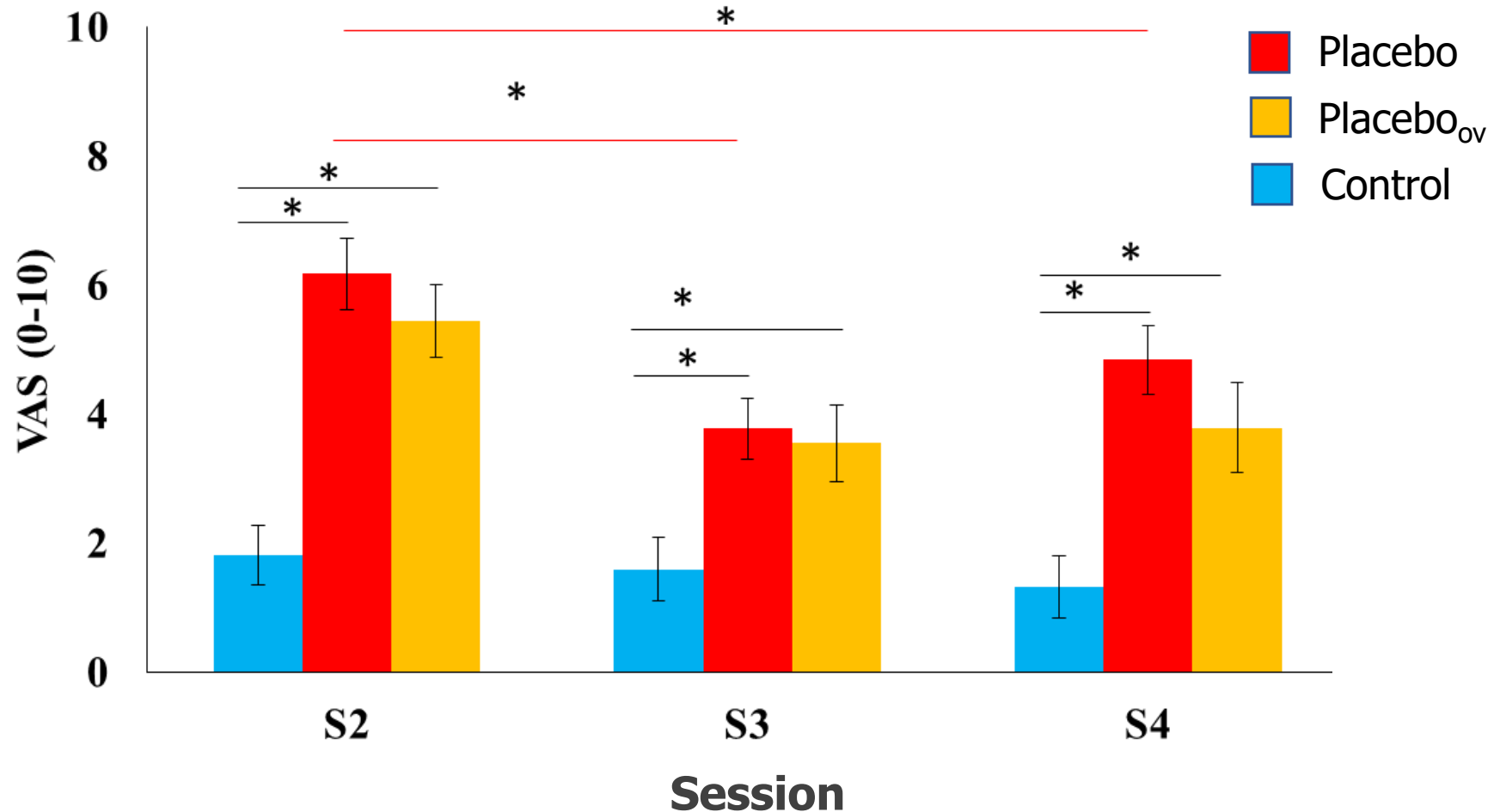
**Reduction in fatigue: 8%**

# Performance expectation: How much do you expect your performance to change in the next session?



\*p < 0.050

# Perceived effectiveness of treatment: Do you think the treatment has been effective?



\*p < 0.050

# Outcome Measures

## Behavioral

**Force:** Maximum Voluntary Contraction (MVC) normalized to baseline

## Subjective

- **Task-specific self-efficacy:** Self-efficacy scale (0-100%)
- *Performance expectations:* Numerical rating scale (NRS, -3, +3)
- *Perceived effectiveness of treatment:* Visual analogue scale (VAS, 0-10)

# Main Results



# Expectations and Treatment perceived effectiveness

➤ **Performance expectation:**

How much do you expect your performance to change in the next session?

➤ **Perceived effectiveness of treatment:** Do you think the treatment has been effective?

- **Significant differences** between **Control vs Placebo** and **Placebo<sub>ov</sub>** across sessions
- **No significant difference** between **Placebo vs Placebo<sub>ov</sub>** across sessions