

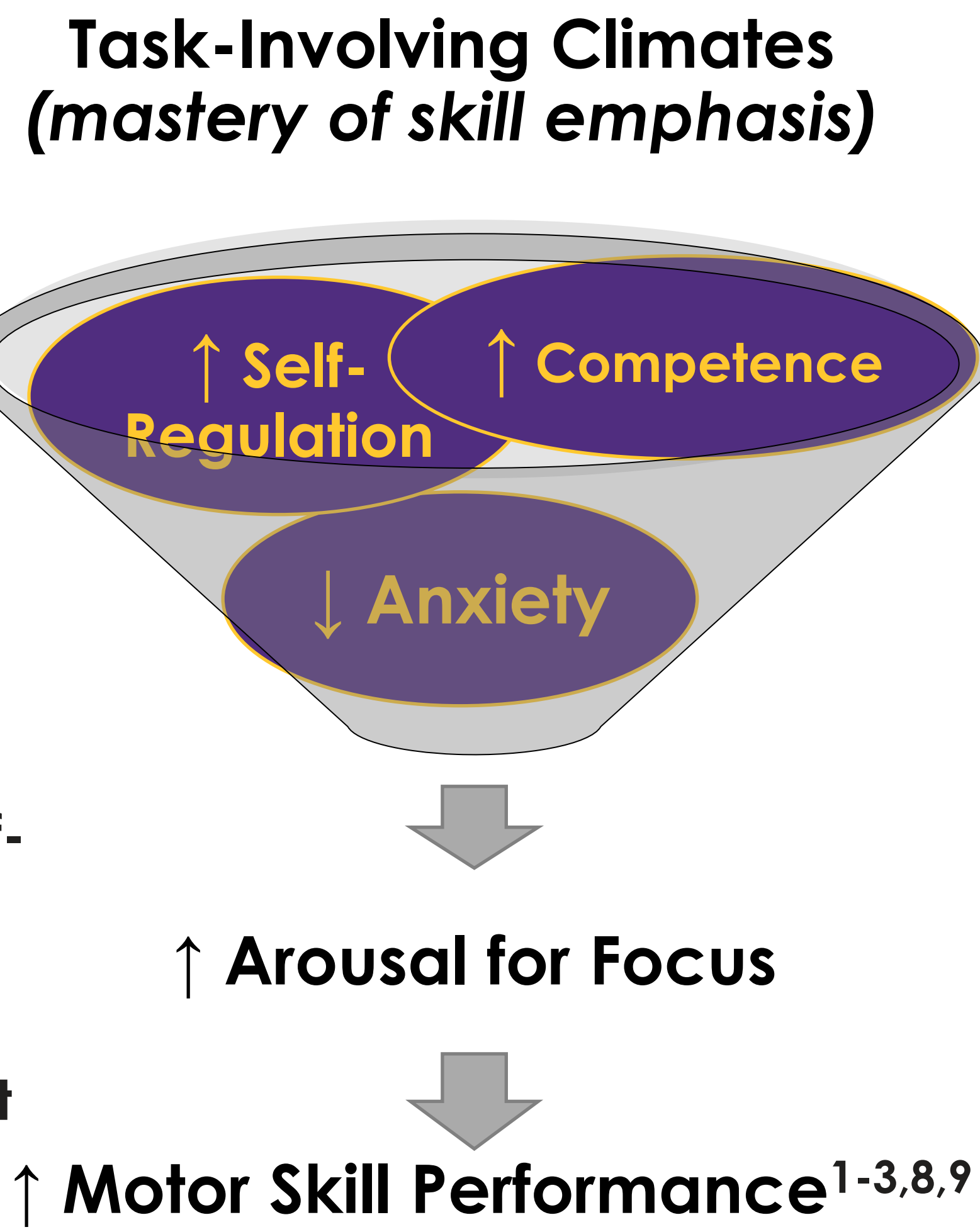
ROTC CADETS' SYMPATHETIC AND VAGAL RESPONSES AND SHOOTING PERFORMANCE TO RECEIVING BRIEF TASK-INVOLVING MOTIVATIONAL CLIMATE FEEDBACK FROM LEADERS

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BACKGROUND

- In a task-involving climate^{2,3}:
- Mistakes are treated as learning opportunities
 - Effort and self-referenced improvement are reinforced
 - Cooperative learning is promoted



40-minute exposures to task-involving climate experimental conditions decrease stress while non-task-involving conditions increase stress measured by self-report and salivary cortisol.⁴⁻⁷

Motivational climates influence on arousal states based on heart rate variability (HRV) has not been previously examined.

PURPOSE & HYPOTHESES

The purpose of this study was to: compare task-involving vs non-task-involving motivational climate feedback on reserve officers' training corps (ROTC)¹⁰ junior cadets':

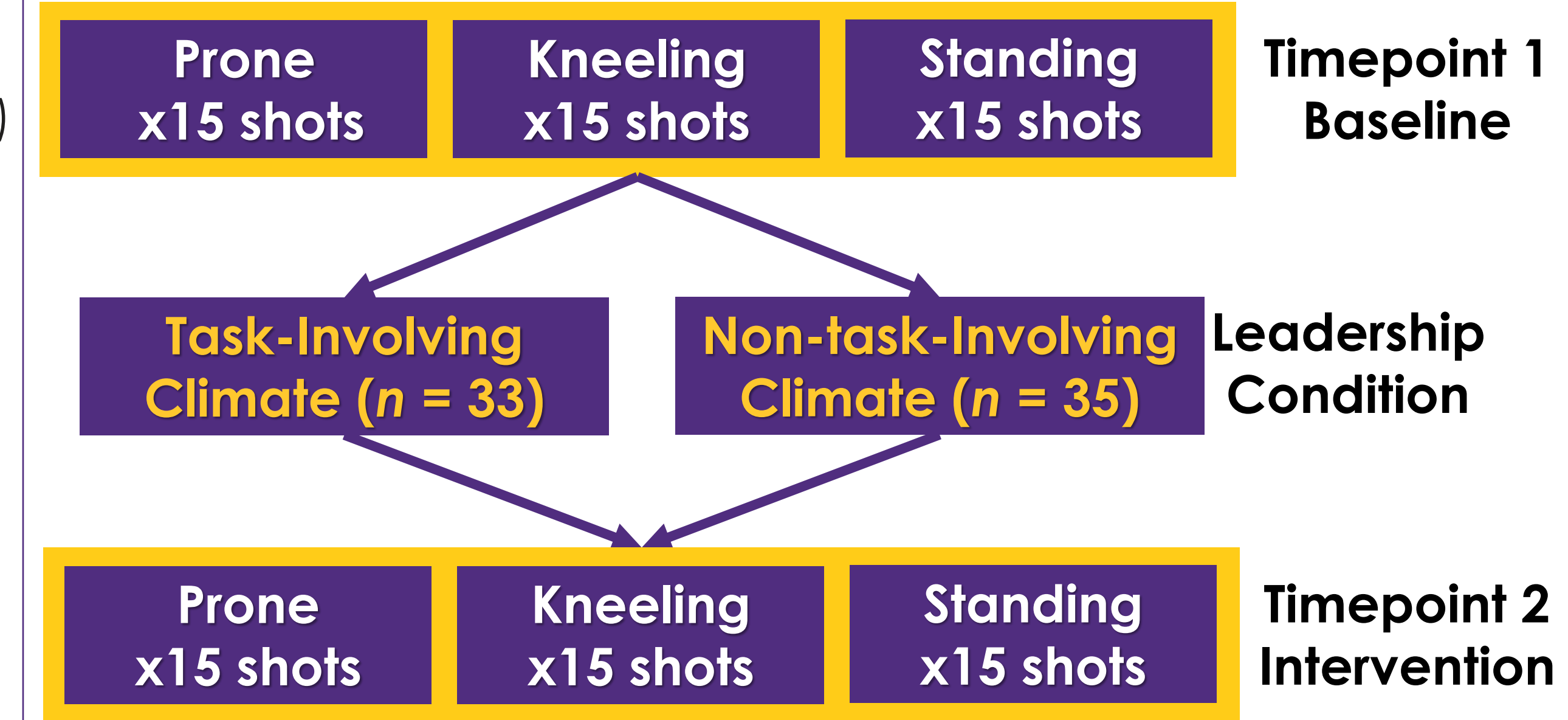
- sympathetic response
Sympathetic ratio was derived from power spectrum density (PSD) estimation and represents a normalized power ratio
- performance measured by hits on a target
Air rifles simulated 50-, 100-, and 150-meter distances in prone, kneeling, and standing positions.

H1: A task-involving motivational climate will lead to a better arousal state than the non-task-involving motivational climate.

H2: A task-involving motivational climate will enhance shooting performance compared to a baseline.

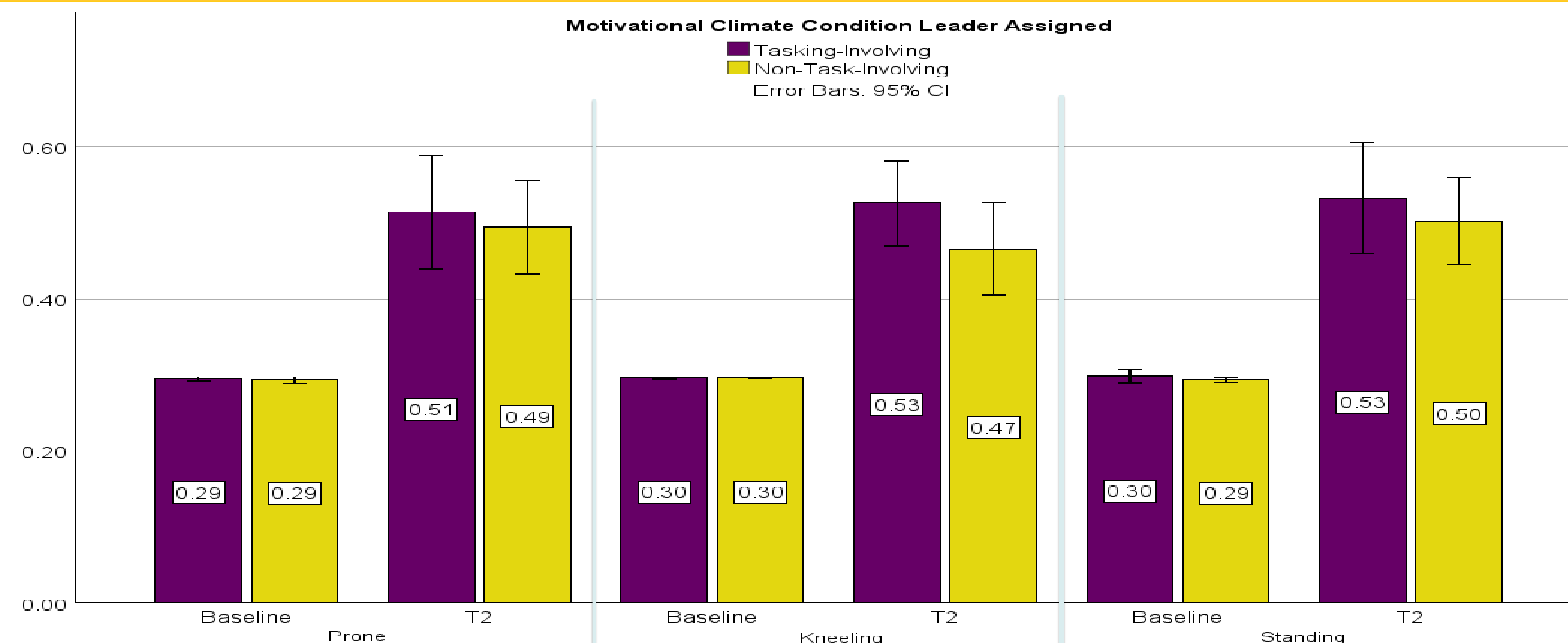
METHODOLOGY

N = 68 ROTC non-senior cadets
n = 23 women, n = 45 men
Wore BIOPAC three-lead EKG with respiration chest strap to measure their sympathetic activity



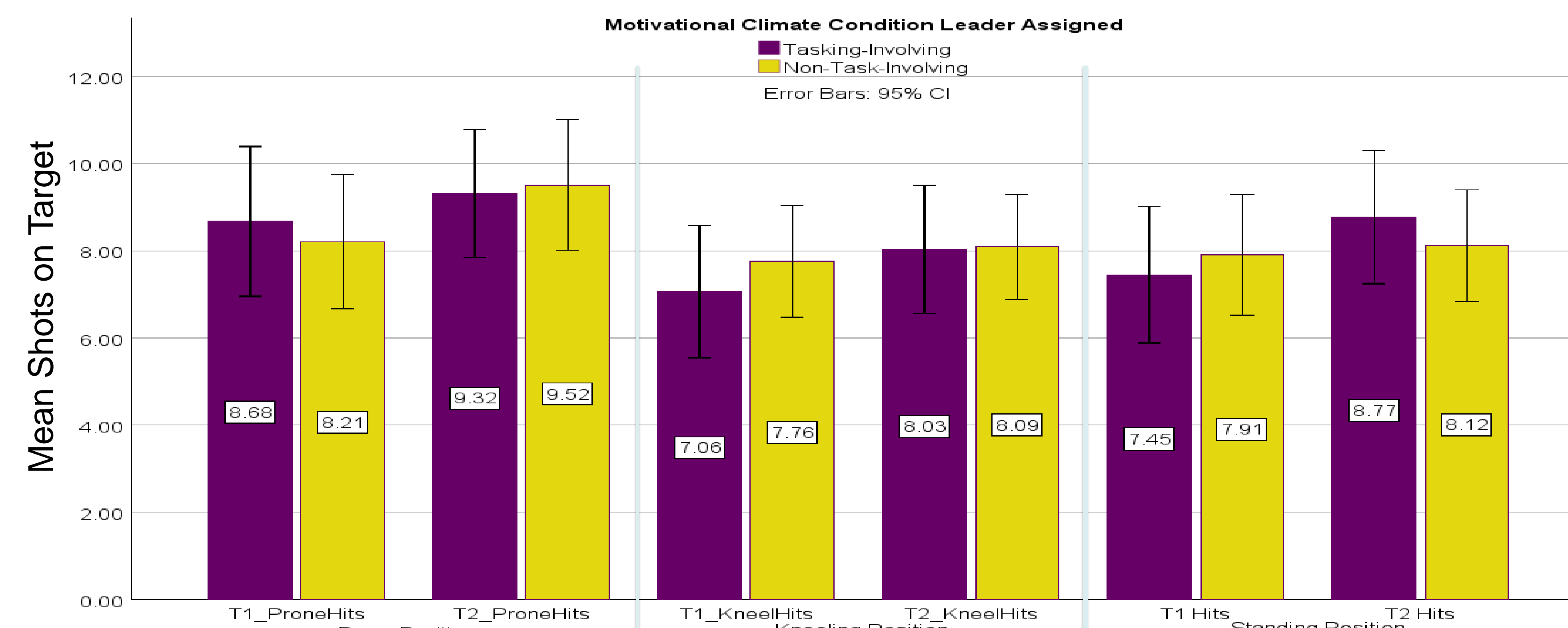
ANCOVA (motivational climate) baseline HRV covariate

SYMPATHETIC (AROUSAL) RESPONSE RESULTS



The ANCOVAs for the sympathetic (arousal) response were non-significant Prone ($F(1,62) = 0.07, p = .80, 0.10\%$), Kneeling ($F(1,62) = 3.467, p = .067, 5.30\%$), and Standing ($F(1,62) = 0.116, p = .74, 0.20\%$)

SHOOTING PERFORMANCE (TARGET HITS) RESULTS



There were no significant differences in shooting; however, the task-involving group improved by 3 hits (13%) on average compared to the non-task-involving group by 1.9 hits (7.2%).

CONCLUSION

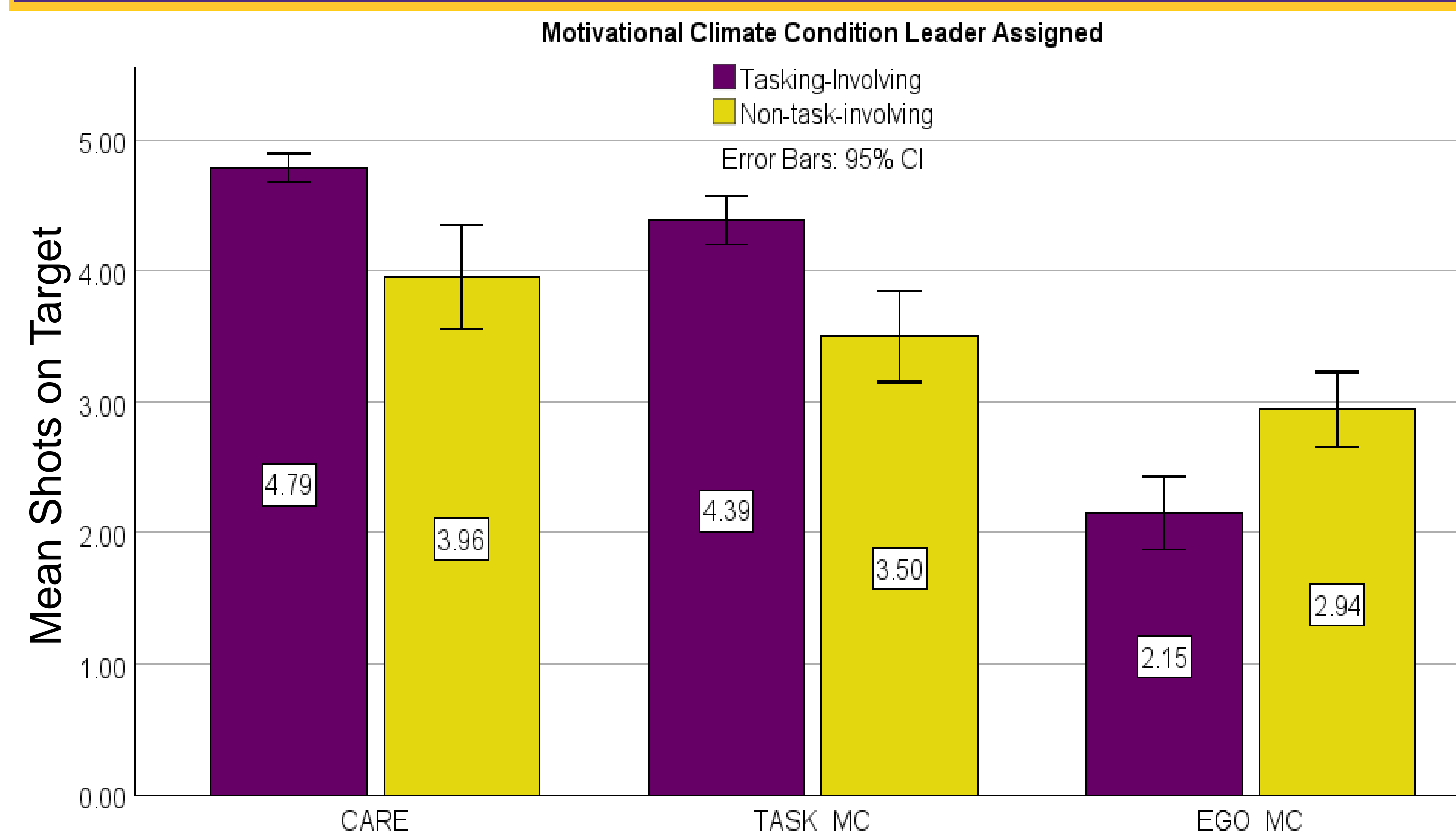
This is the first study to examine HRV responses of participants receiving task-involving vs non-task-involving feedback.

In study, leaders gave bitesize feedback to the cadets similar to feedback in strength and conditioning settings.

While the HRV and shooting performance differences are not statistically significant, even brief exposure to task-involving feedback produced meaningful results in line with theory.

This is the first study to provide evidence with HRV data that receiving task-involving feedback put people into an optimized state to perform (e.g., meaningfully better shooting performance).

MANIPULATION CHECK



PRACTICAL APPLICATIONS

Participants' arousal levels were optimized when receiving task-involving feedback:

- Mistakes are treated as learning opportunities
- Effort and personal improvement is rewarded
- Cooperative learning is encouraged

Cadets received task-involving feedback for a single, 15- to 20-minute shooting session.

- This is shorter than has been previously studied.
- S&C sessions are typically longer and repeated

Benefits are likely additive. Future research can examine the effects of repeated exposures.