

The rise (and fall) of decision making during increasing physical exercise

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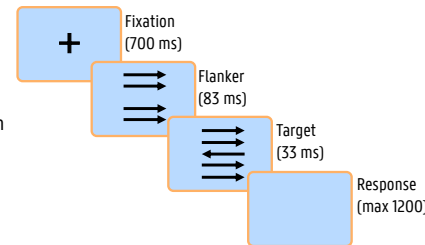
Background

The relationship between **physical and cognitive performance** is described by an **Inverted U-shape** (Tomporski, 2003). During physical exercise, cognitive control tends to improve until it reaches a critical turning point, beyond which it declines.

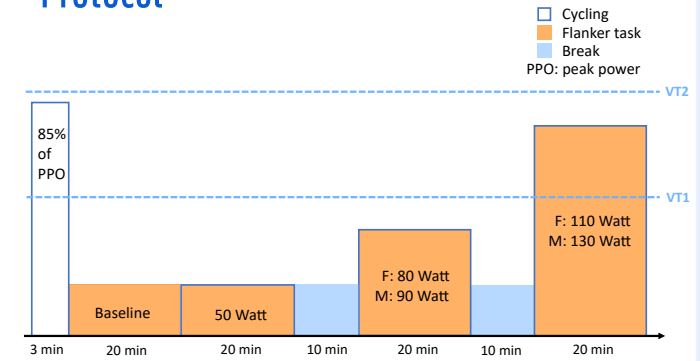


Study focus

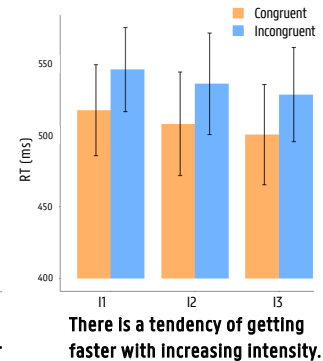
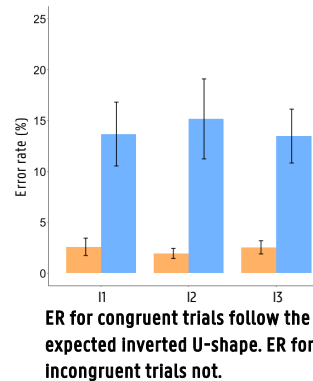
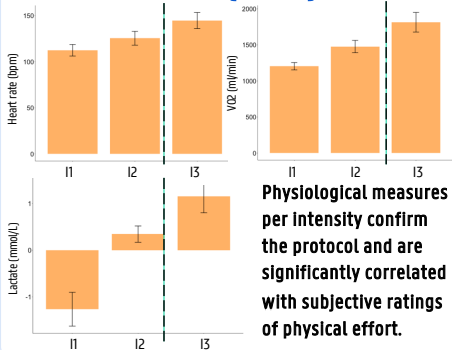
- Inverted U-shape of cognitive performance during increasing intensity
- Evidence accumulation using the diffusion model for conflict tasks
- Physiological parameters during turning point
 - Heart rate
 - V02
 - Lactate
 - Rate of perceived exertion



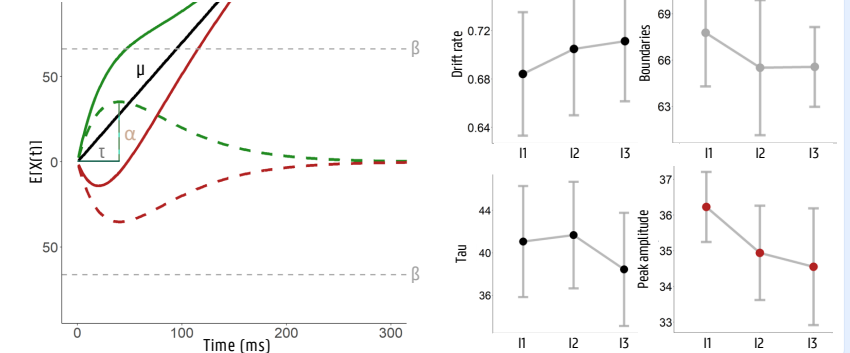
Protocol



Initial results (n = 7)



DMC estimates



Conclusion

- Inconclusive findings regarding inverted U-shape
- Pattern resembles the pattern of Vermeylen et al. (2023)
- No influence of physical exercise on Flanker performance

References

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- Ulrich, R., Schröter, H., Leuthold, H., & Birngruber, T. (2015a). Automatic and controlled stimulus processing in conflict tasks: Superimposed diffusion processes and delta functions. *Cognitive Psychology*, 78, 148–174.
- Vermeylen, L., Braem, S., Ivanchel, I., Desender, K., González-García, C., García-Román, J., Ruz, M., & Notebaert, W. (2023). The temporal dynamics of metacognitive experiences track rational adaptations in task performance. *bioRxiv* (Cold Spring Harbor Laboratory).

Acknowledgements

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