

Effects of Cardiopulmonary Rehabilitation on Cognition in individuals with Long COVID-19 Syndrome

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Introduction

Brain Fog in Long-COVID:

- **Prevalent Symptom**
- **Cognitive Impairment**



Exercise and Rehabilitation:

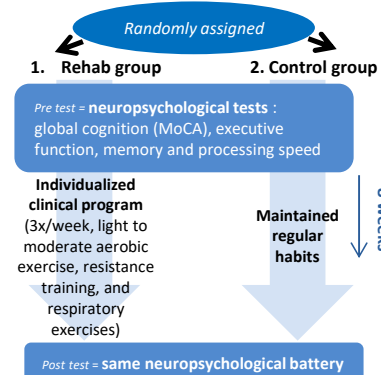
- **Positive Effects:** Shown in healthy and cardiac individuals.
- **Cognition Improvement:** Exercise is linked to cognitive enhancement.

Aim

To assess the effectiveness of an eight-week cardiopulmonary rehabilitation program on cognition in individuals with long-COVID-19.

Method

n = 40 participants with long-COVID-19 (26♀, 14♂, mean age 53±11 years, mean days with long covid = 427)

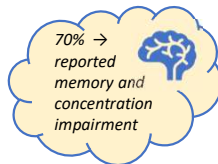


Results

At baseline covid patients show deficits compared to the norms

Table 1. Means of cognitive tests: data Z-scores transformed relative to the norms (Null Hypothesis: All population means 0)

Tests	M(SD)	df	t	p
Working memory (backward digit span)	-0.34 (0.76)	36	-2.69	p<0.05
Working memory (forward digit span)	-0.21 (0.97)	36	-1.33	p>0.05
Episodic memory (HVLT delayed recall)	-1.28 (1.82)	36	-4.30	p<0.01
Episodic memory (HVLT total recall)	-0.78 (1.34)	36	-3.57	p<0.01
Executive functions (verbal fluency: letter P)	-0.69 (0.95)	36	-4.39	p<0.01
Global cognition (MoCA)	-0.92 (1.71)	37	-3.29	p<0.01



No change in intervention between groups

Figure 1.

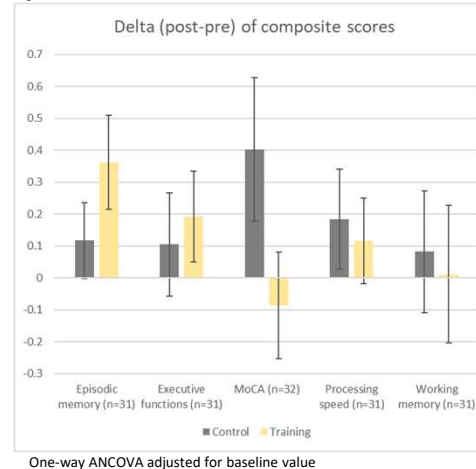
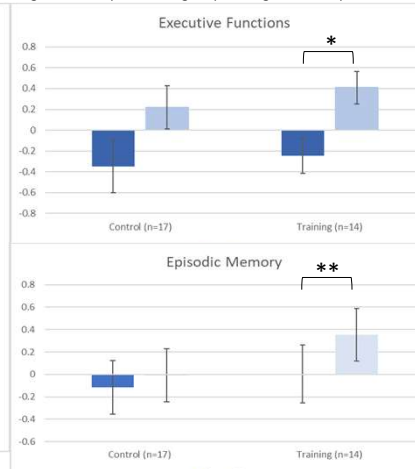


Figure 2. Pre/post intra group changes of composite scores



Conclusions

Rehabilitation Effects on Cognitive Function in Long-COVID:

- **Notable enhancements on executive function and episodic memory.**

- **No significant differences identified with Control Group.**

Implications of the Study:

- **Limitation in Significance:** No statistical improvement seen when compared to individuals maintaining regular habits, potentially influenced by the small sample size → limited statistical power.

- **Promising Potential:** Individualized cardiopulmonary rehabilitation shows promise for cognitive improvement.

Clinicaltrials.gov: NCT05035628

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Acknowledgments

My sincere gratitude to Dr. Christine Gagnon, Dr. Florent Besnier and Dr. Louis Bherer for their invaluable support and guidance. Thank you as well to Alex Newman for his help.

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