

Measuring the impact of VR pain treatment on the brain

A Time-Domain functional Near-Infrared Spectroscopy Pilot Study

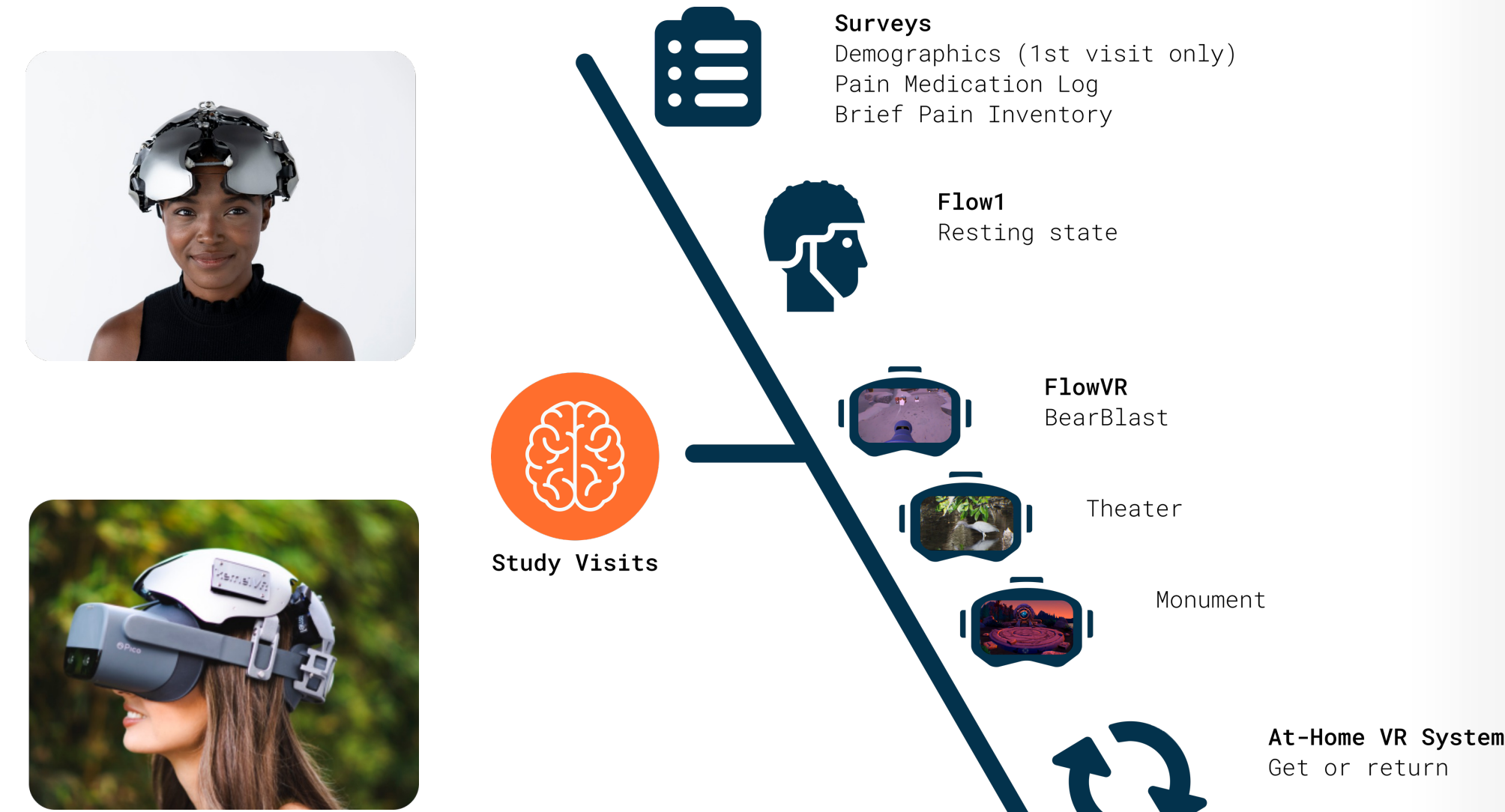
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INTRO

- Virtual Reality (VR) is an emerging technology for pain management, however there is very little work on the neural mechanisms of action for VR pain treatments.
- This pilot study aims to fill in this gap by exploring the effect of a VR 8-week training program on Chronic Lower Back Pain (CLBP) patients by measuring physiology and brain activity patterns using a Time-Domain functional Near-Infrared Spectroscopy (TD-fNIRS) system.

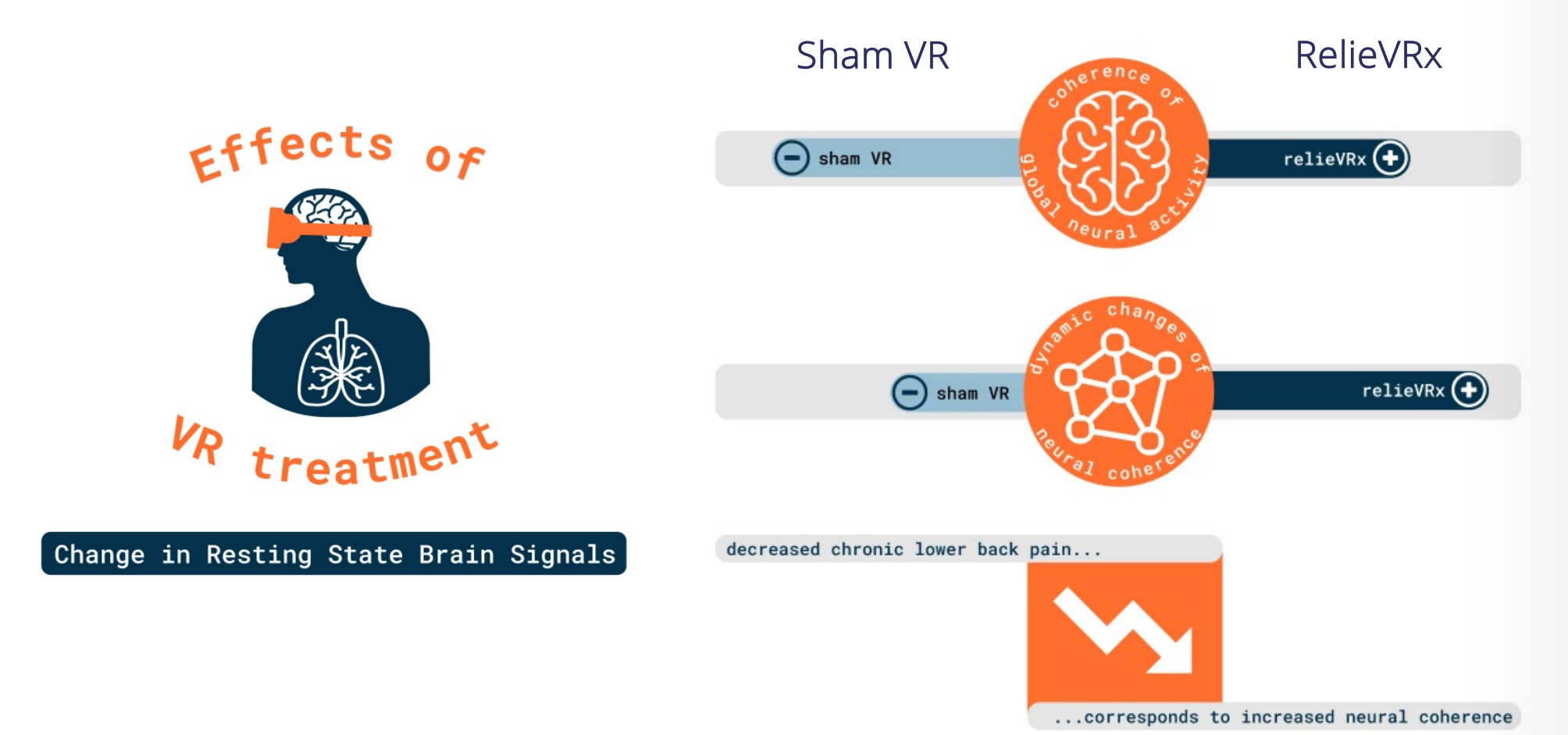
METHODS

- 19 participants (11F/8M, age (mean ± SD): 50.3 ± 12.34 years) completed 2 visits



RESULTS

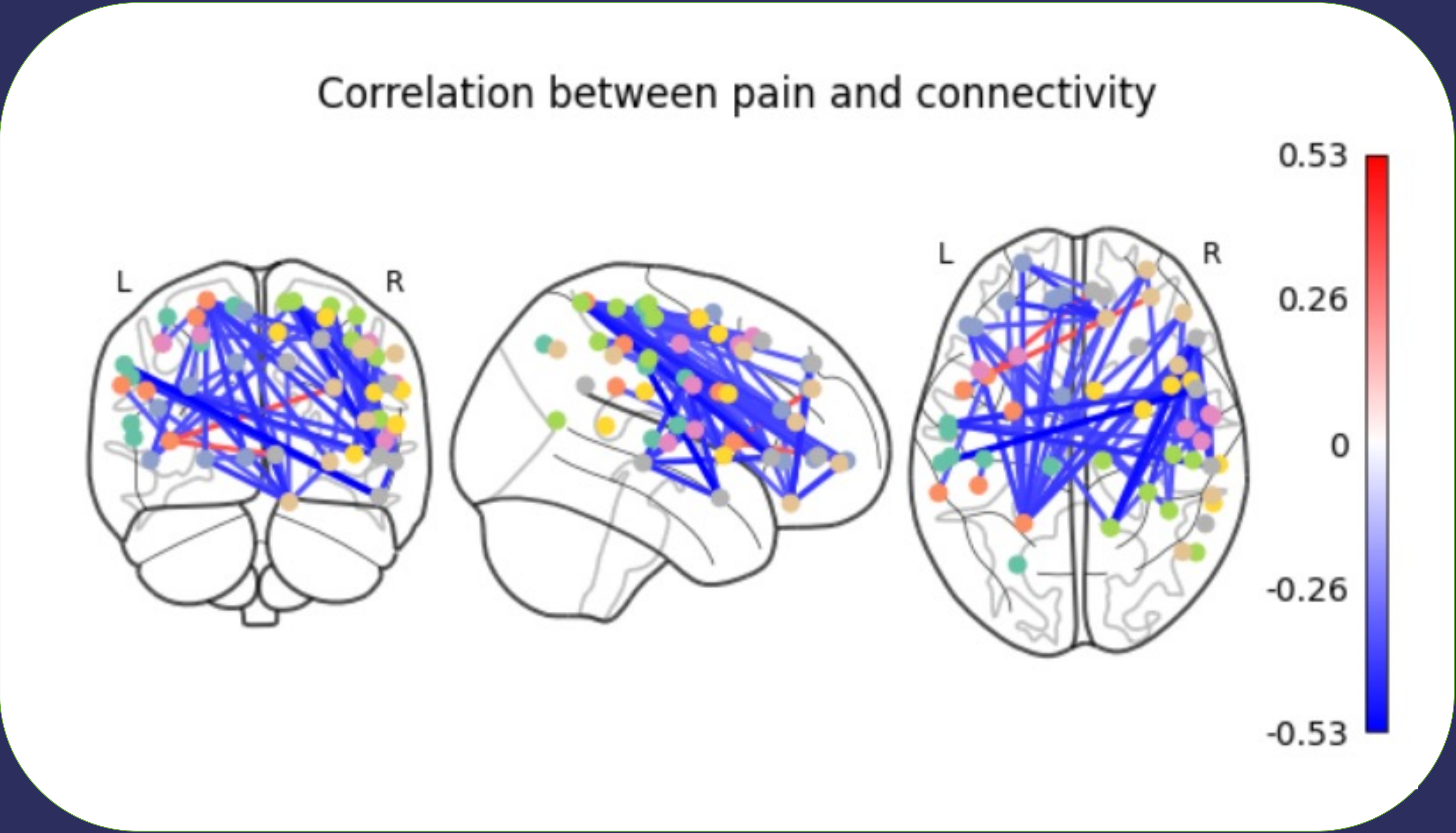
- Compared to Sham VR, after 8 weeks of VR treatment, patients showed statistically significant increases in two types of coherent global brain activity and decreased chronic lower back pain corresponding to these changes in brain activity.



DISCUSSION

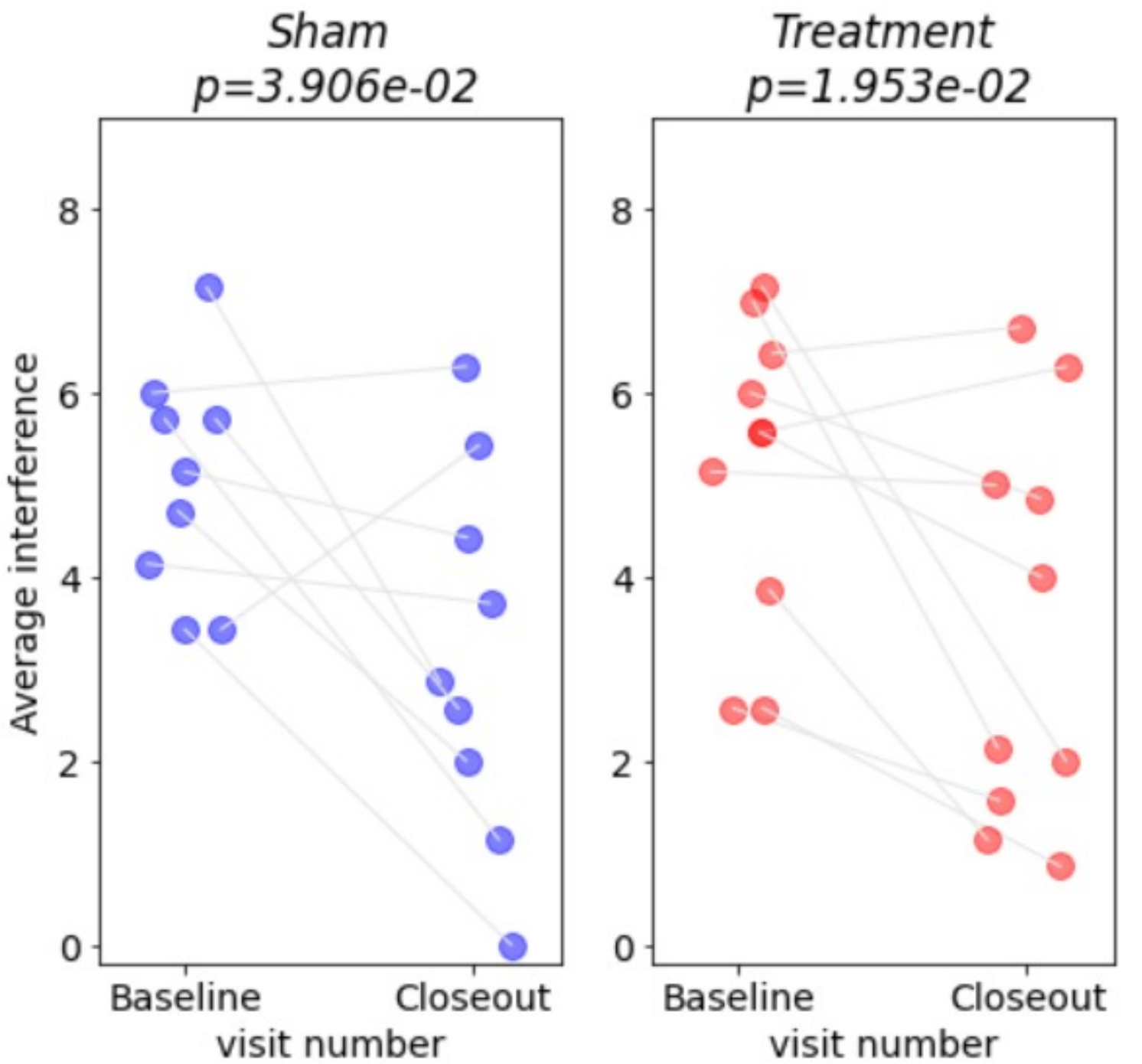
- Brain measurements may provide a quantitative biomarker of pain.
- Changes in brain activity patterns were seen with VR pain treatment as compared to sham.
- A larger study is needed to validate and extend this finding.

VR pain treatment modifies brain activity in chronic lower back pain patients.

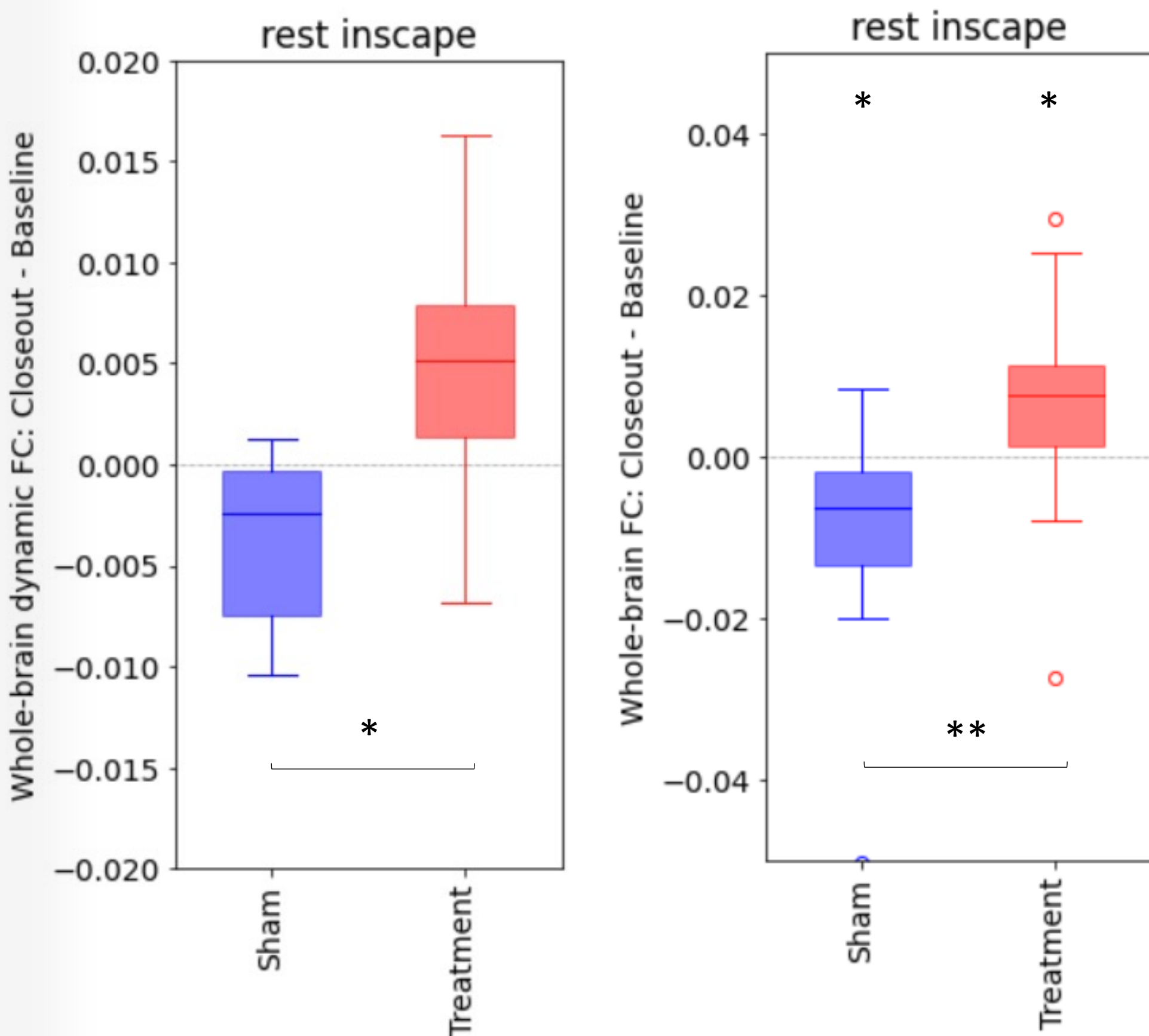


Treatment Group	Pain Intensity		
	Mean	Standard deviation	Range
Sham VR	7.6	1.13	6 - 10
RelieVRx	7.3	1.06	5 - 8

Treatment Group	Age		
	Mean	Standard deviation	Range
Sham VR	50.6	9.57	35 - 63
RelieVRx	50.1	14.93	22 - 66



Both sham and treatment groups showed a decrease in self-reported pain.



Both static and dynamic connectivity metrics showed a significant difference between the two treatment groups, such that the change in the treatment group was higher than the sham group (t-test p=0.03 and p=3.29x10-03, for static and dynamic connectivity respectively)

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