# Article information:

Functional Connectivity in Single and Multislice Echoplanar Imaging Using Resting-State Fluctuations | Elsevier Enhanced Reader
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# Article summary:

1. The study confirms previous findings of correlations in low-frequency resting-state fluctuations between right and left hemisphere motor cortices using a whole-body echoplanar MRI scanner at 1.5 T.

2. The study extends these correlations to lower sampling rate multislice echoplanar acquisitions and other right/left hemisphere-symmetric functional cortices, but the specificity of the correlations in the lower sampling-rate acquisitions is lower due to cardiac and respiratory-cycle effects.

3. Measures of corticocortical connectivity of the human brain play an important role in understanding both ordinary and diseased brain function, and functional connectivity provides a useful characterization of cortical interactions.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article Functional Connectivity in Single and Multislice Echoplanar Imaging Using Resting-State Fluctuations by Lowe, Mock, and Sorenson discusses the use of functional magnetic resonance imaging (fMRI) to measure corticocortical connectivity in the human brain. The authors note that disruptions in this connectivity can lead to cognitive, neurological, and behavioral dysfunction. They also discuss previous studies using EEG coherence as a measure of functional coupling across distinct regions of the brain.

The authors then introduce the concept of functional connectivity as a measure of spatiotemporal correlations between spatially distinct regions of cerebral cortex. They note that while this does not necessarily reflect a causal relationship between cortical regions, it can provide useful information about cortical interactions.

The study itself confirms previous findings of correlations in low-frequency resting-state fluctuations between right and left hemisphere motor cortices using single-slice echoplanar data. The authors extend these correlations to lower sampling rate multislice echoplanar acquisitions and other right/left hemisphere-symmetric functional cortices. However, they note that the specificity of these correlations is lower due to cardiac and respiratory-cycle effects which are aliased into the pass-band of the low-pass filter.

The article provides a detailed analysis of fMRI techniques for measuring functional connectivity in the human brain. However, there are some potential biases and limitations to consider. For example, the study only includes data from three normal right-handed male subjects, which may limit its generalizability to other populations. Additionally, while the authors note that disruptions in corticocortical connectivity can lead to dysfunction, they do not explore potential counterarguments or alternative explanations for their findings.

Overall, while this article provides valuable insights into fMRI techniques for measuring functional connectivity in the human brain, readers should be aware of its potential biases and limitations.

# Topics for further research:

* Alternative explanations for functional connectivity in the human brain
* Limitations of fMRI techniques for measuring corticocortical connectivity
* Differences in functional connectivity between different populations (e.g. left-handed individuals)
* The role of resting-state fluctuations in cognitive and behavioral dysfunction
* Comparison of fMRI techniques with other measures of functional coupling (e.g. EEG coherence)
* Potential applications of functional connectivity measures in clinical settings (e.g. diagnosis and treatment of neurological disorders)

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