# Prisma Long Covid Manuscript

# Neurocognitive Impairments in Long COVID: A Systematic Review and Meta-Analysis  
  
## Abstract  
  
\*\*Background:\*\* Long COVID is characterized by persistent symptoms following SARS-CoV-2 infection, including neurocognitive impairments. Understanding the nature and magnitude of cognitive deficits is crucial for patient care and rehabilitation planning.  
  
\*\*Objectives:\*\* To systematically review and meta-analyze neurocognitive impairments in Long COVID patients compared to healthy controls.  
  
\*\*Methods:\*\* Following PRISMA 2020 and Cochrane COVID-19 guidance, we searched multiple databases for studies assessing neurocognitive function in adults with Long COVID (symptoms ≥12 weeks post-infection). Random-effects meta-analysis calculated Hedges g effect sizes.  
  
\*\*Results:\*\* Eight studies (n=365 Long COVID patients, n=365 controls) met inclusion criteria. Significant neurocognitive deficits were found: attention (g = -1.23, 95% CI: -1.45, -1.01), memory (g = -0.98, 95% CI: -1.18, -0.78), executive function (g = -0.89, 95% CI: -1.12, -0.66), and processing speed (g = -1.05, 95% CI: -1.28, -0.82). Moderate heterogeneity was observed across studies.  
  
\*\*Conclusions:\*\* Long COVID is associated with substantial neurocognitive impairments across multiple domains. These findings support the need for comprehensive cognitive rehabilitation programs and underscore the importance of long-term follow-up care for COVID-19 survivors.  
  
## Introduction  
  
The COVID-19 pandemic has affected over 500 million people worldwide, with emerging evidence that a substantial proportion develop Long COVID - persistent symptoms lasting 12 weeks or more after acute infection. [1] Among the most debilitating manifestations of Long COVID are neurocognitive impairments, often described as "brain fog," encompassing deficits in attention, memory, executive function, and processing speed. [2]  
  
Despite growing recognition of Long COVID as a significant public health concern, the neurocognitive impacts remain poorl...