# Protocol Sleep Autoimmune Systematic Review

# PROTOCOL: Sleep Duration and Risk of Autoimmune Diseases  
  
\*\*Version 1.0 | December 16, 2024\*\*  
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## EXECUTIVE SUMMARY  
  
This protocol outlines the comprehensive methodology for a systematic review and meta-analysis examining the association between sleep duration and autoimmune disease risk. The protocol ensures methodological rigor, transparency, and reproducibility throughout the research process, following international guidelines including PRISMA 2020 and MOOSE.  
  
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## BACKGROUND AND RATIONALE  
  
### Sleep Immunomodulation Hypothesis  
  
Sleep represents a fundamental physiological process essential for immune homeostasis, immunological memory, and immune surveillance. The bidirectional relationship between sleep and immunity suggests that sleep disturbances may impair immune regulation and increase susceptibility to autoimmune disorders.  
  
Sleep deficiency induces multiple immunological changes that could predispose to autoimmunity:  
- Dysregulation of T-helper cell balance (Th1/Th2 imbalances)  
- Reduced natural killer cell activity and tumor surveillance  
- Altered cytokine production (increased pro-inflammatory cytokines)  
- Changes in dendritic cell maturation and antigen presentation  
- Modulated regulatory T-cell function  
  
Despite promising mechanistic evidence and observational studies suggesting associations between short sleep duration and various autoimmune conditions, there exists no comprehensive systematic synthesis of the available literature.  
  
### Study Rationale and Significance  
  
\*\*Epidemiologic Gap:\*\*  
While individual studies have demonstrated associations between sleep deprivation and autoimmune diseases (rheumatoid arthritis, type 1 diabetes, systemic lupus erythematosus), findings are inconsistent and heterogeneous across populations and geographic regions.  
  
\*\*Clinical Relevance:\*\*  
Establishing sleep duration as a modifiable risk factor for autoim...