

**Psychoneuroimmunology as a framework for studying the effects of chiropractic care
in a population with high central adiposity: a feasibility trial**

NCT06208163

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Primary Outcomes:

To evaluate primary endpoints, hypothesis testing incorporated α (1-sided) = 5% and power = 90%. The normal approximation with continuity correction was used to compute and plot proportion point estimates and 95% confidence interval (95% CI) lower bounds in the SS-PROGRESS webapp: https://ss-progress.shinyapps.io/ss_progress_app/

Secondary Outcomes:

For secondary endpoints, mixed models were run via custom 'R' (v4.4.3)⁶⁷ scripts written in 'RStudio' (RStudio, Boston, MA, USA; v2026.01.1; <https://posit.co/download/rstudio-desktop/>) incorporating the lme4 package.⁶⁸ Mixed models account for non-independent data (e.g., repeated measures) and have been shown to provide robust estimates in longitudinal designs even with high levels of missing data.⁶⁹ Change scores at each time point were evaluated using linear mixed models (LMMs) with random intercepts and adjusting for baseline values:

```
lmm = lmer(y - y_baseline ~ 1 + time + y_baseline + (1 | ID), data=d)
```

Assumption (e.g., homoskedasticity) checks were then performed via 'visualize()' in the flexplot package.^{70,71} If assumptions were severely violated, data were evaluated via generalized LMMs (GLMMs) incorporating a gamma distribution and a log link.

```
glmm = glmer(y - y_baseline ~ 1 + time + y_baseline + (1 | ID), data = d, family =  
Gamma(link="log"))
```

Change score (i.e., estimated marginal mean) point estimates and 95% CIs were computed and plotted using via 'emmeans' and 'emmip', respectively in the emmeans package.