**Suppl 3.** Summary of factor loadings of the first four principal components of the Discovery Cohort’s principal component analysis.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PC1 Trait | PC1 Loading | PC2 Trait | PC2 Loading | PC3 Trait | PC3 Loading | PC4 Trait | PC4 Loading |
| Tremor Subscore | 0.2125 | PIGD Subscore | 0.5794 | Fluctuations | 0.4071 | Anxiety | 0.4683 |
| Inflammatory Comorbidity | 0.1594 | Fluctuations | 0.2356 | Gender | 0.2636 | Dopiminergic | 0.3429 |
| MAOi | 0.102 | GBA | 0.1716 | Dyskinesias | 0.2544 | Age at Onset | 0.2528 |
| Family History | 0.0383 | Urinary Symptoms | 0.1118 | LRRK2 | 0.2377 | Depression | 0.2417 |
| GBA | 0.0359 | Freezing | 0.1005 | Family History | 0.22 | Inflammatory Comorbidity | 0.2206 |
| LRRK2 | -0.0299 | Constipation | 0.0942 | Anxiety | 0.2171 | Family History | 0.2162 |
| Dopiminergic | -0.0313 | MAOi | 0.0855 | Freezing | 0.1953 | Gender | 0.1786 |
| Aspirin | -0.0475 | Aspirin | 0.0807 | Depression | 0.1277 | Aspirin | 0.1644 |
| Gender | -0.0556 | Dopiminergic | 0.0724 | PIGD Subscore | 0.0236 | GBA | 0.1569 |
| Urinary Symptoms | -0.0872 | LRRK2 | 0.0516 | GBA | 0.0221 | Orthostasis | 0.1495 |
| Fluctuations | -0.0912 | Orthostasis | 3.00E-04 | Urinary Symptoms | 0.001 | PIGD Subscore | 0.1117 |
| Age at Onset | -0.175 | Age at Onset | -0.0094 | MAOi | -0.0452 | Constipation | 0.0706 |
| Dyskinesias | -0.1901 | Dementia | -0.0094 | Dopiminergic | -0.0762 | Fluctuations | 0.0426 |
| PIGD Subscore | -0.1924 | Inflammatory Comorbidity | -0.0131 | Constipation | -0.0812 | MAOi | -0.016 |
| RBD | -0.2125 | H&Y | -0.0675 | Hallucinations | -0.096 | Urinary Symptoms | -0.0172 |
| Anxiety | -0.2606 | RBD | -0.0842 | Dementia | -0.1586 | RBD | -0.0312 |
| Hallucinations | -0.2882 | Gender | -0.104 | Orthostasis | -0.1933 | Tremor Subscore | -0.0544 |
| Orthostasis | -0.2898 | Hallucinations | -0.1944 | Tremor Subscore | -0.2018 | Hallucinations | -0.0735 |
| Dementia | -0.2902 | Depression | -0.2117 | H&Y | -0.2169 | LRRK2 | -0.1377 |
| Freezing | -0.3114 | Anxiety | -0.2173 | RBD | -0.2509 | Dyskinesias | -0.206 |
| Constipation | -0.3276 | Family History | -0.289 | Aspirin | -0.268 | H&Y | -0.2159 |
| Depression | -0.3321 | Dyskinesias | -0.3443 | Inflammatory Comorbidity | -0.2772 | Freezing | -0.2522 |
| H&Y | -0.3323 | Tremor Subscore | -0.4141 | Age at Onset | -0.3271 | Dementia | -0.3725 |