**Table S1.** Averages and standard deviations of biomarker values by sex.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sex** | **Neopterin (ng/ml)** | | | **C-peptide (pg/ml)** | | | **Creatinine Residuals ()** | | | **Glucocorticoid metabolites (ng/g)** | | |
|  | n | Avg**.** | SD | n | Avg. | SD | n | Avg. | SD | n | Avg. | SD |
| Female | 266 | 600 | 527 | 294 | 9780 | 9751 | 296 | -0.00163 | .263 | 302 | 1028 | 530 |
| Male | 294 | 557 | 554 | 317 | 7628 | 7996 | 318 | 0.00151 | 0.256 | 325 | 961 | 529 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

**Table S2**. Effects of cellular immune activity on daily activities using LMM, n = 293 subject months.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Response | Predictor | Estimate | SE | CI | p\_value |
| Time feeding | Intercept | 0.279 | 0.061 | [0.16,0.4] | <0.001 \* |
|  | Sex(M) | -0.006 | 0.009 | [-0.02,0.01] | 0.55 |
|  | Age | 0 | 0.003 | [-0.01,0.01] | 0.98 |
|  | log2 Neopterin | -0.007 | 0.005 | [-0.02,0] | 0.20 |
|  | log2 C-peptide | 0.006 | 0.004 | [0,0.01] | 0.11 |
| Time resting | Intercept | 0.28 | 0.055 | [0.17,0.39] | <0.001 \* |
|  | Sex(M) | 0.026 | 0.011 | [0,0.05] | 0.03\* |
|  | Age | 0.009 | 0.003 | [0,0.02] | 0.01\* |
|  | **log2 Neopterin** | **0.014** | 0.005 | [0,0.02] | <0.01\* |
|  | **log2 C-peptide** | **-0.007** | 0.004 | [-0.01,0] | 0.04\* |
| Time moving | Intercept | 0.215 | 0.027 | [0.16,0.27] | <0.001 \* |
|  | Sex(M) | -0.003 | 0.005 | [-0.01,0.01] | 0.54 |
|  | Age | -0.007 | 0.002 | [-0.01,0] | <0.001 \* |
|  | log2 Neopterin | -0.001 | 0.002 | [-0.01,0] | 0.77 |
|  | log2 C-peptide | 0.001 | 0.002 | [0,0] | 0.71 |

**Table S3.** Glucocorticoid mediation of constraint on immune activity, n = 288 subject months.

|  |  |  |  |
| --- | --- | --- | --- |
| **Effect** | **Estimate** | **CI** | **P value** |
| Avg. Causal Mediation Effects (ACME) | 0.01 | [ -0.00175, 0.03] | 0.11 |
| Avg. Direct Effects (ADE) | 0.21 | [0.13033, 0.29] | <0.001 \* |
| Total Effect | 0.22 | [0.13836, 0.30] | <0.001 \* |
| Proportion Mediated | 0.04 | [-0.00925, 0.14] | 0.11 |