**Suppl 3.** Vitamin D data.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Pre-flight** | **In-flight** | **R+0** | **R+1** | **R+2-7** | **>R+7** |
| # | Author(s), year (units) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (n) Condition | Mean | **±** σ | Mean | **±** σ | Mean | **±** σ | Mean | **±** σ | Mean | **±** σ | Mean | **±** σ |
|  |  |  | Trend |  | Trend |  | Trend |  | Trend |  | Trend |  | Trend |

Trend legend:

(↓) authors found significant decrease from pre-flight (p < 0.05)

(▼) authors found trend to significant decrease from pre-flight (0.05 < p ≤ 0.1)

(↑) authors found significant increase from pre-flight (p < 0.05)

(▲) authors found trend to significant increase from pre-flight (0.05 < p < 0.1)

(-) authors found nonsignificant change from pre-flight

(U) p-values unreported by authors.

**Table S1.** Data table with mean calcifediol data, standard deviation, Cohen’s *d*, sample size, experimental condition, and significance of results extracted from all studies.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Pre-Flight** | **In-Flight** | **R+0** | **R+1** | **R+2-7** | **>R+7** |
| 1 | Smith et al. 2005 (pg/mL) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (6) Real | 57 | 25 | 36 | 21 | 39 | 22 | 39 | 22 | 44 | 19 | 67 | 44 |
|  |  |  |  | -0.91 | -- | -0.76 | -- | -0.76 | -- | -0.59 | -- | 0.28 | -- |
|  |  (16) Real | 60 | 18 |  |  | 52 | 18 | 58 | 16 | 55 | 13 | 54 | 11 |
|  |  |  |  |  |  | -0.44 | -- | -0.12 | -- | -0.32 | -- | -0.40 | -- |
| 2 | Shackelford et al. 2004 (pg/mL) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (18) Simulated | 22.4 | 1.8 | 24.3 | 2.0 |  |  |  |  |  |  |  |  |
|  |  |  | -- | 1.00 | -- |  |  |  |  |  |  |  |  |
| 3 | Smith et al. 2015 (pg/mL) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (7) Real | 94 | 4 | 87 | 33 |  |  |  |  |  |  |  |  |
|  |  |  |  | -0.30 | -- |  |  |  |  |  |  |  |  |
| 4 | Smith et al. 2012 (nmol/L)[[1]](#footnote-1) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (6) Real | 84 | 22 | 87 | 33 | 74 | 19 |  |  |  |  | 68 | 16 |
|  |  |  |  | 0.11 | -- | -0.49 | -- |  |  |  |  | 0.83 | -- |
| 5 | Smith et al. 2003 (mmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (8) Simulated | 63 | 28 | 62 | 26 |  |  | 68 | 24 | 59 | 6 |  |  |
|  |  |  |  | -0.04 | -- |  |  | 0.19 | -- | -0.20 | -- |  |  |
| 6 | Zwart et al. 2007 (nmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (7) Simulated | 68 | 41 | 66 | 30 | 61 | 22 | 59 | 20 | 65 | 25 |  |  |
|  |  |  |  | -0.06 | -- | -0.21 | -- | -0.28 | -- | -0.09 | -- |  |  |
| 7 | Morgan et al. 2012 (nmol/L)[[2]](#footnote-2) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (12) Simulated | 56.7 | 10.8 | 69.0 | 7.4 |  |  |  |  | 63.7 | 5.3 |  |  |
|  |  |  |  | 1.33 | ↑ |  |  |  |  |  | ↑ |  |  |

**Table S2.** Data table with mean calcitriol data, standard deviation, Cohen’s *d*, sample size, experimental condition, and significance of results extracted from all studies.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Pre-Flight** | **In-Flight** | **R+0** | **R+1** | **R+2-7** | **>R+7** |
| 1 | Smith et al. 2005 (pg/mL) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (6) Real  | 102 | 34 | 100 | 41 | 74 | 25 | 74 | 25 | 95 | 34 | 128 | 54 |
|  |  |  |  | -0.05 | -- | -0.94 | -- | -0.94 | -- | -0.21 | -- | 0.58 | ↑ |
|  |  (16) Real | 94 | 28 |  |  | 84 | 16 | 128 | 22 | 89 | 26 | 95 | 30 |
|  |  |  |  |  |  | -0.44 | -- | 1.35 | -- | -0.19 | -- | 0.03 | -- |
| 2 | Shackelford et al. 2004 (pg/mL) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (18) Simulated  | 29.8 | 2.3 | 25.7 | 2.8 |  |  |  |  |  |  |  |  |
|  |  |  | -- | -1.60 | ▼ |  |  |  |  |  |  |  |  |
| 3 | Smith et al. 2015 (pg/mL) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (7) Real  | 103 | 53 | 94 | 56 |  |  |  |  |  |  |  |  |
|  |  |  |  | -0.17 | -- |  |  |  |  |  |  |  |  |
| 4 | Smith et al. 2012 (pmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (6) Real | 116 | 51 | 94 | 56 | 178 | 84 |  |  |  |  | 153 | 48 |
|  |  |  |  | -0.41 | ▼ | 0.89 | -- |  |  |  |  | 0.75 | -- |
| 5 | Zerwekh et al. 2007 (pg/mL) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  (10) Simulated  | 53 | 23 | 35 | 10 |  |  |  |  |  |  |  |  |
|  |  |  |  | -1.01 | ↓ |  |  |  |  |  |  |  |  |
| 6 | Smith et al. 2003 (pmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (8) Simulated  | 117 | 39 | 92 | 15 |  |  | 99 | 25 | 100 | 14 |  |  |
|  |  |  |  | -0.85 | ↓ |  |  | -0.55 | -- | -0.58 | -- |  |  |
| 7 | Zwart et al. 2007 (pmol/L) |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (7) Simulated  | 126 | 46 | 101 | 32 | 107 | 16 | 101 | 44 | 117 | 36 |  |  |
|  |  |  |  | -0.63 | ▼ | -0.55 | -- | -0.56 | -- | -0.22 | -- |  |  |
| 8 | Morgan et al. 2012 (pmol/L)  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (12) Simulated | 92.8 | 18.1 | 70.6 | 13.1 |  |  |  |  | 94.6 | 29.2 |  |  |
|  |  |  |  | -1.41 | ↓ |  |  |  |  | -0.07 | ▼ |  |  |

1. There was a significant main effect of spaceflight, but post hoc testing did not identify differences between timepoints. [↑](#footnote-ref-1)
2. The authors supplemented vitamin D in their participants before and during the bed rest period. [↑](#footnote-ref-2)