**Supplementary Table S4:** The US Army Rangers FAT overshoot observations and predictions using equation [8] with the four methods (I, II, III, IV) and the GLM

### a) Using Data Corrected for excess hydration and relative bone mass

| Ref | %FAT | ΔWss (kg) | Prediction method | FAT overshoot (kg) | Predicted FAT overshoot (kg) |
|-----|------|-----------|-------------------|-------------------|-----------------------------|
| 43  | 13.1 | 17.3      | I                 | 3.9               | 3.2 [2.5, 3.9]             |
|     |      |           | II                | 3.3               | 3.8 [2.6, 5.4]             |
|     |      |           | III               | 3.5               | 3.6 [2.7, 4.5]             |
|     |      |           | IV                | 3.6               | 3.7 [2.8, 4.6]             |
| 44  | 12.6 | 15.8      | I                 | 4.1               | 3.1 [2.4, 3.7]             |
|     |      |           | II                | 3.5               | 3.6 [2.7, 5.1]             |
|     |      |           | III               | 3.7               | 3.4 [2.7, 4.2]             |
|     |      |           | IV                | 3.8               | 3.5 [2.7, 4.3]             |

### b) Using raw data

| Ref. | %FAT | ΔWss (kg) | Prediction method | FAT overshoot (kg) | Predicted FAT overshoot (kg) |
|------|------|-----------|-------------------|-------------------|-----------------------------|
| 43   | 13.3 | 10        | I                 | 4.0               | 1.8                         |
|      |      |           | II                | 2.5               | 2.1                         |
|      |      |           | III               | 3.0               | 2.0                         |
|      |      |           | IV                | 3.6               | 2.1                         |
| 44   | 12.9 | 8.4       | I                 | 4.2               | 1.6                         |
|      |      |           | II                | 2.5               | 1.9                         |
|      |      |           | III               | 3.1               | 1.8                         |
|      |      |           | IV                | 3.8               | 1.8                         |