**T****h****e** **Bone Biomarker Response to an Acute Bout of Exercise:**

**A Systematic Review with Meta-Analysis**

**Supplementary File 10: Primary meta-analyses and moderator analyses for Ca Metabolism**

*Dolan E1\*,* *Dumas A1, Keane KM2, Bestetti G1, Freitas LHM1, Gualano B1,3, Kohrt WM4, Kelley GA5, Pereira RMR6, Sale C7, Swinton PA8*

1 Applied Physiology & Nutrition Research Group; School of Physical Education and Sport; Rheumatology Division; Faculdade de Medicina FMUSP, Universidade de Sao Paulo, Sao Paulo, SP, BR.

2 Department of Sport, Exercise and Nutrition, Galway Mayo Institute of Technology, Ireland.

3 Food Research Centre, University of São Paulo, SP, BR.

4 Department of Medicine, Division of Geriatric Medicine, University of Colorado Anschutz Medical Campus, USA.

5 Department of Epidemiology and Biostatistics, West Virginia University, USA.

6 Bone Metabolism Laboratory; Rheumatology Division, Faculdade de Medicina FMUSP, Universidade de Sao Paulo, Sao Paulo, SP, BR.

7 Musculoskeletal Physiology Research Group, Sport, Health and Performance Enhancement (SHAPE) Research Centre, School of Science and Technology, Nottingham Trent University, Nottingham, UK.

8 School of Health Sciences, Robert Gordon University, Aberdeen, UK.

**\*Corresponding author:**

Eimear Dolan:

Faculdade de Medicina FMUSP, Universidade de Sao Paulo – Av. Dr. Arnaldo, 455, 3º andar, ZIP code: 01246-903, Sao Paulo - SP, Brazil.

Phone: +55 11 2648-1337; Fax: +55 11 3061-7490; E-mail: [eimeardol@gmail.com](mailto:eimeardol@gmail.com) or [eimeardolan@usp.br](mailto:eimeardolan@usp.br)

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|  | | **Summary of findings** | | | **Evidence Certainty** | | | | |
| **Outcome (#/n)** | | **Effect size**  **Median [95% CrI]** | **Between study standard error ()**  **Median [75% CrI]** | **ICC**  **Median [75% CrI]** | **D1**  **Risk of Bias** | **D2**  **Directness** | **D3**  **Inconsistency** | **D4**  **Imprecision** | **D5**  **Small-study Effects** |
|  | PTH  217 outcomes / 41 studies | 0.61 [0.27 to 0.90] | 0.80 [0.71 to 0.90] | 0.23 [0.07 to 0.40] | Moderate | Low | Very Low | Very Low | Very Low |
|  | ICA  122 outcomes / 19 studies | -0.14 [-0.73 to 0.43] | 0.88 [0.72 to 1.1] | 0.47 [0.20 to 0.65] | Moderate | Low | Very Low | Very Low | Very Low |
|  | ACA  32 outcomes / 9 studies | 0.09 [-0.28 to 0.47] | 0.37 [0.24 to 0.53] | 0.36 [0.13 to 0.63] | Moderate | Low | Very Low | Very Low | Very Low |
| PTH Control  16 outcomes / 4 studies | | 0.04 [-0.51 to 0.68] | 0.35 [0.21 to 0.58] | 0.07 [0.01 to 0.25] | High | High | Moderate | Low | Very Low |
| Control  17 outcomes / 3 studies  (ICA = 12; ACA: 5) | | -0.39 [-1.9 to 1.2] | 1.1 [0.74 to 1.6] | 0.01 [0.00 to 0.04] | High | High | Moderate | Low | Very Low |
| **Moderator analyses (PTH only)** | | | | | | | | | |
| **Timing** | | | | | | | | | |
| (Immediately - 8 hours post)  196 outcomes / 40 studies | | 0.67 [0.29 to 0.97] | 0.88 [0.79 to 0.97] | 0.35 [0.14 to 0.50] | Moderate | Low | Very Low | Very Low | Very Low |
| (Immediatel­­­­y - 15min post)  94 outcomes / 37 studies | | 1.3 [0.79 to 1.8] | 1.1 [0.93 to 1.3] | 0.37 [0.16 to 0.52] | Moderate | Low | Low | Low | Very Low |
| (> 15 min, ≤ 2 hours post)  85 outcomes / 28 studies | | 0.08 [-0.30 to 0.45] | 0.75 [0.66 to 0.87] | 0.09 [0.04 to 0.16] | Moderate | Low | Very Low | Very Low | Very Low |
| (> 2 hours, ≤ 8 hours post)  17 outcomes / 9 studies | | 0.21 [-0.56 to 0.98] | 0.88 [0.67 to 1.1] | 0.01 [0.00 to 0.04] | High | High | Moderate | Low | Very Low |
| 24 hours post  15 outcomes / 10 studies | | 0.05 [-0.32 to 0.44] | 0.31 [0.17 to 0.48] | 0.36 [0.10 to 0.76] | High | High | Moderate | Low | Very Low |
| **Exercise Type** | | | | | | | | | |
| Aerobic  162 outcomes / 32 studies | | 0.87 [0.46 to 1.3] | 0.89 [0.77 to 0.99] | 0.36 [0.13 to 0.52] | Moderate | Low | Very Low | Very Low | Very Low |
| Resistance  29 outcomes / 6 studies | | -0.28 [-0.52 to -0.06] | 0.11 [0.05 to 0.19] | 0.79 [0.44 to 0.95] | High | High | High | Moderate | Low |
| Plyometric  25 outcomes / 4 studies | | -0.10 [-0.44 to 0.26] | 0.13 [0.06 to 0.26] | 0.82 [0.45 to 0.96] | High | High | Moderate | Low | Very Low |
| **Impact level** | | | | | | | | | |
| Low impact/repetitive  83 outcomes / 15 studies | | 0.75 [0.01 to 1.5] | 1.1 [0.92 to 1.4] | 0.40 [0.16 to 0.60] | Moderate | Low | Very Low | Very Low | Very Low |
| Moderate impact/repetitive  79 outcomes / 19 studies | | 0.99 [0.46 to 1.4] | 0.77 [0.65 to 0.94] | 0.41 [0.20 to 0.56] | Moderate | Low | Low | Very Low | Very Low |
| Low impact/ high load  34 outcomes / 8 studies | | -0.25 [-0.46 to -0.08] | 0.09 [0.04 to 0.17] | 0.81 [0.48 to 0.96] | High | High | High | Moderate | Low |
| High impact / directional  21 outcomes / 3 studies | | -0.11 [-0.80 to 0.74] | 0.25 [0.09 to 0.52] | 0.67 [0.22 to 0.93] | High | High | Moderate | Low | Very Low |
| **Modality** | | | | | | | | | |
| Running  36 outcomes / 12 studies | | 0.56 [0.17 to 1.0] | 0.17 [0.08 to 0.31] | 0.90 [0.66 to 0.98] | Moderate | Low | Low | Very Low | Very Low |
| Cycling  83 outcomes / 15 studies | | 0.78 [0.01 to 1.5] | 1.1 [0.93 to 1.5] | 0.40 [0.18 to 0.57] | Moderate | Low | Very Low | Very Low | Very Low |
| Walking  43 outcomes / 8 studies | | 1.3 [0.25 to 2.2] | 1.1 [0.91 to 1.4] | 0.19 [0.06 to 0.34] | Moderate | Low | Low | Very Low | Very Low |
| **Exercise Characteristics** | | | | | | | | | |
| Continuous  154 outcomes / 31 studies | | 0.92 [0.53 to 1.3] | 0.90 [0.79 to 1.0] | 0.35 [0.12 to 0.52] | Moderate | Low | Very Low | Very Low | Very Low |
|  | |  |  |  |  |  |  |  |  |
| Duration (Per 10 Mins)  160 outcomes / 33 studies | | 0.09 [0.00 to 0.18] | 0.93 [0.81 to 1.0] | 0.36 [0.15 to 0.53] | Moderate | Low | Very Low | Very Low | Very Low |
| Intensity Low  114 outcomes / 19 studies | | 0.96 [0.41 to 1.5] | 0.96 [0.82 to 1.1] | 0.39 [0.16 to 0.54] | Moderate | Low | Very Low | Very Low | Very Low |
| Intensity High  26 outcomes / 5 studies | | 0.22 [-1.7 to 1.6] | 1.4 [0.82 to 2.1] | 0.21 [0.06 to 0.48] | Moderate | Low | Very Low | Very Low | Very Low |
| Total work done (Per 1000 units)  138 outcomes / 22 studies | | 0.13 [-0.06 to 0.32] | 0.89 [0.78 to 1.0] | 0.37 [0.14 to 0.54] | Moderate | Low | Very Low | Very Low | Very Low |
| **Participant Characteristics** | | | | | | | | | |
| Male  130 outcomes / 23 studies | | 0.46 [0.01 to 0.91] | 0.88 [0.73 to 1.0] | 0.27 [0.10 to 0.43] | High | Low | Very Low | Very Low | Very Low |
| Female  45 outcomes / 12 studies | | 0.53 [-0.06 to 1.0] | 0.71 [0.54 to 0.90] | 0.55 [0.30 to 0.70] | Moderate | Low | Very Low | Very Low | Very Low |
| Mixed: male/female  42 outcomes / 7 studies | | 1.2 [0.32 to 2.1] | 1.1 [0.91 to 1.4] | 0.18 [0.06 to 0.32] | Moderate | Low | Low | Very Low | Very Low |
|  | |  |  |  |  |  |  |  |  |
| Sedentary  17 outcomes / 6 studies | | 0.51 [-0.06 to 1.1] | 0.43 [0.23 to 0.66] | 0.54 [0.23 to 0.84] | Moderate | Low | Low | Very Low | Very Low |
| Recreational  102 outcomes / 17 studies | | 0.46 [-0.07 to 0.97] | 0.92 [0.81 to 1.0] | 0.10 [0.03 to 0.18] | High | Low | Very Low | Very Low | Very Low |
| Athlete  88 outcomes / 16 studies | | 0.95 [0.25 to 1.6] | 0.92 [0.74 to 1.2] | 0.59 [0.34 to 0.76] | Moderate | Low | Very Low | Very Low | Very Low |

All variables with sufficient data to analyse are presented.