Online Supplemental Material

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Search strategy used in OVID Medline and Embase bibliographic databases

1. Anastomosis, Roux-en-Y/
2. duodenal switch.mp.
3. Biliopancreatic Diversion/ or biliopancreatic diversion.mp.
4. sleeve gastrectomy.mp.
5. gastroplasty.mp. or Gastroplasty/
6. Overweight/su, th [Surgery, Therapy]
7. Obesity/su, th [Surgery, Therapy]
8. Obesity, Morbid/su, th [Surgery, Therapy]
9. bariatric surgery/ or gastric bypass/ or gastroplasty/ or jejunoileal bypass/
10. roux en y.mp.
11. Gastrectomy/
12. Gastroenterostomy/
13. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12
14. weight loss.mp. or exp Weight Loss/
15. weight reduction.mp.
16. Obesity/pc [Prevention & Control]
17. "Weight Reduction Programs"/
18. ((anthropom* or waist circumference* or bmi or body mass index) adj2 (loss$ or reduc$ or decreases$)).mp.
19. ((body fat or adipos$) adj3 (loss$ or reduc$ or decreases$)).mp.
20. (body composition adj3 (loss$ or reduc$ or decreases$)).mp. [14 or 15 or 16 or 17 or 18 or 19 or 20
22. diet therapy/ or caloric restriction/ or diet, carbohydrate-restricted/ or diet, fat-restricted/ or diet, reducing/
23. Overweight/dh [Diet Therapy]
24. Obesity, Morbid/dh [Diet Therapy]
25. Obesity/dh [Diet Therapy]
26. hypocaloric.mp.
27. very low calorie.mp.
28. low calorie.mp.
29. energy restrict$.mp.
30. very-low-calorie.mp.
31. exp Exercise Therapy/
32. ((lifestyle or (life adj1 style)) adj1 (intervention or change$)).mp.
33. 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32
34. 13 or 21 or 33
35. "25(OH)D".mp.
36. 25 hydroxyvitamin d.mp.
37. Calcifediol/
38. calcidiol.mp.
39. 25 hydroxycholecalciferol.mp.
40. 25-hydroxy$.mp.
41. 25OHD.mp.
42. 25-OHD.mp.
43. 25OH$..mp.
44. 25-OH$.mp.
45. exp Vitamin D/
46. (serum adj3 vitamin d).mp.
47. Vitamins/bl
48. 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47
49. bone resorption.mp. or exp Bone Resorption/
50. bone remodeling.mp. or exp Bone Remodeling/
51. (bone adj1 loss).mp. 52. Bone Density/ph [Physiology]
53. exp Hyperparathyroidism/
54. Nutritional Status/ph [Physiology]
55. "Bone and Bones"/me, ph, pp [Metabolism, Physiology, Physiopathology]
56. (bone adj3 marker$).mp.
57. (bone adj3 metabolism).mp.
58. (bone adj3 turnover).mp.
59. 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58
60. 48 or 59
61. 34 and 60
62. limit 61 to (english language and humans)
63. case reports.pt.
64. review.pt.
65. 63 or 64
66. exp Neoplasms/ or cancer.mp.
67. exp HIV/ or hiv.mp.
68. exp Cachexia/ or wasting.mp.
69. exp Diabetic Nephropathies/ or exp Renal Dialysis/ or exp Kidney Diseases/ or exp Kidney Failure, Chronic/ or exp Renal Insufficiency, Chronic/
70. 66 or 67 or 68 or 69
71. 62 not (65 or 70)
### Supplemental Table 1. Excluded studies, duplicate papers and papers providing additional information

#### Studies excluded from the meta-analysis

<table>
<thead>
<tr>
<th>Reference</th>
<th>Reason for exclusion</th>
</tr>
</thead>
</table>

#### Duplicate papers reporting on data presented elsewhere, some of which contributed additional data

<table>
<thead>
<tr>
<th>Reference</th>
<th>Reason for exclusion</th>
</tr>
</thead>
</table>

#### Papers contributing additional adiposity data, not identified in original literature search

<table>
<thead>
<tr>
<th>Reference</th>
<th>Reason for exclusion</th>
</tr>
</thead>
</table>
Supplemental Figure 1. Risk of bias summary: judgements about each risk of bias item for each randomized controlled trial included in meta-analysis, using Cochrane criteria.
Supplemental Figure 2. Risk of bias graph: judgements about each risk of bias item presented as percentages across all randomized controlled trials included in meta-analysis, using Cochrane criteria.
Supplemental Figure 3. Risk of bias summary: judgements about each risk of bias item for each non-randomized controlled trial included in meta-analysis, using RoBANS criteria for non-randomized controlled trials.
Supplemental Figure 4. Risk of bias graph: judgements about each risk of bias item presented as percentages across all non-randomized controlled trials included in meta-analysis, using RoBANS criteria for non-randomized controlled trials.
Supplemental Figure 5. Funnel plot with pseudo 95% confidence limits (dashed lines) of the standard error of the weighted mean difference versus the weighted mean difference.
## Supplemental Table 2. GRADE summary of findings table

**Author(s):** SR Mallard, AS Howe, LA Houghton  
**Date:** 2 April, 2016  
**Question:** What is the effect of weight loss on vitamin D status in humans?  
**Setting:** General population

<table>
<thead>
<tr>
<th>Study design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>Weight loss</th>
<th>Weight maintenance</th>
<th>Absolute (95% CI)</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 randomized trials</td>
<td>serious</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>none</td>
<td>1460</td>
<td>1094</td>
<td>WMD 3.11 nmol/L higher (1.38 higher to 4.84 higher)</td>
<td>⬤ ⬤ ⬤</td>
<td>MODERATE</td>
</tr>
<tr>
<td>11 observational studies</td>
<td>serious</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>none</td>
<td>484</td>
<td>433</td>
<td>WMD 4.85 nmol/L higher (2.59 higher to 7.12 higher)</td>
<td>⬤ ⬤ ⬤ ⬤</td>
<td>VERY LOW</td>
</tr>
</tbody>
</table>

1WMD, weighted mean difference; IQR, interquartile range  
2Allocation concealment not specified in three of the four studies  
3Participants who did not meet their assigned weight loss goals were reclassified as being in the weight maintenance group (six studies), and in six studies participants were recruited separately for weight loss and weight maintenance arms