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1 Table 1. Characteristics of the included studies

| Author, year                     | Study population   | OA at baseline                   | Intervention   | Trial, length of follow-up | Joint | No of pts               | Females pts                          | Age, years   | BMI, kg/m <sup>2</sup>   | Image-modality           |
|----------------------------------|--|----------------------------------|--|----------------------------|-------|-------------------------|--------------------------------------|--|--|--------------------------|
| Messier et al, 2004(1)           | BMI ≥28 kg/m <sup>2</sup> , age≥60, KLG 1-3 and/or PFOA, frequent pain.            | 100%: KLG 1-3                    | Exercise<br>Diet<br>Diet + exercise<br>Healthy lifestyle | ADAPT (RCT)<br>18 months   | Knee  | 316                     | HL: 68%<br>D:72%<br>E:74%<br>D+E:74% | HL: 69 ±0.1*<br>D: 68 ±0.7*<br>E: 69 ±0.8*<br>D+E 69 ±0.8* | H: 34.2 ±0.6*<br>D: 34.5 ±0.6*<br>E: 34.2 ±0.6*<br>D+E: 34 ±0.7*   | Radiographs              |
| Messier et al, 2011(2)           | BMI ≥28 kg/m <sup>2</sup> , age≥60, KLG 1-3 and/or PFOA, frequent pain             | 100%: KLG 1-3                    | High WL > 5%<br>Low WL < 5%:<br>No WL/ WG                | ADAPT (RCT)<br>18 months   | Knee  | 76                      | N/A                                  | N/A  | 93.0 † (85.9; 100.0)<br>89.7 † (83.6; 95.7)<br>94.8 † (90.2; 99.4) | Radiographs              |
| Anandacoomarasamy et al, 2012(3) | BMI ≥ 30 kg/m <sup>2</sup>   | 68-74%: KLG ≤1<br>26-32%: KLG ≥2 | Diet + exercise<br>Gastric banding                       | N/A (NRS)<br>12 months     | Knee  | MRI: n=78<br>dGEM: n=55 | MRI: 75%<br>dGEM: 67%                | MRI: 51.7(11.8)<br>dGEM: 50.9(12.4)                        | MRI: 39.9(5.8)<br>dGEM: 39.6(5.2)                                  | 3T MRI<br>dGEM           |
| Gudbergesen et al, 2013(4)       | BMI ≥ 30 kg/m <sup>2</sup> , age > 50, OA according to ACR criteria.               | 100%: KLG 1-4                    | Diet   | CAROT (NRS)<br>16 weeks    | Knee  | 169                     | 80%                                  | 62.7 (6.3)   | 37.0 (4.5)   | 1.5 T MRI                |
| Beavers et al, 2014(5)           | BMI: 27– 40,1 kg/m <sup>2</sup> , age ≥ 55<br>KLG 2-3 or FTOA+PFOA, frequent pain. | 100%: KLG: 2-3                   | Exercise<br>Diet<br>Diet + Exercise                      | IDEA (RCT)<br>8 months     | Hip   | 284                     | 74%                                  | 66.0 (6.2)   | 33.4 (3,7)   | DXA                      |
| Hunter et al, 2015(6)            | BMI: 27– 40,1 kg/m <sup>2</sup> , age ≥ 55<br>KLG 2-3 or FTOA+PFOA, frequent pain. | 100%: KLG: 2-3                   | Exercise<br>Diet<br>Diet + Exercise                      | IDEA (RCT)<br>18 months    | Knee  | 454                     | 72%                                  | 66 (6)   | 33.6 (3.7)   | Radiographs<br>1.5 T MRI |
| Gersing et al, 2016(7)           | BMI >25 kg/m <sup>2</sup> , age: 45-79,<br>KLG 1-3 or at risk of OA.               | 81%: KLG ≤1<br>19%: KLG 2-3      | N/A  | OAI (NRS)<br>48 months     | Knee  | 516                     | 61%                                  | 62.4 (9.2)   | 30.3 (3.5)   | 3T MRI<br>T2-mapping     |
| Gersing et al, 2017(8)           | BMI >25 kg/m <sup>2</sup> , KLG 1-3 or at risk of OA.                              | 49%: KLG ≤1<br>51%: KLG 2-3      | N/A  | OAI (NRS)<br>48 months     | Knee  | 640                     | 62%                                  | 62.9 (9.1)   | 29.8 (3.3)   | 3T MRI                   |

|                               |   |                             |                                     |                         |      |     |      |                                  |   |                       |
|-------------------------------|---|-----------------------------|-------------------------------------|-------------------------|------|-----|------|----------------------------------|---|-----------------------|
| Murillo et al, 2017(9)        | BMI: 27– 40,1 kg/m <sup>2</sup> , age ≥ 55<br>KLG 2-3 or FTOA+PFOA, frequent pain.  | 100%: KLG: 2-3              | Exercise<br>Diet<br>Diet + Exercise | IDEA (RCT)<br>18 months | Knee | 106 | 73%  | N/A                              | 33,9 (3,8)  | 1.5 T MRI             |
| Hangaard et al, 2018 (10)     | BMI ≥ 30 kg/m <sup>2</sup> , age > 50, KLG 1-2 in the lateral compartment.          | 47%: KLG 1<br>53%: KLG 2    | Diet                                | CAROT (NRS)<br>16 weeks | Knee | 19  | N/A  | 61.5 ‡ (50.9-71.5) §             | KLG 1: 34.5 ‡ (30.9–40.6) §<br>KLG 2: 34.5‡ (30.9–40.6) § | 1.5 T MRI<br>dGEM     |
| Steidle-Kloc et al, 2018 (11) | Female OAI participants with ≥10% weight loss or weight gain.                       | 50%: KLG ≤1<br>50%: KLG ≥2  | N/A                                 | OAI (NRS)<br>24 months  | Knee | 72  | 100% | WL: 59.3 (9.1)<br>WG: 61.5 (8.7) | WL: 30.1 (4.6)<br>WG: 26.0 (4.1)                          | 3T MRI                |
| Guimaraes et al, 2018(12)     | BMI >25 kg/m <sup>2</sup> , age: 45-79, KLG 1-3 or at risk of OA, meniscal WORMS=1. | 54%: KLG ≤1<br>46%: KLG 2-3 | N/A                                 | OAI (NRS)<br>48 months  | Knee | 487 | 62%  | 61.8 (8.9)                       | 27.9 (3.6)  | 3T MRI                |
| Jafarzadeh et al. 2018(13)    | BMI ≥35 kg/m <sup>2</sup> , age: 25-60, 1 serious comorbidity, frequent knee pain.  | 48%: KLG ≤1<br>52%: KLG ≥2  | Gastric surgery<br>Medication       | N/A (NRS)<br>12 months  | Knee | 75  | 92%  | 49 ‡                             | <20% WL: 40.9 (4.5)<br>≥20% WL: 42.3 (4.5)                | 3T MRI                |
| Gersing et al, 2019 (14)      | BMI >25 kg/m <sup>2</sup> , age: 45-79, KLG 1-3 or at risk of OA.                   | 49%: KLG ≤1<br>51%: KLG 2-3 | N/A                                 | OAI (NRS)<br>96 months  | Knee | 760 | 61%  | SW: 62.1 (8.6)<br>WL: 63.0 (9.4) | SW:29.9 (3.5)<br>WL: 29.8 (3.6)                           | 3T MRI<br>T2- mapping |

2 The results are reported as mean (SD) or number unless otherwise indicated. ACR: American College of Rheumatology, BMI: body mass index,

3 dGEM: dGEMRIC, FTOA: femorotibial osteoarthritis, KLG: Kellgren-Lawrence grade, NRS: non-randomized study, OA: osteoarthritis, OAI: The

4 Osteoarthritis Initiative, PFOA: patellofemoral osteoarthritis, RCT: Randomized controlled trial, SW: stable weight, WG: weight gain, WL: weight loss

5 \* ± SEM (Standard error of mean)

6 † Kilograms

7 ‡ Median

8 § Range

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