**Table 3. Study Data**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | | **Outcome(s)** | **How outcome is measured** | **Point estimate** | **Precision of estimate**  **(SD unless otherwise noted)** | **Statistical significance** | **Harm/ adverse events** |
| **Adie et al50**  **2012**  **Systematic Review** | | Pain | VAS 0-10 | **Mean difference between groups**  POD1: -0.22 | **95% CI**  -0.93, 0.49 | NS | Adverse events NS RR: 0.98 [0.28,3.47] |
| POD2: -1.32 | -2.37, -0.27 | P= .01  Favors any cryotherapy vs any control |  |
| POD3: -0.47 | -1.40, 0.47 | NS |  |
| Knee ROM | Degrees | POD1-6: 5.13 | -2.06, 12.31 | NS |  |
| D/C: 11.39 | 4.13, 18.66 | P<.002  Favors any cryotherapy vs. any control |  |
| Swelling | Circumference at mid-patella –cm | 0.25 | -0.18, 0.68 | NS |  |
| LOS | Days | -0.20 | -1.55, 1.15 | NS |  |
| **Alaca et al29**  **2015** | | Active knee flexion | Days to meet goal | 45 degrees  I: 4.33; C: 3.8 | I: 1.63; C: 1.97 | NS | Not reported |
| 60 degrees  I: 8.20; C: 9.53 | I: 2.86; C: 3.48 | NS |
| Passive knee flexion | 45 degrees  I: 3.9 ; C: 4.13 | I: 0.8; C: 0.83 | NS |
| 60 degrees  I: 5.93; C: 6.8 | I: 2.53; C: 1.26 | NS |
| Knee extension | 20 degrees  I: 1.27; C: 2.27 | I: 0.8; C: 2.12 | NS |
| Walking | Pain free with walker  I:3.93; C:4.4 | I:0.59; C:0.63 | NS |
| **Alkire & Swank28**  **2010**  **RCT** | | Edema | Circumference -cm | Preop I: 46; C: 42 | Not reported | NS | 4 urinary retention  3 Lumbar radiculopathy  2 Stitch abscess  1 Subcutaneous abscess  Insomnia (no number reported)  Urinary tract infection (no number reported) |
| POD1 I: 47; C: 43 |
| POD2 I: 48; C: 44 |
| Knee flexion | Degrees | Preop I: 114; C: 115 |
| POD1 I: 68; C: 65 |
| POD2 I: 73; C: 74 |
| Knee extension | Preop not reported |
| POD1 I: 16; C: 14 |
| POD2 I: 14; C: 12 |
| LOS | Days | I: 2.24; C: 2.3 |
| **Beaupre et al55**  **2001**  **RCT** | | Knee flexion | Degrees | Pre-admission  I1: 115; I2: 114; C: 112 | Pre-admission  I1: 16; I2: 15; C: 15 | P= .69 | I1: 1 Hematoma  1 Erythema  2 Increased edema  I2: 4 Deep vein thrombosis  1 Hematoma;  1 Mild infection  C: 2 Increased drainage  1 Hematoma1 mild infection  Other:4 cardiovascular complications  1 Postop confusion  1 Pulmonary embolism |
| Discharge  I1: 61; I2: 62; C: 65 | Discharge  I1: 14; I2: 17; C: 13 |
| Knee extension | Pre-admission  I1: -6; I2: -8; C: -5 | Pre-admission  I1: 5; I2: 5; C: 6 | P= .30 |
| Discharge  I1: -8; I2: -8; C: -8 | Discharge  I1: 4; I2: 4; C: 4 |
| **Bennett et al27**  **2005 ‘**  **RCT** | | Active knee flexion | Degrees | Preop I1:102.5; I2:102.5; C:102.6 | Not reported | I2>I1 P= .008 I2>C p<.0001 | 8 Wound infection or aseptic dehiscence of wound |
| Day 5 I1: 69.4; I2: 78.7; C:64.9 |
| Passive knee flexion | Preop I1:108.3; I2:108.6; C:108.8 | I2>I1 P= .007  I2>C P<.0001 |
| Day 5 I1: 75.3; I2: 86.6; C:71.2 |
| Knee extension- lag | Preop I1:2.0; I2:2.2; C:1.8 | NS |
| Day 5 I1: 12.1; I2: 11.6; C:12.9 |
| Passive knee extension | Preop I1:9.3; I2:9.7; C:10.0 | NS |
| Day 5 I1: 6.2; I2: 7.7; C:6.5 |
| Pain | VAS (0-10) | Mean over 5 days I1: 3.6; I2: 2.6; C:3.1 | I1>I2 P<.001 I1>C P= .013 C>I2 P= .005 |
| LOS | Days | I1: 8.8; I2:8.1; C:8.0 |  | NS |
| **Boese et al30**  **2014**  **RCT** | Swelling | Circumference-cm, 10 cm above joint line-change from pre-op | POD1 I:1.9; C1:1.6; C2:2.3 | Not reported | NS | I:2 manipulations; 1 swelling -->ER  C1: none  C2: 1 manipulation;  1 Hematoma 2 PE  1 Hypoxia 1 Headache 1 Atrial fibrillation |
| POD2 I:4.7; C1:3.5; C2:4.1 |
| Circumference-cm, at joint line-change from pre-op | POD1 I:1.8; C1:2.0; C2:1.9 | NS |
| POD2 I:3.7; C1:2.8; C2:3.8 |
| Circumference-cm, 10 cm below joint line-  change from pre-op | POD1 I:1.1; C1:1.0; C2:1.2 | POD2 p<.01 I>C1 and C2 |
| POD2 I:3.4; C1:2.1; C2:1.4 |
| Total knee ROM | Degrees | PreOP I:107.3; C1:107.0; C2:106.8 | NS |
| D/C I:109.6; C1:109.0; C2:109.5 |
| Knee extension lag |  | POD1AM I:9.9; C1:9.2; C2:8.5 | NS |
| POD1PM I:8.0; C1:7.2; C2:6.2 |
| POD2AM I:7.0; C1:6.8; C2:6.2 |
| POD2PM I:5.1; C1:5.7; C2:5.0 |
| D/C I:2.3; C12.2; C2:2.1 |
| Knee flexion |  | POD1AM I:76.8; C1:75.6; C2:78.1 | NS |
| POD1PM I:82.1; C1:84.3; C2:82.5 |
| POD2AM I:86.7; C1:87.2; C2: 87.8 |
| POD2PM I:87.9; C1:89.6; C2:88.1 |
| D/C I: 111.9; C1: 111.2; C2: 111.7 |
| Pain | VAS: 1-10 | POD1AM I:3.6; C1:3.3; C2:2.4 | NS |
| POD1PM I:2.9; C1:2.7; C2:2.0 |
| POD2AMI: 2.1; C1:2.4; C2:2.3 |
| POD2PM I:1.8; C1:2.5; C2:1.6 |
| LOS | Days | I:2.7; C1:3.2; C2:2.6 | P<.01 I<C1 and C2<C1 |
| **Borckardt et al36**  **2013**  **RCT** | Pain | Brief pain inventory | No data | None reported | NS | Not reported |
| Brief symptom inventory | NS |
| Psychological state | Psychological distress score | NS |
| **Bruun-Olsen et al56**  **2009**  **RCT** | Pain | VAS 0-100 | Preop  I: 52; C:47 | Preop  I:17; C:19 | NS | Not reported |
| 1 week postop I:40; C:40 | 1 week postop I:23; C:21 |
| Swelling | Circumference- cm | Preop I:40; C: 40 | Preop I:5; C: 4 | NS |
| 1 week postop I:43; C:44 | 1 week PO I:5; C:4 |
| Active knee flexion | Degrees | Preop  I: 121; C:127 | Preop  I: 14; C:12 | NS |
| Postop I:85; C:83 | post-op I:13; C:16 |
| Passive knee flexion | Preop  I:125; C:131 | pre-op  I:14; C:13 | NS |
| Postop I:87; C:85 | PO II:11; C:16 |
| Active knee extension | Preop  I: - 3; C:-4 | pre-op  I: 6; C:6 | NS |
| Postop I: -8; C: -11 | post OP I: 4; C: 6 |
| Passive knee extension | Preop  I: -2; C:-2 | pre op  I: 7; C:6 | NS |
| Postop I:-7; C:-10 | post OP I: 5; C:6 |
| **Chang et al, 201239**  **RCT** | Pain | VAS | POD1 9am  I: 57.00; C:60.32 | POD1 9am  I: 17.83; C:22.77 | P=.525 | Not reported |
| POD1 5pm  I:46.87; C:45.16 | POD1 5pm  I:17.05; C:19.77 | P=.717 |
| POD2  I:36.45; C:37.10 | POD2  I:13.74; C:18.25 | P=.876 |
| POD3  I:27.42; C:27.74 | POD3  I:12.24; C:15.70 | P=.928 |
| Short form McGill Pain Questionnaire – sensory dimension | POD1 9am  I: 12*.*26; C:13.45 | POD1 9am  I:5.79; C:6.11 | P=.433 |
| Post-test  I:5.16; C:5.19 | Post-test  I:4.08; C:3.66 | P=.974 |
| Short form McGill Pain Questionnaire-present pain intensity | POD1 9am  I:2.24; C:3.16 | POD1 9am  I:0.89; C:1.10 | P=.104 |
| Post-test  I:1.23; C:1.45 | Post-test  I:0.50; C:0.72 | P=.157 |
| Passive knee flexion | degrees of motion | POD3:  I: 71.68 C: 66.94 | POD3  I: 6.90; C: 7.15 | P=.01 |
| **Demoulin et al45**  **2012**  **RCT** | Pain | VAS (0-100) | None reported | None reported | Difference between groups at POD7,  P= .425 | None |
| Swelling | Circumference at joint line-cm | Preop  I: 40.2; C1: 41; C2: 40.3 | Preop  I: 4; C1: 4.7; C2: 3.1 | NS |
| POD7  I: 43; C1: 43.5; C2: 42.9 | POD7  I: 4.5; C1: 4.5; C2: 3.4 |
| Circumference below joint line-cm | Preop  I: 35.2; C1: 36.8; C2: 36.2 | Preop  I: 3.3; C1: 5; C2: 3.1 | NS |
| POD7  I: 37.6; C1: 38.8; C2: 38.9 | POD7  I: 3.3; C1: 4.5; C2: 3.6 |
| Circumference above joint line-cm | Preop  I: 43.1; C1: 44.6; C2: 44.5 | Preop  I: 6.2; C1: 6.6; C2: 4.7 | NS |
| POD7  I: 46.8; C1: 47.9; C2: 47.4 | POD7  I: 5.7; C1: 5.9; C2: 4.8 |
| Passive Knee flexion | Degrees | None reported | None reported | NS |
| Active knee flexion |
| Passive knee extension |
| Active knee extension |
| **den Hertog et al40**  **2012** | Function | American Knee Society Score | POD0: not reported  POD5-7  I:122.25; C: 80.52 | Not reported | P<.001 | I: 2 severe and 7 minor  C:11 minor |
| WOMAC | POD0: not reported  POD5-7  I:4.24; C: 6.19 | POD5-7  I:1.94; C: 1.79 | P<.001 |
| LOS | Days | I:6.75; C: 13.20 | Not reported | P<.001 |
| **Denis et al57**  **2006**  **RCT** | Knee flexion | Degrees | Diff I1 and C: 1.7  Diff I2 and C: -2.9  Diff I1 and I2: -4.6 | **95% CI**  ( -5.8, 9.2)  (-10.3, 4.5)  ( -12.1, 2.9) | NS | I1: 1 Hematoma,  1 Superficial vein thrombosis  2 Scar bleeding,  3 CVP problems  I2: 1 Hematoma,  1 Deep vein thrombosis  1 CVP problems  C: 1 Hematoma,  1 Superficial vein thrombosis  3 CVP problems |
| Knee extension | Diff I1 and C: -1  Diff I2 and C: -1.5  Diff I1 and I2: -0.5 | **95% CI**  ( -3.4, 1.4)  ( -3.9, 0.8)  ( -2.9, 1.9) | NS |
| Function | TUG (seconds) | Diff I1 and C: -8.7  Diff I2 and C: -10.4  Diff I1 and I2: -1.6 | **95% CI**  ( -26.8, 9.2)   ( -28.0, 7.3)  ( -19.6, 16.4) | NS |
| WOMAC total | Diff I1 and C: -4.1 Diff I2 and C: 4.9 Diff I1 and I2: 9.0 | **95% CI**  ( -17.5, 9.3)  ( -8.4, 18.1)  ( -4.4, 22.4) | NS |
| WOMAC pain | Diff I1 and C: 3.0  Diff I2 and C: 12.1  Diff I1 and I2: 9.1 | **95% CI**  ( -9.9, 15.9)  ( -0.6, 24.9)   ( -3.8, 22) | NS |
| WOMAC stiffness | Diff I1 and C; -5.4  Diff I2 and C: 3.8  Diff I1 and I2: 9.2 | **95% CI**  ( -20.8, 10.0) ( -11.5, 19.0)  ( -6.2, 24.6) | NS |
| WOMAC functional ability | Diff I1 and C: -7.0 Diff I2 and C: 1.9  Diff I1 and I2: 8.9 | **95% CI**  ( -21.7, 7.7) ( -12.6, 16.5)   ( -5.7, 23.6) | NS |
| LOS | Days | Diff I1 and C: -0.3  Diff I2 and C: -0.2 Diff I1 and I2: 0.2 | 95% CI  ( -1.7, 1.0) ( -1.5, 1.1)   ( -1.2, 1.5) | NS |
| **Ebert et al54**  **2013**  **RCT** | Active knee extension | Degrees | Preop  I:4.5; C: 5.3 | Preop  I:3.38; C: 4.92 | NS | 1 DVT |
| POD2AM  I:4.29; C:4.00 | POD2AM  I:3.15; C:3.41 |
| POD2PM  I:2.42; C:3.85 | POD2PM  I:1.39; C:3.88 |
| POD3AM  I: 2.96; C:3.36 | POD3AM  I:2.36 ; C:2.44 |
| POD3PM  I:2.63; C:3.20 | POD3PM  I:2.36; C:2.59 |
| POD4AM  I:: 2.13; C:2.48 | POD4AM  I:1.94; C:1.37 |
| POD4PM  I:1.30; C:2.78 | POD4PM  I:0.82; C:1.76 |
| Active knee flexion | Preop  I:124.04; C: 127.31 | Preop  I:9.91; C: 10.34 | Time X Group interaction  P= .04  I>C at POD4 PM P= .014  ES: .79 (95% CI 2.32-16.78) |
| POD2AM  I:84.33; C:82.62 | POD2AM  I:15.16; C:16.10 |
| POD2PM  I:91.92; C:86.58 | POD2PM  I:13.22; C:13.24 |
| POD3AM  I:89.42 ; C:87.96 | POD3AM  I:14.01 ; C:13.57 |
| POD3PM  I:90.58; C:89.28 | POD3PM  I:12.36; C:13.36 |
| POD4AM  I:92.13; C:87.30 | POD4AM  I:13.13; C: 13.45 |
| POD4PM  I:97.39; C:88.22 | POD4PM  I:10.02; C:13.15 |
| Swelling | Circumference at midpatella -cm | Preop  I:41.40; C: 40.63 | Preop  I:2.51; C: 2.92 | NS |
| POD2AM  I:47.31; C:45.95 | POD2AM  I:2.58; C:3.01 |
| POD2PM  I:47.24; C:45.94 | POD2PM  I:2.32; C:3.09 |
| POD3AM  I:47.08 ; C:45.78 | POD3AM  I: 3.12; C:2.94 |
| POD3PM  I:47.18; C:45.90 | POD3PM  I:2.89; C:2.67 |
| POD4AM  I:46.77; C:46.05 | POD4AM  I:2.34; C:2.45 |
| POD4PM  I:46.63; C:46.08 | POD4PM  I:2.54; C:2.99 |
| Circumference at thigh -cm | Preop  I:47.88; C:46.66 | Preop  I:3.13; C:4.01 | NS |
| POD2AM  I:53.37; C:52.12 | POD2AM  I:3.54; C:3.94 |
| POD2PM  I:53.01; C:52.03 | POD2PM  I:2.13; C:3.42 |
| POD3AM  I: 53.26; C:53.09 | POD3AM  I:2.54 ; C2.91: |
| POD3PM  I:52.89; C:52.90 | POD3PM  I:3.30; C:3.81 |
| POD4AM  I:52.78; C:53.21 | POD4AM  I:2.81; C:3.14: |
| POD4PM  I:52.52; C:53.08 | POD4PM  I:3.25; C:4.18 |
| Circumference at calf -cm | Preop  I:36.75; C: 36.21 | Preop  I:2.15; C:2.82 | NS |
| POD2AM  I:39.29; C:38.61 | POD2AM  I:2.61; C:2.58 |
| POD2PM  I:39.53; C:38.63 | POD2PM  I:2.07; C:3.24 |
| POD3AM  I: 39.77; C:39.32 | POD3AM  I: 1.87; C:2.26 |
| POD3PM  I:39.74; C:39.45 | POD3PM  I:1.81; C:2.05 |
| POD4AM  I:40.15; C:39.68 | POD4AM  I:1.47; C:2.36 |
| POD4PM  I:39.90; C:39.80 | POD4PM  I:1.95; C:2.47 |
| Circumference at ankle-cm | Preop  I:23.24; C:22.82 | Preop  I:1.22; C:0.98 | NS |
| POD2AM  I:23.94; C:23.17 | POD2AM  I:1.75; C:1.02 |
| POD2PM  I:24.02; C:23.29 | POD2PM  I:1.34; C:1.29 |
| POD3AM  I: 24.16; C:23.77 | POD3AM  I1.54; C:1.72 |
| POD3PM  I:24.13; C:23.82 | POD3PM  I:1.71; C:1.68 |
| POD4AM  I:24.68; C:24.69 | POD4AM  I:1.15; C:1.09 |
| POD4PM  I:24.20; C:24.91 | POD4PM  I:1.63; C:1.78 |
| Pain | Numeric rating scale (1-10) | Preop  I:4.67; C:4.71 | Preop  I:1.59; C:1.64 | NS |
| POD2AM  I:1.71; C:1.62 | POD2AM  I:1.00; C:0.91 |
| POD2PM  I:1.31; C:1.38 | POD2PM  I:1.21; C:1.06 |
| POD3AM  I: 1.46; C:1.88 | POD3AM  I: 1.10; C:1.38 |
| POD3PM  I:1.54; C:1.50 | POD3PM  I:1.27; C:1.11 |
| POD4AM  I:1.54; C:2.13 | POD4AM  I:1.43; C:1.73 |
| POD4PM  I1.79:; C:2.00 | POD4PM  I:1.29; C:1.08 |
| **He et al37**  **2013**  **RCT** | Pain | VAS 0-10 | 12 hours I: 4.78; C: 4.85 | 12 hours I: 1.66; C: 1.55 | NS | Nausea and vomiting;  Dizziness  Drowsiness;  Urinary retention |
| 24 hours I: 4.36; C: 4.29 | 24 hours I: 1.53; C: 1.33 | NS |
| 36 hours I: 3.86 ; C: 3.93 | 36 hours I: 1.55; C: 1.41 | NS |
| 48Hours I: 3.19; C: 3.11 | 48Hours I: 1.45; C: 1.32 | NS |
| 3 days I: 3.70; C: 4.43 | 3 days I: 1.40; C: 1.47 | P= .017 |
| 4 days I: 3.47; C: 4.10 | 4 days I: 1.29; C: 1.19 | P= .018 |
| 5Days I: 2.91; C: 3.51 | 5Days I: 1.12; C: 1.16 | P= .015 |
| 7 Days I: 2.22; C: 2.87 | 7 Days I: 1.02; C: 1.08 | P= .005 |
| **Kim et al18**  **2009**  **RCT** | Pain | VAS | I: 7.1; C: 7.0 | Not reported | P : 0.486 | Not reported |
| Knee flexion Contracture | Degrees | I: 0.8; C: 0.6 | I: : 1.9 ; C: 1.9 | P= 0.598 |
| Maximum knee flexion | I: 97.5; C: 94.8 | I: : 8.9; C: 12.4 | P : 0.214 |
| LOS | Days | I: 4.8; C: 6.2 | I: 0.9; C: 1.5 | I<C , P<.001 |
| Weight-bearing | % of body weight | POD1 I: 64.6; C: 65.4 | POD1  I: 13; C: 12.6 | NS |
| **Labraca et al53**  **2011**  **RCT** | Pain | VAS | I: 3.01; C: 5.36 | I : 2.35; C: 2.54 | P= 0.27 | Not reported-Excluded participants with complications |
| Knee flexion | Degrees | I: 88.11; C: 71.82 | I : 2.35; C: 16.81 | P= .012 |
| Knee extension | I: 0.68; ,C: 2.80 | I : 1.84; C: 1.10 | P= .035 |
| Quadriceps strength | Manual muscle testing (0-5) | I: 3.91; C: 3.01 | I: 0.56; C: 0.52 | P= .042 |
| Hamstrings strength | I: 4.02; C: 2.97 | I: 0.82; C: 0.59 | P= .041 |
| Balance | Tinetti test (Balance)  % of participants | Normal: I: 99%; C: 93% | N/A | P= .047 |
| Adaptive: I: 1%; C: 7% | P= .223 |
| Gait | Tinetti test (Gait)  % of participants | Normal: I: 97%; C: 90% | N/A | P= 045 |
| Adaptive: I: 3%; C: 10% | P= 052 |
| Function | Barthel index mean  % of participants | Moderate: I: 45.85 C: 42.01 | I: 4.2; C: 1.27 | P : 0.143 |
| Mild: I: 67.86;C: 71.48 | I : 3.14; C: 8.93 | P : 0.134 |
| Independent: I: 100; C: 110 | I: 0; C: 0 | P : 0.056 |
| **Lang19**  **1998**  **Quasi-experimental** | LOS | Days | **Median**  I: 5;  C: 5 | **Range**  I: 3 to 9  C: 3 to 18 | P : 0.160 | Not reported |
| Discharge destination | Setting type | Home – I: 20; C: 20 Extended Care –I: 2; C: 2  Rehab – I: 1; C: 3 | N/A | P= 0.632 |
| Functional task performance | Number with independent mobility | I: 13 ; C: 18 | N/A | p : 0.370 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Lau and Chiu31**  **2001**  **RCT** | Total knee ROM | Degrees | POD7  I: 75; C: 56 | **95% CI**  POD7 I: 69-80; C: 42.9-57.2 | P<.005 | I: 1 superficial wound infection  C: 1 DVT |
| Knee extension lag | Not reported | Not reported | NS |
| **Leach et al32**  **2006**  **RCT** | Knee flexion | Degrees | I: 86.9; C: 83.1 | Not reported | P : 0.19 | Not reported |
| Knee extension lag | I: -2.9; C: -1.6 | P= .23 |
| Pain | VAS (0-10) | I: 2.7; C: 2.2 | p : 0.47 |
| **Lenssen et al52**  **2006**  **RCT** | Active knee extension | Degrees | I: 8.4; C: 7.8 | I: 5.1; C: 5.6 | P : 0.73 | C: 1 cardiac |
| Passive knee extension | I: 5.5; C: 5.8 | I: 4.5; C: 4.9 | P : 0.81 |
| Active knee flexion | I: 69.8; C: 70.4 | I: 11.9; C: 13.3 | P= 0.90 |
| Passive knee flexion | I: 77.7; C: 77.9 | I: 11.2; C: 12.8 | P : 0.95 |
| Functional Status | KSS Knee Score | I: 54.3; C: 52.2 | I: 15.2; C: 17.8 | P : 0.68 |
| KSS Function score | I: 29.3; C: 22.9 | I: 10; C: 13.2 | P= 0.09 |
| LOS | Days | I: 4.1; C: 4.5 | I: 0.9; C: 1.3 ( | P : 0.34 |
| Pain | VAS | I: 3.6; C: 3.6 | I: 2.3; C: 2.8 | P : 0.97 |
| Satisfaction With Treatment | 11 point scale | I: 9.1; C: 9.1 | I: 0.8; C: 0.7 | P : 0.99 |
| **Maniar et al46**  **2012**  **RCT** | Pain at Rest | VAS | Day 3:  I1: 1.42; I2: 1.67; C: 1.48 | Day 3:  I1: 0.94; I2: 1.55; C: 1.01 | P= .694 | More cases of wound staining in CPM groups than in control group  No major wound complications |
| Day 5:  I1: 0.79; I2: 1.0; C: 0.67 | Day 5:  I1: 074; I2: 1.3; C: 0.74 | P : 0.366 |
| Pain with Walking | Day 3:  I1: 4.73; I2: 5.27; C: 5.30 | Day 3:  I1: 1.13; I2: 1.38; C: 1.53 | P : 0.157 |
| Day 5:  I1: 3.39; I2: 3.33; C: 4.21 | Day 5:  I1: 1.17; I2: 1.60; C: 1.58 | P : 0.067 |
| Knee extension | Degrees | Day 3:  I1: 3.48; I2: 3.94; C: 4.09 | Day 3:  I1: 2.93; I2: 3.25; C: 3.18 | P : 0.714 |
| Day 5:  I1: 2.88; I2: 3.33; C: 3.03 | Day 5:  I1: 2.80; I2: 2.70; C: 2.78 | P : 0.793 |
| Knee Flexion | Day 3:  I1: 75.15; I2: 66.97; C: 67.12 | Day 3: SD  I1: 112.90; I2: 1.67; C: 1.48 | P : 0.061 |
| Day 5:  I1: 87.27; I2: 84.70; C: 83.49 | Day 5: SD  I1: 8.40; I2: 18.07; C: 16.16 | P : 0.254 |
| Swelling | Suprapatelar girth-cm | Day 3:  I1: 48.59; I2: 49.32; C: 48.33 | Day 3:  I1: 5.57; I2: 9.67; C: 10.04 | P : 0.746 |
| Day 5:  I1: 48.18; I2: 48.74; C: 47.64 | Day 5:  I1: 5.45; I2: 6.10; C: 4.80 | P : 0.715 |
| Calf girth -cm | Day 3:  I1: 38.56; I2: 38.41; C: 38.53 | Day 3:  I1: 4.56; I2: 4.63; C: 1.53 | P : 0.989 |
| Day 5:  I1: 37.94; I2: 38.09; C: 38.06 | Day 5:  I1: 4.49; I2: 3.95; C: 1.58 | P : 0.987 |
| Walking speed | TUG (seconds) | Day 3:  I1: 123.30; I2: 120.87; C: 126.33 | Day 3:  I1: 46.54; I2: 35.84; C: 41.34 | P : 0.867 |
| Day 5:  I1: 101.19; I2: 102.98; C: 97.96 | Day 5:  I1: 42.49; I2: 43.58; C: 33.46 | P : 0.867 |
| **Mau-Moeller et al44**  **2014**  **RCT** | Active knee flexion | Degrees | **Mean Difference**  4.4 | **95%% CI**  -0.4, 9.1 | NS | None |
| Passive knee flexion | 6.0 | 0.9, 11.2 | P<.025 |
| Active knee extension | -0.1 | -2.3, 2.1 | NS |
| Passive knee extension | 0.7 | -0.4, 1.8 | NS |
| Postural Control | Sway Area (Eyes Open) degrees | 0.01 | -0.54, 0.56 | NS |
| Sway Medio-Lateral (Eyes Open)-degrees | -0.68 | -2.50, 1.14 | NS |
| Sway, Anterior-Posterior (Eyes Open)-degrees | -0.92 | -1.82, 3.66 | NS |
| Sway Velocity (ML) (Eyes Open)-mm/sec | -0.17 | -5.19, 4.86 | NS |
| Sway Velocity (AP) (Eyes Open)-mm/sec | 2.00 | -3.80, 7.79 | NS |
| Sway Area (Eyes Closed)-degrees | 0.59 | -0.35, 1.53 | NS |
| Sway Medio-Lateral (Eyes Closed)-degrees | -0.29 | -1.98, 1.40 | NS |
| Sway, Anterior-Posterior (Eyes Closed)-degrees | 1.58 | -1.05, 4.22 | NS |
| Sway Velocity (ML) (Eyes Closed)-mm/sec | 1.23 | -2.47, 4.94 | NS |
| Sway Velocity (AP) (Eyes Closed)-mm/sec | 4.50 | 0.23, 8.77 | NS |
| Pain | VAS | -0.56 | -1.73, 0.60 | NS |
| LOS | Days | -0.53 | -1.47, 0.41 | NS |
| Physical activity | Hours lying/sitting | -0.5 | -1.8, 2.8 | NS |
| Hours standing | -1.0 | -0.8, 2.8 | NS |
| Hours stepping | -0.1 | -0.5, 0.6 | NS |
| Number of transitions sit to stand | -27.2 | -10.0, 65.2 | NS |
| Number of steps | -534 | -1555, 2624 | NS |
| Function | HHS score pain | -1.9 | -2.5, 6.4 | NS |
| HHS score function | -0.3 | -2.6, 2.0 | NS |
| HHS score strength | -0.9 | -1.7, 0.0 | NS |
| HHS score instability | 0 |  | NS |
| HHS score flex Deformity | 0 |  | NS |
| HHS score ROM | -0.8 | 0.2, 1.5 | P<.025 |
| HHS score total | -0.8 | -5.8, 7.4 | NS |
| SF-36 score  physical health | -2.5 | -6.9, 11.9 | NS |
| SF-36 score  mental health | -1.6 | 10.6, 13.9 | NS |
| SF-36 score  total | -1.4 | -11.1, 8.3 | NS |
| WOMAC score  pain | -0.3 | -2.2, 2.8 | NS |
| WOMAC score  stiffness | -0.4 | -1.4, 0.6 | NS |
| WOMAC score  functional difficulty | -1.2 | -7.5, 9.9 | NS |
| WOMAC score  total | -2.3 | -9.8, 14.4 | NS |
| **Munk et al47**  **2002**  **RCT** | Swelling | Knee Swelling  Circumference (cm) | POD1: I: 46; C: 46 | POD1: I: 4; C: 5 | NS | None |
| POD2:I: 48; C: 47 | POD2:I: 4; C: 4 | NS |
| POD7:I: 47; C: 47 | POD7:I: 4; C: 4 | NS |
| Calf Swelling  Circumference (cm) | POD1: I: 38; C: 38 | POD1: I: 3; C: 4 | NS |
| POD2:I: 39; C: 39 | POD2:I: 3; C: 3 | NS |
| POD7:I: 39; C: 40 | POD7:I: 3; C: 3 | NS |
| Ankle Swelling  Circumference (cm) | POD1: I: 22; C: 22 | POD1: I: 2; C: 2 | NS |
| POD2:I: 22; C: 23 | POD2:I: 2; C: 2 | NS |
| POD7:I: 23; C: 24 | POD7:I: 2; C: 2 | NS |
| Pain at Rest | Number of Subjects per category of VAS  Low (L): 0-2  Moderate (M): 3-5  High (H): 6-10 | POD1:  I: L: 8, M: 13, H: 18  C: L: 5, M: 15, H: 15 | Not reported | NS |
| POD2  I: L: 12, M: 18, H: 9  C: L: 13, M: 14, H: 7 | NS |
| POD7:  I: L: 10, M: 21, H: 8  C: L: 12, M: 16, H: 6 | NS |
| Pain with Walking | POD1:  I: L: 2, M: 9, H: 28  C: L: 1, M: 9, H: 24 | NS |
| POD2  I: L: 4, M: 16, H: 19  C: L: 4, M: 18, H: 12 | NS |
| POD7:  I: L: 6, M: 21, H: 12  C: L: 8, M: 14, H: 12 | NS |
| Knee Flexion | Degrees | POD1: I: 59; C: 58 | Range  POD1: I: 42-70; C: 42-72 | NS |
| POD2:I: 65; C: 70 | POD2:I: 50-75; C: 50-82 | NS |
| POD7:I: 85; C: 94 | POD7:I: 78-90; C: 80-95 | NS |
| **Ni, et al51**  **2015**  **Systematic Review** | Pain | VAS | **Mean difference**  POD1  -0.10 | **95% CI**  -0.61, 0.40 | P=.69 | NS difference between intervention and comparison groups |
| POD2  -1.07 | -1.65, -0.50 | P<.001 |
| POD3  -0.18 | -1.13, 0.76 | P=.70 |
| Adverse events | Frequency | **Risk difference**  0.00 | -0.03, 0.04 | P=.80 |
| **Nigam etal20**  **2011**  **RCT** | Pain | Verbal scale 0-10 | Within group pre-post difference I: -2.15; C: -0.34 | Not reported |  | Not reported |
| Change diff between groups: 1.81 | SE : 0.57 | P= .002 |
| Active knee flexion | Degrees | Within group pre-post difference I: +45.7; C: +27.2 | Not reported |  |
|  | Change diff between groups: 18.4 | SE : 4.29 | P<.001 |
| Knee swelling | circumference | Difference between involved and uninvolved knee  Within group pre-post difference I: +1.11; C: +1.59 | Not reported |  |
| Change diff between groups: 0.48 | SE : 0.67 | NS |
| **Pereira & Jolles33**  **2015**  **RCT** | Active knee flexion | Degrees | **Mean difference between groups** | Not reported |  | Popliteal pain  Sciatic pain  Skin blisters  Fever  Acute confusion  Lower limb swelling |
| POD1: 0.7 | P= .651 |
| POD3: 4.6 | P= .623 |
| POD7: 8.5 | P= .163 |
| Passive knee flexion | POD1: 4.4 | P= .439 |
| POD3: 6.4 | P= .509 |
| POD7: 4.1 | P= .308 |
| Active knee extension | POD1: 0.2 | P= .985 |
| POD3: 1.0 | P= .381 |
| POD7: 1.5 | P= .341 |
| Passive knee extension | POD1: 0.5 | P= .690 |
| POD3: 1.9 | P= .120 |
| POD7: 0.3 | P= .772 |
| Pain | VAS 100mm | POD1: 0.8 | P= .117 |
| POD3: 0.5 | P= .166 |
| POD7: 0.4 | P= .530 |
| LOS | Days | I: 8.8  C: 8.8 | NS |
| **Pichonnaz et al48**  **2016**  **RCT** | Swelling | Limb volume % difference | POD2  I:12.9; C:13.7 | POD2  I:9.7; C:7.2 | P= .65 | Not reported |
| POD7  I:17.0; C:15. | POD7  I:10.7; C:6.5 | P= .58 |
| Limb volume mL difference | POD2  I:848; C:796 | POD2  I:550; C:363 | P= .95 |
| POD7  I:1087; C:905 | POD7  I:706; C:317 | P= .66 |
| Limb bioimpedence % difference | POD2  I:33.1; C:35.5 | POD2  I:10.1; C:7.7 | P= .45 |
| POD7  I:41.8 ; C:40.8 | POD7  I:6.5; C:6.6 | P= .51 |
| Active knee flexion | Degrees | POD2  I:108.9; C:108.4 | POD2  I:16.2; C:12.0 | P= .73 |
| POD7  I:58.6; C:59.4 | POD7  I:11.2; C:12.1 | P= .92 |
| Passive knee flexion | POD2  I:116.4; C:115.1 | POD2  I:16.0; C:10.8 | P= .54 |
| POD7  I:68.4; C:69.6 | POD7  I:11.5; C:13.3.56 | P= .66 |
| Active knee extension lag | POD2  I:8.7; C:10.3 | POD2  I:5.7; C:8.1 | P= .56 |
| POD7  I:6.8; C:5.9 | POD7  I:4.9; C:6.1 | P= .37 |
| Passive knee Extension lag | POD2  I:5.9; C:5.6 | POD2  I:4.8; C:5.7 | P= .66 |
| POD7  I:3.0; C:1.8 | POD7  I:4.1; C:3.4 | P= .21 |
| Pain at rest | VAS – 100 mm | POD2  I:31.0; C:25.9 | POD2  I:28.4; C:21.5 | P= .71 |
| POD7  I:21.8; C:21.0 | POD7  I:22.1; C:16.5 | P= .90 |
| Pain during gait | POD2  I:48.7; C:57.3 | POD2  I:28.7; C:21.8 | P= .23 |
| POD7  I:29.7; C:36.8 | POD7  I:18.8; C:22.5 | P= .18 |
| gait | Speed m/s | POD7  I:0.49; C:0.50 | POD7  I:0.17; C:0.22 | P= .93 |
| Stride length m | POD7  I:0.96; C:0.96 | POD7  I:0.21; C:0.21 | P= .90 |
| Cadence stride/min | POD7  I:30.36; C:.30.13 | POD7  I:6.13; C:8.94 | P= .86 |
| Limp % | POD7  I:10.63; C:7.17 | POD7  I:9.03 ; C:5.08 | P= .20 |
| Knee flexion degrees | POD7  I:24.55; C:22.13 | POD7  I:10.67 ; C:8.36 | P= .39 |
| Peak swing speed degree/sec | POD7  I:136.70; C:134.99 | POD7  I:45.24; C:46.84 | P= .81 |
| Stance time % | POD7  I:64.98; C:66.08 | POD7  I:7.43; C:7.38 | P= .53 |
| Swing time % | POD7  I:35.02; C:33.92 | POD7  I:7.43; C:7.38 | P= .53 |
| Double support time % | POD7  I:36.93; C:38.34 | POD7  I:12.13; C:13.19 | P= .60 |
| **Pongkunakorn and Sawatphap22**  **2014**  **Quasi-experimental** | Passive knee flexion | Degrees | POD1  I:67.0; C:59.1 | POD1  I:14.2; C:3.2 | P<.001 | I: 1 Manipulation; 1 readmission for wound hematoma; 1 wound necrosis  C: 1 Manipulation; 1 wound bleeding |
| POD2  I:76.6; C:69.8 | POD2  I:14.2; C:13.3 | P= .008 |
| POD3  I:86.4; C:84.7 | POD3  I:12.1; C:12.2 | P= .246 |
| POD4  I:91.3; C:91.9 | POD4  I:10.0; C:9.2 | P= .325 |
| POD5  I:95.7; C: 92.4 | POD5  I:6.0; C:10.7 | P= .147 |
| POD6  I: 98.1; C: 96.4 | POD6  I:5.9; C:7.5 | P= .186 |
| POD7  I:98.2; C:97.5 | POD7  I:7.2; C:5.0 | P= .865 |
| Discharge  I:100.6; C:96.4 | Discharge  I:6.9; C:10.2 | P= .005 |
| LOS | Days | I:8.3; C:7.4 | I:1.7; C:2.1 | P= .060 |
| **Pope et al21**  **1997**  **RCT** | Knee extension lag | Degrees | I1: 11.3; I2: 8.2; C: 6.2 | 95% CI I1:7.9-14.7; I2:4.5-11.9; C:3.2-9.2 | P= 0.32 | I1: 2 Revision  C: 1 Manipulation |
| Knee flexion | I1:70.3; I2: 78.3; C: 56.8 | 95% CI  I1:61.7-78.9; I2:70.1-86.4; C: 48.5-65.2 | P= 0.67 |
| Total knee ROM | I1: 58.6; I2: 69.5; C: 50.5 | 95% CI ; I1:49.3-67.9; I2: 60.7-78.3; C:4105-59.6 | P= 0.74 |
| **Pua et al23**  **2014**  **Quasi-Experimental** | Function | Ability to achieve SLR | **Rate**  I:80%; C:81% |  | P= .66 | None |
| Odds ratio: 1.06 | **95% CI**  0.81 to 1.40 |
| Ability to achieve 90 degrees of knee flexion | **Rate**  I:66%; C:59% |  | P<.01 |
| OR: 1.33 | **95% CI**  1.07 to 1.65 |
| Type of walking aid  used | **Odds of using less support**  OR: 1.36 | 95% CI  1.13 to 1.64 | P<.001 |
| Walker rate  I:19%; C:27% |  |
| Broad-based quad cane rate  I:29%; C:28% |  |
| Narrow-based quad cane rate  I: 20%; C: 22% |  |
| Cane rate  I:31%; C:24% |  |
| LOS | Days | **Difference Between groups**  -0.69 | **95% CI**  -0.50 to -0.87 | P<.001 |
| Hospital costs | Singapore dollars | **Difference Between groups**  -542 | **95% CI**  -346 to -808 | P<.001 |
| 90-day Readmission | Percent occurence | **Rate**  I:2%; C:2% |  | P= .57 |
| **Odds Ratio**  0.81 | **95% CI**  0.40 to 1.66 |
| **Rakel et al41**  **2014**  **RCT** | Pain at rest | 21-point numeric scale | No data | Not reported | P= .13 | Not reported |
| Pain with flexion | No data | Not reported | P= .19 |
| Pain with extension | **Median**  I:9.5; C1: no data; C2: 14 | Not reported | I vs. C1, P= .05, ES: .5  I vs. C2, P= .019, ES: .5  CI vs. C2, P= 1.0, ES: 0 |
| Pain with gait | **Median**  I:8; C1:no data; C2:10 | Not reported | I vs. C1, P= .30, ES: .25  I vs. C2, P= .006, ES: .24  C1 vs. C2, P= .24, ES: 0 |
| Pressure pain threshold at knee | kPA | **Median**  I:194; C1:187; C2:156 | Not reported | I vs. C2, P= .01, ES: .3  C1 vs. C2, P= .03, ES: .2 |
| Pressure pain threshold at anterior tibialis | **Median**  I:288; C1: 310; C2:247 | Not reported | I vs. C1, P= 1.0  I vs. C2, P= .083, ES: .2  C1 vs. C2, P= .023, ES: .3 |
| Heat pain threshold at knee | Degrees C | No data | Not reported | NS |
| Heat pain threshold at anterior tibialis | No data | Not reported | NS |
| Active knee flexion | Degrees | No data by group | Not reported | P= .70 |
| Active knee extension | No data by group | Not reported | P= .17 |
| Extension lag | No data by group | Not reported | P= .24 |
| Gait | Feet walked in 15 sec | No data by group | Not reported | P= .60 |
| **Renkawitz et al24**  **2010**  **Controlled trial** | Walking | Distance - meters | POD5  I:134.8; C:113.3 | POD5  I:46.8; C:40.5 | P= .006 | I: 1 wound healing disorder  C: 2 wound healing disorder  1 readmission due to knee swelling |
| POD8  I:183.3; C:175.3 | POD8  I:44.1; C:36.8 | NS |
| Stairs | number | POD5  I:3.3; C:1.1 | POD5  I:5.6; C:3.6 | P= .03 |
| POD8  I:15.5; C:14.3 | POD8  I:6.3; C:4.6 | P= .035 |
| Swelling | Circumference of thigh-cm | POD5  I:51.7  C:49.4 | POD5  I:6.6  C:5.9 | NS |
| POD8  I:51.0; C:48.4 | POD8  I:6.7; C:5.9 | P= .006 |
| Circumference of lower leg-cm | POD5  I:40.5; C:39.4 | POD5  I:5.8; C:5.6 | NS |
| POD8  I:40.1; C:39.2 | POD8  I:5.4; C:5.6 | NS |
| Function | Knee society score | POD5  I:29.0; C:23.2 | POD5  I:13.8; C:9.3 | NS |
| POD8  I:47.3; C:48 | POD8  I:8.6; C:7.5 | NS |
| Pain at rest | VAS 0-10 | POD5  I:3.0; C:2.9 | POD5  I:1.4; C:1.3 | NS |
| POD8  I:2.5; C:2.4 | POD8  I:1.2; C:1.1 | NS |
| Pain with mobilization | POD5  I:3.2; C:3.5 | POD5  I:1.0; C:1.0 | NS |
| POD8  I:2.8; C:2.6 | POD8  I:1.0; C:.9 | NS |
| Total knee ROM | degrees | POD5  I:66.5; C:64.8 | POD5  I:9.6; C:8.8 | NS |
| POD8  I:75; C:73 | POD8  I:9.0; C:6.1 | NS |
| Time out of bed | Min/d | POD5  I:45.7; C:51.1 | POD5  I:18.5; C:13.3 | P= .006 |
| POD8  I:75.4; C:71.3 | POD8  I:28.9; C:25.5 | NS |
| Met discharge criteria | percent | POD5  I:7.5; C:1.3 |  | P= .067 |
| POD8  I:94; C:85.5 |  | P= .098 |
| LOS | Days | I:9.7; C: 9.9 | I: .8; C: .7 | Not reported |
| **Starks et al25**  **2014**  **Quasi-experimental (historical comparison group)** | LOS | Days | Median  I:4; C:6 | Not reported | Not reported | Not reported |
| **Thienpont26**  **2013**  **RCT** | Pain | VAS | At rest POD2  I: 4; C:3.5 | At rest POD2  I: 3; C:2.5 | P=.18 | None |
| With movement  POD2  I:5.5; C:5.5 | With movement POD2  I:2.5; C:2.5 | P=.68 |
| Walking POD2  I:5.5; C:4.5 | Walking POD2  I:2.5; C:2 | P=.08 |
| Knee flexion | Degrees | POD4  I:88.5; C:92 | POD4  I:12.5; C:20 | P=.30 |
| Knee extension | POD4  I:-1.5; C:-1.5 | POD4  I:2.5; C:4 | P=.88 |
| Straight leg raise | Participants capable | POD1  I:44/50; C:39/50 |  | P=.29 |
| Walking | Participants capable without aid | POD1  I:35/50; 38/50 |  | P=.65 |
| Swelling | Circumference - mm | I:45; C:45.5 | I:4.5; C:5.1 | P=.60 |
| LOS | Days | I:4.8; C:4.8 | I:1; C:1 | P=1.0 |
| **Tsang et al38**  **2007**  **RCT** | Pain | Chinese version of 11-point VAS | POD4   rest I: 2.7; C 3.1  max I: 7.9; C: 7.3 | POD4   rest I: 2.0; C 2.4  max I: 1.5; C: 2.8 | NS | Not reported |
| POD8  rest I: 1.9; C: 2.5  max I: 6.8; C: 6.1 | POD8  rest I: 1.9; C: 1.9  max I: 2.0; C: 2.1 |
| Active knee ROM | Degrees | POD4  (R) I: 73.7; C: 76.0  (L) I: 65.7; C: 80.3 | POD4  (R) I: 15.1; C: 22.6  (L) I: 21.7; C: 21.6 | NS |
| POD8  (R) I: 87.7; C: 86.9  (L) I: 87.7; C: 92.1 | POD8  (R) I: 14.0; C: 14.2  (L) I: 17.8; C: 14.5 |
| Passive knee ROM | POD4  (R) I: 94.3; C: 90.7  (L) I: 90.0; C: 93.7 | POD4  (R) I: 13.5; C: 19.5  (L) I: 15.9; C: 18.8 | NS |
| POD8  (R) I: 104.0; C: 99.7  (L) I: 103; C: 100.9 | POD8  (R) I: 11.5; C: 10.3  (L) I: 13.2; C: 13.4 |
| Ambulation status | Timed up and go test (seconds) | POD8 I: 78.4; C: 67.5 | POD8 I: 30.7; C: 48.8 | NS |
| **Wang, et al34**  **2015**  **RCT** | Pain | Numeric rating scale 0-10 | Difference: post minus pre-CPM  POD1 AM  I:0.53;C:2.03 | POD1 AM  I:1.58;C:1.55 | Group effect:  I < C, P<.001 | Not reported |
| POD1 PM  I: 0.61; C: 1.67 | POD1 PM  I: 1.12; C: 1.29 |
| POD2 AM  I: 0.00; C: 0.55 | POD2 AM  I: 1.00; C: 1.39 |
| POD2 PM  I: 0.00; C: 0.73 | POD2 PM  I: 1.30; C: 1.23 |
| POD3 AM  I: -0.36; C: 0.48 | POD3 AM  I: 1.39; C: 0.91 |
| POD3 PM  I: -0.33; C: 0.61 | POD3 PM  I: 1.02; C: 0.90 |
| POD4 AM  I: -0.55; C: 0.61 | POD4 AM  I: 1.03; C: 1.00 |
| POD4 PM  I: -0.61; C: 0.95 | POD4 PM  I: 1.02; C: 1.25 |
| POD5 AM  I: -0.29; C: 0.69 | POD5 AM  I: 1.01; C: 1.03 |
| POD5 PM  I: -0.50; C: 0.68 | POD5 PM  I: 1.07; C: 1.01 |
| **Wanich, et al43** | Pain | VAS | Pre-treatment  I: 28; C: 26 | Not reported | P<.05 | I: 1 complaint of tenderness under electrode |
| Post-treatment  I:19; C: 25 |
| LOS | Days | I: 4.4; C: 3.9 | Not reported | NS |
| **Yang et al35**  **2013**  **RCT** | Pain | Change in VAS | I1: 4.92; I2: 6.0; C: 2.67 | I1: 1.75; I2: 1.73; C: 1.86 | I1 vs. C: P= .001 I2 vs. C: P<.001 I1 vs. I2: NS | I1: 2 infections |
| Knee ROM | Change in degrees active flexion | I1: 39.46; I2: 56.45; C: 40.24 | I1: 30.87; I2: 21.32; C: 24.99 | I1 vs. C: NS I2 vs. C: NS I1 vs. I2: NS |
| Change in degrees active extension lag | I1: 9.31; I2: 5.55; C: 1.76 | I1: 7.67; I2: 2.84; C: 3.98 | I1 vs. C: P<.001 I2 vs. C: P= .009 I1 vs. I2: NS |
| Knee swelling | Change in circumference 10 cm above patella base-cm | I1: 0.38; I2: 0.14; C: -0.01 | I1: 1.88; I2: 1.39; C: 1.40 | I1 vs. C: NS I2 vs. C: NS I1 vs. I2: NS |
| **Yashar et al49**  **1997**  **RCT** | Knee ROM | Total degrees of movement from full extension to full flexion | POD3 I: 13.7 to 82.4; C: 11.5 to 72.8 | Not reported | P= .0003 | I: 6 Wound necrosis; wound healing  Blisters  Delayed hemarthrosis  Temporary peroneal palsy  C: 8 Wound necrosis  Blisters  Drainage>1 week  Delayed hemarthrosis  Temporary peroneal palsy  Deep vein thrombosis |
| POD5 I: 12.6 to 84.6; C: 10.4 to 79.0 | P= .019 |
| Discharge I: 9.1 to 89.1; C: 8.1 to 84.3 | P= .0013 |
| LOS | Days | I:7.5; C:7.5 | I:2.9; C:3.5 | NS |
| **Zietek, et al42**  **2015**  **RCT** | Pain at rest | VAS | POD1  I: 3.3; C: 4.0 | POD1  I: 2.6; C:3.0 | p=0.34 | Not reported |
| POD2  I: 2.2; C: 3.0 | POD2  I: 2.7; C: 2.4 | p=0.68 |
| Pain with walking | POD1  I: 6.1; C: 6.4 | POD1  I:1.9; C:1.8 | p=0.21 |
| POD2  I: 4.9; C: 5.4 | POD2  I: 2.4; C: 1.6 | p=0.61 |

Abbreviations: AROM: active range of motion; C: comparison group; CI: confidence interval; cm: centimeters; CPM: continuous passive motion; d: day; D/C: discharge; Diff: difference; DVT: deep vein thrombosis; ER: emergency room; FWB: full weight-bearing; HHS: Hospital for Special Surgery Knee Score; I: intervention group; hr: hour; IRQ: interquartile range; KSS: knee society score; LOS: length of hospital stay; mA: milliamps; min: minutes; MLD: manual lymphatic drainage; mm: millimeters; N/A: not applicable; NS: not statistically significant; OA: osteoarthritis; PACU: post-anesthesia care unit; PE: pulmonary embolism; preop= pre-operative; POD: post-operative day; postop= post-operatively; PROM: passive range of motion; pt: patient; PT: physical therapy; RA: rheumatoid arthritis; RCT: randomized controlled trial; ROM: range of motion; RR: relative risk; SD: standard deviation; sec: second; TKA: total knee arthroplasty; TUG: timed up and go test; VAS: visual analogue scale; WOMAC: Western Ontario McMaster Universities Arthritis