Supplementary File

Embase resistance training search
Date searched: Feb 1, 2021
Results: 389
Search mode: Boolean Phrase

1. ((Hip adj6 fracture*) or broken hip* or ((neck or proximal) adj3 (femur or femoral) adj6 fracture*)).mp.
2. exp hip fracture/
3. 1 or 2
4. (post-hip fracture or post-femoral neck fracture or ((after or following or post or patient*) adj2 (hip fracture* or femoral neck fracture*))) or "with hip fracture*" or "with a hip fracture" or post-surg* or postoperative or replacement or arthroplast* or hemiarthroplast* or fixation or surg* or (hip fracture* adj8 rehab*)).mp.
5. 3 and 4
6. kinesiotherapy/
7. resistance training/
8. weight lifting/
9. ((exercise or exercises or train* or conditioning) adj5 (program* or protocol* or regime* or strateg* or therap* or intervention* or progressive or functional or postoperative or postoperative or home or home-based or outpatient)).mp.
10. (Resist* exercise* or resistance activit* or weight train* or resist* train* or strength train* or strength exercise* or muscle strengthening or weightlifting or (lift* adj4 weight*) or (weight bearing adj4 exercise*) or progressive resist* or gravity resistive or isotonic or isometric or ((eccentric or concentric) adj2 (contraction* or exercise*))).mp.
11. or/6-10
12. gait/
13. muscle strength/
14. locomotion/
15. (Strength* or function* or walk or walking or gait or locomotion).mp.
16. or/12-15
17. 5 and 11 and 16

Medline resistance training search
Date searched: Feb 1, 2021
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1. ((Hip adj6 fracture*) or broken hip* or ((neck or proximal) adj3 (femur or femoral) adj6 fracture*)).mp.
2. exp hip fractures/
3. fractures, bone/ or femoral fractures/
4. hip/ or hip joint/
5. 3 and 4
6. 1 or 2 or 5
7. (post-hip fracture or post-femoral neck fracture or ((after or following or post or patient*) adj2 (hip fracture* or femoral neck fracture*))) or "with hip fracture*" or "with a hip fracture" or post-surg* or postoperative or replacement or arthroplast* or hemiarthroplast* or fixation or surg* or (hip fracture* adj8 rehab*)).mp.
8. 6 and 7
9. exercise therapy/ or resistance training/
10. Weight Lifting/
11. ((exercise or exercises or train* or conditioning) adj5 (program* or protocol* or regime* or strateg* or therap* or intervention* or progressive or functional or post-operative or postoperative or home or home-based or outpatient)).mp.
12. (Resist* exercise* or resistance activit* or weight train* or resist* train* or strength train* or strength exercise* or muscle strengthening or weightlifting or (lift* adj4 weight*)) or (weight bearing adj4 exercise*) or progressive resist* or gravity resistive or isotonic or isometric or ((eccentric or concentric) adj2 (contraction* or exercise*))).mp.
13. or/9-12
14. 8 and 13
15. exp gait/ or muscle strength/
16. Locomotion/
17. (Strength* or function* or walk or walking or gait or locomotion).mp.
18. 15 or 16 or 17
19. 14 and 18
S1. (MH "Hip Fractures+") OR ( (MH "Hip Joint") OR (MH "Hip") ) AND (MH "Femoral Fractures") OR (MH "Fractures") ) OR ( (Hip N6 fracture*) or "broken hip*" or ((neck or proximal) N3 (femur or femoral) N6 fracture*) ) ) AND ( "post-hip fracture*" or "post-femoral neck fracture*" or ((after or following or post or patient*) N2 ("hip fracture*" or "femoral neck fracture*")) or "with hip fracture*" or "with a hip fracture" or post-surg* or postoperative or replacement or arthroplast* or hemiarthroplast* or fixation or surg* or ("hip fracture*" N8 rehab*) )

S2.(MH "Weight Lifting") OR (MH "Muscle Strengthening+") OR (MH "Therapeutic Exercise") OR ((exercise or exercises or train* or conditioning) N5 (program* or protocol* or regime* or strat* or therap* or intervention* or progressive or functional or postoperative or postoperative or home or home-based or outpatient)) OR Resist*-exercise* or resistance-activit* or weight-train* or resist*-train* or strength-train* or strength-exercise* or muscle-strengthening or weightlifting or (lift* N4 weight*) or (weight-bearing N4 exercise*) or progressive-resist* or gravity-resistive or isotonic or isometric or ((eccentric or concentric) N2 (contraction* or exercise*))

S3: (MH "Locomotion+") OR (MH "Gait") OR (MH "Muscle Strength") OR Strength* or function* or walk or walking or gait or locomotion

S4: S1 AND S2 AND S3
#1. TS=( (Hip NEAR/6 fracture*) or broken-hip* or ((neck or proximal) NEAR/3 (femur or femoral) NEAR/6 fracture*) )
#2. TS=(post-hip-fracture* or post-femoral-neck-fracture* or ((after or following or post or patient*) NEAR/2 (hip-fracture* or femoral-neck-fracture*)) or with-hip-fracture* or with-a-hip-fracture or post-surg* or postoperative or replacement or arthroplast* or hemiarthroplast* or fixation or surg* or (hip-fracture* NEAR/8 rehab*))
#3. TS=((exercise or exercises or train* or conditioning) NEAR/5 (program* or protocol* or regime* or strateg* or therap* or intervention* or progressive or functional or post-operative or postoperative or home or home-based or outpatient)) OR Resist*-exercise* or resistance-activit* or weight-train* or resist*-train* or strength-train* or strength-exercise* or muscle-strengthening or weightlifting or (lift* NEAR/4 weight*) or (weight-bearing NEAR/4 exercise*) or progressive-resist* or gravity-resistive or isotonic or isometric or ((eccentric or concentric) NEAR/2 (contraction* or exercise*)) )
#4. TS=(Strength* or function* or walk or walking or gait or locomotion)
#5. #1 AND #2 AND #3 AND #4

Supplementary Figures
A. Immediate effect on Strength

B. Immediate effect on Gait Speed

C. Long-term effect on Strength

D. Long-term effect on Gait Speed

Figure 1. Forest plots of immediate and long-term effects of progressive resistance training on muscle strength and gait speed (Random-effects Bayesian meta-analysis)
A. Immediate effect on timed up and go (TUG) test

| Study         | Total Mean | SD  | Total Mean | SD  | Control Mean | SD  | Standardised Mean Difference | SMD | 95% CI                | Weight |
|---------------|------------|-----|------------|-----|--------------|-----|--------------------------------|-----|-----------------------------|--------|
| Mitchell 2001 | 30.29      | 5.46 | 59.675     | 29  | 42.032       | 14  | 0.10                          | 0.41 | [0.11; 0.61]               | 14.5%  |
| Hauer 2002    | 12.89      | 9.69 | 12.16      | 12  | 11.95        | 2.84| -0.23                         | -0.30| [-0.53; 0.56]              | 11.6%  |
| Petersson 2004| 50.60      | 9.86 | 51.00      | 25  | 61.10        | 25  | -0.04                         | 0.57 | [-0.94; 0.35]              | 14.3%  |
| Mååd 2008     | 23.00      | 1.92 | 20.00      | 20  | 24.510       | 20  | -0.18                         | 0.78 | [-0.42; 0.45]              | 13.0%  |
| Syllaa 2011   | 100.00     | 8.70 | 7.837      | 50  | 8.000        | 7.390| -0.14                         | 1.98 | [0.04; 3.85]               | 15.0%  |
| Syllaa 2012   | 48.70      | 7.23 | 47.20      | 47  | 2.6964       | 2.6966| 1.21                         | 1.77 | [1.16; 3.92]               | 15.0%  |
| Kringborg 2017| 37.60      | 5.57 | 37.10      | 37  | 10.3097      | 4.50| -0.26                         | 0.70 | [-1.04; 0.12]              | 15.0%  |

**Random effects model**

**Prediction interval**

Heterogeneity: $I^2 = 80\%$, $\tau^2 = 0.3319$, $p < 0.01$

B. Immediate effect on six-minute walk test (6MWT)

| Study         | Total Mean | SD  | Total Mean | SD  | Control Mean | SD  | Standardised Mean Difference | SMD | 95% CI                | Weight |
|---------------|------------|-----|------------|-----|--------------|-----|--------------------------------|-----|-----------------------------|--------|
| Magazin 2019  | 91.54      | 60  | 59.6100    | 96  | 59.5460      | 25  | 0.11                          | 0.18 | [0.03; 0.36]               | 21.2%  |
| Peterson 2004 | 36.50      | 9.00 | 107.3489   | 25  | 58.0680      | 102.5308| 0.30                         | 0.21 | [-0.81; 1.41]              | 10.6%  |
| Marchon 2005  | 51.91      | 11  | 36.2819    | 10  | 57.0746      | 150.50 | 0.15                         | 0.90 | [-0.08; 1.82]              | 11.0%  |
| Magazin 2010  | 14.30      | 36  | 65.6742    | 12  | 20.09       | 61.1179| 0.15                         | 0.62 | [-0.92; 1.79]              | 12.2%  |
| Syllaa 2011   | 109.19     | 29  | 80.3677    | 50  | 12.97       | 63.6692| 0.40                         | 0.69 | [-0.12; 1.11]              | 25.1%  |
| Syllaa 2012   | 48.14      | 6.32 | 82.5249    | 47  | 58.69      | 164.0523| 0.92                         | 4.49 | [1.34; 8.09]               | 18.0%  |

**Random effects model**

**Prediction interval**

Heterogeneity: $I^2 = 84\%$, $\tau^2 = 0.1622$, $p < 0.01$

C. Long-term effect on timed up and go (TUG) test

| Study         | Total Mean | SD  | Total Mean | SD  | Control Mean | SD  | Standardised Mean Difference | SMD | 95% CI                | Weight |
|---------------|------------|-----|------------|-----|--------------|-----|--------------------------------|-----|-----------------------------|--------|
| Mitchell 2001 | 20.42      | 57  | 57.0232    | 32  | 43.0077      | 24  | 0.19                          | 0.40 | [0.10; 0.27]               | 64.3%  |
| Hauer 2002    | 12.89      | 7.12 | 12.7127    | 12  | 7.4117       | 1.40| 0.02                          | 0.70 | [0.14; 1.55]               | 37.8%  |

**Random effects model**

**Prediction interval**

Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0.0008$, $p = 0.73$

D. Long-term effect on six-minute walk test (6MWT)

| Study         | Total Mean | SD  | Total Mean | SD  | Control Mean | SD  | Standardised Mean Difference | SMD | 95% CI                | Weight |
|---------------|------------|-----|------------|-----|--------------|-----|--------------------------------|-----|-----------------------------|--------|
| Magazin 2019  | 14.30      | 34  | 68.3597    | 12  | 57.4719      | 34.5%| 0.57                         | 0.22 | [1.36; 0.10]               | 34.5%  |
| Magazin 2019  | 50.50      | 6.50 | 69.5300    | 59  | 56.5000      | 69.5300| -0.06                         | 0.44 | [0.28; 0.47]               | 65.5%  |

**Random effects model**

**Prediction interval**

Heterogeneity: $I^2 = 53\%$, $\tau^2 = 0.1690$, $p = 0.14$

**Figure 2.** Forest plots of immediate and long-term effects of progressive resistance training on timed up and go (TUG) test and six minute walk test (6MWT) (conventional [Frequentist] meta-analysis)
A. Immediate effect on timed up and go (TUG) test

B. Immediate effect on six-minute walk test (6MWT)

C. Long-term effect on timed up and go (TUG) test

D. Long-term effect on six-minute walk test (6MWT)
**Figure 3.** Forest plots of immediate and long-term effects of progressive resistance training on timed up and go (TUG) test and six-minute walk test (6MWT) (Random-effects Bayesian meta-analysis)

**A. Immediate effect on Strength by program initiation time**

**B. Immediate effect on Gait Speed by program initiation time**

**C. Immediate effect on Strength by equipment type**

**D. Immediate effect on Gait Speed by equipment type**
**Figure 4.** Forest plots of subgroup analysis using the Mixed-Effects Model (random-effects model within subgroups, fixed-effects model between subgroups); (A) and (B) subgroups: Intervention initiation time (early: < 8 weeks, mid: 8-24 weeks, late: > 24 weeks); (C) and (D) subgroups: Progressive Resistance Equipment Type (Machine used: Yes/No)