Belgian Society for GERONTOLOGY and GERIATRICS

PHYSICAL EXERCISE

Sarcopenia Guideline 2018-2019 - Intervention

BVGG - SBGG

WHY?

To provide an evidence-based overview of the possible physical exercise interventions for sarcopenia targeting one or more of the three sarcopenia domains (muscle mass, muscle strength or physical performance).

HOW?

An umbrella review on physical exercise interventions was performed:

- *Population*: older adults (65+)
- *Intervention*: exercise
- *Control:* non-exposed control
- *Outcome*: sarcopenia
- *Study design*: systematic review, meta-analysis
- *Quality assessment*: AMSTAR checklist

DATA HANDLING

Initial search yielded 665 eligible reviews of which 14 were finally included.

Key characteristics of the reviews, including participants, exercise treatment, outcomes assessed were retrieved.

Recommendations were generated based on the overall syntheses about the main effect of each intervention.

RESISTANCE TRAINING

✓ Muscle mass
✓ Muscle strength
✓ Physical performance

3 meta-analysis (75 st.)
2 sytematic review
(24 studies - 100% in favour)

- large muscle group training in a total body approach
- 1-4 sets of 8-15 repetitions during 2-3 training moments a week
- elastic bands can be used effectively at home to improve muscle strength

MULTIMODAL EXERCISE

✓ Muscle mass
✓ Muscle strength
✓ Physical performance

3 systematic reviews
(70 studies - >80% in favour)

- can encompass a combination of resistance training, walking, aerobic training, balance training and other types of training

OCCLUSION TRAINING

✓ Muscle strength

1 meta-analysis (13st.)

- performed under supervision of a trained exercise coach
- low intensity: 10-30% 1RM

RECOMMENDATION

- We do recommend **resistance training** to improve muscle strength, muscle mass and physical performance for healthy, pre-sarcopenic or sarcopenic older people since evidence shows a significant and positive effect.
  - ➢ For maximal strength gains a **high-intensity** resistance training program is recommended, i.e. 70-80% of the maximum weight that a person can lift/move for one repetition (1RM). However, low-intensity resistance training (≤50% 1RM) may be sufficient to induce strength gains.
- We do recommend **multimodal exercise** therapy for healthy, pre-sarcopenic or sarcopenic older people in the prevention or treatment of sarcopenia since data show significant evidence in favour.
- We do recommend occlusion training (=blood flow restriction training (BFR)). **Occlusion training** (i.e. muscle resistance training with maintaining arterial blood inflow and restricting the venous blood outflow of the trained muscle) is a relatively novel training method that has a significant positive impact on muscle strength. Low intensity (10-30% 1RM) BFR training has proven to be more effective in increasing muscle strength compared to low intensity training alone. We recommend that this type of training is performed under supervision of a trained exercise coach.

REFERENCES: Antoniak, A. E. and C. A. Greig "The effect of combined resistance exercise training and vitamin D-3 supplementation on musculoskeletal health and function in older adults: a systematic review and meta-analysis." Bmj Open 7(7). Beaudart, C., et al. "Nutrition and physical activity in the prevention and treatment of sarcopenia: systematic review." Osteoporosis International 28(6): 1817-1833. Csapo, R. and L. M. Alegre "Effects of resistance training with moderate vs heavy loads on muscle mass and strength in the elderly: A meta-analysis." Scand J Med Sci Sports 26(9): 995-1006.Hughes, L., et al. "Blood flow restriction training in clinical musculoskeletal rehabilitation: a systematic review and meta-analysis." Br J Sports Med 51(13): 1003-1011. icons from the noun project