



Changing elderly strength levels with a four months multicomponent training program

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Resumo / Abstract / Resumen

The multicomponent training seems to positively influence elderly's physical fitness. It is unclear the effects of this type of training with less intervention time in strength levels. Thus, the aim of this study was to assess the effects of a multicomponent training program with four months in elderly's strength levels. The sample of this study was composed by 30 subjects with 69.30 (\pm 5.45) years old and 71.80 (\pm 8.97) Kg. Body weight was assessed with a bioimpedance balance. The knee flexion and extension, arm curl and abduction were assessed with a strain gauge in kilograms of force (Kgf). There were no significant differences between the two moments. However, the mean body weight, knee flexion and extension strength levels increased. A four months multicomponent training program seem to be insufficient to improve strength levels in elderlies.

Palavras-chave / Key-words / Palabras-clave

Strength; Elderlies; Multicomponent Training.

Introdução / Introduction / Introducción

Elderlies physical fitness seems to be determinant for daily life activities and quality of life. Thus, exercise programs are regularly prescribed to improve older people physical fitness (Marsh et al., 2009). The multicomponent training seems to positively influence elderly's physical fitness. However, the literature is scarce about the benefits of multicomponent training in strength levels (Nelson et al., 2004).

Different studies assessed the eight multicomponent training effects in body composition and physical fitness with a duration of eight months (Monteiro, Alves & Forte, 2019). It is unclear the effects of this type of training with less intervention time. Thus, the aim of this study was to assess the effects of a multicomponent training program with four months in elderly's strength levels

Métodos / Methods / Métodos

Participants

The sample of this study was composed by 30 subjects with 69.30 (\pm 5.45) years old and 71.80 (\pm 8.97) Kg. Among them, fourteen were males and sixteen were females. All the procedures were in accord to the Helsinki's declaration regarding human research. A written consent by the parents or tutors was obtained beforehand.

Measures

Body weight was assessed with a bioimpedance balance (Tanita, BC-601, USA). The knee flexion and extension, arm curl and abduction were assessed with a strain gauge in kilograms of force (Kgf).

Procedures

For body weight assessment the subjects wear light clothes and without shoes. Before the strength evaluations the subjects performed a 10 minutes walking warm up, combined with upper limbs rotations, elevations, flexions and extensions. The strength levels were assessed with a strain gauge fixed to the machines arms at 60°. The subjects performed three repetitions and the highest value was selected. Between repetitions, each subject rested 2 minutes. The multicomponent training was characterized by three sessions per week with exercises of resistance, strength, coordination and balance. Each session volume was sixty minutes (Monteiro et al., 2018).

Analysis

The Kolmogorov-Smirnov test allowed to assess the sample normality. T-Test assessed the statistical differences between groups. The significance level was 5%.

Resultados / Results / Resultados

Table 1. Mean, standard deviation (\pm SD), and the comparison between the baseline and after four months of multicomponent training in weight and strength levels.

Variables	Baseline	Post-Training	T	p
	Mean (\pm SD)	Mean (\pm SD)		
Weight	71.80 (\pm 8.97)	71.83 (\pm 9.08)	-0.138	0.891
Knee flexion	13.82 (\pm 6.40)	14.07 (\pm 6.05)	-0.518	0.608
Knee extension	33.39 (\pm 12.77)	33.45 (\pm 12.62)	-0.119	0.906
Arm curl	13.82 (\pm 4.36)	13.68 (\pm 4.46)	0.494	0.625
Arm abduction	6.78 (\pm 2.58)	6.38 (\pm 2.66)	1.641	0.112

This study aimed to assess the effects of a multicomponent training program with four months in elderly's strength levels. The results shown that there were no significant differences between the baseline and after four months of intervention. That might be explained by the lack of specificity of multicomponent training in strength capacity (Carvalho et al., 2010). In fact, multicomponent training aim to train resistance, strength, coordination and balance in a single session (Carvalho et al., 2010; Monteiro et al., 2018). Even more, four months of multicomponent training might not be enough to improve strength levels by multicomponent training.

Conclusions

A four months multicomponent training program seem to be insufficient to improve strength levels in elderlies. It is recommended to assess the effect of different multicomponent training programs duration in strength level.

References

- Marsh, A. P., Miller, M. E., Rejeski, W. J., Hutton, S. L., & Kritchevsky, S. B. (2009). Lower Extremity Muscle Function After Strength or Power Training in Older Adults. *Journal of Aging and Physical Activity*, 17(4), 416-443.
- Nelson, M. E., Layne, J. E., Bernstein, M. J., Nuernberger, A., Castaneda, C., Kaliton, D., Hausdorff, J., Judge, J. O., Buchner, D. M., Roubenoff, R., & Fiatarone Singh, M. A. (2004). The effects of multidimensional home-based exercise on functional performance in elderly people. *J Gerontol A Biol Sci Med Sci*, 59(2), 154-160.
- Monteiro, A. M., Alves, E., & Forte, P. (2019). An eight months multicomponent training effect in elderly's functional fitness. *Motricidade*, 15, 24-24.
- Carvalho, J., Marques, E., Soares, J. M., & Mota, J. (2010). Isokinetic strength benefits after 24 weeks of multicomponent exercise training and a combined exercise training in older adults. *Aging Clin Exp Res*.
- Monteiro, A. M., Rodrigues, F., Forte, P., & Carvalho, J. (2018). The influence of an eight month multicomponent training program in edlerlies gait and bone mineral mass. In *Proceedings of the 4th IPEleiria's International Health Congress* (No. 18 (Suppl 2), pp. 52-52). BMC Health Services Research.