Adolescents who practice more vigorous physical activity (p = 0.023) use less smartphone, and those who have more time in sedentary physical activity (p = 0.008) use it more.

Conclusions

Adolescents who spend more time on smartphones refer more MMS. The use of the smartphone is associated with a more sedentary lifestyle, unlike the adolescents who practice vigorous physical activity that give less use to it.

Keywords

Smartphone, Physical Activity, Musculoskeletal Symptoms.

O6

Functional fitness and cognitive performance in independent older adults – fallers and non-fallers: an exploratory study

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Background

Actual research reinforces the importance of multimodal exercise programs for fall prevention; however remains unclear which components should be included in exercise programs, considering physical and cognitive components.

Objectives

This exploratory study aims to identify the associations between functional fitness (FF) and cognitive performance (CP) in independent older adults, regarding fallers and non-fallers.

Methods

63 males and 124 females (65-96 years) were selected based on the criteria of moderate or high functional independency (≥18 points) determined by responses to the 12-item of Composite Physical Functioning Scale [1]. FF was assessed by the Senior Fitness Test Battery [2]. A composite Z-score was created based on the individual scores for each fitness item. CP was assessed by the Mini-mental State Examination adapted for the Portuguese population [3]. Descriptive statistics were calculated for all outcome measurements and comparisons were performed using independent sample t-Tests. Multiple regression analyses were performed to test associations between FF and CP.

Results

T-test comparisons showed that females were more flexible than males (p < 0.05). Males were taller and heavier than females (p < 0.05). No differences were observed between these independent fallers and non-fallers sample. Multiple regression analyses were performed to understand the association of FF with CP in fallers and non-fallers. Agility was negatively associated with the MMSE score in fallers and non-fallers; however, after adjusting for gender, age and education, this association was not significant for non-fallers (p < 0.05). Lower body strength showed positive associations (p < 0.05) with the MMSE score exclusively in non-fallers, regardless the adjustments. Likewise, the upper body strength was positively associated with the MMSE score (p < 0.05) in non-fallers after adjusting for age, gender and education (p < 0.05). On the other hand, the upper body flexibility showed negative associations with the MMSE score (p < 0.05) however this association did not remain significant after adjusting for gender, age and education.

Conclusions

Independent older adults with higher agility scores were more likely to have an improved CP, whether they are fallers or non-fallers. Body strength, particularly improved lower body strength, is associated with higher CP in non-faller older adults, independently of age, gender and education. This exploratory study increases the spectrum of research in multimodal programs by suggesting that agility and strength training should be included in exercise prescription for fall prevention, in order to foment CP.

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Keywords

Aging, Physical fitness, Accidental falls, Cognitive aging.

O7

Association between endurance of the trunk extensor muscles and the risk of falling in community-dwelling older adults

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Background

Falls in the elderly are a serious health problem and the result of the complex interaction between individual and environmental risk factors. Balance is considered a key factor for higher falling risk in this population [1, 2]; thus, assessment and preventive/rehabilitation programs targeting the balance control system are currently a clinical guideline [1]. Programs commonly include strength/power training of the lower limbs and trunk muscles and postural control exercises [1, 3]. Recently it has been shown that the elderly reach premature muscle fatigue during upright stance tasks [2], and that fatigue leads to poor balance control [4]. Muscular endurance hence appears to play an important role in the efficiency of the balance control system, particularly during performance of long lasting functional tasks. However, the association between muscle endurance and balance control measures has been overlooked, especially in the trunk muscles, despite its potential to assist clinicians and researchers to comprehensively screen falling risk factors and tailoring interventions accordingly.

Objective

The main purpose of this cross-sectional study was to determine the association between endurance of the trunk extensor muscles and the risk of falls in the elderly, considering possible co-factors such as age and BMI.

Methods

Community-dwelling adults ≥ 65 years were recruited from senior universities in the Centre region of Portugal. Exclusion criteria included severe physical/cognitive limitations that would prevent subjects from performing the testing protocol. Falling risk/balance was assessed using the Berg Balance Scale (BBS, score 0–56). Muscle performance was measured through the trunk extensor endurance test (in seconds). Simple and multiple linear regression analyses, using SPSS (v20), were conducted to predict the effects of muscle endurance, BMI and age on balance control. Statistical significance was set at 0.05.

Results

Fifty-nine volunteers (44 females, age = 71 ± 5 years, height = 1.60 ± 0.09 m, mass = 71.67 ± 14.35 kg, BMI = 28.02 ± 4.62 kg/m^2) were included in the study. The largest correlation was found between the BBS score, and muscle endurance (ρ = 0.379), and BMI (ρ = -0.335). Muscle endurance predicted 7% of the BBS score (r^2_a = 0.070, p = 0.024). When combined with BMI, muscle endurance accounted for ~16% (r^2_a=0.162, p = 0.003) of the total variance of the BBS score.