

Effects of Yoga practice on fear of falling and mobility of elderly fallers

Efeitos da prática do Yoga no medo de cair e mobilidade de idosos caidores

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RESUMO

Introdução: O aumento da população idosa faz crescer o número de quedas e de suas consequências, a partir disso existem estudos demonstrando que o Yoga, por ser uma técnica milenar que visa proporcionar aos seus adeptos equilíbrio físico, mental e espiritual, pode também interferir no equilíbrio postural. **Objetivo:** comparar os resultados do treinamento da prática de Yoga no equilíbrio de idosos; bem como comparar os resultados de treinamento com ioga na mobilidade e sem medo de cair de idosos com histórico de quedas. **Método:** Foram avaliados 20 idosos e o treinamento foi feito durante um período de 4 meses. A mobilidade foi avaliada pelo teste Time and Up and Go (TUG). O medo de cair foi avaliado pelo FES-I. Foram adotados testes estatísticos apropriados para a comparação inter e intra-grupo antes e após o treinamento, com $p \leq 0,05$. **Resultados:** após as coletas de dados foi observado que o Yoga pode contribuir para a melhora do equilíbrio e medo de quedas além de também surtir efeitos subjetivos positivos relacionados à qualidade de vida. **Conclusão:** a prática do Yoga impacta em relação ao equilíbrio e redução do medo de quedas

Descritores: Yoga; Queda; Idosos Caidores.

ABSTRACT

Introduction: The increase of the elderly population increases the number of falls and their consequences. From this, there are studies demonstrating that Yoga, because it is a millenarian technique that aims to provide its followers with physical, mental and spiritual balance, can also interfere in the postural balance. **Objective:** compare the results of yoga practice training in elderly balance; as well as comparing the results of yoga training on mobility and no fear of falling in older people with a history of falls. **Method:** Twenty elderly were evaluated and the training was done during a period of 4 months. Mobility was assessed by the Time and Up and Go (TUG) test. The fear of falling was assessed by the FES-I. Appropriate statistical tests were used for inter- and intra-group comparison before and after training, with $p \leq 0.05$. **Results:** After data collection, it was observed that Yoga can contribute to the improvement of the balance and fear of falls, besides also having subjective positive effects related to quality of life. **Conclusion:** yoga practice impacts balance and reducing fear of falls

Descriptors: Yoga; Fall; Elderly Fallers.

REVISA

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ORIGINAL

Introduction

With increasing longevity worldwide, interest in the study of aging by various groups of researchers has increased. It has been observed that there has been an increase in the aging of the population, as well as a decrease in mortality and a reduction in birth rates. According to these data, older people (aged 60 and over) increased from 9.2 per cent in 1990 to 11.7 per cent in 2013 and the projection is to increase further to reach 21.1 per cent. percent by 2050.¹

The increase in the elderly population and life expectancy are factors that show the advancement of health in the world, however, in contrast, the reality to support and assist these elderly does not keep up with the same pace. Thus, several studies in the area about the creation of policies for this branch have been carried out aiming to promote the requirements to attend this portion of the population that needs specific care. One of the biggest public health problems in Brazil is population aging, due to the great problem of social inequality, and health services do not meet the demands of the elderly.²

We should mention the problems experienced by the elderly in relation to mobility and suffering also experiencing not receiving social support to deal with their own aging process. This study notes that physical and mental illness can be caused by factors such as family abandonment, death of a partner, and financial difficulties, and we can not fail to highlight the problems resulting from falls, thus all this conjuncture of situations, affecting the life of the elderly can trigger a public health problem as it may leave the elderly dependent on special care.³⁻⁵³

This information encourages us to think about population growth, life expectancy, health services, and the cost to public administration.

A complementary fact to the study is that human aging is a natural process, involving reduction of body functions, as well as psychological changes, being a variable and progressive process that can trigger health problems and this can be accentuated with physical inactivity, anxiety. and depression, lower motivation, lower self-esteem, loss of an independent lifestyle, musculoskeletal fragility and deconditioning, i.e., a decrease in functional capacity.²⁶

In the elderly population, falls and their consequences constitute a growing public health issue. According to the literature, falls are defined as "the unintentional displacement of the body below the initial position with inability to correct in a timely manner", determined by multifactorial circumstances compromising stability. Information that complements the study that stresses that falls, as the most common type of accident among the elderly, should be treated as important economic, social and epidemiological factors.

38,8,44

This research also notes that falls can be considered multifactorial, since several situations can contribute to them. Both internal factors such as aging itself and its consequences such as reduced physical balance and disease and medication formation that can affect balance, social isolation, dependence on basic functional activities, depression, as well as external factors such as falls from wet surfaces. or slippery, uneven ground, loose objects and rugs, problems with stair steps.⁴⁴

The benefits of physical activity in the aging process have been described above all with regard to coping with gait difficulty, postural and balance problems. Informational issues associated with muscle strengthening work and training that contribute to body balance stand out.²⁰

In this sense, we should also mention research that corroborates the influence of regular practice of general physical activity on autonomy and functional capacity in the aging process.³⁴

We should highlight the study involving a proposal of physical activity aimed at reducing falls in the elderly, which used guided exercises, but without a protocol definition, promoting a variety in intensity and time for each one. It was also used, for all groups, global stretching, strengthening with and without resistance, balance training and motor coordination.³⁸

In addition, this study emphasized the gain of strength, flexibility, endurance and motor coordination through the practice of physical activity, besides contributing to the maintenance of quality of life and independence.³⁸

The data cited above contribute to the development of the study and we should portray that in parallel to the common physical practices used for diverse groups, including the elderly, there are integrative activities, such as Tai Chi Chuan, Lian Gong, homeopathy, acupuncture, herbal medicine, body and meditative practices such as Yoga thus demonstrating that there are several types of treatments that can be used to improve postural balance, both through allopathic and holistic medicine.

Regarding holistic medicine, we will stick to yoga, a technique that consists of an ancient philosophical system and its main objective is to promote the balance between mind and body through asanas (physical exercises), pranayamas (breathing exercises), bandhas (contractions), mudras (gestures), *trataka* (concentration of the gaze) and meditation, aiming to provide physical, mental and spiritual balance.¹¹

There are a lot of studies on yoga, one of them has observed health promotion through ancient practice, highlighting the observation of symptoms and well-being with hatha yoga practice, involving physical and respiratory techniques and exercises, along with philosophical and ethical content for a group of students, staff, and faculty at a public university in the state of São Paulo. In addition to this, there is also research that portrays the positive effects of yoga practice in mastectomized women such as stress reduction and decrease in anxiety state, as well as an overall improvement in quality of life accompanied by a reduction in heart and respiratory rate. Also noteworthy is the study that observed the practice of yoga and stressing the connection between body and mind and its effects on stress reduction stimulating the practitioner besides performing physical effort with asanas and breathing exercises, promotes a greater challenge by stimulating the same. to have a greater awareness of body, mind and breath and thus to be more aware of one's thoughts and attitudes.^{4,6,37}

Yoga is a technique that uses the body itself as a process of self-knowledge, trying to jointly perform a body movement (*asana*) and reflecting on it, in relation to what is being worked, both physically and emotionally.

Thus, to complement it, we can mention the fact that yoga can also stimulate the practitioner to observe their respective physical and psychic

posture towards life, along with the intrinsic teachings in the practice, becoming a better human being.

About this millenary technique, it is observed in bibliographic references, several studies that draw our attention, including the study in which observed the practice of yoga in relation to stress and anxiety in mastectomized women, and concluded that the millenary technique promoted a reduction of stress.⁶

Another pertinent study is that observes the influence of yoga on cardiac rehabilitation in patients with Chronic Heart Failure (CHF) and it was observed that Yoga promotes a positive impact on exercise capacity and health-related quality of life in patients with CHF may be included in cardiac rehabilitation programs, but still requires further studies on the subject.²⁴

An important finding is the study that concludes that yoga is a mind-body practice that exerts an important therapeutic effect on most practitioners and also promotes health for most practitioners, expanding their self-awareness and self-care skills, but each practitioner enjoys a diverse positive benefit.⁴

Another pertinent study looked at the question of yoga's respiratory effects in relation to sedentary ones and may contribute to overall respiratory capacity compared to the sedentary group.⁴⁹

Thus, in general, the practice of yoga, through the observation of the literature, emphasizes that it has been having positive effects, such as reduction in mastectomized women. Research has highlighted the influence of millenary practice on chronic heart disease. We also highlight the study that observed that the practice of yoga contributes to health promotion in general and there is also research in which it was observed that yoga practitioners have a better lung capacity compared to sedentary individuals.^{6,24,4,49}

We should mention the problem of osteoporosis as causing fractures, as well as impairing the quality of life of the elderly. This study also reported that yoga exercise can quickly prevent bone loss, promote greater muscle strength and increase mobility and flexibility, thus reducing the risk of falls and fractures. In addition to promoting a reduction of pain, improvement of physical and social functions, providing a general improvement in health and balance.¹⁵

There are several types of treatments that can be used to improve postural balance through both allopathic and holistic medicine.

In relation to holistic medicine we can mention yoga which consists of an ancient philosophical system and its main objective is to promote the balance between mind and body through asanas (physical exercises), pranayamas (breathing exercises), bandhas (contractions), mudras (gestures), *trataka* (concentration of the gaze) and meditation, aiming to provide physical, mental and spiritual balance.²⁹

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Thus, to complement it, we can mention the fact that yoga can also stimulate the practitioner to observe their respective physical and psychic posture towards life, along with the intrinsic teachings in the practice, becoming a better human being.

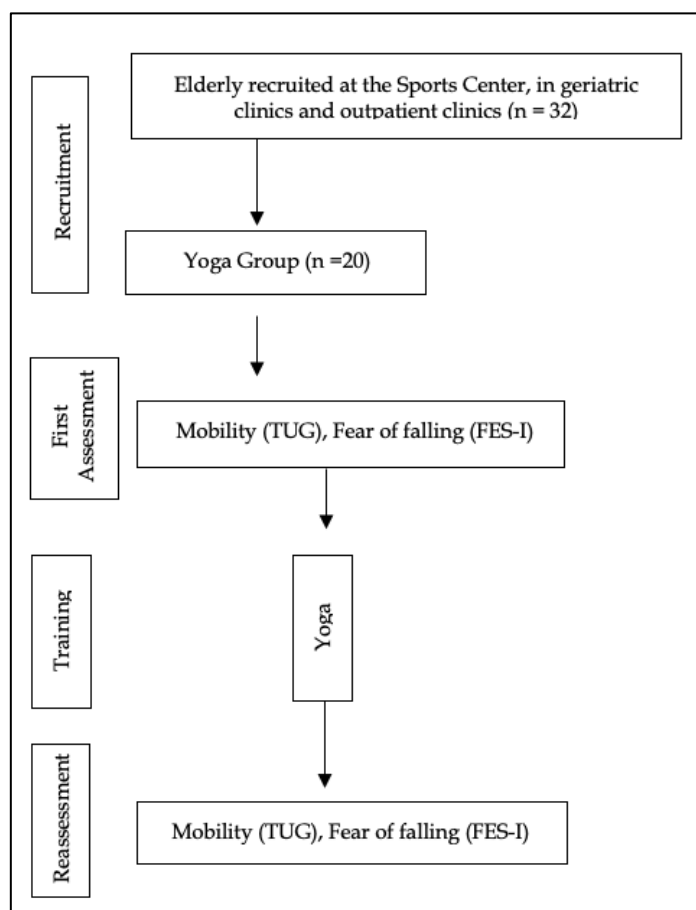
A complementary study mentions the problem of osteoporosis as causing fractures, as well as impairing the quality of life of the elderly. He also reported

that yoga exercise can quickly prevent bone loss, promote greater muscle strength and increase mobility and flexibility, thus reducing the risk of falls and fractures. It was highlighted that yoga promoted a reduction of pain, improvement of physical and social functions, providing a general improvement in health and balance. Thus, it showed that yoga can be a promising intervention in improving fear of falling, balance and flexibility, reducing the risk of falling in the elderly.⁴⁹

In this sense, the aim of this study was to compare the results of training Yoga practice in the balance of elderly fallers; as well as comparing the results of yoga training in mobility and fear of falling in older people with a history of falls.

Method

The study design can be seen in Figure 3.



Twenty elderly were evaluated in the city of Itatiba - SP, in the sports center provided by the City Hall. Elderly people who suffered one or more falls at least one year before the start of data collection were considered fallers. The training was done over a period of 4 months.

The “Timed Up and Go” (TUG) test was used to assess mobility. TUG is a means of measuring patients' motor skills, measured in seconds. For this purpose, two equal chairs spaced 3

meters apart are used and the individuals studied lift from a chair, without the help of their arms, walk 3 meters, turn around and return to their initial position. The instructions are given to the volunteer by verbal command and the test is performed twice, with the time counting only on the second execution..⁴²

Fear of falling was assessed using the Falls Efficacy Scale - International (FES-I) fall effectiveness scale, which assesses fear of falling when performing 16 activities with scores ranging from 16 to 64, where the minimum value corresponds to the absence of falls. concern and the utmost to extreme concern.⁹

Inclusion criteria include: being at the moment of the evaluation, age ≥ 60 years old; reside in the community of Itatiba - SP; and ability to understand and perform the activities proposed by the researcher. All participants filled out a Health Record observing items such as age, gender, place of fall, and medications in use. The yoga classes in this study were performed once a week with a duration of 1 hour each class, by a professional of the area and were used muscle contractions, stretching, various breathing exercises.

It should be noted that the Yoga classes were taught for 4 months, and each class the professional always sought to perform breathing exercises, then begin to introduce movements of the joints, aiming to warm up the body and working motor coordination along with breathing, in particular. Then he introduced the asanas (postures) respecting the limits of each one until performing relaxation, breathing exercises again and meditation, and each sequence of classes were totally different from each other in order to work all the muscle groups of the elderly.

Data were presented as mean $\pm$ SD. Shapiro-Wilk test was applied to verify data normality. Intra-group comparisons were made by paired t-test to verify changes in the variables evaluated. Unpaired t-test was applied to compare intergroup data. A value of $p \leq 0.05$ was adopted as significant.

The present study was submitted and approved by the Ethics Committee of the Faculty of Philosophy and Sciences (FFC) of the Paulista State University "Júlio de Mesquita Filho" (UNESP), Marília Campus-SP, with opinion nº 0842 / 2013. The participants were informed in advance about all the procedures to be performed, and after agreeing to what was proposed to them, signed an informed consent form.

Results

Table 1 shows the characteristics of participants regarding age and falls.

Table 1: Sample Characteristics

Yoga Grup	
N	20
Mean Age (years) $\pm$ SD	65.6 $\pm$ 4.9

Figure 1 shows the assessment of fear of falling before yoga practice.

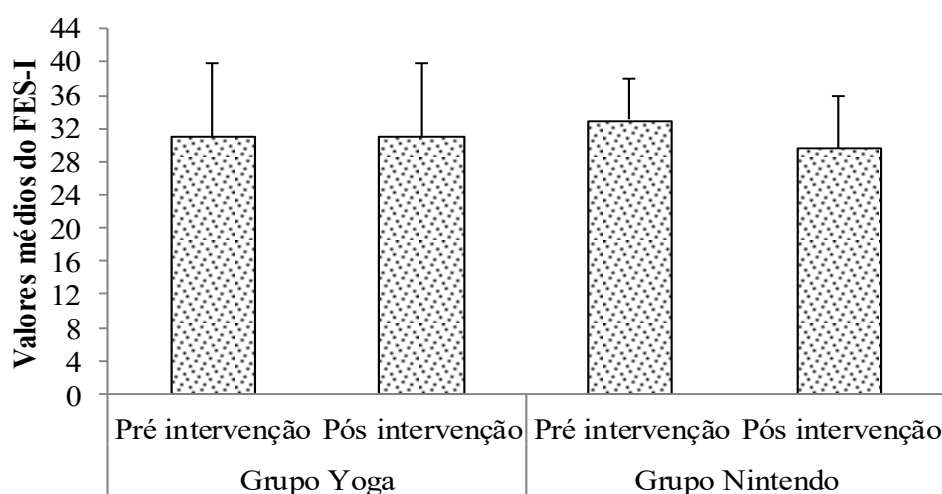


Figure 1: Pre and post intervention FES-I mean values for the Yoga group (n = 20; p = 0.99)

Figure 2 shows the practice of Yoga for mobility, depicting an improvement, but without statistical significance.

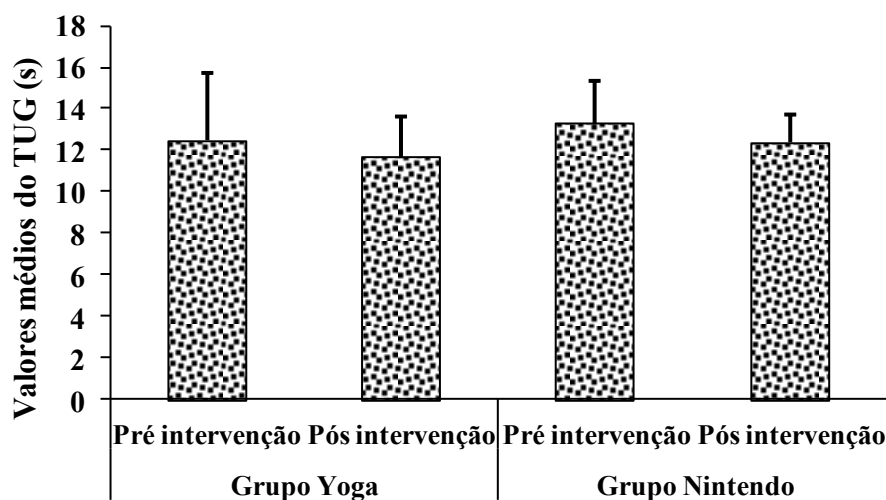


Figure 2: Mean TUG values (seconds) pre and post intervention for the Yoga group (n = 20; p = 0.12)

Discussion

In the elderly population the prevalence of falls is high, causing consequences such as disability, fractures, death, decreased functional capacity, fear of falling and dependence. The incidence of falls is 28% to 35% in older people over 65 years old, 35% in those over 70 years old and 32% to 42% over 75 years generating an annual cost around 1% of all health expenditures in western countries.²⁶

From this, to contribute to better care for the elderly, we sought to elaborate this study that aimed to analyze the technique of yoga in mobility and fear of falling of 20 elderly with a history of falls. We want to emphasize that it was used in yoga practice random exercises in each class, respecting the limit of each one, once a week to focus on balance.

The results showed that for both TUG and FES-I, yoga practice can have a gradual positive effect in reducing fear of falling and improving mobility.

It should be noted that TUG is effective in assessing the risk of falls, because the longer it takes the elderly to perform the test, which is to lift without a chair, walk 3 meters, rotate 180 degrees and return to the chair. the higher the risk of falls. Thus, the shorter the performance time, the better the mobility.⁴⁵

One study looked at the effect of yoga on the elderly and found that this age-old technique has great potential that can contribute to reducing fear of falling and improving balance, as well as improving musculoskeletal problems such as back pain, osteoarthritis. and knee pain in older women. One of the ways Yoga works postural balance is that the technique acts on flexibility and strength. Regular yoga practice increases hip extension and stride length and decreases the anterior inclination of the pelvis, important variables in postural balance. Yoga could be applied as a group in public health, increasing the number of people participating. Nevertheless, more studies on the subject still need to be done in order to use Yoga as an instrument to promote balance and reduce the fear of falls.⁴⁹

We cannot fail to emphasize the subjective data reported by the elderly in the technique used, because even without statistical significance, they reported that there were subjective improvements, such as improved sleep, reduced depression, improved motor coordination and greater willingness to perform activities. This information makes us think about the intrinsic factors in the technique, besides stimulating a greater research on the subject, with larger groups and longer.

Conclusion

The results show that the practice of Yoga impacts on balance and reduces the fear of falling, but it should be noted that, in the subjective, a technique used had a positive effect on the fear of falling and mobility of the elderly.

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