Effects of yoga and Nintendo Wii treatment, without loss of movement and mobility of the elderly

Efeitos do tratamento com Yoga e Nintendo Wii no medo de cair e mobilidade de idosos caidores

Efectos del tratamiento de yoga y Nintendo Wii, sin pérdida de movimiento y movilidad de los ancianos

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RESUMO
Objetivo: observar o efeito da prática do Yoga e do Nintendo Wii no equilíbrio, redução de quedas e medo de cair de idosos caidores. **Método:** Foram avaliados 20 idosos divididos em 2 grupos 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 ≤0,05. **Resultados:** não houve diferença significativa no efeito produzido pela Yoga e Nintendo Wii o medo de quedas e mobilidade. **Conclusão:** as duas técnicas utilizadas, embora tenham levado a uma redução nos escores médios do medo de cair e da mobilidade de idosos caidores, não diferem significativamente no efeito produzido sobre esses desfechos.
Descritores: Yoga; Idosos caidores; Nintendo wii.

ABSTRACT
Objective: to observe or practice the practice of Yoga and the Nintendo Wii unbalanced, reducing the number of falls and the means of falling from the same falls. **Method:** They were supported by 20 elderly people divided into 2 groups and training was carried out over a period of 4 months. Mobility was assessed by the Time and Up and Go (TUG) test. My hair was rated FES-I. Appropriate statistical tests were presented for inter- and intra-group comparison before and after, with p ≤0.05. **Results:** there was no significant difference in effect produced by Yoga and Nintendo Wii or by permanence and mobilization**. Conclusion:** like the techniques used, this led to a reduction in the average scores of the fall and in the mobility of the fallen people, with no significantly different effect produced on these debris.
Descriptors: Yoga; Fallen elderly; Nintendo wii.

RESUMEN
Objetivo: observar o practicar desequilibrado la práctica de Yoga y Nintendo Wii, reduciendo el número de caídas y los medios para caer de las mismas caídas. **Método:** fueron apoyados por 20 personas mayores divididas en 2 grupos y la capacitación se llevó a cabo durante un período de 4 meses. La movilidad se evaluó mediante la prueba Time and Up and Go (TUG). Mi cabello fue calificado FES-I. Se presentaron pruebas estadísticas apropiadas para la comparación inter e intragrupo antes y después, con p ≤0.05. **Resultados:** no hubo diferencias significativas en el efecto producido por Yoga y Nintendo Wii o por permanencia y movilización. **Conclusión:** al igual que las técnicas utilizadas, esto condujo a una reducción en los puntajes promedio de la caída y en la movilidad de las personas caídas, sin un efecto significativamente diferente producido en estos desechos.
Descriptores: Mortalidad; Anciano; Suicidio; Epidemiología.

ORIGINAL

Introduction

With the increase in longevity around the world, interest in the study of aging has increased by several groups of researchers. According to 2013 United Nations information data, it is observed that there has been an increase in the aging of the population, in addition to a decrease in mortality and a reduction in birth rates. According to these data, elderly people (aged 60 or over) increased from 9.2 percent in 1990 to 11.7 percent in 2013 and the projection is to increase further, reaching 21.1 percent. percent in 2050.[1]

The increase in the elderly population and life expectancy are factors that show the advancement of the health area worldwide, however, in contrast, the reality to support and assist these elderly people does not follow the same pace. Thus, several studies in the area on the creation of policies for this branch have been carried out aiming to promote the requirements to attend this part 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 observed that the problems experienced by the elderly in relation to mobility, which portrays the suffering that can be experienced by the elderly when they do not receive social support to deal with the aging process itself, in addition to dealing with physical and mental illnesses can be caused by factors such as family abandonment, death of a partner, in addition to financial difficulties, and we cannot fail to highlight the problems resulting from falls, so this whole situation of situations, affecting the lives of the elderly, can trigger a public health problem, since that can make the elderly person dependent on special care.[3]

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

We observed the study that informs us that human aging consists of a natural process, involving reduced body functions, in addition to 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, that is, a decrease in functional capacity.[4]

In the elderly population, falls and their consequences are a public health issue, which has been shown to be increasing. According to the literature, falls are defined as "the unintentional displacement of the body to a lower level than the initial position with inability to correct it in a timely manner", determined by multifactorial circumstances compromising stability. Information that is complemented by the study which highlights that falls, being the most common type of accidents among the elderly, should be treated as important economic, social and epidemiological factors.[5-7]

This research also notes that falls can be considered multifactorial, as several situations can contribute to them. Both internal factors such as aging itself and also its consequences such as reduced physical balance and the formation of diseases and medication that can affect balance, social isolation, dependence on basic functional activities, depression, in addition to external factors such as falls

from wet surfaces or slippery, unevenness in the floor, loose objects and carpets, problems with stairs steps.[7]

The benefits of physical activity in the aging process have been described above all in terms of coping with walking difficulties, postural and balance problems. It highlights informational issues associated with muscle strengthening work and training that contribute to body balance.[8]

In this sense, the study by Moreira et al (2014), corroborates the influence of regular practice of general physical activity on autonomy and functional capacity in the aging process.[9]

We highlight a study involving a proposal for 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. Global stretches, strengthening with and without resistance, balance training and motor coordination were also used for all groups..[10]

A study, with the elderly population, highlighted the gain in strength, flexibility, endurance and motor coordination through the practice of physical activity in addition to contributing to the maintenance of quality of life and independence.[5]

The data mentioned above contribute to the development of the study and we must portray that in addition 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, bodily 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 medicine and holistic medicine.

In relation to holistic medicine, we will stick to 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), tratka (concentration of the gaze) and meditation , aiming to provide physical, mental and spiritual balance.[11]

On Yoga, there are a large number of studies, one of which observed the promotion of health with ancient practice, emphasizing the observation of symptoms and the state of well-being with the practice of hatha yoga, involving techniques and physical and breathing exercises, along with philosophical and ethical content for a group consisting of students, staff and teachers at a public university in the state of São Paulo. In addition to this, there is also research that highlighted the positive effects of Yoga practice in women with mastectomies as a reduction in stress and a decrease in the state of anxiety, in addition to a general improvement in quality of life accompanied by a reduction in heart and respiratory rate. Also noteworthy is the study in which he observed the practice of yoga and emphasizing the connection between body and mind and its effects in reducing stress by stimulating the practitioner in addition to making physical effort with asanas and breathing exercises, promotes a greater challenge by stimulating the even being more aware of the body, mind and breathing and thus being more aware of their own thoughts and attitudes.[12-14]

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

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

Another pertinent study investigated 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 the exercise capacity and health-related quality of life in patients with CHF that can be included in cardiac rehabilitation programs, but still requires further studies on the topic.[15]

We highlight the study that concluded that yoga is a mind-body practice that has an important therapeutic effect on most practitioners and also promotes health for most of them, expanding their capacity for self-perception and self-care, however each practitioner enjoys a diverse positive benefit.[12]

We observed the question of the respiratory effects of yoga in relation to the sedentary ones and we can see that yoga contributes to the breathing capacity in general, compared to the sedentary group.[16]

We emphasize the problem of osteoporosis as a cause of fractures, in addition to impairing the quality of life of the elderly, in addition, yoga physical exercises can prevent bone loss quickly, in addition to promoting greater muscle strength and increased mobility and flexibility, thus decreasing the risk of falls and fractures, highlighting that yoga promotes pain reduction, improves physical and social functions, providing a general improvement in health and balance.[17]

Analyzing these studies on this ancient technique, it is noted that there were no studies involving yoga together with virtual reality.

Complementing this information on interventions, it is also emphasized on the implementation of virtual environments, games have been used in areas such as education, positively influencing the learning process, working on cognition, visual skills, increasing memory and problem solving. With this, a new class of game known as Exergame has been used, which is exercise and game at the same time aiming to provide the user with motor and sensory skills promoted by virtual reality, which can be used as learning instruments.[18]

One type of exergame that stands out is the Nintendo Wii. Itakussu's research (2016) contributes to the study because it reports the issue of training experience with Exergames, and among them the Nintendo Wii on functionality, balance and quality of life of the elderly through the implementation of virtual reality.[19]

Another research on the use of the Nintendo Wii observed the positive impact of virtual reality in relation to balance and gait in the elderly, helping them in general.[3]

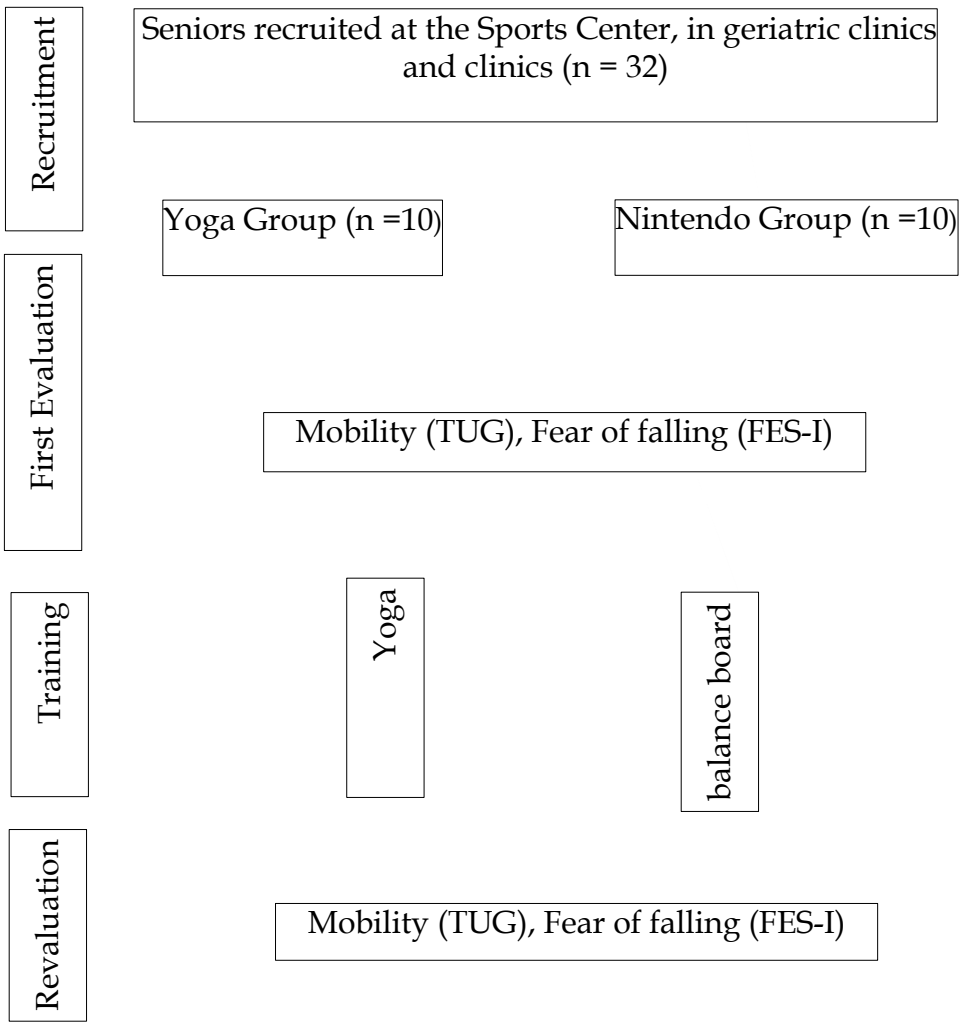
In addition, we observed an improvement in muscle strength with the practice of Nintendo wii in the lives of the elderly, also influencing the physical posture, balance and gait of the individuals studied.

Thus, it is possible to recognize the importance of the applicability of games to verify its benefits to the elderly, through games that challenge their balance.

Method

Study design

Of the 32 elderly people recruited at the Sports Center, in geriatric clinics and clinics, 20 met the eligibility criteria. They were separated into Grupo Yoga and Grupo Wii with 10 elderly people each, in the city of Itatiba - SP, in the Sports Center provided by the City Hall. The elderly who suffered one or more falls in at least one year before the start of data collection was considered a faller. The training was done over a period of 4 months.



Mobility assessment

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, 3 meters apart, are used and the studied individuals get up from a chair, without the help of their arms, walk 3 meters, make the turn and return to the starting position. The instructions are given to the volunteer through verbal command and the test is performed twice, with the time counting only in the second execution.[20]

Assessment of fear of falling

Fear of falling was assessed using the FES-I Falls Efficacy Scale (Falls Efficacy Scale - International), which assesses the fear of falls when performing 16 activities with scores ranging from 16 to 64, where the minimum value corresponds to the absence of concern and the maximum to extreme concern.[21]

Eligibility criteria

Subjects who were ≥ 60 years old at the time of assessment were included; lived in the city of Itatiba - SP; they had the capacity to understand and carry out the activities proposed by the researcher.

Initial assessment

All participants completed the Health Record, observing items such as age, sex, place of fall, health problems and medications in use.

Training protocols

The yoga classes in this study were held once a week for 1 hour each class, by a professional in the area and muscle contractions, stretching, and various breathing exercises were used.

It should be noted that the Yoga classes were taught for 4 months, and each class the professional always tried to perform breathing exercises, to then start introducing movements of the joints, aiming to warm up the body and work motor coordination together with the breath, 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 was totally different from each other in order to work all the muscle groups of the elderly.

The balance training was performed with sessions of approximately 30 minutes, twice a week. The exercises were performed using the Nintendo® Wii Fit program, associated with the use of a motion-sensitive platform called the Wii Balance Board.[22] This platform is characterized by being a wireless device, which communicates with the Wii console via Bluetooth. Being rectangular and flat, it has pressure sensors in each of the four corners that detect the pressure center and the individual's movement changes.[23-24]

Three different exercises were used that are part of the Wii Fit: Table Tilt, which consists of a simulator of a hole platform, where the volunteer was instructed to make oscillations on the platform in order to place the balls that are on top of this platform into the holes; Tightrope, in which the participant was encouraged to walk on a tightrope in order to cross it until reaching the other end of the rope; and Penguin Slide, where the individual was simulated like a penguin that is on a block of ice and must balance while trying to catch fish. The duration of 10 minutes was stipulated for each exercise, respecting the degree of conditioning of the participant.[23]

Statistical analysis

The data were presented as mean ± SD. The Shapiro-Wilk test was applied to verify the normality of the data. Intra-group comparisons were made using the paired t-test to verify changes in the assessed variables. The unpaired t-test was applied to compare inter-group data. A value of p≤0.05 was adopted as significant.

Ethical Aspects

This study was sent and approved by the Ethics Committee of the Faculty of Philosophy and Sciences (FFC) of the São Paulo State University "Júlio de Mesquita Filho" (UNESP), Campus de Marília-SP, with opinion number 0842/2013. they were previously informed about all the procedures to be performed, and after agreeing to what was proposed to them, they signed a Free and Informed Consent Form.

Results

Table 1 shows the characteristics of the participants in relation to age and falls.

Table 1-Sample characteristics

	Wii Group	Yoga Group
N	10	10
Age mean (years) ±DP	69.7±71	65.6±4,9

Figure 1 shows the comparison of the Yoga and Nintendo group in relation to the fear of falling.

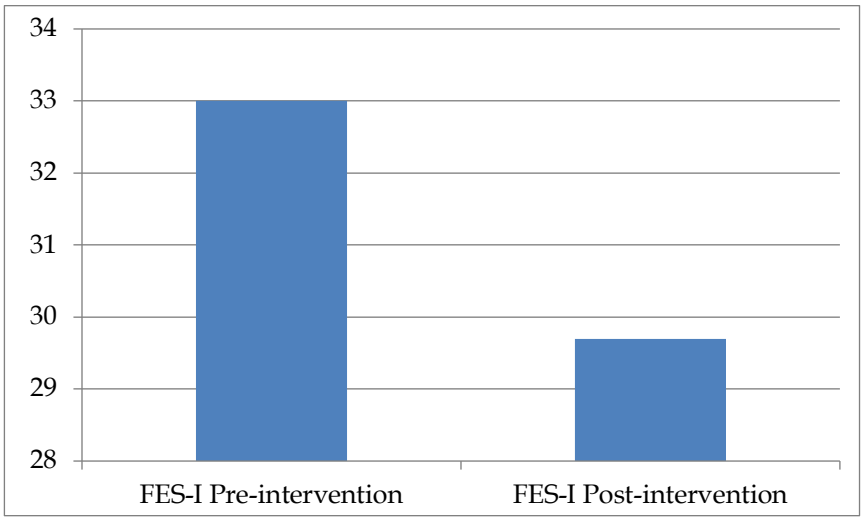


Figure 1- Mean values of FES-I before and after intervention for the Yoga (n = 10; p = 0.99) and Nintendo (n = 10; p = 0.05) groups. Sao Paulo. 2015.

Figure 1 shows that the fear of falling was less after the practice of Yoga and the intervention of the Nintendo Wii, but with no significant difference. Figure 2 shows the comparison between the Yoga and Nintendo group for mobility.

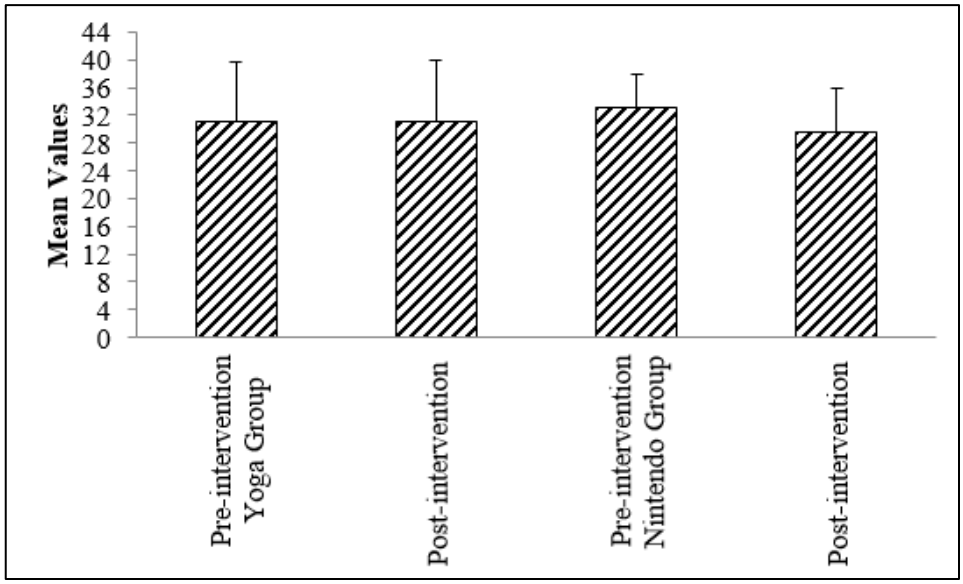


Figure 2- Mean values of TUG (seconds) before and after intervention for the Yoga group (n = 10; p = 0.12) and Nintendo (n = 10; p = 0.18). Sao Paulo. **2015.**

Figure 2 shows a reduction in the fear of falling in both groups after the intervention, this reduction being smaller in the Yoga group compared to the Nintendo Wii group, but without statistical significance.

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. In Brazil, around 30% of the elderly suffer falls every year and this percentage tends to increasing to 50% among those over the age of 80, information portrayed in the research by Morsch et al, 2016 and which complements by pointing out that falls among the elderly are factors that generate a cost for public administration in the health area , which demands the attention of scholars on public health, due to the frequency, morbidity rate and high economic and social cost.[10,25] From this, to contribute to a better assistance to the elderly, we sought to elaborate this study that aimed to analyze the Yoga and Nintendo® Wii Fit techniques in the mobility and fear of falling of 20 elderly people with a history of falls. Each technique is different, because Yoga was used random exercises in each class, respecting the limit of each one, once a week and the Nintendo Wii Fit was used 3 specific exercises to focus on balance. In addition, we must emphasize that the study was randomized, since the groups were chosen at random.

Results showed that for both TUG and FES-I, the Nintendo Wii had a better effect in relation to Yoga, which leads us to indicate that the exercises proposed by virtual reality, through Nintendo® Wii games Fit contributed more

to reducing the fear of falling and improving mobility, than the exercises proposed by Yoga.

We also emphasize that the TUG is effective for assessing the risk of falls, because the longer it takes the elderly to perform the test, which is to get up without the support of a chair, walk 3 meters, rotate 180 degrees and return to the initial chair, the greater the risk of falls. Thus, the shorter the time to perform the tasks, the better the mobility.[26]

We observed the effect of Yoga in the elderly and noticed that this ancient technique has great potential that can contribute to reducing the fear of falls and promoting an improvement in balance. A positive effect on improving musculoskeletal problems, such as back pain, osteoarthritis and knee pain in older women, has also been noted. One of the ways in which Yoga works on postural balance is that the technique acts on flexibility and strength. The regular practice of Yoga increases the hip extension and the step length, decreasing the anterior inclination of the pelvis, important variables in postural balance. Yoga could be applied in groups in the area of public health, increasing the number of people participating. Despite this, further studies on the subject still need to be carried out in order to be able to use Yoga as an instrument to promote balance and reduce fear of falls.[27]

We emphasize the subjective data reported by the elderly in the 2 techniques used, because even without statistical significance, they reported that there were subjective improvements, both with Yoga, and with the Nintendo Wii, such as improved sleep, reduced depression, improvement in motor coordination and greater willingness to carry out activities. This information makes us think about the intrinsic factors in each technique, in addition to stimulating further research on the topic, with larger groups and for a longer time.

Conclusion

The results showed that there was no significant difference in the effect produced by Yoga and Nintendo Wii the fear of falls and mobility. Thus, although in the subjective scope, the two techniques used have led to a reduction in the average scores of fear of falling and the mobility of falling elderly people, they do not differ significantly in the effect produced on these outcomes.

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