



RESEARCH ARTICLE

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HYDROTHERAPY ON EQUILIBRIUM OF ELDERLY

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ABSTRACT

Population aging is an inevitable process that occurs due to various physiological, biological and social changes that occur over the years. The instabilities in the balance are due to the advancement of age and changes occurred as a basis of support, impairment of vision, gait; associated with environmental, socioeconomic and nutritional factors, sedentarism determining the limitations of the elderly, which potentiates the risk of falls, being the main degrading factor in the life of the elderly. Thus, the problem is reached: Can the intervention of aquatic kinesiotherapy bring benefits to the elderly's balance? The aim of this research was to verify the efficacy of hydrotherapy in the balance of the elderly. Methods: This is an interventional, descriptive and exploratory study, with a cross-sectional design and a quantitative approach, developed in the city of Vitória da Conquista, Bahia. The sample was represented by 27 individuals aged over 60 years of both sexes treated in the physiotherapy nucleus, who had independent gait. Data were analyzed using a statistical treatment method. The calculations and graphs were processed from the Microsoft Office program. We conclude that hydrotherapy, from the Berg scale and the Tinetti test, that hydrotherapy contributes to the balance of the elderly.

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INTRODUCTION

According to the World Health Organization (WHO) it is denominated like old person every person of greater or equal age for 60 years. However, the aging process is comprised of several factors that are related to health, purchasing power, culture and gender. With aging, the elderly may present reduced muscle mass, strength and bone density, leaving them fragile, which is reflected in the balance (GASPAROTTO; FALSARRILLA; COIMBRA, 2014). Aging compromises the ability of the central nervous system to perform the processing of the vestibular, visual and proprioceptive signals responsible for maintaining body balance, as well as reducing adaptive reflex modifications. These degenerative processes are responsible for the occurrence of vertigo and / or dizziness (presbivertigem) and imbalance (presbiataxis) in the geriatric population (RWVER, 2015). There is a demographic increase in the number of elderly people, and it is suggested that this occurs due to the reduction of the fertility rate, where it is estimated that in 2040, the elderly population will increase by

23%, an average of 153 elderly people for 100 young people (IBGE 2015). Population aging is an inevitable process that occurs due to various physiological, biological and social changes that occur over the years (Schneider and Irrigay, 2008). The instabilities in the balance are due to the advancement of age and changes occurred as a basis of support, impairment of vision, gait; associated with environmental, socioeconomic, nutritional, sedentary factors determining the limitations of the elderly, which increases the risk of falls (RODRIGUES; BARBEITO; JUNIOR, 2016). Among several forms of treatment in the recovery of the balance hydrotherapy is a great ally in the reduction of the events. The aquatic exercise has been used as resources to treat rheumatic, orthopedic and neurological diseases; however, it has only recently become the target of scientific studies (OLIVEIRA, CERVAENS, 2013). The manifestations of body balance disorders have a great impact on the elderly, since this age group is more prone to falls that have the potential to limit their social autonomy, since they end up reducing their activities of daily living, by predisposition to falls and fractures, bringing suffering, body immobility, fear of falling again and high costs with health treatment. In this case, hydrotherapy appears as a resource that can improve the

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balance, contributing with scientific research regarding the proposed theme, besides certifying the benefits of this technique to transform the reality of the aging process. The physical properties of water, together with kinesiotherapy, can be considered in most of the physical objectives proposed in a rehabilitation program, the aquatic environment is considered safe and effective in the rehabilitation of the elderly, since water acts simultaneously in the musculoskeletal disorders and improves the balance. The multiplicity of symptoms such as pain, muscle weakness, reduced balance, obesity, joint diseases, reduced gait and the impossibility of sustaining body weight make it difficult to perform exercises on the floor, unlike water exercises, where there is a decrease in joint overload. In addition, fluctuation enables the individual to perform exercises and movements by reducing gravitational forces (OLIVEIRA; CERVAENS, 2013). It was relevant to carry out this study to better understand the role of hydrokinesiotherapy in the restoration of balance, as well as to contribute with health professionals and academic research presenting the result with analysis of the intervention with Aquatic exercises. Thus, the present article aimed to evaluate the efficacy of hydrotherapy in the treatment of balance disorders in the elderly, considering that the exercises in the water are a differentiated, appropriate and safe medium for the practice of physical activity in the elderly, being a technique without impact that can be performed in individuals with osteoarticular problems, edema among others, besides the improvement of the balance.

MATERIALS AND METHODS

It is an interventional, descriptive and exploratory study, with a cross-sectional design and quantitative approach, developed in the city of Vitória da Conquista, Bahia. The sample was represented by 27 individuals aged over 60 years of both sexes attended in the physiotherapy nucleus, who had independent gait. Initially, before the execution of the treatment plan, the subjects participated in the evaluation, filling in the socio-demographic questionnaire, in addition to the Berg scale and the Tinetti test. The Berg Balance Scale is a widely used clinical test for a person's static and dynamic balance skills and the scale is taken as the standard for functional balance tests. The test takes 15 to 20 minutes and comprises a set of 14 simple balance-related tasks, ranging from getting up from a sitting position to standing with one foot. The degree of success in achieving each task is scored from zero (incapable) to four (independent), and the final measure is the sum of all scores. The final results can be interpreted as follows: ≤ 20 points: wheelchair user; $> 20 \leq 40$ points: you can walk, but with assistance; $> 40 \leq 56$ points: independent. The Tinetti scale is a balance and mobility scale that measures the risk of a subject falling. Their results are understood as follows: between 24 and 28 points: low risk; between 19 and 23 points: average risk; 0 and 18 points: high risk. After the first analysis, the subjects were submitted to exercises in a heated pool at 33 ° C, measuring 6mx12m with depth of 1.20m, following the program of activities described in Table 1. After the program of activities, subjects were submitted to the evaluation again using the Berg scale and the Tinetti test. The data were then analyzed in a descriptive way, with relative and absolute frequencies, as well as the calculation of the mean. The research complied with Resolution CNS No. 466/2012, of the National Health Council, and was approved by the Research Ethics Committee of FAINOR for the opinion No. 3.101.459. The survey data was processed in Microsoft Excel 2010.

RESULTS

Regarding the participants' ages, the n ranged from 60 to 82 years, with an overall mean of 69 years. Of the subjects, 74% were female and 26% male, according to Table 2.

Table 1. Aquatic Intervention Program. Vitoria da Conquista - BA, 2018

Characterization of the hydrotherapy intervention program: Sessions of 45 minutes, 2 times per week, each session of the hydro therapy program composed of 4 phases.
Phase I: Adaptation to the aquatic environment. Activity: Walk the entire length of the pool in the following directions: forward, back and side pass with wide strides with time of (10min.)
Phase II: Stretching. The stretches are held for 30 sec. with time of (15 min.) Activ: stretches of the hamstring muscles, tricepsural, quadriceps and iliopsoas in orthostatic position with support in the bars and strengthening of them with the use of noodle and sandshin.
Phase III: Exercises for static and dynamic equilibrium. Activate: Circle in hand, clock wise and counter clockwise, three times in each type of gear (speed 0,40m / s), in a row, placing the hands on the waist of the front participant, with unipodal support with opposite knee in flexion (15 min.) 4 series with 10 repetitions, Tibiotascico Pumping (3 times 15) semi-squatting exercises.
Phase IV: Relaxation with active stretching of upper / lower limbs associated with respiratory exercise (05 min.)

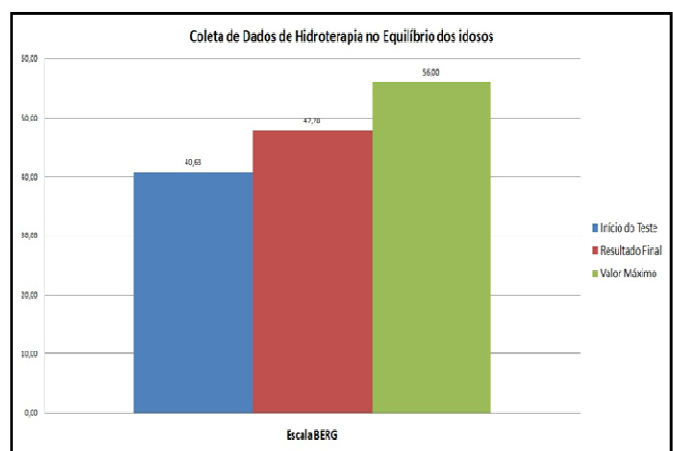
Source: Own elaboration.

Table 2. Socio-demographic characteristics of the sample. Vitoria da Conquista – BA, 2018

Characteristics	% answer	n	%
Sex	100		
Female		20	74,0
Male		07	26,0
Age, years	100		
60 - 69		14	51,8
70 - 79		11	40,8
≥ 80		2	7,4

Source: research data

At the beginning of the intervention, with respect to the Berg scale, the population presented an overall average of 40.63 points out of 56 possible points. After the end of the care program, in the reanalysis, the interviewees reached an average of 47.78 points. In this sense, there was an increase, after intervention, of 7.15 points, as shown below:

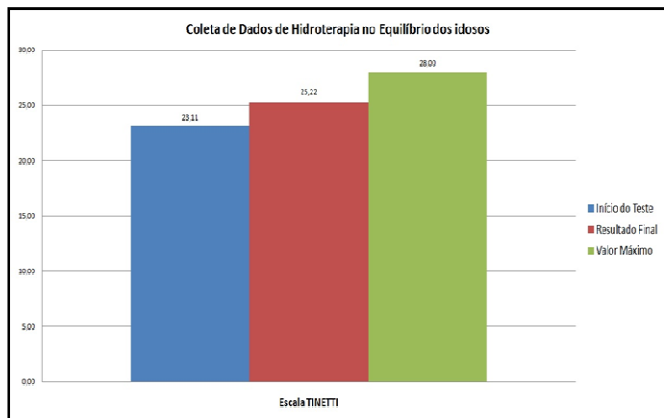


Source: Research data.

Graph 1. BERG scale in points: result before and after the intervention. Vitoria da Conquista – BA, 2018

At the beginning of the program, the population showed a mean of 23.11 points in the Tinetti test, in general, of a possible total of 28 points. At the end of the intervention program, the sample reached an overall average of 25.22

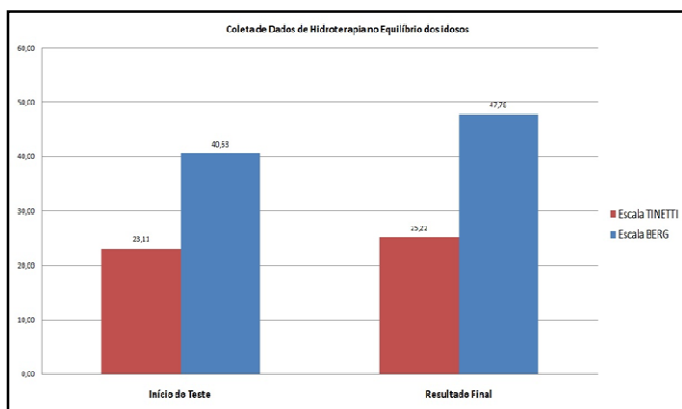
points, showing a growth of 2.11 points in the Tinetti test, as shown below:



Source: Research data

Graph 2. TINETTI score in points: result before and after the intervention. Vitoria da Conquista - BA, 2018

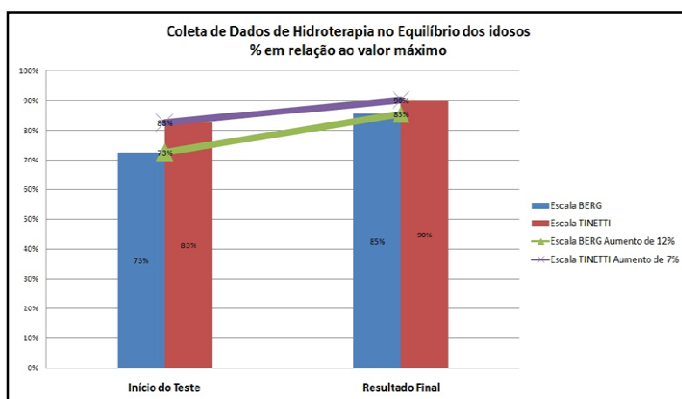
Graph three shows the comparison between the Berg scale and the Tinetti test in points. According to the Tinetti scale, the group stopped having medium risk and started to have a low risk of falling, surpassing 25 points.



Source: Research data.

Graph 3. Comparison in points: BERG scale and TINETTI test. Result before and after the intervention. Vitoria da Conquista - BA, 2018

The comparison of graph three shows that there was a 12% increase in the Berg scale and 7% in the Tinetti test after the intervention of the hydrotherapy in the balance of the elderly, according to graph four, as follows:



Source: Research data.

Graph 4. Comparison in percentage points: BERG scale and TINETTI test. Result before and after the intervention. Vitoria da Conquista - BA, 2018

DISCUSSION

The term hydrotherapy is derived from the Greek words hidro (hydor) water and terapéia (treatment). In this context, hydrotherapy aims to use the physical, physiological and kinesiological effects of immersion of the body in a heated pool as a resource that helps rehabilitate or prevent functional changes. The water principles can be divided into hydrostatic and hydrodynamic, which study the behavior of liquids at rest and in motion, successively. The main physical properties of the water with the greatest clinical reach on the immersed body are: density, buoyancy, hydrostatic pressure, turbulence, viscosity, surface tension and refraction (FINHOLDT, 2007). Water heating and physical properties play an important role in the rehabilitation or prevention of functional changes, maintaining joint range of motion, reducing muscle tensions and relaxation (BARROS, 2015). This type of activity can associate exercises of balance, strength and proprioception. A better balance can be achieved with muscle training and this may decrease the risk of falls, since the decrease in the ability to generate muscle strength in the lower limbs contributes to the imbalance (SILVA, 2012). In the present study, results are presented that it is possible to defend the idea that hydrokinesiotherapy is effective in improving the balance of the elderly, as soon as it is inserted into the aquatic environment, the body is submitted to different physical forces and, consequently, a series of physiological adaptations, besides having advantages for this population group, taking advantage of their properties, enabling a better performance for the elderly, besides offering lower risks (BARROS, 2015).

The results of this study showed that elderly individuals may have improved balance due to hydrokinesiotherapeutic interventions, whereas there was a 12% increase in the Berg scale and 7% in the Tinetti test after the hydrotherapy intervention in the elderly balance. The maintenance of the body posture is static or in performance of motor skill is paramount for the quality of life of the elderly. According to Bittar (2002), it is estimated that the prevalence of balance complaints in the population over 65 years old reaches 85%, and is associated with several etiologies, such as degeneration of the vestibular system, decreased visual acuity, ability to accommodate vision and uniform change, proprioceptive changes, skeletal muscle deficits (sarcopenia), postural hypotension, cerebellar atrophy, decreased attention mechanism and reaction time contribute to changes in balance in elderly individuals, associated with decreased ability to perform activities of daily living. The therapeutic effects associated with the aquatic exercises are related to the maintenance or increase of the range of motion, re-education of the paralyzed muscles, strengthening and improvement of the functional activities of the gait with sensory-motor integration, improving freedom of movement and the quality of life of the elderly.

Conclusion

It can be concluded after the analysis of the data that the hydrokinesiotherapy can be a good alternative in the issue of the balance of the elderly, as soon as it presented growth in the results of the Berg scale and the Test Tinetti. According to the Berg scale, the population was at the border between floor assistance and independence and, after intervention, remained securely at the levels of independence. Regarding the Tinetti scale, subjects who presented an average risk of falling reached low risk of falling after hydrocephalytherapy intervention. The present study is important to enrich the scientific knowledge about hydrotherapy, being of reflexive

value both for physiotherapy professionals and for the health area in general, as it contributes to the field and reflects on the elderly population and problems of the balance of mode general.

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