

The Risk of Falling Associated to Dizziness in Elderly

Abstract

The aging process can be understood as a natural process of the progressive decreasing of the functional individuals reserve. As cause from this degenerative process it occurs vertigo and / or dizziness and body imbalance associated with the risk of falls, what brings impacts to the daily life of the elderly like a reduction of social autonomy, reduction of daily activities, insecurity, suffering and immobility. The dizziness are frequent in all age groups, especially in the elderly because of the body systems functions decreasing as a whole and in particular the body system balance, which includes the integration of vestibular, visual and proprioceptive sensors. According to the type of injury, the individual can have the vestibular rehabilitation as treatment suggested and it can be performed by speech therapists and physiotherapists. The Vestibular Rehabilitation Therapy (TRV) is a non-invasive treatment, consisting of specific repetitive physical exercises associated with medication when in need as well as lifestyle and diet changes. The techniques used are based on habituation and substitution exercises that involve cephalic movements on different speeds and surfaces to promote the plasticity of the vestibular system and activation of the deep proprioceptors of the foot sole that are responsible for the vibratory sensitivity. Vestibular rehabilitation has been shown like an important method in the treatment of patients with balance disorders, improving their competence and well being in performing daily activities.

Keywords: Aging; Postural balance; Vestibule; Labyrinth; Dizziness

Mini Review

Volume 9 Issue 4 - 2017

Scheila Farias de Paiva^{1*}, Clara Mercia Barbosa Silva², Olga Elisabete de Oliveira Brito², Ana Claudia Santos Soares² and Wanderson Santana Fraga²

¹Speech Therapy Department, Brazil

²Multiprofessional Resident Speech-Language Pathologist in Hospital Health Care, Brazil

***Corresponding author:** Scheila Farias de Paiva, Universidade Federal de Sergipe, Av. Gov. Marcelo D'Ávila - SÁo JosÁo, Lagarto - SE, Brasil 49400-00, UFS /Brasil, Tel: (55) 79-99800-9392; Fax: (55) 79-99800-9392; Email: spaivafono@yahoo.com.br

Received: September 30, 2017 | **Published:** December 12, 2017

Abbreviations: TRV: Vestibular Rehabilitation Therapy; QOL: Quality of Life; VR: Vestibular rehabilitation

Introduction

Aging process

Before the aging has been considered as a phenomenon, nowadays it is part of the most societies reality. The world is getting old. It is so true that it is estimated, that there will be about 2 billion people with more than 70 years old in the world in 2050 and most of them will be living in developing countries [1].

The aging process can be saw as a natural process of progressive decrease of the functional reserve of the individuals. (Senescence) which, under normal conditions, does not usually cause any problem. However, under conditions of overload such as diseases, accidents and emotional stress can cause a pathological condition that requires assistance - Senility, [2].

The central nervous system from the aging process suffers damages when accomplishes the processing of the vestibular, visual and proprioceptive information that are responsible for the balance maintenance and reducing the ability to modify the adaptive reflexes. As cause of this degenerative process, it occurs vertigo and/or dizziness and imbalances in the elderly population [3].

The aging of the world's population is an undeniable fact. There is a totally agreement that the pace of this process in next decades will be particularly fast in developing countries [4]. It is an extremely complex phenomenon caused by many factors, which

produces the most diverse trends and consequences. That's why this phenomenon is demanding more and more multidisciplinary studies for its better understanding and comprehension [5].

As a consequence of this process, researchers, Veras [6], report that the area of aging has become a priority in the training of qualified professionals, in research and development of health models. Taking Care properly of the multiple elderly demands is a social issue, and it concerns to all, it is an adversity, something indispensable in the contemporary multiprofessional health discussion agendas in this century.

The imbalance disorders bring big impacts to the daily elderly life, it leads to a reduction of social autonomy which has as consequences: The reduction of daily activities, unsafe feelings and predisposed to falls, it induces to suffering and body immobility [3,7,8].

Dizziness and risks of falls

Dizziness is common in every age range, especially in elderly people because of the body system functions wane as a whole. In particular the balance body system that includes the connection of vestibular, visual and proprioceptive sensors [9]. Among all Vestibular symptoms, dizziness is the most common, after 65 years, it directly interferes with quality of life (QOL) and It is also the second major symptom that prevails in the world population until the age of 65, it loses only to migraine [10]. Age is directly associated with changes in gait and equilibrium and consequently related to the risks of falls especially in the female gender due to bigger longevity than the male gender [11,12].

Dizziness is the illusion of movement [9,13], Authors describe that the most common manifestations are the spinning sensations of a person's surroundings, instability, disequilibrium, fluctuation, spatial disorientation and drunkenness. They can be like a rotating type (vertigo) or non-rotatory type (instability, fluctuation, oscillations), imbalance and visual distortion with feeling of going forward or backwards (oscillopsia) [10]. This imbalance is one of the main risk factors for falling and restriction on the elderly's life [14].

In another study, Authors said that: The potential severity of balance disorders in the elderly give to prevention a privileged place, because a falling can be considered a sentinel event in an elderly person's life, it is a potential spot in the beginning of an important functional decline or a symptom of a new pathology, because of the loss of body capacities (Peres e Silveira [15])¹.

Falling is defined as an unintentional event that has as a result of an individual initial position in change to the same level or a lower level [16]. Besides, falling represents a big problem for old people because of its consequences (insult, incapacity, institutionalization and death) these are the effects of the combination between high incidence and high susceptibility to injuries (BRASIL, 2007). About 30% of older people fall every year. This rate increases to 40% among the elderly with more than 80 years old and 50% Women tend to fall more than men up to 75 years old, from this age the frequencies are the same [1].

The same author cited previously, also describes that elderly who fall, about 2.5% need hospitalization and from this percentage, only half will survive after one year. The most common causes and risk factors associated with falls to elderly in the community are: the environment, equilibrium / gait weakness / disturbances, dizziness / vertigo, postural modification / orthostatic hypotension, central nervous system injury, syncope, and reduction of vision.

Vestibular rehabilitation

According to the type of injury, the person can have as indicated, the vestibular rehabilitation treatment and it can be made for speech therapists or physiotherapists. The patient when taken to their offices must be evaluated as a whole. mainly in their auditory, postural and functional disabilities [17].

Vestibular Rehabilitation therapy (TRV) is a non-invasive treatment, consisting of specific and repetitive physical exercises associated to a prescription as needed as well of changes of lifestyle and diet. It is based on the neural plasticity from the central nervous system for the regulation and maintenance of balance. Through: Adaptation, habituation and substitution [14,18]. The balance system integration is processed in the vestibular nucleus of the brainstem, when it is receiving sensory information the central nervous system triggers ocular and spinal reflexes for automatic and unconscious maintenance of the body

¹Translated from: "A gravidade potencial dos distúrbios do equilíbrio nos idosos confere à prevenção um lugar privilegiado, porque uma queda pode ser considerada um evento sentinela na vida de uma pessoa idosa, um marcador potencial do início de um importante declínio funcional ou um sintoma de uma patologia nova, em razão da perda de capacidades do corpo" (Peres e Silveira, 2010).

equilibrium [19].

In adaptation, the vestibular system learns how to receive and process information, even if distorted or incomplete, then it re-establishes the body balance. The habituation consists in the reduction of sensory responses through repetitive exercises. In the substitution process the central nervous system is able to replace information from the deficient vestibular function with the goal of recovering the visual field stability [19,20].

The TRV has the objective of re-establishing or minimize the body balance disorders and provide a better life quality and the individual's functionalities [21]. The techniques used are based on habituation and substitution exercises that involves the cephalic movements, in different speeds and surfaces, to promote the plasticity of the vestibular system and activation of the deep proprioceptors on the sole(bottom of feet) responsible for the vibratory sensitivity [17]. The Vestibular rehabilitation (VR) exercises intend to improve vestibulo-visual interaction during the cephalic movement, increase static and dynamic postural stability in conditions which produces conflicting sensory information and decreases the individual sensibility to cephalic movement [22].

In a study based on a literature review about VR exercises benefits [23], the writers observed, based on their articles researches, the great success of Vestibular Rehabilitation in elderly with Dizziness problem. The vestibular Rehabilitation brought a positive psychological effect in recovery of physical and mental safety and then the improvement of elderly life quality.

Therefore, it is noticed that an effective evaluation associated to a structured program of phonoaudiological vestibular rehabilitation contribute to a significant improvement in the symptomatology of dizziness, general quality of life and physical, emotional and functional elderly's abilities. Then this tool has been shown important in the treatment of patients with balance disorders, improving their competences and well being in performing daily activities.

Conclusion

Therefore, the aging is a natural process that brings some physiological features like vertigo and /or dizziness and Body disequilibrium that are the main causes of falls in this group of people. However, using a structured program of vestibular rehabilitation associated with some medicine, when it is necessary, as well as changes in living and eating habits, it is possible to have a significant improvement in the symptomatology of dizziness, general quality of life and physical, emotional and functional elderly's abilities. This tool has been shown important in the treatment of patients with balance disorders, improving their competences and well being in performing daily activities.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Acknowledgment

None.

References

1. Brazil (2007) Aging and health of the elderly / Ministry of Health, Secretariat of Health Care, Department of Basic Attention. Brasília: Ministry of Health, pp. 192.
2. Lima AP, Delgado EI (2010) The Best Age in Brazil: biopsychosocial aspects arising from the aging process. *Ulbra and Movement (REFUM) Ji-Paraná* 1(2): 76-91.
3. Ruwer SL, Rossi AG, Simon LF (2005) Balance in the elderly. *Rev Bras Otorhinolaringol* 71(3).
4. Saad PM (2016) Population Aging: demands and possibilities in the health area. *Demographics*, pp. 153-166.
5. Ziem A (2010) Aging and Education: A Field of New Reflections and Knowledge for Social Work. Completion of course work (Bachelor of Social Work) - Federal University of Santa Catarina, Florianópolis.
6. Veras R (2016) Is it possible, in Brazil, to grow old with health and quality of life? *Brazilian Journal of Geriatrics and Gerontology* 19(3): 381-382.
7. Harun A, Semenov YR, Agrawal Y (2015) Vestibular Function and Activities of Daily Living: Analysis of the 1999 to 2004 National Health and Nutrition Examination Surveys. *Gerontology & Geriatric Medicine*, p. 1-8.
8. Morris JN, Howard EP, Steel K, Berg K, Tchalla A, (2016) Strategies to reduce risk of falling: Cohort study with 1-year follow-up in community dwelling older adults. *BMC Geriatrics*. Published online 29(16): 92.
9. Sauvage JP, Grenier H (2017) Vestibular Rehabilitation: practical guide. Rio de Janeiro.
10. Scherer S, Lisboa HRK, Pasqualotti A (2012) Dizziness in the elderly: otoneurological diagnosis and interference in quality of life. *Rev Soc Bras Fonoaudiol* 7(2): 142-150.
11. Alves VL, Taguchi CK, Oliveira IL, Sousa MGC (2014) Evaluation of the tendency for falls in the elderly in Sergipe. *Revista CEFAC* 16(5): 1389-1396.
12. Stenhagen M, Ekström H, Nordell E, Elmståhl S (2013) Falls in the general elderly population: a 3- and 6- year prospective study of risk factors using data from the longitudinal population study Good aging in Skane. *BMC Geriatr* 13: 81.
13. Ganança, MM, Caovilla HH (2000) How to deal with dizziness and associated symptoms. In: Ganança MM, Munhoz MSL, Caovilla HH, Silva MLG. *Therapeutic strategies in Otoneurology*. Publisher Atheneu.
14. Ricci NA, Aratani MC, Doná F, Macedo C (2010) Systematic review of the effects of vestibular rehabilitation in middle-aged and elderly adults. *Rev Bras Fisioter* 14(5): 361-371.
15. Peres M, Silveira E (2010) Effect of vestibular rehabilitation on the elderly: regarding balance, quality of life and perception. *Science & Collective Health* 15(6): 2805-2814.
16. Gasparotto LPR, Falsarella GR, Coimbra AMV (2014) The falls in the scenario of old age: basic concepts and current research in health. *Rev Bras Geriatr Gerontol* 17(1) 201-209.
17. Soares EV (2007) Vestibular rehabilitation in the elderly with imbalances for gait. *Online Perspectives, Campos dos Goytacazes* 1(3): 88-100.
18. Tavares FS, Santos MFC, Knobel KAB (2008) Vestibular rehabilitation in a university hospital. *Rerista Brasileira de Otorrinolaringólogo* 74(2): 241-247.
19. Albertino S, Albertino RS (2012) Vestibular Rehabilitation. *Journal of the Pedro Ernesto University Hospital, UERJ*.
20. FF Gain, CF Gain (2000) Vestibular rehabilitation: principles and techniques. In: Ganança MM, et al. (Eds.), *Therapeutic strategies in Otoneurology*. Publisher Atheneu.
21. Miralles NDR, Conti MHS, Vitta R, Laurenti R, Saes SO (2011) Vestibular evaluation and rehabilitation in the elderly individual. *Rer Bras Geriatr Gerontol* 14(4): 687-698.
22. Zeigelboim BS, Rosa MRD, Klagenberg KF, Jurkiewicz AL (2008) Vestibular rehabilitation in the treatment of dizziness and tinnitus. *Rev Soc Bras Fonoaudiol* 13(3): 226-232.
23. Pereira PC (2013) Efficacy of Vestibular Rehabilitation in the Elderly with Dizziness. *Journal of the University of Rio Verde Três Corações* 11(2): 371-378.