

## **ABSTRACT**

**Title:** Evaluation of the effects of different walking types on the postural stability in healthy seniors – a systematic review.

**Objective:** The main objective of this diploma thesis is the evaluation of the impact of different types of walking on the postural stability in healthy elderly, based on the available resources corresponding to the established inclusion criteria. Force platforms were used as the tool to evaluate and to objectify postural stability in all studies included. These platforms are capable of measurement the level of postural stability by recording stance excursions in multiple directions. This thesis makes efforts to review the level of the possible future inclusion of different walking types in the process of physical therapy among older patients, regarding to improve the postural stability as well as the fall prevention in these patients. The next goals of this diploma thesis are to determine which type of walking appears to be the most efficient comprising the fall prevention as well as to assess the optimal frequency of the ordinary walking performance to achieve the same objective.

**Methods:** This diploma thesis is processed in the form of a systematic review based on the available literary resources. First part of the thesis comprises the theoretical basis and the introduction to the old age problematic and the walking characteristics associated with this life stage. Second part with its descriptive – analytical character involves analysis of the studies, each of which examines one type of walking and its impact on the postural stability in healthy seniors aged 60 years old and above.

**Results:** At the end of the review, there were only 8 studies to fulfill the inclusion criteria. Regarding to the relatively low number of included studies, the results of this review are applicable only to a small, strictly defined group of elderly people which already had to fulfill certain health criteria to be included to the analysed studies. Based on our findings, we can declare that different types of walking (walking in natural environments, Nordic walking, brisk walking, stair-climbing walking, slackline walking, treadmill walking and walking using instable shoe modifications) can be used in healthy elderly training to improve postural stability. On the contrary, maximal and submaximal intensity walking exercise has a negative impact on the postural stability in healthy elderly. Based on the analysis of the studies, it was not possible to clarify the ideal dosage of simple walking to improve balance abilities in healthy elderly.

**Keywords:** postural stability, elderly, aged, improvement, walking, effect, balance, gait, fall prevention