



ERGONOMIC SHOE SAFETY IMPROVEMENT IN REDUCING FALLS IN AMBULATORY FRAIL OLDER ADULTS



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BACKGROUND/PURPOSE

Crucial factors that highlight the ergonomic applicability in the reduction of falls are the home environment and shoes. Additionally, walking barefoot is associated with changes in the parameters of proprioception, balance, gait and mobility. Our research group work aims to review the literature, concerning the factors of home safety with an approach to the ergonomic component, regarding the reduction of falls in ambulatory frail elderly and the preliminary use of the Footwear Assessment Tool.

MATERIAL & METHODS

Footwear Assessment Tool has been used on the footwear of 3 older people. The measurements with the Footwear Assessment Tool consist of six different subcategories, which determine the suitability of the shoe.

Categories/ Footwear styles	Density	Fixation	Heel counter stiffness	Midfoot sole sagittal stability	Midfoot sole frontal stability	Score
Moccasin 1	2-multiple	2-laces	2-moderate	1-moderate	0-minimal	7
Moccasin 2	2-multiple	2-laces	2-moderate	1-moderate	1-moderate	8
Moccasin 3	2-multiple	0-none	2-moderate	1-moderate	0-minimal	5
Moccasin 4	2-multiple	0-none	1-minimal	2-rigid	0-minimal	5
Moccasin 5	2-multiple	0-none	2-moderate	1-moderate	0-minimal	5
Sandal 1	0-single	1-velcro	0-none	2-rigid	1-moderate	4
Sandal 2	0-single	1-velcro	0-none	1-moderate	0-minimal	2
Sandal 3	0-single	1-velcro	0-none	1-moderate	0-minimal	2
Surgical/ Bespoke	2-multiple	0-none	2-moderate	2-rigid	0-minimal	6

Motion control properties

REFERENCES

- 1.Barton CJ, Bonanno D, Menz HB. Development and evaluation of a tool for the assessment of footwear characteristics. J Foot Ankle Res 2009;2:10
- 2.Franklin S, Grey MJ, Heneghan N, Bowen L, Li FX. Barefoot vs common footwear: A systematic review of the kinematic, kinetic and muscle activity differences during walking. Gait Posture. 2015;42(3):230-9

RESULTS

The ergonomic design of the home environment and the footwear constitutes an important issue in reducing the incidents of falls, as well as in the treatment and prevention of common foot disorders. It was found that 6 of them were less likely to cause a fall, whereas 3 of them had higher chance to cause one, without any of them having entirely the most ideal or the least ideal features.

CONCLUSIONS

An important ergonomic factor in the prevention of falls is footwear. Defining the ideal shoe is not an easy task to achieve, as it has to combine several factors to be safe and appealing to wear. It is concluded that there is an urgency for further research, regarding the assessment of shoe factors and their association to falls.