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Reducing the Risk of Falling and Teaching Safe Falling as a Basic Element Supporting Health Resort Treatment

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ABSTARCT

The problem of falls and their consequences in people of all ages is widely recognized. Numerous programs have been developed to reduce the risk of falls. Combining programs aimed at reducing falls and their consequences contributes to a reduction in the number of falls, and therefore in unintentional deaths, injured body parts, years lived with disability, and the enormous costs incurred due to these events and their subsequent consequences. The aim of this study is to recommend programs that reduce the effects of falls and teach safe falling techniques as a fundamental element of supportive spa treatment. A review of selected literature provides evidence of the effectiveness of methods for reducing the effects of falls in people of various ages and abilities. Italians and Spanish schools have introduced a program called 'Safe Falls Safe School', which aims to teach schoolchildren appropriate behavior during falls and thereby mitigate their effects. For many years, courses on the "theory and methodology of safe falling" have been offered in Poland for physiotherapy students. In 2024, a program was also launched in Poland for seniors living in social welfare homes. A comprehensive approach, encompassing diagnostics, functional training, education, and psychological support, significantly improves patients' quality of life and reduces anxiety. Incorporating these activities into your daily spa practice will significantly increase the effectiveness of your therapy and reduce the risk of post-traumatic complications.

Keywords: Health prevention, Personal safety, 'Polish school of safe falling', Quality of life

INTRODUCTION

The problem of falls and their consequences in people of all ages is widely known (WHO, 2021; IHME, 2025). Despite this, it remains a major public health problem. It most often affects children and adolescents up to 15 years of age (WHO, 2020) and people over 65 years of age (WHO, 2025). Demographic forecasts indicate a significant increase in the number of elderly people (GUS, 2023; Wu et al., 2025). This phenomenon exacerbates existing risks related to loss of balance and impact with the ground. Therefore, new strategies and programs are being developed to reduce the number or consequences of falls. In 2021, the WHO indicated that "prevention strategies should emphasize education, training, creating safer environments,

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prioritizing fall-related research, and establishing effective policies to reduce the risk" (WHO, 2021). Most prevention programs focus on preventing falls (Gąsienica-Walczak et al., 2024). The authors of the Polish School of Safe Falling (Iermakov et al., 2022) also focused on reducing the effects of falls, primarily reducing bodily injury. Combining programs aimed at reducing falls and their effects contributes to reducing the number of falls, and thus unintentional deaths, injured body parts, years lived with disability, mental disorders, and the enormous costs incurred by states due to this event and its subsequent consequences. Implementing appropriate programs will significantly improve personal safety and quality of life. Investing in strategies to prevent falls and their consequences is more cost-effective than treating the consequences of falls, bringing clinical and economic benefits to health and social care systems (Dobosz et al., 2018). The implications of analyzing the key objectives of spa treatment outlined in the 2005 Act (Polish Government, 2005) (including providing preventive services and health education) justify identifying this type of health care service as the optimal setting for implementing the strategy described above. This is especially true given that in Poland, this type of treatment is primarily used by children and, in most cases, people over 65. Nitera-Kowalik et al. (2018) examined the impact of spa treatment on fall prevention in the elderly. Based on the results, they concluded that 'the comprehensive spa treatment had a beneficial effect on improving balance: the index of symmetry and load distribution in the lower limbs, and reducing pain in the subjects. The use of balneophysical treatments and interactive exercises for balance and load symmetry in the lower limbs reduced the risk of falls in the subjects'. This research should be expanded to include methods for reducing the effects of falls and teaching how to safely impact the ground after losing balance. Only such studies will fully demonstrate the potential of spa treatment in reducing the number and effects of falls.

AIM

The aim of the work is to recommend verified programs that reduce the effects of falls and teach safe falling techniques as a basic element supporting spa treatment.

METHODS

The research was based on a narrative review. This method describes and discusses the state of knowledge on a given topic from a theoretical and contextual perspective. No database types or criteria for including retrieved articles are specified. It is a critical analysis of literature published in books and articles in electronic or print journals (Rother, 2007).

RESULTS

An analysis of selected publications provides evidence of the effectiveness of methods for reducing the effects of falls in people of all ages and abilities. The Spanish and Italian schools have implemented a program called 'Safe Falls

Safe School, which aims to teach schoolchildren appropriate behavior during falls and thereby mitigate their effects. ToronjoHornillo et al. (2018) studied 120 schoolchildren whose ages ranged from 12 to 17 years, all attending a private, but partially publicly-funded, secondary school in Seville (Spain). The study intervention period lasted 5 weeks. Data was collected before an after program. Observation records five basic elements during a backward fall: position of the neck, the hands, the trunk, the hips, and the knees. The proportion of students who bent their neck in a sudden fall was 10.8% before, and 89.2% after the intervention. For the rolling up variable, the proportion of students who completed this correctly was 15% before, and 85% after the program ($p = 0.000$). The bending of knee was completed correctly 1.7% before, and 98.3% after the intervention ($p = 0.013$). The bending of the hip task was performed incorrectly by all students before the intervention, and 100% correctly afterwards ($p \leq 0.001$). The rate of those who used their hands correctly before the intervention was 0.8% and afterwards 99.2% ($p \leq 0.001$). DelCastillo-Andres et al. (2018) studied of 122 school-children aged 10 ($n = 44$), 11 ($n = 54$) and 12 ($n = 24$), and all attended state primary schools in Seville, Spain. The study intervention period lasted 6 weeks. Data was collected before and after program. Observation records five basic elements during a backward fall: position of the neck, the hands, the trunk, the hips, and the knees. In all variables after the application of the program there was an increase in the correct position. From the pre-test to the post-test the number of those who incorrectly completed neck flexion fell from 76.4% to 9.8%. Those score, who used their upper extremities to stop the fall fell from 98.4% to 9.8%.Those, who incorrectly completed the rolling up fell from 91.9% to 8.9%. Those who incorrectly completed the hip flexion fell from 98.4% to 13%. Lastly, those who incorrectly completed the knee flexion fell from 43.9% to 4.9%. For all five responses, the difference was significant ($p < 0.05$). The program was equally effective for both genders, as no significant differences in motor responses were recorded between boys and girls. Invernizzi et al. (2019) surveyed 87 secondary school students in Italy. The sample, comprising 53 students in the first year of high school (13 years) and 34 students in the fifth year of high school (17 years). The study intervention period lasted 10 weeks. Data was collected before an after program. The backwards falling ability test carried out among both groups was evaluated in relation to the position of the neck, trunk, knees, hips and hands. The proportion of students who bent their neck in a sudden fall was 73.6% before, and 95.3% after the intervention. For the rolling up variable, the proportion of students who completed this correctly was 4.6% before, and 84.9% after the program. The bending of knee was completed correctly 31% before, and 94.2% after the intervention. The bending of the hip task was performed incorrectly by 50.6% students before the intervention, and 79% correctly afterwards. The rate of those who used their hands correctly before the intervention was 0% and afterwards 76.7%. In Poland, Rafał Kubacki is implementing his own fall training program for children and youth called "Teacher Ball Ukemi." It's a set of exercises using Swiss balls, a box, a roller, a dummy, a scooter, and a skateboard to support the development of self-protection skills when falling to the ground using the philosophy and theory of "ukemi" (falling) (Kubacki et al., 2020). Rauk Kubacka et al.

(2018) state that "using a Swiss ball to teach ukemi (falls) and body balance on the ground is an innovative approach in the area of broadly conceived injury prevention in cases of sudden collisions and falls." Unfortunately, no studies have been conducted on students of a similar age to those in Spain and Italy. In Poland, courses on the 'theory and methodology of safe falling' have been conducted for students for many years. The first to participate in the study were students from the Academy of Physical Education and University College (Kalina et al., 2008). The research covered 688 people between 19 and 55 years old who completed four different programs in terms of structure (but not content) of combat sports propaedeutics – the basics of judo. Two courses were implemented in the stationary course for 13 weeks, each lasting one lesson (45 minutes). Furthermore, another two courses were implemented every two weeks, totaling eight lessons but each lasting 90 minutes. The lowest score among female students was 70 points, and among male students was 65 points (in both cases, the level was more than sufficient). The next group were students of physiotherapy (Gąsienica-Walczak et al., 2010).The surveys included 107 physiotherapy students of the fifth semester of the first-degree studies in the Podhale State Vocational School of Higher Education. The age range was 20–24 years in women and 19–34 in men. Students took part in the unique two-semester-long authors' program titled "The theory and methodology of safe falls in individuals after limb amputations and the blind" (lectures 20 hours, classes 40 hours). The students were divided into two groups. Students in group A were trained by the rigorous method, while students in group B were trained by a method that preferred playful forms of exercises. The average test of safe falling result in group A was 90.77 points; in group B, it was 90.44 points. These results show a more-than-good motor competence of students as pertains to the safe falls. In 2024, a program for seniors living in a nursing home was also carried out in Poland (Klimczak et al., 2024). The pilot researches covered 6 people between 62 and 78 years. All were nursing home care patients. Four seniors participated in both general training and dedicated safe fall sessions. Two participated in safe fall sessions only. All patients reduced collision errors with the distal parts of the body during simulated backward falls under laboratory conditions. Additionally, studies were conducted in Poland with people with various disabilities: after limb amputation (Kalina & Kalina, 2003; Gąsienica-Walczak & Kalina, 2015), visually impaired and blind (Gąsienica-Walczak & Kalina, 2012), with mental impairment (Mosler et al., 2014; Mosler, 2015, 2016; Mosler et al., 2017).

CONCLUSION

Despite the research findings described above, reducing the risk and consequences of falls and teaching safe falling are not widely implemented in Poland. In the context of spa treatment, which aims to improve the patient's functional capacity and overall well-being, reducing the risk of falls and teaching safe falling should be an integral element of prevention and therapy.

A comprehensive approach, encompassing diagnostics, functional training, education, and psychological support, significantly improves patients' quality of life and reduces anxiety. Incorporating these activities into daily spa practice will significantly increase the effectiveness of therapy and reduce the risk of post-traumatic complications.

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