

# FEAR OF FALLS IS AN INDEPENDENT RISK FACTOR FOR FRACTURES

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## FEAR OF FALLS IS AN INDEPENDENT RISK FACTOR FOR FRACTURES

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**Objectives.** Fractures of bones of the peripheral skeleton are due to the combination of a fall and reduced bone strength. Multiple falls can lead to the fear of falling syndrome which may become an accessory risk factor for falls.

**Aim.** The aim of the study was to establish the relationship between age, fear of falls with other risk factors and the chance of fracture in elderly people.

**Materials and methods.** A single screening study in a representative sample of 1417 individuals aged 65-74 years was performed. All subjects performed the adapted IOF osteoporosis

risk test, which estimated risk factors for falls and fear of falling. The chair rising test (CRT) performance time was used as a criterion of muscle strength in lower extremities. The balance test (BT) in semitandem-tandem position performance time was used as a criterion of the capacity to maintain body balance and stability. Statistical analysis of the results was done with the help of the program «STATISTIKA 7.0».

**Results.** Variance analysis (ANOVA) showed that age was an independent factor contributing to reduced muscle strength in lower extremities according to Scheffe-test after 70 years ( $F=5,1$ ;  $p<0.001$ ), and according to LSD-test age ( $p<0,03$ ) influences the performing of CRT after 67 years.

20% had a broken bone after a minor fall after 50 years, of these 58% had the fear of falling, while among individuals without a broken bone in history the fear of falling was lower – in 16% ( $p<0,0001$ ). In the presence of the fear of falling the chance of fracture increases 7-fold in those with low traumatic fractures in past history as compared to those without fractures ( $\chi^2=163,4$ ;  $p<0,00001$ ; odds ratio unit chains=6,9). We established relationships between fear of falling and insufficient (less than 10 minutes) daily stay in the fresh air ( $\chi^2=32,99$ ;  $p<0,001$ ), which may contribute to the development of vitamin D deficiency, between the fear of falling and low (less than 30 minutes) daily physical activity ( $\chi^2=42,22$ ;  $p<0,001$ ). Restriction of physical activity due to the fear of falls leads to progressive muscular atrophy and reduced muscular activity. This is confirmed by the revealed relationships between the time of CRT performance and patient's physical activity ( $\chi^2=70,6$ ;  $p=0,004$ ), as well as between the time of CRT performance and daily stay in the fresh air ( $\chi^2=81,5$ ;  $p=0,0003$ ). Patients' physical activity is related to the time of BT performance ( $\chi^2=63,2$ ;  $p=0,002$ ), and the time of BT performance has relationship with daily stay in the fresh air ( $\chi^2=66,9$ ;  $p=0,0006$ ) and fractures in the past history ( $\chi^2=61,5$ ;  $p=0,003$ ).

**Conclusions.** Age is an independent factor contributing to reduced muscle strength in lower extremities after 67 years. Individuals who have suffered low traumatic fractures develop the fear of falling syndrome which increases the chance of repeated fractures. The fear of falling in elderly people results in reduced daily physical activity and stay in the fresh air which contributes to reduced muscle strength and capacity to maintain balance and thus is an additional independent risk factor for falls and fractures.

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**LĘK PRZED UPADKIEM JAKO INDYWIDUALNY CZYNNIK RYZYKA ZŁAMANIA**

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**Keywords:** złamanie, lęk przed upadkiem, czynniki ryzyka