Assessment of the frequency of falls and attendant risk factors, in conjunction with self-perceived quality of life, in elderly residents of nursing facilities in Wroclaw, Poland

Bożena Ostrowska, Paweł Kozłowski, Beata Skolimowska, Rafał Bugaj
Faculty of Physiotherapy, Wroclaw University of Health and Sport Sciences, Poland

Introduction. An increase in the average life expectancy constitutes one of the greatest achievements of humanity, and at the same time a serious challenge for modern health protection and social care systems. The main aim of the work is to investigate quality of life and risk of falls.

Methods. Forty-four people (30 women and 14 men) aged 63 to 99 (average: 83.2 ± 7.2) recruited from two local nursing homes participated in the study. To assess the risk of falling FallScreen (physiological profile assessment, Prince of Wales Medical Research Institute) in a shortened version was used. To assess QoL (quality of life), the Polish version of the SF-36 questionnaire in its standard version was used.

Results. It was indicated that in the year preceding the study, nearly 60% of participants fell; 32% (n = 14) fell once and 27% (n = 12) fell twice or more. Occurrence of chronic diseases and taking at least three medications were reported by more than 80% of seniors. The Results section presents the components of the physical and mental dimensions of the self-assessment of the quality of life of the participants of the study. The average index of quality of life among the studied people was 94.3 points, which is 55.2% of the maximum score.

Conclusions. The dominating risk factor for falls, as established in the nursing home residents against the Physiological Profile Assessment (PPA) scale, consisted in slower reaction to a stimulus; its average value exceeding by threefold the reference value for healthy individuals of similar age.

Key words: falls, fall risk, quality of life, older people

Correspondence address: Paweł Kozłowski, Faculty of Physiotherapy, Wroclaw University of Health and Sport Sciences, Poland, al. I.J. Paderewskiego 35, 51-612 Wroclaw, Poland, e-mail: pawel.kozlowski@awf.wroc.pl; https://orcid.org/0000-0002-4562-4437

Introduction

An increase in the average life expectancy constitutes one of the greatest achievements of humanity, and at the same time a serious challenge for modern health protection and social care systems. It is expected that by 2050 the population of people over 65 in developed countries such as the US have will doubled. In Poland the aging of society is one of the fastest in the European Union [1].

The extension of a person’s life does not always go hand in hand with satisfaction with physical and mental fitness [2]. Despite its individual varied pace and dynamics, aging leads to aggravation of health and quality of life (QoL). With depression and dementia, falls constitute one of the main geriatric problems. Each year, approximately 30% of respondents over 65 and 50% of respondents over 85 fall [3, 4]. The main consequences of falls are serious physical injuries resulting in limited mobility, increased dependency and necessary admission to nursing homes. Moreover, they are related to a high indicator of morbidity and mortality [5]. It is estimated that the consequences of falls absorb approx. 1/3 of costs related to all injuries, constitute the third biggest cause of disability among the elderly and cause of 40% of admissions to care facilities [6].
Causes of falls in the case of the elderly are multifactorial, and their risk increases with the accumulation of involutional organ changes, multiple diseases, functional deficiencies or administered pharmacotherapy. Such factors involve aggravation in posture control, slowing down of reflexes and defensive reactions, as well as weakening of functions of the so-called strategic systems responsible for coordination, balance and gait [7–9]. Loss of muscle mass and strength (primary sarcopenia) mainly within the lower limbs and the trunk, impairment of the ability to generate adequate muscle tone in response to a stimulus, disturbance in feeling one’s position (aggravation of proprioception), weakening of sight, a decrease in the active range of movement in joints and characteristic gait with small steps with a shortened support phase and failing to lift feet above the ground are considered to be the main – apart from environmental factors – causes of falls among the elderly [10].

Old age, regardless of its course, should be a period of good quality of life. Its perception is conditioned by health, social, economic, cultural or personality factors. In the case of the elderly quality of life is identified mainly with health, the degree of independence in performing daily activities and the ability to deal with limitations and disabilities [11].

One of the main tasks of care facilities where elderly persons are admitted is to improve the comfort of life of seniors, their activization, and ensuring safety and good quality of services [12, 13]. In such institutions optimal solutions reducing the risk of falling are continuously sought for, as residents of such institutions fall three times more frequently than respondents living in their own homes [7] Reviews of the literature indicate that only multifactorial risk assessments can effectively prevent or limit falls [14].

Numerous previously used functional tests assessing balance and gait offer a limited possibility to predict falls among elderly people and identify people with a high risk of falling [15]. However, diagnosing the risk based on the presence of a disease can be problematic, as the weakening of the efficiency of key functions for body stability also occurs in persons without documented serious diseases. Measuring instruments which not only allow indicating the existence of the risk of falling, despite a disease, but also determining functions within which deficits occur as well as the scope of such deficits seem to be the most useful.

Associations between falls and QoL of elderly have already been studied, however there are few reports in the literature referring to elderly respondents residing at care facilities in Poland. Identification of the association between falls and QoL may constitute an important database for the planned rehabilitation and intervention services at such institutions. Therefore, the objective of the study was to assess the risk of falling based on the Physiological Profile Assessment (PPA) and to subjectively assess the quality of life of nursing home residents as well as to determine the association between the risk of falling and the comfort of life of seniors residing there.

### Subjects and methods

#### Study participants

44 persons (30 women and 14 men) aged 63 to 99 (average: 83.2 ± 7.2) recruited from two local nursing homes (Wrocław, Poland) participated in the study. The study was approved by the Ethics Committee of the University of Physical Education. Participation in the study was voluntary. The condition to participate in the study was written consent of the participant and the physical and mental condition allowing independent performance of basic daily activities. The exclusion criteria included medium and deep cognitive impairment (MMSE < 20), inability to move independently or physical disability, making it impossible to perform functional tests – neurological and orthopaedic diseases.

To characterize the studied group, a short (sociodemographic) interview was carried out with the participants and basic somatic features were measured. Questions concerned: past falls, diseases, medications taken, wearing prescription glasses, and participation in activating activities, e.g. kinesiotherapy or occupational therapies. Table 1 illustrates characteristics of the participants.
Table 1. Subjects characteristics

<table>
<thead>
<tr>
<th>Baseline characteristic (mean ± SD)</th>
<th>Total (n = 44)</th>
<th>Women (n = 30)</th>
<th>Men (n = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)*</td>
<td>83.2 ± 7.2</td>
<td>83.1 ± 7.2</td>
<td>72.3 ± 11.9</td>
</tr>
<tr>
<td>Mass (kg)*</td>
<td>69.3 ± 11.4</td>
<td>65.7 ± 12.4</td>
<td>72.8 ± 10.4</td>
</tr>
<tr>
<td>Height (cm)*</td>
<td>162.5 ± 7.5</td>
<td>155.8 ± 6.5</td>
<td>169.3 ± 8.5</td>
</tr>
<tr>
<td>Total medications per day (n)</td>
<td>2.9 ± 3.3</td>
<td>2.6 ± 3.5</td>
<td>3.2 ± 3.1</td>
</tr>
<tr>
<td>Mini-Mental State Examination</td>
<td>24.9 ± 3.4</td>
<td>25.5 ± 3.6</td>
<td>24.3 ± 2.9</td>
</tr>
<tr>
<td>No. of falls in past year (n)</td>
<td>0.94 ± 0.2</td>
<td>0.73 ± 0.2</td>
<td>1.14 ± 0.3</td>
</tr>
<tr>
<td>Falls in past year (n, %)</td>
<td>26 (59.1)</td>
<td>16 (53.3)</td>
<td>10 (71.4)</td>
</tr>
<tr>
<td>Medical conditions (n, %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osteoarthrosis</td>
<td>24 (54.5)</td>
<td>18 (60.0)</td>
<td>6 (42.9)</td>
</tr>
<tr>
<td>Hyper tension</td>
<td>22 (50.0)</td>
<td>15 (50.0)</td>
<td>7 (50.0)</td>
</tr>
<tr>
<td>Lower limb ischemia</td>
<td>14 (31.9)</td>
<td>11 (36.7)</td>
<td>3 (21.4)</td>
</tr>
<tr>
<td>Stroke</td>
<td>5 (11.4)</td>
<td>3 (10.0)</td>
<td>2 (14.3)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6 (13.6)</td>
<td>4 (13.3)</td>
<td>2 (14.3)</td>
</tr>
<tr>
<td>Other</td>
<td>30 (68.2)</td>
<td>22 (73.3)</td>
<td>8 (57.1)</td>
</tr>
<tr>
<td>Use of walking aids (n, %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glasses</td>
<td>20 (45.5)</td>
<td>12 (40.0)</td>
<td>8 (57.1)</td>
</tr>
<tr>
<td>Participation in classes</td>
<td>12 (27.3)</td>
<td>8 (26.7)</td>
<td>4 (28.6)</td>
</tr>
</tbody>
</table>

* significant differences (p < 0.05)

Fall risk, quality of life assessment

To assess the risk of falling FallScreen (PPA – physiological profile assessment, Prince of Wales Medical Research Institute) in a shortened version was used. It consists of five tests (edge contrast sensitivity, proprioception, knee extension – quadriceps strength, reaction time, sway on foam with eyes open) measuring physiological conditions of the risk of falling. Results of the tests were entered into a computer program (FallScreen) and adjusted to age and gender. The program calculates the fall risk indicator (z-score) using an algorithm which is a product of the discriminant analysis function of the applied data and it means: for < 0 no risk of falling; 0–1 small risk; 1–2 moderate risk; 2–3 significant risk; > 3 very high risk [16]. This method is simple and quick to use and is well tolerated by elderly people. It does not require excessive effort and it does not cause pain or discomfort; it is characterized by high external validity and test-retest reliability, and 75% accuracy of predicting the risk of falling in institutional communities. The risk of falling is presented in “contract units” (AU) [17].

To assess QoL, the Polish version of the SF-36 questionnaire in its standard version was used [17, 18]. It consists of 36 questions and it analyses eight categories: limitations in physical activities because of health problems (PF), bodily pain (BP), limitations in usual role activities because of physical health problems (RP), general health perceptions (GH), vitality (VT), limitations in social activities because of physical or emotional problems; (SF), general mental health; (MH), and limitations in usual role activities because of emotional problems (RE). The questions are transformed into a point scale ranging from 0 (best) to 171 (worst). The categories are summarized into two collective domains of physical health and mental health: Physical Health Summary (PHS) and Mental Health Summary (MHS).

Statistical analysis

Data were processed with the Statistica 12.0 software package (Statsoft, USA). The Shapiro-Wilk test was used to confirm the normality of the data set. To characterize constant variables descriptive statistics, i.e. mean ± standard deviation (SD), number, and percentages were used. Comparison between groups for constant variables was carried out using the t test for independent tests (normal distribution) or the Mann–Whitney U test (abnormal distribution). Associations
between the number of falls, the fall risk indicator and quality of life were studied using Spearman’s rank correlation. Statistical significance was set at $\alpha < 0.05$.

Ethical approval
The research related to human use has been complied with all the relevant national regulations, institutional policies and in accordance the tenets of the Helsinki Declaration, and has been approved by the Ethics Committee of the Wroclaw University of Health and Sport Sciences (approval No.: 1/2016).

Informed consent
Informed consent has been obtained from all individuals included in this study.

Results

It was indicated that in the year preceding the study, nearly 60% of participants fell; 32% ($n = 14$) of people fell once and 27% ($n = 12$) of participants fell twice or more. Occurrence of chronic diseases and taking at least three medications were reported by more than 80% of seniors; pain in the musculoskeletal system was reported by 90% and prescription glasses were used by 45% of respondents. Only 27% of nursing home residents participated in physical activity classes and occupational therapy offered by the institution (tab. 1).

Fall risk assessment – Physiological profile assessment (PPA)

Table 2 presents the results of the PPA assessment, including the calculated general fall risk indicator ($z$-score) and results of indicators for particular tests. The mean value of the fall risk indicator was 4.3.

A high risk of falling was observed in 72% of people (24 women and 8 men), a significant and moderate risk was observed in 9% of respondents (4 men and 4 women), and mild and low risk was found – in 4.5% of persons (2 men and 2 women).

Table 2 also presents results obtained by the participants in particular PPA tests in comparison to normal ranges suggested for respondents of similar age without significant diseases.

Significant deficits in systems important for control balance were observed in the majority of the participants of the study (tab. 2). Most deficits were observed in muscle strength of the lower extremities, visual acuity and reaction time to a stimulus. Results appropriate for age, i.e. falling within the normal range and not indicating the need to intervene, were observed: in muscle strength in 2 persons (4.5%), quality of sight in 3 participants (6.8%), and in reaction time in 4 persons (9%). The best results were obtained in the assessment of proprioception: in 80% of people (36) the test result was normal. The differences between women and men both for the general fall risk indicator as well as in the results of particular tests, except for muscle strength of knee extension, were not statistically significant.

Table 2. Test results in the PPA of the risk of falling and comparison of test results with the reference norms appropriate for the mean age (79) of the participants of the study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>Women</th>
<th>Men</th>
<th>Reference values pertinent for</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls-risk indicator</td>
<td>($z$-score)</td>
<td>4.3 ± 2.5</td>
<td>4.4 ± 2.6</td>
<td>4.2 ± 2.4</td>
<td>–</td>
</tr>
<tr>
<td>Reaction time</td>
<td>(ms)</td>
<td>807.7 ± 566.1</td>
<td>830.2 ± 608.1</td>
<td>759.4 ± 504.7</td>
<td>216–295</td>
</tr>
<tr>
<td>Body sway</td>
<td>AP (mm)</td>
<td>33.4 ± 16.9</td>
<td>33.4 ± 16.6</td>
<td>33.4 ± 18.9</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>ML (mm)</td>
<td>38.0 ± 18.5</td>
<td>39.4 ± 18.5</td>
<td>34.7 ± 15.7</td>
<td>45.1 ± 17.9</td>
</tr>
<tr>
<td>Knee extension strength</td>
<td>(kg)</td>
<td>10.1 ± 3.8</td>
<td>8.1 ± 2.0</td>
<td>14.3 ± 3.2</td>
<td>15–29</td>
</tr>
<tr>
<td>Proprioception</td>
<td>($^\circ$)</td>
<td>2.3 ± 1.9</td>
<td>1.9 ± 1.4</td>
<td>3.2 ± 2.6</td>
<td>0.8–3.2</td>
</tr>
<tr>
<td>Edge contrast sensitivity</td>
<td>(dB)</td>
<td>12.3 ± 4.1</td>
<td>11.6 ± 4.3</td>
<td>13.7 ± 3.6</td>
<td>17–22</td>
</tr>
</tbody>
</table>
Assessment of quality of life

Table 3 presents results of the components of the physical (PF, RP, BP, GH, VT) and mental (VT, SF, RE, MH) dimensions of the self-esteem of the quality of life of the participants of the study. The average index of quality of life among the studied people was 94.3 points, which is 55.2% of the maximum score (the larger the score, the lower the assessment of quality of life).

From the analysis of the health self-assessment it can be concluded that in reference to the year preceding the study, 40% of participants stated that their health had deteriorated insignificantly, 32% felt similar, 14% declared that their health had got much worse, 9% a little better and 4% much better.

Table 3. Results of particular components of quality of life

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Female</th>
<th>Male</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of life</td>
<td>94.3 ± 28.6</td>
<td>96.3 ± 27.7</td>
<td>90.1 ± 29.5</td>
<td>0.64</td>
</tr>
<tr>
<td>Physical Health</td>
<td>60.0 ± 18.9</td>
<td>61.2 ± 18.7</td>
<td>57.5 ± 19.0</td>
<td>0.681</td>
</tr>
<tr>
<td>Summary (PHS)</td>
<td>29.6 ± 11.9</td>
<td>30.1 ± 10.7</td>
<td>28.5 ± 11.2</td>
<td>0.76</td>
</tr>
<tr>
<td>PF</td>
<td>14.8 ± 7.0</td>
<td>15.3 ± 5.8</td>
<td>13.5 ± 8.0</td>
<td>0.56</td>
</tr>
<tr>
<td>RP</td>
<td>4.6 ± 2.5</td>
<td>4.5 ± 2.9</td>
<td>4.8 ± 2.4</td>
<td>0.80</td>
</tr>
<tr>
<td>BP</td>
<td>11.9 ± 3.0</td>
<td>11.9 ± 3.1</td>
<td>12.0 ± 2.9</td>
<td>0.93</td>
</tr>
<tr>
<td>Mental Health</td>
<td>33.6 ± 12.6</td>
<td>34.6 ± 11.4</td>
<td>31.2 ± 14.3</td>
<td>0.56</td>
</tr>
<tr>
<td>Summary (MHS)</td>
<td>11.6 ± 3.5</td>
<td>11.9 ± 2.5</td>
<td>10.8 ± 4.5</td>
<td>0.48</td>
</tr>
<tr>
<td>SF</td>
<td>3.2 ± 1.7</td>
<td>3.0 ± 1.7</td>
<td>3.5 ± 1.8</td>
<td>0.49</td>
</tr>
<tr>
<td>RE</td>
<td>7.3 ± 6.0</td>
<td>8.3 ± 6.1</td>
<td>5.0 ± 5.7</td>
<td>0.24</td>
</tr>
<tr>
<td>MH</td>
<td>11.6 ± 5.8</td>
<td>11.4 ± 3.9</td>
<td>11.8 ± 6.7</td>
<td>0.84</td>
</tr>
</tbody>
</table>


The participants of the study assessed their physical functioning (58.3% of the maximum score) slightly lower than their mental functioning (494%). The low self-esteem level was mostly affected by reported significant physical limitations (RP) which constituted up to 73.8% of the maximum score, as well as physical functioning – 59.3%. Vitality (VT) included in the mental dimension of quality of life was also assessed at a low level (57.9% of the maximum score) which affected the general assessment of quality of life. Other components, such as social activity, social limitations and general mental health were assessed at an average level.

Significant differences between women and men in the assessment of particular elements of the QoL index components were not observed. Both groups of respondents indicated a low level of quality of life.

Association between the frequency of falls and quality of life

A significant association between falls and the quality of life of the participants of the study was observed (Table 4). Frequency of falls positively correlated with the results of the physical and mental dimensions of quality of life and the general QoL indicator. Falls negatively affected the following spheres of life: physical functioning, vitality, social activity and the sense of physical and mental health.

Table 4, Association between the number of falls and QoL components of the nursing home residents under study

<table>
<thead>
<tr>
<th>No. of falls in past year</th>
<th>QoL</th>
<th>PHS</th>
<th>MHS</th>
<th>PF</th>
<th>RP</th>
<th>BP</th>
<th>GH</th>
<th>VT</th>
<th>SF</th>
<th>RE</th>
<th>MH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.61*</td>
<td>0.61*</td>
<td>0.57*</td>
<td>0.53*</td>
<td>0.30</td>
<td>0.23</td>
<td>0.67*</td>
<td>0.59*</td>
<td>0.45*</td>
<td>0.16</td>
<td>0.69*</td>
<td></td>
</tr>
</tbody>
</table>

* significant differences (p < 0.05)
Association between the risk of falling and the index of quality of life

There were no significant relationships between the general fall risk index (z-score) and the quality of life index and its individual categories (physical and mental dimensions) (Table 5).

Table 5. Association between the fall risk indicator and particular QoL categories of the studied persons

<table>
<thead>
<tr>
<th>z-score</th>
<th>QoL</th>
<th>PHS</th>
<th>MHS</th>
<th>PF</th>
<th>RP</th>
<th>BP</th>
<th>GH</th>
<th>VT</th>
<th>SF</th>
<th>RE</th>
<th>MH</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.14</td>
<td>-0.20</td>
<td>0.09</td>
<td>-0.19</td>
<td>-0.27</td>
<td>-0.41</td>
<td>0.01</td>
<td>0.04</td>
<td>-0.06</td>
<td>0.08</td>
<td>0.12</td>
<td></td>
</tr>
</tbody>
</table>


* significant differences (p < 0.05)

Discussion

In this study the risk fall (PPA) and the quality of life (QoL) of elderly respondents, residents of nursing homes, were assessed. Also, associations between falls reported in the medical history, the fall risk indicator (z-score) and quality of life were analyzed.

Our studies revealed a high probability of falls (z-score 4.3) and a low self-assessment of quality of life in the studied community of elderly persons. We did not observe any significant associations between the fall risk indicator determined based on the PPA and the subjective assessment of the quality of life of seniors. Significant dependencies occurred between the frequency of falls and the self-esteem of the quality of life of the participants. The obtained results constitute valuable information for the personnel of care facilities. They identify people at particularly high risk and direct therapeutic intervention to the area of the observed functional deficits and quality of life.

We indicated numerous falls during the year preceding the study (n = 38) and a high risk of falling in the future based on the PPA: high in 32 respondents (73%), significant in 4 people (9%), moderate and mild in 6 participants (14%), and low in 2 persons (4%). In the studied community falls concerned every second woman and nearly 2/3 of men; moreover, men fell ≥2 more than women. Sex and age did not differentiate the participants concerning the fall risk indicator. In 80% of women and 57% of men the risk of falling was very high. The obtained results vary from the reports of some researchers. The study conducted by Gunendi et al. [18] shows that elderly women fall more often than men, and this is related to poorer body stability. In the large-scale POLSENIOR studies it was indicated that in all age group falls were more often experienced by women (37.3% vs. 34.4%), while in 1997 it was observed that falls occurred as often among women as among men. However, the study group was not large [19]. What is more, it turns out that sex is not a factor determining the risk of falling [20]. In other studies, a larger frequency of falls among men at advanced age was observed (3.3 vs. 1.8 falls/man-year respectively) [21]. In the studies by Büchele et al. [22] conducted in nursing homes in Bavaria it was observed that falls were related to age and female sex, and less with a limited functional status.

The fall risk assessment based on the PPA revealed significant deficits in systems important for balance control. Values of the mm strength of knee extensors, quality of sight and reaction time significantly differed from the reference ranges. Also, large values of the range of bending in the frontal plane, similar to, equal to or exceeding values obtained in the sagittal plane, indicate issues with posture stability. Studies conducted by other authors indicated that aggravation of functional efficiency constitutes an independent risk factor of falls and it determines decreased quality of life [7]. According to Landi et al. [23], weakening of muscle strength increases the probability of falls by three times, and it strongly correlates with an increase in fear of falls.

A problem which is frequently discussed in studies conducted on elderly people is satisfaction from their life in the general and fragmentary dimension consisting of satisfaction from particular manifestations of functioning [24].
Our studies indicated that more than half of respondents (63.6%) assessed their quality of life as low. The physical dimension affected the obtained results more than the mental dimension, including limitations and physical functioning. The results are compliant with the results of other authors. Persons who fall, admitted to care facilities, have a lower quality of life and physical fitness than people living in their own homes [25]. According to seniors from various countries, the most important elements in the assessment of quality of life are: the ability to perform daily activities, health, sensory efficiency, mobility, independence and energy [26]. The type of care does not significantly affect the assessment of quality of life However, the need to be supported in basic daily activities has a negative impact (ADL). People who need assistance – both formal and informal – have a worse opinion about their quality of life. Significant factors correlating with the assessment of quality of life are mental disorders and depression [27, 28]. Women assessed their quality of life lower than men. Our observations are confirmed by the reports of other authors. Lower self-assessment characterizes women with a low assessment of health, physical limitations, emotional disorders and a difficult financial situation [24, 29].

In the studied group of nursing home residents, we did not observe any association between self-esteem of quality of life and the fall risk index determined based on the PPA, which suggests that subjective perception of quality of life – in the physical and mental domains – was not related to the studied efficiency of sensorimotor functions related to postural control, and it is not a sensitive indicator to predict falls. Studies conducted by other authors indicated that reduced functional efficiency in terms of daily activities and mobility is related to a greater risk of falling [30].

Our studies showed that people who fall assessed their quality of life as low. The more often they fall, the lower they assess their quality of life. The number of falls affected the physical dimension as well as the mental dimension related to their satisfaction from life. The above results are also confirmed by other authors. The studies conducted by Smee et al. [31] and Cockayne et al. [32] indicate that respondents who fall assess their physical and mental health lower, and they are reluctant to be physically active.

Lower self-assessment can be caused by fear (anxiety) of falls (FoF), injury and loss of independence [33]. The literature on the subject indicates that the feeling related to the possibility of falling, and not necessarily preceded by its occurrence, accompanies 12% to 73% of elderly people [34, 35].

One of the obstacles to taking up physical activity and improving quality of life is kinesiophobia – an irrational, debilitating and exhausting fear of movement and physical activity resulting from the feeling of being vulnerable to injury or damage. The conducted research as well as the current scientific reports indicate the need to reduce the severity of kinesiophobia in the elderly. They also indicate that the individualization of the rehabilitation approach is indispensable in this process. So far, this has been shown to reduce the severity of kinesiophobia in people with lower back pain after participation in multidisciplinary rehabilitation and 6 months after its completion [36]. Exercises to deal with kinesiophobia in individuals had similar effects after total plastic surgery of the knee joint [37, 38]. Also, physical therapy reduces the severity of kinesiophobia in people with sciatica.

Persons who experience fear of falls have lower results in tests involving gait and balance, they have poorer sight, they use assistance more often in performing daily activities, they are less active, and they assess their health and satisfaction from life lower [39, 40]. Epidemiological data indicate that residents of nursing homes are hospitalized due to falls twice as often. However the frequency of all hospitalizations in nursing homes is different and it ranges from 9% to 59% [6].

The main task of care facilities is to ensure professional care, activization of seniors and an attempt to improve their quality of life. Social and physical activization, which constitutes an important element, is often limited by various types of financial, cultural and mental barriers [12]. In the studied community, up to 73% of residents did not participate in any additional classes related to physical activity. According to Costello et al., exercise is the only way to significantly limit the number of falls [41].
In our studies due to the small amount of demographic and socioeconomic data, we did not assess the association between the number of falls, the fall risk indicator and the co-existence of diseases, taking medications, using assistance when walking or participating in activities.

Their association with falls and quality of life has been quite well-understood. In the community studied by us, these factors probably affected the frequency of falls. Recent studies indicate that the increased fall risk in residents of nursing homes is related to taking ≥ 3 medications affecting the CSN [42, 43]. The presented study has a pilot nature and elements of the health assessment, daily physical activity, the level of fear of falls, and results of the intervention introduced will be taken into account in subsequent studies.

Despite such limitations, the study provides evidence for the importance of the problem of falls and the need to predict their risk in communities of elderly people. We indicated a strong association between the frequency of falls and the perception of quality of life. Falls destructively affect independence and lead to a spiral of inactivity, further reduction of functionality, and an increased risk of falling occurring in the future [44].

Conclusion

The dominating risk factor for falls, as established in the nursing home residents against the Physiological Profile Assessment (PPA) score, consisted in a slower reaction time to a stimulus; its average value exceeding by threefold the reference value for healthy individuals of similar age. Significant differences in general falls risk indicator between women and men were not addressed.

The frequency of falls was established to affect individual perception of overall quality of life, both in mental and physically. The individuals who had sustained a larger number of falls in the past also rated their overall quality of life as lower.

Self-assessment of overall quality of life among the nursing home residents was low.

The results yielded by the study were affected appreciably more by the physical rather than mental factors.

No correlation between the falls risk indicator and gender was established.

Disclosure statement

No author has any financial interest or received any financial benefit from this research.

Conflict of interest

The authors state no conflict of interest.

References


