



contributing to DALYs lost in Hungary [4]. The rate of



the anthropometric profile's characteristics for the study participants are presented in [Table 1](#).

One hundred and seventy-two participants (70.78%) were classified as physically inactive. 80.25% of the examined population self-reported 'average', 'good' and 'very good' health status.

The results clearly showed in general that the Hungarian participants aged over 50 years are more likely to do PA if they have lower age and college or university degree ( $p \leq 0.001$ ) except active transport which was significantly more preferred by individuals with lower educational level ( $p = 0.035$ ). Daily sitting time was similar, gender differences could not be described ([Table 2](#)

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Negative significant correlation was found between age, BMI and place of living (rural residence) and QoL domains and positive significant relationship between QoL and education.

Time spent with leisure time activity showed significant positive relationship with physical health, psychological domain and social relationships. Active transport (time spent with walking or cycling) correlated only with psychological domain (Table 5).

#### Discussion

One of the most significant challenges may become the lack of PA among the ever-expanding aging population. The lifestyle, more specifically the PA regimen of an individual, changes throughout the lifespan. A significant change in life experienced by individuals older than 50 years could be their transition from employment to retirement, which may influence the health and PA areas. The transition to retirement might lead to a decreased volume of daily PA and at the same time, particularly as a result of an increase in leisure time, the proportion of PA might increase [34, 35]. The health of retirement-age adults has increasing public health importance in Hungary as well, given the demographic trends. By mitigating individuals' time constraints, retirement provides

new opportunities for adopting more physically active lifestyles and increasing the frequency and duration of leisure-time physical exercise [36]. The results of present research can provide further details to PA recommendations with the analysis of PA patterns of aging people in Hungary.

At present, Hungarians are among the most obese nations in Europe, and are in fourth place on a global scale, which may be one of the explanations for poor morbidity and mortality statistics in Hungary [4]. The central obesity is strongly associated with cardiovascular morbidity and mortality [37]. Cardiovascular disease is responsible for more than half of the deaths for people in Hungary. Age-standardized death rates of cardiovascular diseases were more than the double of the EU average in 2014, mainly due to the greater prevalence of smoking and obesity as well [4]. In spite of that, it is well known that regular PA is the most evidence-based strategy for reducing cardiovascular disease risk with aging in both sexes, only total of 29.22% Hungarian participants meet the PA suggestion of ACSM [38]. In a recent analysis of large longitudinal studies by Myers et al. it was found that people who engaged in 150 min moderate intensity (or equivalent) PA per week, had a 31% reduction in mortality compared to those who were less active [39].O6-36439

Table 3 Results of the WHOQoL-BREF domains by the different demographic variables in ageing adults in Hungary

	Physical health	Psychological domain	Social relationships	Environment domain
Mean	58.28	63.07	61.63	61.10

On the other hand, one major determinant for overweight/obesity is physical inactivity. Asp and colleagues found strong independent associations between both PA and obesity, and between physical mobility and obesity in the elderly [40].

As an earlier study showed, the environment might influence the PA of individuals. Smaller residential areas indicate a higher proportion of weekly PA [41]. The inhabitants of smaller towns and villages are more likely to achieve PA recommendations [42]. Seniors living in residential areas with  $\leq 100,000$  inhabitants are more likely to achieve the walking recommendation in the context of overall walking as well as active transport [43]. In contrast, our findings suggest, that urban living has a positive impact on quality of life, the urban residents have better QoL, than rural residents. In our present study, the amount of urban (71.6%) individuals were more than rural, but this ratio nearly represents the Hungarian (69.5%) distribution [2]. Earlier, the

influences of cities' environmental and built factors were widely demonstrated in the quality of life of aging population [44, 45].

Essential amount of PA can be reported by the aging population in the context of active transport. Based on previous results, PA performed during leisure time and total PA (transportation, work, housework and leisure) can predict the absence of frailty in the elderly [42]. Promoting active transport offers the potential to increase PA levels especially among older adults, since few participate in sport and exercise [18, 46]. Based on our results, the active transportation proved to be one of the good possibilities in elevating the PA level among low-educated older individuals. This information may be relevant for planning services for older people in Hungary.

Education factor is one of the basic determinants of health conscious behavior [47] and of PA [8]. The impacts of education on health are known to derive from



In the present research, people between 50 and 59 years, did more work-related activities, leisure physical activity, vigorous, moderate and total MVPA as well, than older participants. Data from the Baltimore Longitudinal Study on Aging showed remarkable differences in activity levels between the subgroups under 60 and over 75 years [50]. In another examined sample, PA levels decreased also significantly in 10-year-group categories as the age advanced [51].

More than three quarters of the examined population was satisfied with their own health. A previous research showed similar findings, Irish people aged 50+ also reported high life satisfaction [52]. The patients' feeling of their own good health is an important aspect of positive ageing. It is also a good predictor of other important ageing outcomes, morbidity and mortality.

The QoL of respondents was measured by WHOQoL-BREF questionnaire. In the present research, participants, who had higher degree of education (all dimension of WHOQoL-BREF) and lower age had better QoL, except the environment domain.

Being overweight interfered with QoL equally in both sexes, people with lower BMI had better QoL than individuals with higher BMI [53]. Higher age may be associated with higher BMI [54]. A negative correlation was confirmed in the adult population between BMI and vigorous PA as well. In persons aged  $\geq 50$  years with normal BMI the prevalence of a sedentary lifestyle is 9.5%, while in obese individuals it is higher, 10.7% [54, 55]. In the aging population, individuals with normal BMI achieve significantly more steps/day than individuals with overweight and obesity. Weekend days (especially Sunday) were the days with the lowest number of steps in men and women aged  $\geq 50$  years with overweight and obesity [56]. Present results indicated an association between increased BMI and decreased QoL in almost all domains (except environmental) of the WHOQoL-BREF.

Our present results showed strong connection between WHOQoL-BREF domains and different demographic variables. We used multivariate linear regression analysis to examine the effect of PA adjusted for demographic and anthropometric (age, education, BMI, place of living) variables. Our results are in line with former findings, i.e. men and women aged  $\geq$



Nevertheless, we believe that these limitations do not prevent drawing conclusions from the study.

The strength of the present study is the comprehensive assessment of quality of life in older people. In addition, a large age range of elderly (from 50 years) was studied. Earlier studies on elder populations in bigger



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