

# Quality of life and impact of physical activity time in the health of elderly

## *Qualidade de vida e impacto do tempo de atividade física na saúde dos idosos*

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### ABSTRACT

**Objective:** This study aimed to evaluate the quality of life, through the “Medical Outcomes Study 36 - Item Short - Form Health Survey” (SF-36) questionnaire, of a group of elderly involved in physical activities scheduled and the impact of physical activity time. **Methods:** We assessed 143 elderly engaged in physical activity programmed by Universidade Federal de Uberlândia. As a data collection tool, we used the SF-36 and a sociodemographic questionnaire, applied at the time of the interview. Statistical analysis was performed using Kruskal-Wallis, for analysis between domains, and Mann-Whitney test, to verify the relationship between health status and physical activity level. **Results:** The average age was 70.5 years. The mean score for the SF-36 of the elderly people who participated in the research was 73.3. The best result was in the Social Aspects domain (81.7), followed by Mental Health (78.9). Approximately 76% had at least 150 minutes of physical activity per week, being classified as a more active population. Most (70.6%) of the elderly had a good perception of their general health. There was statistical difference in the General Health domain among groups that performed physical activity for a period of less than one year and those who have been engaging in regular physical activity for over 10 years. **Conclusions:** The Social Function and Mental Health domains had the highest scores, with significant documentation of a better general health in the group that have practiced consecutive physical activity for over ten years.

**Keywords:** quality of life; elderly; questionnaires.

### RESUMO

**Objetivos:** Avaliar a qualidade de vida, através do questionário “Medical Outcomes Study 36 - Item Short - Form Health Survey” (SF-36) em um grupo de idosos envolvidos em atividades físicas programadas e o impacto do tempo de atividade física. **Métodos:** Avaliamos 143 idosos envolvidos em atividade física programada pela Universidade Federal de Uberlândia. Como ferramenta de coleta de dados, foram utilizados os questionários SF-36 e um sociodemográfico, aplicados no momento da entrevista. Foi realizado o teste Kruskal-Wallis para análise entre os domínios e Mann-Whitney para verificar a relação entre o estado de saúde e o nível de atividade física. **Resultados:** A média de idade da população foi de 70,5 anos. A pontuação média encontrada a partir da análise do SF-36 foi de 73,3. Os domínios Aspectos Sociais (81,7) e Saúde Mental (78,9) apresentaram os escores mais elevados. Cerca de 76% dos idosos incluídos no estudo praticavam pelo menos 150 minutos de atividade física por semana, sendo classificada como população mais ativa. A maioria (70,6%) dos idosos tinha uma boa percepção do seu estado geral de saúde; entretanto, observou-se diferença estatística quanto ao domínio Estado Geral de Saúde entre os grupos que praticavam atividade física por período menor que um ano e aqueles que praticam há mais de 10 anos. **Conclusões:** As melhores pontuações foram obtidas para os domínios Aspectos Sociais e Saúde Mental, sendo observado significativo melhor estado geral de saúde no grupo que pratica atividade física consecutiva há mais de dez anos.

**Palavras-chave:** qualidade de vida; idosos; questionários.

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## INTRODUCTION

Aging is a biological and universal process.<sup>1</sup> Populations of the world have been aging as the expected life span at birth has become longer. It is estimated that the population of older adults in the world will exceed one billion by 2020, and most of the elder population will be living in developing countries.<sup>2</sup> According to the World Health Organization, under the chronological point of view, elderly are considered to be individuals aged 65 years or older in developed countries, while in developing countries, the prevailing age is 60 years or older.<sup>3</sup> In Brazil, legal provisions support the elderly population within this age group.

Considering that life expectancy has increased significantly in recent years,<sup>4,5</sup> quality of life for older adults is one of the greatest challenges faced by care professionals from different areas. Elders are considered to be vulnerable to hospitalization, chronic diseases, and age-associated decline, among others.<sup>6,7</sup> Previous studies have shown that the best quality of life for older adults is associated with regular physical activity, which is recognized as a strong ally of active and healthy aging, in addition to decreased risk of morbidity and mortality, improvement of psychological conditions, self-esteem, cognition, the physical capacity needed to undertake activities of daily living and increased social involvement.<sup>8</sup>

Quality of life is a multidimensional concept that includes objective and measurable criteria, such as normal operation or maintenance of activities of daily living,<sup>9</sup> and subjective components, commonly referred to as life satisfaction, which reflect the balance between expectations and the objectives achieved.<sup>10</sup> The World Health Organization defines quality of life as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”, and discusses the interaction of many factors in the third age.<sup>11</sup>

The investigation of quality of life has been studied through different assessment questionnaires, including the “Medical Outcomes Study 36 – Item Short – Form Health Survey” (SF-36), which has been considered the most appropriate tool for this type of evaluation. The SF-36 accesses health concepts that represent basic human values relevant to everyone’s functional status and well-being.<sup>12</sup>

Thus, this study aimed to evaluate quality of life, through SF-36 questionnaire, of a group of elderly involved in scheduled physical activities and the impact of physical activity time.

## METHODS

### Population and quality of life study enrollment

This was a random population-based cross-sectional study. The study population consisted of people aged 60 and over (n=143) living in the city Uberlândia between November 2013 and February 2014. All elderly included in the study participated in a physical activity program offered by Universidade Federal de Uberlândia called “Physical Activity and Recreation for the Third Age” (AFRID). The program

receives an average of 350 elderly per semester, offering various modules on sports, including the 130 elderly who agreed to participate in this study. The elderly included in the study were classified according to the number of hours spent being most active ( $\geq 150$  minutes) and less active ( $< 150$  minutes).<sup>8</sup>

Since 1989, School of Physical Education of Universidade Federal de Uberlândia develops a physical and recreational activity program aimed at providing social and emotional physical well-being to participants of the AFRID project. A multidisciplinary team aims to attenuate age-related problems. The activities are: water aerobics, weight training, dance, digital inclusion, singing and coral, among others.

### “Medical Outcomes Study 36 - Item Short - Form Health Survey” (SF-36) and sociodemographic questionnaire

To evaluate the quality of life of older people, the SF-36 questionnaire, translated and validated for the Brazilian reality, was used.<sup>13</sup> SF-36 is a short questionnaire with 36 items, which measure eight multi-item domains: physical functioning (10 items), social functioning (2 items), limitations due to physical problems (4 items), limitations due to emotional problems (3 items), mental health (5 items), vitality (4 items), pain (2 items), and general perception of health (5 items). For each item in each domain, scores are coded, summed, and transformed into a scale from 0 (worst possible health state measured by the questionnaire) to 100 (best possible health state). In addition, the SF-36 Physical Component Summary and the Mental Component Summary scales are derived from the standard SF-36 scoring algorithms.

Associated with the SF-36, a sociodemographic questionnaire was also applied during the interview. The local Ethics Committee approved this cross-sectional study, under protocol number 412.463, and all participants provided a written informed consent.

## Statistical analysis

Statistical analysis was performed using the procedures of descriptive statistics (mean, standard deviation and frequency distribution). The internal consistency of the SF-36 was verified by means of Cronbach’s alpha values. The assessment of physical activity time does not present a normal range, thus the analysis between domains was performed using the non-parametric association of Kruskal-Wallis, assuming a significance level of  $p \leq 0.05$ . To verify the relationship between health status and activity level, the Mann-Whitney test was used.

## RESULTS

The distribution of demographic factors and socioeconomic status for the older adult group are presented in Table 1. The average age of the sample was 70.5 years (ranging from 60 to 89 years); the majority of participants (61.5%) had less than six years of schooling) and were more likely to be married (49.6%). About 27% of the elderly had low income, more than half (51.1%) had been participating in the AFRID project for over five years. Approximately 76% of

the elderly practiced at least 150 minutes of physical activity per week and had been classified as a more active population, with no significant differences between SF-36 domains of more and less active groups (data not shown).

The results on quality of life as measured by SF-36 are shown in Table 2. The better the quality of life, the results show that the domains with the lowest scores were: limitations for physical aspects and pain (61.9 and 64.0, respectively) while the domains relating to functional capacity, general health, emotional and mental health fluctuated around the score of 70. The best result was in the social aspects domain (81.7), followed by mental health (78.9). According to the classification proposed by Caporici et al.<sup>4</sup> the group of patients included in this study all had domains classified as good. The Cronbach's alpha values were higher than 0.5 for all domains assessed by the SF-36. Therefore, it is a reliable measure.

Overall, the perception of the elderly in relation to general health was good (70.6%; 101/143). However, 6.3% (9/143) of the elderly still classify their general health as poor or very poor (Figure 1). We also compared the values of each SF-36 domain with similar populations, i.e. healthy elderly who practice physical activity, between Uberlândia and other cities of Brazil; the results are shown in Table 3. Cities like São Paulo reported higher domain values, which was contrary to the situation in Belo Horizonte.

A statistical difference was only shown in the general health domain among groups that performed physical activity for a period of less than one year and those who engaged in regular physical activity for more than 10 years ( $p \leq 0.05$ ) (Figure 2).

## DISCUSSION

The present study investigated health aspects of the elderly population of Uberlândia using the SF-36 and analyzed the associations with sociodemographic characteristics. Good scores in the SF-36 dimensions were expected, as it dealt with persons with no cognitive impairment and who were independent; in addition to the social aspects, the scores for mental health and functional capacity were better perceived by the studied population.

Table 1. Demographic and socioeconomic characteristics of the 143 elderly evaluated according to the "Medical Outcomes Study 36 - Item Short - Form Health Survey" (SF-36).

Characteristics	Total=143 n (%)
Gender	
Female	120 (83.9)
Male	23 (16.1)
Age (years)	
60-70	70 (48.9)
71-80	54 (37.8)
≥81	19 (13.2)
Civil status	
Married	71 (49.6)
Single	9 (6.3)
Separate	12 (8.4)
Widower	47 (32.9)
Living consensually	4 (2.8)
Number of residents living at the household	
1-4	132 (92.3)
5-8	11 (7.7)
Educational level	
Incomplete primary education	88 (61.5)
Complete primary education	13 (9.1)
Incomplete secondary education	5 (3.5)
Complete secondary education	13 (9.1)
Superior education	13 (9.1)
Other*	11 (7.7)
Family income (BRL)**	
600.00 a 1,050.00	39 (27.3)
≥1,050.00	85 (59.4)
Not applicable	19 (13.3)

\*Uninformed, incomplete superior education; \*\*Brazilian Real.

Table 2. Quality of life according to the "Medical Outcomes Study 36 - Item Short - Form Health Survey" (SF-36).

Domains	Mean	Standard deviation	Minimum	Maximum	Classification (URSS, 2000)* <sup>14</sup>	Cronbach's alpha
Physical Function	71.4	24.6	0	100.0	Good	0.9
Role physical	61.9	41.8	0	100.0	Good	0.9
Pain	64.0	28.3	10.0	100.0	Good	0.8
General Health	74.2	18.4	5.0	100.0	Good	0.6
Vitality	68.5	20.8	20.0	100.0	Good	0.7
Social Function	81.7	23.5	25.0	100.0	Good	0.7
Role Emotional	72.3	39.5	0	100.0	Good	0.9
Mental Health	78.9	19.1	4.0	100.0	Good	0.7

\*Unidade de Pesquisa em Serviços Sanitários - URSS (2000)



Figure 1. Perception of health status in relation to physical activity time according to “Medical Outcomes Study 36 - Item Short - Form Health Survey” (SF-36).

Despite the SF-36 being a widely used tool for assessing the population’s quality of life, most studies published in Brazil using the SF-36 aimed to verify the impact of disease on quality of life and evaluate the benefits of treatments, and studies evaluating the quality of life related to health in healthy elderly in Brazil using the SF-36 are still scarce.<sup>19,20</sup>

According to previous studies,<sup>21</sup> economic conditions can influence quality of life. As expected, it was found that 43% of seniors with incomes up to BRL 1,050 had better quality of life than those with lower incomes (21.8%). On the other hand, living alone was associated with lower scores on mental health.<sup>22</sup> Our results showed that only 18.2% of the elderly living alone have good mental health.

According to our findings, the health aspects of the older adult population varies and is related to the time

Table 3. Quality of life according to the “Medical Outcomes Study 36 - Item Short - Form Health Survey” (SF-36) for different cities of Brazil

Domains	Uberlândia (MG) n=143	Belo Horizonte (MG) <sup>15</sup> n=87	Aracaju (SE) <sup>7</sup> n=587	Brejo Santo (CE) <sup>16</sup> n=60	São Paulo (SP) <sup>17</sup> n=1958	Porto Alegre (RS) <sup>18</sup> n=102
Physical function	71.4	61.1	58.9	58.3	71.4	70.9
Physical performance	61.9	49.2	67.4	70.4	81.2	75.0
Pain	64.0	54.8	59.9	61.9	74.2	65.0
General health	74.2	59.0	61.9	43.9	70.1	68.0
Vitality	68.5	61.0	67.2	37.1	64.4	57.6
Social function	81.7	70.0	80.5	49.5	86.1	76.2
Emotional performance	72.3	53.4	75.1	81.1	85.9	73.1
Mental health	78.9	68.3	54.9	42.4	69.9	72.4

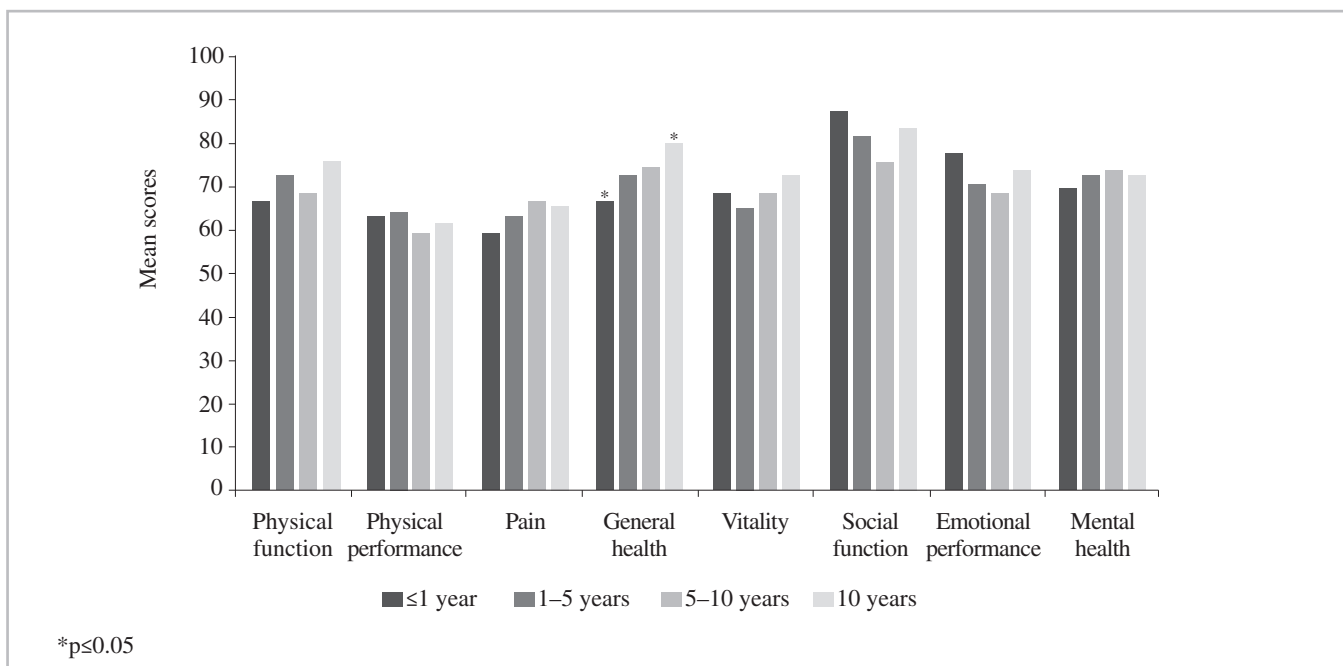


Figure 2. Domains of the “Medical Outcomes Study 36 - Item Short - Form Health Survey” (SF-36) according to time of physical activity.

spent engaging in physical activity. That is, whether one is more active or less active. Consequently, these individuals were more likely to express satisfaction with their general health.

The mean score of the elderly people who participated in the research for the SF-36 was 73.3; this was primarily related to the mental aspects assessed by the questionnaire. The studies conducted, despite expecting a strong relationship between the time of physical activity related to the dimensions of the SF-36 questionnaire,<sup>23</sup> found positive correlations between health perceived by older adults and the time practicing physical activity. In our study, general health was statistically related to time spent engaging in physical activity.

More research is needed in this area in order to consider whether older adults who are physically and mentally active demonstrate and can perceive better performance of activities, better health and, therefore, better quality of life.

Regardless of the study design and the sociodemographic characteristics, the effects of physical activity on both physical and mental health are clear. Specifically, social programs that include physical activity can contribute significantly to the quality of life of the elderly population, intervening in a positive way. This aspect can be inferred from our study, since there were no significant differences between the more active population and the less active population, that is, independently of the time of physical activity performed per week, there was a direct influence on the quality of life for seniors in our study. In summary, our sample of older adults have a good perception of their health. However, in the future, an analysis of which domains influenced their perception will be necessary. It is also necessary to compare the quality of life of those who do and those who do not exercise.

Our study has some limitations that should be noted when interpreting the results. Firstly, the cross-sectional design of the study did not allow an analysis of the trends of quality of life in a prospective way. Secondly, the study used a small population, thus reducing the statistical power. However, despite these limitations, our findings broadened knowledge of the role of physical activity on the quality of life of an elderly population in Brazil.

In conclusion, the findings of the present study, according to the mean quality of life scores of the elderly people, indicate that the Social Function and Mental Health domains had the highest means, with significant documentation of a better general health in the group that performed physical activity consecutively for over ten years.

## CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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