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original article

# Motor performance of elderly in a community in southern Brazil

## *Desempenho motor de idosos de uma comunidade do sul do Brasil*

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**Abstract** – The objective of this study was to present reference values and assess the motor performance of the elderly in a community in the south of Brazil, according to sex and age group. Population-based household study, conducted with 477 elderly (≥60 years) from the municipality of Antônio Carlos, Santa Catarina state. Motor performance was verified by four tests: handgrip strength (KG), balance (four tasks), 'chair stand' and 'pick up a pen' (seconds). We use a score varying from 0 (unable) to 3 (good) in all the tests. We assessed 270 women with a mean age of 73.2 ±8.82 years, and 207 men (73.3 ± 8.96 years). The results showed that the values (means, standard deviations and percentiles) were higher in men than those of the women in handgrip strength test and lower in the tests evaluated by time. The chi-square test showed that men had the highest prevalence of 'good' performance in the 'chair stand', balance and handgrip strength tests, when compared to the women (p≤0.01). With the advance of age there is a reduction in the prevalence (p≤0.01) of men and women with good performance and an increase in the prevalence of incapacity or poor performance in all the tests. The best motor performance is specific to the test, sex and age group. The men and the youngest age groups exhibit the best motor performance in all the tests.

**Key words**: Aging; Hand strength; Time and motion studies.

**Resumo** – *O estudo teve como objetivo apresentar valores de referência e avaliar o desempenho motor de idosos de uma comunidade do sul do Brasil, de acordo com sexo e grupo etário. Estudo populacional, de base domiciliar, realizado com 477 idosos (≥ 60 anos) do município de Antônio Carlos, SC. O desempenho motor foi verificado por meio de quatro testes: força de preensão manual (Kg), equilíbrio estático (quatro tarefas), "sentar e levantar" e "pegar o lápis" (segundos). Foi usado escore de classificação para todos os testes que variou de 0 (incapaz) a 3 (bom). Foram avaliadas 270 mulheres (73,2 ±8,82 anos) e 207 homens (73,3 ± 8,96 anos). Os resultados mostraram que os valores (médias, desvios padrão e percentis) dos homens, no teste de força de preensão manual, foram maiores do que os das mulheres e menores no testes avaliados por tempo. O teste qui-quadrado mostrou que os homens tiveram maior prevalência de desempenho "bom" nos testes "sentar e levantar", equilíbrio e força de preensão manual, comparados às mulheres (p≤0,01). Com avanço da idade, houve redução na prevalência (p≤0,01) de homens e mulheres com desempenho bom e aumento na prevalência de incapacidade ou desempenho fraco, em todos os testes. O melhor desempenho motor é específico ao teste, sexo e grupo etário. Os homens e os grupos etários mais jovens apresentam melhor desempenho motor, em todos os testes realizados.*

**Palavras-chave**: *Envelhecimento, Estudos de tempo e movimento, Força de preensão manual.*

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## INTRODUCTION

Motor performance tests are important objective measures in the assessment of the functional health of the elderly, as they allow the identification of physical/motor capacity involved in the performance diverse tasks related to daily living[1-3]. The assessment of functional limitation through these types of tests can be indicative of the process of disabilities[3], as it can predict cognitive deficit[4], risk of fractures[5,6], hospitalization[7], morbidities and mortality[2,8]. In addition, the motor tests can characterize current health and assist in the delivery of intervention programs[9].

In Brazil, there are few studies, with probabilistic samples and home collection that verify the motor performance of the elderly and present information regarding this performance in a way that provides a reference for the assessment of health. The 'SABE Survey'[10] involved elderly residents in the urban area of the municipality of São Paulo. The study conducted by Pinheiro et al.[11] involved elderly residents in city with unfavourable socioeconomic conditions in north eastern Brazil. No studies involving elderly residents from rural areas, as in the south of the country, were found.

Brazil is a country which still has divergent socio-demographic, cultural and economic characteristics[12] and these characteristics may be reflected in living conditions, access to health care, health status and differences in the motor performance of the elderly[2,9-11]. Therefore, it is necessary to conduct studies in various contexts, in order to have pertinent information from this contingent of the population. The objective of this study was to present reference values and assess the motor performance of the elderly from a community in the south of Brazil, where 71.5% of the elderly live in rural area, according to sex and age group[13].

## METHODS

This study, both population-and household-based, is part of the epidemiological research 'Saúde – AC', conducted in the municipality of Antônio Carlos, Santa Catarina (AC-SC). This municipality, 30 km from the capital of the state of Santa Catarina, in 2010, had a population of 7,458 inhabitants (12.8% were 60 or over), with 68.1% of the population residing in small, rural properties[13]. There is a Health Service Unity in the centre of the Antônio Carlos, in addition to three teams from the Family Health Strategy programme (FHS) which cover 100% of the municipality.

The study population was composed considering all the elderly registered, in 2009, on the FHS (n=917), attending to the age groups of 60-79 years and 80 years or more. For the individuals between 60 and 79 years (n=782) the calculated sample was of 471 individuals (margin of error of 5 percentile points, prevalence of 50% of unknown outcome, a test power of 80% and 15% sample loss). Random sampling was considered within each area of the FHS (area 1, n=175; area 2, n=140 and area 3, n=156). At the end of the collection (December 2010 to April 2011) 343 elderly were assessed (area 1, n=125; area 2, n=98 and; area 3, n=120) increasing the margin of error to 5.4

percentile points. Since the stratified sample was not proportional, sample weights were used for the analysis of data. The sample loss criteria were the following: absence of an adequate proxy respondent; individual absent from the municipality for a period longer than the field research or following three home visits; inability to access to the home due to the rural road conditions.

All the elderly (n=134) from the municipality that were 80 or over were assessed (February to April 2010). The elderly that were 80 years or over before 31st of May 2010 were placed in the 80 or over age group; the rest in the 60-79 age group.

We used a questionnaire based (short version) on the 'SABE Survey', a multicenter study undertaken in seven Latin American and Caribbean countries(http://hygeia.fsp.usp.br/sabe/Extras/Questionário_2000.pdf)[14].

Data collection was conducted by undergraduate and postgraduate students (Physical Education and Nutrition) and by the research coordinator. The interviewers were trained prior to testing and refinement and calibration of the instrument (questionnaire and motor tests). The research coordinator was responsible for training and check the questionnaires.

The handgrip strength test (HGS) verified the motor performance of the superior limbs. The inferior limbs were evaluated by three tests related to the function of strength/resistance, mobility, balance and agility: 'chair stand'[15], 'pick up the pen'[16], assessed by time and balance[15]. Tests procedures were the same used in the 'SABE Survey'[9,10]and will now be presented concisely.

Handgrip strength – assessed by a dynamometer (TAKEI), was taken using the arm that the subject considered dominant. The assessment was conducted twice with an interval of 1 minute and the highest value was recorded (kg). To assess the performance in the test, the values (kg) were distributed in percentiles, according to sex: unable = score 0 (unable); ≤ $P_{25}$ = score 1 (poor); > $P_{25}$ a ≤ $P_{75}$ = score 2 (average); > $P_{75}$ = score 3 (good).

The 'chair stand' test[15] – the elderly began the test in the sitting position, arms crossed over the chest, after which they attempted to stand and sit five times, consecutively, as quick as possible, in ≤ 60 seconds. The performance in the test was verified by way of value distribution (seconds) in percentiles, according to sex: score 0 (unable); ≤ $P_{25}$ = score 1 (poor); > $P_{25}$ a ≤ $P_{75}$ = score 2 (average); > $P_{75}$ = score 3 (good).

The 'pick up the pen' test[16] – the individual should crouch, pick up the pencil on the ground and return to the start position in ≤ 30 seconds. The performance in the test was verified by way of value distribution (seconds) in percentiles, according to sex: score 0 (unable); ≤ $P_{25}$ = score 1 (poor); > $P_{25}$ a ≤ $P_{75}$ = score 2 (average); > $P_{75}$ = score 3 (good).

Balance[15] – verified by a test composed of 4 static tasks (10 seconds each), conducted with the individual standing, in sequence: (a) side-by-side stand; (b) full tandem stand; (c) maintain balance when standing only on the right leg (one-leg stand); (d) maintain balance when standing only on the left leg (one-leg stand). The score were the following [9,10]: unable (0) = was not able to perform any of the 4 tasks; poor (1) = performed one task (side-by-side); average (2) = performed two tasks (side-by-side and full tandem stand); good (3) = successfully performed three or four tasks.

Before each test the interviewers explained and demonstrated the test and made sure that the task could be completed without any physical risk to the elderly. We take care in relation the footwear of individuals (tests related to the lower limbs), i.e., tests were performed with the individual barefoot or using any firm shoe.

The elderly unable of understanding the instructions due to a cognitive problem were excluded from the analyses. The elderly with physical limitations were included in the score tests as unable[9,10].

Information about family arrangements (living alone/accompanied), literacy (knows how to write and read - yes/no) and occupation throughout life (agriculture/other professions) were used to describe the sample.

For the descriptive analyses of the variables, measures, standard deviation, percentiles and proportion of individuals were used according to sex and age group (60-69, 70-79 and ≥80). The Kruskal-Wallis test verified the effect of the age group upon motor performance and the U test (Mann-Whitney) was used in the comparisons between men and women.

The distribution of the individuals, according to the motor performance test scores, sex and age group were shown in tables, using the chi-squared test. The exact Fisher test was used in the cases in which any frequency expected was less than five. The *Spearman* correlation was used to verify the relation between the test scores and the motor performance, according to sex.

All the analyses were weighted using the sample weight. The level of significance adopted was 5% ($\alpha = 0.05$). The data were doubly tabulated and analysed using the statistic programme SPSS® 16.0.

The ethics committee of the Universidade Federal de Santa Catarina (Protocol No. 189/09) approved the study.

## RESULTS

The study involved 270 women (73.2 ± 8.82 years) and 207 men (73.3 ± 8.96 years), aged between 60 and 100 years. The majority of the elderly lived accompanied in the home (86.9%), worked in agriculture/farming throughout life (70.1%) and stated they were able to read and write (82.1%).

In the evaluation of motor performance, of the total 477 elderly analysed, 42 were unable to complete any test related to the performance of the inferior limbs and were included in the analyzes with score 0. Were also included with score 0, seven, 16 and 8 subjects who failed to perform the 'chair stand' test, 'pick up a pen' and balance tests, respectively. The test of handgrip strength was not realized by 17 elderly.

Table 1 presents the values from the HGS tests, 'chair stand' and 'pick up the pen', according to sex and age group. When compared to men, the women presented lower mean values in the HGS test ($p<0.05$) and higher values in the tests assessed by time ($p<0.05$), when compared with the men. With the increase in age, the men and women showed a significant reduction ($p <0.001$) in mean values in the HGS and an increase in the time necessary to perform the 'pick up a pen' test ($p <0.001$). The reductions occurred for the two extreme age groups (60-69 and ≥80 and over), except

for the handgrip test (men), whose differences were observed between younger age groups and the other age groups.

The data from Table 3 shows the distribution of the men and women, according to sex and performance in the tests. The male sex presented a higher prevalence of individuals with better results in the 'chair stand', balance and HGS tests, when compared with the female sex. The women showed a higher prevalence in incapability and poor performance in the 'chair stand' and balance tests, when compared with the men. The differences were significant between the sexes, in relation to performance in the 'chair stand' tests ($p \leq 0.001$), balance ($p \leq 0.001$) and HGS ($p \leq 0.021$).

**Table 1.** Means, standard deviation (SD) and medians, from the handgrip strength test (HGS), 'chair stand' and 'pick up a pen' according to sex and age group. Antônio Carlos, SC, Brazil, 2010/2011.

| Tests | Age Group | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 60-69 | | 70-79 | | ≥ 80 | | All | |
| | Mean ± SD | Median | Mean ± SD | Median | Mean ± SD | Median | Mean ± SD | Median |
| Handgrip (kg) | | | | | | | | |
| Female (263) * | 22.4 ± 5.8 | 23.0[a] | 21.7 ± 5.8 | 21.0[b] | 19.0 ± 5.2 | 20.0[b] | 21.7 ± 5.8[†] | 22.0 |
| Male (197) * | 38.1 ± 8.8 | 40.0[a] | 29.2 ± 7.2 | 29.0[b] | 29.9 ± 7.0 | 31.0[b] | 33.5 ± 9.1[†] | 34.0 |
| 'Chair stand' (s) | | | | | | | | |
| Female (226) | 14.2 ± 6.9 | 13.0 | 14.2 ± 4.9 | 13.0 | 15.0 ± 5.7 | 13.5 | 14.3 ± 6.2[†] | 13.0 |
| Male (182) | 12.0 ± 4.6 | 11.0 | 12.8 ± 4.6 | 12.0 | 13.0 ± 4.6 | 12.0 | 12.4 ± 4.6[†] | 11.9 |
| 'Pick up a pen' (s) | | | | | | | | |
| Female (233) * | 2.2 ± 1.5 | 2.0[a] | 2.3 ± 1.9 | 2.0[a] | 3.4 ± 1.9 | 3.0[b] | 2.4 ± 1.7[†] | 2.0 |
| Male (185) * | 1.9 ± 1.2 | 2.0[a] | 2.0 ± 1.2 | 2.0[a] | 2.7 ± 1.3 | 2.0[b] | 2.0 ± 1.2[†] | 2.0 |

[†]Significant differences ($p<0.05$) between the sexes *(Mann-Whitney).* * Values in reference to the comparison between the age groups (*Kruskal Wallis* test). a,b - values with different superscript letters were significantly different (Mann-Whitney).

**Table 2.** Percentiles of time spent conducting the 'chair stand' test (seconds), 'pick up a pen' test (seconds) and handgrip strength test (kg), according to sex and age group. Antônio Carlos, SC, Brazil, 2010/ 2011.

| | Female | | | | Male | | | | All |
|---|---|---|---|---|---|---|---|---|---|
| | 60-69 | 70-79 | 80 | All | 60-69 | 70-79 | 80 | All | |
| Handgrip (n) | (115) | (72) | (76) | (263) | (78) | (65) | (54) | (197) | (460) |
| 10 | 15.0 | 15.0 | 12.0 | 14.7 | 27.0 | 20.0 | 19.0 | 21.0 | 15.0 |
| 25 | 18.0 | 17.0 | 6.0 | 18.0* | 34.2 | 24.0 | 25.8 | 28.0* | 20.0 |
| 50 | 23.0 | 21.0 | 20.0 | 22.0 | 40.0 | 29.0 | 31.0 | 34.0 | 25.0 |
| 75 | 27.0 | 26.0 | 22.0 | 26.0* | 44.0 | 33.7 | 35.0 | 41.0* | 33.0 |
| 90 | 29.0 | 29.0 | 26.0 | 29.0 | 47.9 | 38.0 | 38.5 | 45.5 | 41.0 |
| 'Chair stand' (n) | (108) | (67) | (58) | (233) | (77) | (60) | (48) | (185) | (418) |
| 10 | 8.0 | 9.0 | 9.0 | 9.0 | 8.0 | 7.0 | 8.0 | 8.0 | 8.0 |
| 25 | 10.0 | 12.0 | 11.0 | 11.0 | 9.0 | 10.0 | 10.0 | 10.0 | 10.0* |
| 50 | 13.0 | 13.0 | 13.5 | 13.0 | 11.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| 75 | 16.0 | 16.0 | 17.5 | 16.0 | 4.0 | 16.0 | 15.0 | 16.0 | 16.0* |
| 90 | 19.0 | 19.0 | 23.8 | 20.0 | 18.0 | 19.0 | 19.0 | 19.0 | 19.0 |
| 'Pick up a pen' (n) | (110) | (64) | (52) | (226) | (77) | (60) | (45) | (182) | (408) |
| 10 | 1.0 | 1.0 | 2.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 1.0 |
| 25 | 1.0 | 1.0 | 2.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 1.0* |
| 50 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 75 | 2.0 | 3.0 | 4.0 | 3.0 | 2.0 | 2.0 | 3.0 | 2.0 | 3.0* |
| 90 | 4.0 | 4.0 | 6.0 | 4.0 | 3.0 | 3.9 | 5.0 | 3.0 | 4.0 |

*Used to define the categories of performance.

The percentile distribution shows the values employed to determine the categories of motor performance (percentiles 25 and 75).

**Table 3**. Distribution (%) of the elderly according to sex and performance in the tests. Antônio Carlos, SC, Brazil, 2010/11.

| | Unable | Poor | Average | Good | p* |
|---|---|---|---|---|---|
| 'Chair stand' | | | | | |
| Female | 10.7 | 19.0 | 50.9 | 19.4 | ≤0.001 |
| Male | 9.8 | 15.4 | 40.6 | 34.2 | |
| Total | 10.3 | 17.4 | 46.4 | 25.8 | |
| 'Pick up a pen' | | | | | |
| Female | 8.7 | 2.8 | 22.4 | 66.1 | 0.465 |
| Male | 8.8 | 1.5 | 19.8 | 69.8 | |
| Total | 8.8 | 2.2 | 21.3 | 67.7 | |
| Balance | | | | | |
| Female | 9.3 | 19.8 | 29.5 | 41.4 | ≤0.001 |
| Male | 8.8 | 8.2 | 17.0 | 66.0 | |
| Total | 9.1 | 14.8 | 24.1 | 51.9 | |
| Handgrip | | | | | |
| Female | 1.2 | 15.5 | 46.4 | 37.0 | ≤ 0.021 |
| Male | 4.1 | 16.5 | 40.9 | 38.6 | |
| Total | 2.4 | 15.9 | 44.0 | 37.7 | |

*Chi-square Test.

With the advance of age, women and men present significant differences in performance in the four tests. Between the men, the prevalence of better performance reduced, in all the tests, with the advance of age. For the female sex, in the 'chair stand' test, the women aged 80+ exhibited better prevalence of good performance than those aged 70-79 (Table 4).

**Table 4.** Distribution (%) of the elderly according to age groups, sex and performance in the tests. Antônio Carlos, SC, Brazil, 2010/11.

| Tests | Female | | | P | Male | | | P |
|---|---|---|---|---|---|---|---|---|
| | 60-69 | 70-79 | ≥ 80 | | 60-69 | 70-79 | ≥ 80 | |
| Handgrip | | | | | | | | |
| Unable | - | 3.6 | - | ≤0,001* | 28 | 7.2 | - | ≤0,001* |
| Poor | 13.9 | 14.3 | 23.7 | | 7.2 | 26.8 | 18.5 | |
| Average | 41.6 | 47.6 | 60.5 | | 27.1 | 49.0 | 64.8 | |
| Good | 44.6 | 34.5 | 15.8 | | 63.0 | 17.0 | 16.7 | |
| 'Chair stand' | | | | | | | | |
| Unable | 2.7 | 15.3 | 29.7 | ≤0.001* | 4.9 | 13.2 | 18.2 | ≤0.007** |
| Poor | 19.5 | 18.8 | 17.6 | | 12.5 | 19.2 | 14.5 | |
| Average | 51.9 | 54.7 | 37.8 | | 42.4 | 37.1 | 43.6 | |
| Good | 26.0 | 11.2 | 14.9 | | 40.2 | 30.5 | 23.6 | |
| 'Pick up a pen' | | | | | | | | |
| Unable | 3.5 | 10.6 | 21.6 | ≤0.001* | 4.9 | 13.2 | 11.1 | ≤0.001* |
| Poor | 2.7 | 2.9 | 4.1 | | 1.6 | 1.3 | 1.9 | |
| Average | 16.9 | 21.2 | 44.6 | | 17.9 | 17.2 | 33.3 | |
| Good | 76.9 | 65.3 | 29.7 | | 75.5 | 68.2 | 53.7 | |
| Balance (n) | | | | | | | | |
| Unable | 4.5 | 12.4 | 18.4 | ≤0.001** | 4.9 | 13.3 | 10.9 | ≤0.001* |
| Poor | 19.8 | 18.2 | 23.7 | | 8.2 | 8.7 | 7.3 | |
| Average | 18.7 | 43.5 | 36.8 | | 10.9 | 20.7 | 27.3 | |
| Good | 57.1 | 25.9 | 21.1 | | 76.1 | 57.3 | 54.5 | |

* Fisher's exact test. ** Chi-square Test.

The scores of the tests were positively correlated with statistical significance ($p \leq 0.01$) (Table 5).

**Table 5.** Spearman correlation coefficient for testing motor performance in elderly. Antônio Carlos, SC, Brazil, 2010/2011.

| | $r_{spearman}$ 'Chair stand' | $r_{spearman}$ 'Pick up a pen' | $r_{spearman}$ Balance |
|---|---|---|---|
| Female | | | |
| HGS | 0.344* | 0.253* | 0.330* |
| "Chair stand" | | 0.484* | 0.506* |
| "Pick up a pen" | | | 0.348* |
| Male | | | |
| Handgrip | 0.454* | 0.426* | 0.383* |
| "Chair stand" | | 0.509* | 0.409* |
| "Pick up a pen" | | | 0.508* |

* $p \leq 0.01$

## DISCUSSION

According to our knowledge, this is the first home-based population study in Brazil that presents reference values and assesses the motor performance of elderly in rural and urban areas. The previous studies covered urban areas only[10,11].

The results showed that the men exhibited superior values to the women in the HGS, completed the tests in less time and had a higher prevalence in good performance in all the tests, as is described in the literature[9-11]. The women exhibited the higher percentage of incapability and/or poor performance in the tests. With advancing age, male and female showed a reduction in the proportion of individuals with better results in all tests.

The differences between the sexes in motor performance may be explained by the hormonal characteristics and their effects on body composition[17]. The women exhibit a higher quantity of body fat while the men showed higher levels of testosterone and a higher quantity of muscle mass. The women are more affected by chronic diseases that cause pain and limit joint movements[18] and exhibit a higher prevalence of excess weight[10], factors that hinder mobility[19] and balance[2,20]. It is believed that the lifestyle of men, working in farming, could have contributed to the better performance in the tests, even at more advanced ages.

Comparing the results of the present study with other studies that used the same test protocols and instruments, can be verified that men and women from AC-SC showed higher values of HGS, compared to the elderly from São Paulo[10], Barbados and Cuba[9]. In São Paulo were evaluated 1894 elderly aged 60 years or more, and in Barbados and Cuba[9], 1508 and 1905 elderly were evaluated, respectively. The men from AC-SC, were faster than those of Cuba[9] and of São Paulo[10] in the 'chair stand' test and slower than the elderly of São Paulo[10] in the 'pick up a pen' test. The women

from AC-SC completed the 'chair stand' test in an inferior time than the women from Cuba[9]. In the 'pick up a pen' test the women from this study were faster than the women from Cuba, Barbados[9] and São Paulo[10].

In relation to the percentile distribution, the values used to define the categories of performance were equal to those observed in the 'SABE Survey' São Paulo[10] for the 'chair stand' test and to those from Barbados[9] and Lafaiete Coutinho-BA[11] in the 'pick up a pen' test. In the HGS the elderly from AC-SC exhibited higher values than those of the elderly from São Paulo[10], Lafaiete Coutinho-BA[11], Barbados and Cuba[9]. However, it is worth noting that the study by Pinheiro et al.[11] used a different dynamometer to that used in AC-SC, São Paulo[10], Barbados and Cuba[9], which may interfere in the identified values.

The comparison with other populations, even using the same methodology and instruments should be viewed with caution. The differences may be due to differences in the criteria used for the sample selection and/or exclusion of elderly, number of participants, the better ability of individuals, ethnic differences, environmental influences[10] and willingness to participate, besides differences in nutritional status and physical activity level.

The results showed that the prevalence of individuals with better performance was specific to each test, varying between sex and age group. However, with the advance of age, men and women showed a decrease in the prevalence of good performance and the increase in the percentage of those unable or with poor performance as verified in other studies[9,10,21].

The highest prevalence of chronic disease, the reduction of physical activity, in addition to the normal physiological alterations of aging (reducing of muscle mass, the decline in the levels of determined hormones[17], cognitive decline[22], alterations in the sensory systems[23] and the nutritional status[20], among others), may explain the motor decline with the advance of age.

The correlations between motor performance scores for both sexes were positive and significant between all tests, suggesting that elderly that exhibit good performance in the first task tend to present similar performance in the second. These findings are similar to those verified in the 'SABE Survey'/São Paulo[10] and the study conducted in Lafaiete Coutinho-BA[11].

The cross-sectional design does not allow to verify the effects of aging on the reduction of motor performance and / or increase in functional limitation. However, the results are consistent with findings from other studies. The results allow the identification of the prevalence of elderly with poor performance/functional limitation and, as the results were presented to the municipality of AS-SC (Secretary of Health and Social Assistance), they could contribute to the planning of actions to improve the health of the elderly. The study included a representative sample of the elderly population of the municipality, guaranteeing internal validation. The other strong point of the study is the possibility of presenting reference values for a set of motor tests that could be used as a reference for elderly from municipalities in the south of Brazil, with similar characteristics.

## CONCLUSION

Data from this study showed that the men and the youngest elderly exhibited better performance in the motor tests, compared to the women and the eldest individuals, respectively. The highest prevalence of incapability and best motor performance is specific to the test, sex and age group.


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