

## Prevention of depression and anxiety in community-dwelling older adults: the role of physical activity

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### 1. Introduction

[1] With the growing number of Brazilian older adults, the relevance of diseases that affect a significant portion of this population also increases. Depression and anxiety are among the major mental disorders in the elderly, and both are frequent causes of emotional suffering and lost quality of life. These disorders in the elderly are associated with functional impairment, high costs of health care, and increased mortality. Furthermore, it is known that depression can complicate the course and prognosis of cardiovascular diseases, stroke and other diseases.

[2] Regarding the occurrence of depression in individuals aged 55 or more living in the community, the literature reports diverging prevalence rates, ranging from 0.4% to 35%. However, when clinical manifestations of depression are investigated separately, it is observed that cases of major depression are infrequent (weighted average prevalence of 1.8%), while episodes of minor depression prevail (9.8%). When all depressive syndromes with clinically significant symptoms are grouped, the average prevalence reaches 26%. These results suggest that, in the elderly, episodes of minor depression and depressive syndromes are particularly relevant, as opposed to the higher frequency of severe depressions that is observed in other age groups.

[3] Epidemiological studies have shown that anxiety disorders are among the most common psychiatric disorders among people aged 60 or over, with a lifetime prevalence estimated over 15.3%, higher even than the estimate for mood disorders (11.9%). In another population survey, the prevalence of anxiety disorders in the elderly was 10.2%, with generalized anxiety disorder (GAD) being the most common (7.3%), followed by phobic disorder (3.1%), panic disorder (1.0%) and obsessive compulsive disorder (0.6%). In Brazil, there are few community studies investigating the occurrence of anxiety disorders in the elderly.

[4] The prevention of mental disorders has been considered one of the most viable alternatives available to reduce the impact that the emergence of new cases would have both on the quality of life of patients and on the healthcare system. Studies have shown that prevention is possible, reducing the risk of occurrence of new cases of mental disorders, especially regarding interventions for patients with subclinical symptoms.

[5] The relationship between the role of physical activity in the prevention of depression suggests two strands: depression decreases the practice of physical activity, and physical activity may be useful in preventing depression. Given the physical and psychological benefits from physical activity, in general, and from physical exercise, in particular, its practice by depressed elderly adults without comorbidities may promote the prevention and reduction of depressive symptoms.

[6] Evidence suggests that physical activity can be used as an adjunct in the prevention of depression in the elderly. However, there are few studies in relation to anxiety, and the 'dose' of physical activity needed to assist in the reduction of depressive and anxiety symptoms has not been sufficiently investigated. We also note that the effectiveness of physical activity to prevent the onset of depression and anxiety in the elderly has also not been adequately evaluated in clinical trials, mainly through a survey of population coverage and characteristics.

### 2. Assessments

[7] The evaluation of physical activity to prevent depression and/ or anxiety in the elderly in primary care has not been properly investigated. The intervention programme to be applied in this study consists of four steps (described below), lasting three months each:

**[8]** Step 1 – Watchful Waiting: Participants with scores on the CES-D scale  $\geq 13$  who have a negative MINI score for depression and/or anxiety and are not suspected of having mild cognitive impairment or dementia will wait 3 months after medical evaluation to be re-evaluated. This period of “watchful waiting” is indicated to observe if the individual does not present spontaneous remission of depressive and/or anxiety symptoms. In the reassessment, the following questionnaires will be applied: the CES-D, SF-36, MMSE, and Verbal Fluency. If the subject continues to present subsyndromal depressive symptoms (with CES-D  $\geq 13$ ), he/she will be randomized into one of the arms of the study (physical activity or usual care).

**[9]** Step 2 – Physical Activity Intervention 1: This step is taught by a physical educator and takes place in the home, with a duration of 50 minutes for each session, over a 3-month period. Twice a week, participants will be taught to practice physical exercises for strength and stretching (elongation); planned goals for this intervention include the practice of aerobic physical activity (walking) at least 3 times a week. The evaluation of frequency and duration of physical activity will be assessed with a pedometer.

**[10]** Step 3 – Physical Activity Intervention 2: After these 3 months of intervention, the CES-D and the MINI will be re-administered. The participant who continues to present scores on the CES-D  $\geq 13$  and have a negative MINI score for depression and/or anxiety will receive a new period of 3 months of assisted physical activity, with 24 more meetings at home, lasting 50 minutes each.

**[11]** Step 4 – Referral to Primary Care: After that, if there is still a CES-D score  $\geq 13$ , a further period of 3 months will begin, but the elderly will not receive any intervention, as in step 1, when “watchful waiting” is performed. At the end of this period the following questionnaires will be reapplied: the CES-D, SF-36, MMSE, and Verbal Fluency. If the CES-D scores remain high, participants will receive guidance about the need to receive a specific medication that they can discuss with their doctors.

**[12]** In the first contact with the subject, physical educators will conduct an assessment to verify if he/she is able to perform scheduled activities. Strength tests and the short version of the International Physical Activity Questionnaire Short Form (IPAQ-SF) will be applied. This latter instrument consists of seven open questions that will allow for estimating the time spent by the elderly in different physical activities (hiking and physical efforts of different intensities) the week before starting the proposed interventions; physical inactivity will also be assessed. At each meeting with physical educators, standardized exercises (contained in the protocol drawn up for this purpose) will be performed, lasting approximately one hour.

**[13]** Subjects will be instructed to walk at least 3 times a week for a period of 30 minutes, and they should write down on a weekly record if scheduled activities were completed. The elderly participants will receive a pedometer, which is a mechanical counter that registers movements performed in response to vertical acceleration of the body, and he/she will be informed about its purpose. They will also be instructed to place the unit at the waist and to use it all day, removing it only at bedtime. The pedometer measures the daily steps of the individual and the daily caloric loss and covered distance; data will be downloaded once a week by responsible staff.

**[14]** Regarding the usual care arm, subjects in this group will have unrestricted access to usual care for depressive and/or anxiety symptoms. Their use of health services and use of prescribed medications will be recorded. Assessments in this arm will be done with the same questionnaires and in the same timeframe that will be used for the physical activity group.

### **3. Discussion**

**[15]** It is known that clinically significant depressive symptoms can increase the risk of developing depressive disorder by almost 40%. Such symptoms are more frequent than major depression in elderly people living in the community (7.0 x 26.0%); are associated with significant psychosocial impairment; can increase the risk of physical incapacity, clinical diseases, and use of health services; and are not usually recognized by health professionals.

**[16]** Nonpharmacological interventions may be effective in preventing the development of depressive disorders in the elderly and may be quite useful in primary care. A recent

review of the literature has demonstrated that different therapy techniques (such as cognitive behaviour therapy, competitive memory training, reminiscence group therapy, problem-adaptation therapy, and problem-solving therapy) have been able to reduce depressive symptoms in individuals who 65 years old; this highlights their usefulness in clinical practice and the benefit of this type of interventions, which offers minimal risks of side effects, especially in the elderly, who constitute a group in which comorbidities are more frequent and pharmacological treatments increase the chances of drug interactions.

[17] Consistent with these findings, a meta-analysis on brief psychotherapeutic interventions for elderly people with subsyndromic depressive symptoms has shown that they can reduce the incidence of depression by 30%.

[18] Another type of non-pharmacological intervention, one practically not evaluated in representative population studies, is physical activity. Physical activity reduces the occurrence of problems of balance, coordination and agility; decreases bone mass loss; increases cardiorespiratory function; promotes muscle strengthening; and reduces the risk of falls and fractures in the elderly. Another benefit that deserves to be highlighted is its role in forming social bonds, expanding contact networks and emotional support. To the best of our knowledge, this is the first community-dwelling study, with the methodology described, aimed at the elderly population with subsyndromic depressive symptoms.

[19] Depending on the results that will be obtained in this study, new health policies could be implemented, aiming to reduce the number of elderly people with depression seen in primary care. In addition, training may be implemented for family health teams so that screening tools could be used to make an early identification of individuals with (or at risk of developing) mental disorders.

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**Responda as questões abaixo em português de acordo com o texto:**

1. De acordo com o parágrafo [1], quais doenças podem ter seu curso e prognóstico complicados pela depressão? (1,0pt)

*Resposta: Doenças cardiovasculares, derrame e outras doenças.*

2. No parágrafo [5] os autores falam da relação entre o papel da atividade física na prevenção da depressão e sugere duas vertentes. Quais são elas? (1,0pt)

*Resposta: Depressão diminui com a prática de atividade física, e atividade física pode ser útil na prevenção da depressão.*

3. De acordo com os parágrafos [8] e [9], para o que é indicado o Passo 1 e, como ocorre o Passo 2? (2,0pts)

*Resposta:*

*Passo 1 – Este período de “espera vigilante” é indicado para observar se o indivíduo não apresenta remissão espontânea de sintomas depressivos e/ou ansiedade.*

*Passo 2 –Este passo ‘intervenção por atividade física é ministrado por um educador físico e ocorre em casa, com a duração de 50min cada sessão, durante um período de 3 meses.*

4. No parágrafo [13], O que é pedômetro e qual sua função? (2,0pts)

*Resposta: Pedômetro é um contador mecânico que registra os movimentos realizados em resposta à aceleração vertical do corpo. O pedômetro mede os passos diários de um indivíduo, a perda calórica e a distância percorrida.*

5. No parágrafo [18], fala-se sobre uma intervenção não-farmacológica. Qual é essa intervenção e o que ela reduz? (2,0pts)

*Resposta: É a atividade física. Ela reduz a ocorrência de problemas de equilíbrio, coordenação e agilidade; diminui a perda de massa óssea; aumenta a função cardiorrespiratória; promove o*

*fortalecimento muscular e reduz o risco de quedas e fraturas em idosos.*

6. Ainda no parágrafo [18], quais são os outros benefícios que merecerem destaque? (1,0pt)

*Resposta: O papel na formação de laços sociais, ampliando redes de contato e apoio emocional.*