

## DEMENTIA AND TAI CHI

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### Abstract

**Objective.** Tai Chi is increasingly considered as an alternative therapy in the area of medicine and rehabilitation. Also, Tai Chi is viewed as an acceptable physical activity to preserve or enhance health. Also, the symptoms are decreased significantly in groups of patients with distinct diseases, therefore improving the quality of life connected to health by significantly reducing the symptoms associated with it.

**Methods.** Our study consisted of a group of five patients with mild-moderate dementia performed courses of Tai Chi for 6 months, with the frequency of 2-4 sessions per week. The patients were evaluated using the following scales: Mini-Mental State Examination, Bristol Activities of Daily Living Scale, Cornell Scale for Depression in Dementia (CSDD), Quality of life in Alzheimer's Disease and the Neuropsychiatric Inventory Questionnaire at the beginning of the study and at the end of the study.

**Results.** The results of this study demonstrate that the elderly dementia patients achieve physical and psychological benefits from Tai Chi. For our group of dementia patients, the benefits were demonstrated in the improvement of physical and cognitive functions and also in the decreased levels of depression and anxiety.

**Conclusions.** Studies were conducted in the literature on Tai Chi and dementia patients, and the results that showed improvements in patients' lives, in terms of physical ability, but also with quality of life and cognitive ability support our conclusion of this study.

Key words: Tai chi, dementia, physical activity.

### Introduction

There are numerous strategies used to promote human health, there is currently growing interest in alternative medicine techniques. From this perspective, the potential of traditional medicine is remarkable in China, which is based on techniques such as acupuncture, herbal medicines and various types of exercise, including Tai Chi, whose basis is based on slow, rhythmic performance. and controlled with deep breathing and mental concentration.

In the field of physiotherapy, studies have considered that Tai Chi can be used either as a supplement to rehabilitation, or as a complementary support during that rehabilitation, or as an exercise that allows to maintain the state of health after recovery.

Tai Chi practice is an effective complement to physiotherapeutic treatment, as the exercises we propose involve both physical and psychological benefits. Because Tai Chi Chuan can be practiced by people of all ages, the chosen spectrum consists of patients with dementia, in the early-moderate form, regardless of gender, age or previous profession. Tai Chi evolved in different styles during this development, including Chen, Wu, Sun and Nang. Among these styles, Caen is the oldest, while Nang is the most known.

Despite the lack of rigorous evidence of its benefits, Tai Chi is widely practiced in many countries as a form of exercise for health and fitness. Thus, Tai Chi is practiced as an exercise that promotes good health, memory, concentration, digestion, balance and flexibility and is also believed to promote the improvement of anxiety, depression and degradation associated with age and inactivity.

It is also practiced to improve the quality of life. Despite all this and its popularity, the biological mechanism and clinical effects of Tai Chi are not well understood.

The state of relaxation induced by deep breathing and slow movements that take place during a Tai Chi session decreases the state of stress and anxiety.

In terms of physiotherapists' view of the benefits that Tai Chi can bring, they are very varied from the specified benefits: greater balance, circulatory improvement, stress reduction, pain reduction, increased elasticity, respiratory improvement, joint pain relief, pain reduction back, more coordination, higher concentration, decreased muscle pain and increased joint mobility; also appreciated were the increase in elasticity followed by a balance and the power of higher concentration. The benefits that were least experienced were the decrease in nerve and muscle pain was marked.

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Among the benefits most appreciated by practitioners are above average stress reduction, greater elasticity and improved breathing, and among the most noted is the decrease in pain and body discomfort. Tai Chi proves to be a highly recommended activity at any age and circumstance, because of the benefits it offers. These benefits also make it an effective complement to any rehabilitation therapy, both during and after, due to the multitude of benefits that the patient can bring.

However, although the benefits can be seen in anyone, studies and surveys reveal that Tai Chi appears more appropriate in older cases, because its slow motion qualities allow full use of this technique especially in the elderly, where other methods can be used. danger to the patient. This indicates the importance of Tai Chi in the areas of geriatrics in the future.

### Methods

Tai Chi sessions were held during 6 months with 3-4 sessions a week, in the company of a "teacher", who provided instructions and corrected the activity of the disciples. Usually, each session began with a series of simple exercises designed to improve the flexibility of the joints, ligaments and muscles, consisting of a series of stretches and rotations of the ankles, knees, hips, spine, neck, shoulders, elbow, and wrist, not necessarily in this order and with variable duration, depending on the physical condition of the practitioners.

At any moment, it was insisted that patients do not need to force the body, the exercises should be performed as far as possible without pain. It is also necessary to pay attention to the breathing, which must be deep, abdominal type. It was recommended that patients forget about daily problems and concentrate on feeling the movements of different parts of the body and breathing.

The session continues with more complex exercises aimed at strengthening and improving the strength not only of the muscles and joints, but also of the internal organs. The exercises are repeated several times, alternating with those of relaxation and simple breathing. The need to maintain a relaxed posture is emphasized and the breathing is deep and accompanied.

Progressively, the movements become more complex and the joints and both parts of the body are involved. In some cases, sounds that help the breathing and have a toning and relaxing effect are also emitted. The movements, executing them calmly and without violence, acquire a special plasticity. The session usually ends with a not very prolonged meditation and with a massage performed on different parts of one's body or a massage performed between the same partners.

### Results

Patients were evaluated using the following scales: Mini-Mental State Examination, Bristol Activities of Daily Living Scale, Cornell Scale for Depression in Dementia (CSDD), Quality of Life in Alzheimer's Disease and The Neuropsychiatric Inventory Questionnaire, at the beginning of the study and at the end of the study.

The first patient, M.L., aged 70, was diagnosed with dementia 2 years ago. The patient obtained the following results at the beginning of the Tai Chi sessions: at the Mini-Mental State Exam he obtained 19 points. At the Bristol Activities of Daily Living Scale he scored 30 points, presenting minor difficulties in meal preparation, cleaning, hygiene and transportation. Also presenting medium difficulties in housework, finances, shopping. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 25 points, being distributed as follows: under the heading mood related signs 4 points: being mildly anxious, mildly sad and moderately irritable; in the section on behavioral disturbance he obtained 6 points: his agitation was moderate, his slowness in movements was average, his lack of interest was severe and his physical accusations of discomfort were average; in the physical signs section, the patient obtained 2 points, with a severe lack of energy; in the section of cyclic functions, the patient obtained 8 points: with severity in his diurnal variation mood, difficulty in falling asleep, multiple awakening during sleep and early morning awakening ; under the heading of ideational disturbance his score was 5 points: with a severity of diminished self-esteem, of pessimism and an incipient state of delusions of illness. At Quality of Life in Alzheimer's Disease, the patient obtained 19 points, being distributed as follows: his energy level being low, his mood being poor, his living situation being good, his memory being poor, his family situation being excellent, his marriage being good, his friends being fair, he considered himself as whole being in a poor situation, his ability to perform housework being severely affected, his financial situation being severely affected and he considered his life as whole being in a poor situation. His caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 18 points as follows: his delusions being moderate, his agitation and irritability being moderate, his depression, apathy and anxiety being moderate, his motor disturbances being mild and his nighttime behaviors being moderate and his appetite being severe.

The patient obtained the following results after completing the Tai Chi sessions: at the Mini-Mental State Exam he obtained 19 points. At Bristol Activities of Daily Living Scale, he earned 27 points, which improved the difficulty of

housework and shopping. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 20 points in the mood related signs points, lowering their level of irritability; in the section on behavioral disturbance: his agitation was low, the slowness in movements being improved, his lack of interest being improved and his physical accusations of discomfort becoming minor; in the physical signs section, the patient obtained 1 point, with a lack of minor energy; in the section of cyclic functions, the patient presented with a moderate difference in his diurnal variation mood, minor difficulty in falling asleep; in the section of ideational disturbance his score was 5 points: with a self-esteem higher than 6 months ago, he also registered a decrease in pessimism. At Quality of Life in Alzheimer's Disease, the patient earned 25 points, with improvements in their perception of themselves, their situation, family and friends. His caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 13 points, thus: his agitation and irritability being decreased, his depression, apathy and anxiety being now mild, due to the decrease in the frequency of insomnia.

The second patient, A.A., aged 72, was diagnosed with dementia 2 years ago. The patient obtained the following results at the beginning of the Tai Chi sessions: at the Mini-Mental State Exam she obtained 21 points. At the Bristol Activities of Daily Living Scale she scored 27 points, presenting minor difficulties in transportation outside of the house and gardening and also presenting medium difficulties in the management of finances and shopping chores. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 20 points, being distributed as follows: under the heading mood related signs 3 points: being mildly anxious, mildly sad and irritable; in the section on behavioral disturbance she obtained 4 points: her slowness in movements was mild, her lack of interest was mild and her physical accusations of discomfort were mild; in the physical signs section, the patient obtained 2 points, with a severe lack of energy; in the section of cyclic functions, the patient obtained 6 points: with mild modifications in her diurnal variation mood, but with severe difficulty in falling asleep, multiple awakening during sleep and early morning awakening; under the heading of ideational disturbance her score was 5 points: with a severity of diminished self-esteem, of pessimism and an incipient state of delusions of loss. At Quality of Life in Alzheimer's Disease, the patient obtained 31 points, being distributed as follows: her physical health being good, her energy level being fair, her mood being fair, her living situation being excellent, her memory being fair, her family situation being excellent, her marriage being

excellent, her relation with friends being poor, she considered herself as whole being in a fair situation, her ability to perform housework being moderately affected, her financial situation not being affected, but she considered her life as whole being in a poor situation. Her caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 14 points as follows: her delusions being mild, her agitation and irritability being mild; her depression, apathy and anxiety being moderate, her motor disturbances being mild and her nighttime behaviors being severe and she presented a mild loss of weight.

The patient obtained the following results after completing the Tai Chi sessions: at the Mini-Mental State Exam she obtained 21 points. At Bristol Activities of Daily Living Scale, she earned 25 points, which improved the difficulty of transportation and shopping. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 17 points in the mood related signs her score was the same; in the section on behavioral disturbance: the patient obtained the same results as before; in the section of cyclic functions the patient improved her appetite and gained back the weight that she had lost; in the section of ideational disturbance the patient presented a self-esteem higher than 6 months ago, she also registered a decrease in pessimism. At Quality of Life in Alzheimer's Disease, the patient earned 35 points, with improvements in her perception of herself and her situation. Her caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 12 points, thus: her depression and apathy decreased.

The third patient, S.I., aged 73, was diagnosed with dementia 4 years ago. The patient obtained the following results at the beginning of the Tai Chi sessions: at the Mini-Mental State Exam he obtained 18 points. At the Bristol Activities of Daily Living Scale he scored 42 points, presenting moderate difficulties in meal preparation, cleaning, hygiene and transportation. Also presenting severe difficulties in housework, finances, shopping. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 29 points, being distributed as follows: under the heading mood related signs 8 points: being moderately anxious and sad and severely irritable; in the section on behavioral disturbance he obtained 6 points: his agitation was moderate, his slowness in movements was average, his lack of interest was severe and his physical accusations of discomfort were average; in the physical signs section, the patient obtained 2 points, with a severe lack of energy; in the section of cyclic functions, the patient obtained 8 points: with moderate disturbances in his diurnal variation mood, difficulty in falling asleep, multiple awakening

during sleep; under the heading of ideational disturbance his score was 5 points: with a severity of diminished self-esteem, of pessimism and a moderate state of delusions of illness. At Quality of Life in Alzheimer's Disease, the patient obtained 15 points, being distributed as follows: his energy level being severely decreased, his mood being poor, his living situation being unsatisfactory, his memory being severely affected, his family situation being unsatisfactory, his marriage being mildly affected, his friendships being affected, he considered himself as whole being in a poor situation, his ability to perform housework being severely affected, his financial situation being severely affected and he considered his life as whole being in a poor situation. His caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 22 points as follows: his delusions being moderate, his agitation and irritability being severe, his depression, apathy and anxiety being severe.

The patient obtained the following results after completing the Tai Chi sessions: at the Mini-Mental State Exam he obtained 18 points. At Bristol Activities of Daily Living Scale, he earned 39 points, which improved the difficulty of transportation and shopping. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 26 points in the mood related signs points, lowering their level of irritability; in the section on behavioral disturbance: his agitation decreased, his lack of interest being improved; in the physical signs section, the patient obtained the same results as before; in the section of cyclic functions, the patient's problems were the same; in the section of ideational disturbance the patient presented a self-esteem higher than 6 months ago, he also registered a decrease in pessimism. At Quality of Life in Alzheimer's Disease, the patient earned 20 points, with improvements in their perception of himself, his situation, family and friends. His caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 18 points, thus: his agitation and irritability being decreased, his depression and apathy decreased.

The fourth patient, T.A., aged 70, was diagnosed with dementia 3 years ago. The patient obtained the following results at the beginning of the Tai Chi sessions: at the Mini-Mental State Exam she obtained 19 points. At the Bristol Activities of Daily Living Scale she scored 25 points, presenting minor difficulties in transportation outside of the house and gardening and also presenting medium difficulties in the management of finances and shopping chores. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 23 points, being distributed as follows: under the heading mood related signs 4 points: being moderately anxious,

mildly sad and irritable; in the section on behavioral disturbance she obtained 4 points: her slowness in movements was mild, her lack of interest was mild and her physical accusations of discomfort were mild; in the physical signs section, the patient obtained 6 points, with a severe lack of energy, moderately loss of appetite and weight loss; in the section of cyclic functions, the patient obtained 4 points: with mild modifications in her diurnal variation mood, but with severe difficulty in falling asleep; under the heading of ideational disturbance her score was 5 points: with a severity of diminished self-esteem, of pessimism and an incipient state of delusions of loss. At Quality of Life in Alzheimer's Disease, the patient obtained 31 points, being distributed as follows: her physical health being good, her energy level being fair, her mood being fair, her living situation being excellent, her memory being fair, her family situation being excellent, her marriage being excellent, her relation with friends being poor, she considered herself as whole being in a fair situation, her ability to perform housework being moderately affected, her financial situation not being affected, but she considered her life as whole being in a poor situation. Her caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 14 points as follows: her delusions being mild, her agitation and irritability being mild; her depression, apathy and anxiety being mild, her motor disturbances being mild and her insomnia being moderate.

The patient obtained the following results after completing the Tai Chi sessions: at the Mini-Mental State Exam she obtained 19 points. At Bristol Activities of Daily Living Scale, she earned 25 points, with no visible improvements. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 22 points in the mood related she has a decrease level of anxiety than before; in the section on behavioral disturbance: the patient obtained the same results as before; in the section of cyclic functions the patient improved her appetite and gained back the weight that she had lost; in the section of ideational disturbance the patient presented a self-esteem higher than 6 months ago, she also registered a decrease in pessimism. At Quality of Life in Alzheimer's Disease, the patient earned 36 points, with improvements in her perception of herself and her situation and family. Her caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 12 points, thus: her depression and anxiety decreased.

The fifth patient, C.I., aged 68, was diagnosed with dementia 1 year ago. The patient obtained the following results at the beginning of the Tai Chi sessions: at the Mini-Mental State Exam he obtained 21 points. At the Bristol

Activities of Daily Living Scale he scored 25 points, presenting minor difficulties in transportation and in housework, finances, shopping. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 18 points, being distributed as follows: under the heading mood related signs 3 points: being intermittently anxious, mildly sad and irritable; in the section on behavioral disturbance he obtained 4 points: his agitation was intermittently, his slowness in movements was average, his lack of interest was mild and his physical accusations of discomfort were average; in the physical signs section, the patient obtained 2 points, with a moderate lack of energy; in the section of cyclic functions, the patient obtained 4 points: with moderate difficulty in falling asleep and multiple awakening during sleep, under the heading of ideational disturbance his score was 5 points: with a moderately loss of self-esteem, of pessimism and an incipient state of delusions of illness. At Quality of Life in Alzheimer's Disease, the patient obtained 28 points, being distributed as follows: his energy level being decreased, his mood being moderately affected, his living situation being excellent, his memory being moderately affected, his family situation being excellent, his marriage being good, his friendships mildly affected, he considered himself as whole being in a fair situation, his ability to perform housework being moderately affected, his financial situation being good and he considered his life as whole being in a fair situation. His caregivers completed the The Neuropsychiatric Inventory Questionnaire and the patient obtained 23 points as follows: his delusions being mild, his agitation and irritability being mild, his depression, apathy being moderate, his anxiety being mild, his motor disturbances being mild and his nighttime behaviors being moderate and his appetite being severe.

The patient obtained the following results after completing the Tai Chi sessions: at the Mini-Mental State Exam he obtained 21 points. At Bristol Activities of Daily Living Scale, he earned 23 points, which improved the difficulty of transportation and shopping. At the Cornell Scale for Depression in Dementia (CSDD) the patient obtained 14 points in the mood related signs points, lowering the level of irritability; in the section on behavioral disturbance: his lack of interest being improved; in the physical signs section, the patient obtained the same results as before; in the section of cyclic functions, the patient's problems were the same; in the section of ideational disturbance the patient presented a self-esteem higher than 6 months ago, he also registered a decrease in pessimism. At Quality of Life in Alzheimer's Disease, the patient earned 32 points, with improvements in his perception of himself, his situation. His caregivers completed the The

Neuropsychiatric Inventory Questionnaire and the patient obtained 18 points, thus: his agitation and irritability being decreased, his depression and apathy decreased.

### Discussions

In this study, we observed that Tai Chi practitioners with dementia perceive related health and wellness benefits; thus, the various physical, psychological, social and lifestyle improvements that can be achieved can impact on improving the quality of life. The results show significant improvements in mood, reduced perceived stress, as well as increased self-efficacy and social support perception.

There are various investigations that have investigated the effect of Tai Chi on fear and the reduction of falls in the elderly. It has been shown how Tai Chi can reduce the fear of falling into a group of 69 women who have undergone an intervention program with this type of therapy. Wolff et al and Sattin et al have demonstrated how Tai Chi can improve balance and reduce fear and number of falls in a group of 311 subjects with previous falls.

Tai Chi practice produces improvements in the elderly between the ages of 60 and 90 who suffer from sleep problems. Applying an intervention program with Tai Chi for 24 weeks and 3 weekly sessions of 1h in a group of 16 subjects improved the variable measures with the Pittsburgh Sleep Quality Index (PSQI) on quality, effectiveness, duration and sleep disorders.

In this regard, recent research has shown how Tai Chi improves the quality of life in people over 65. During 25 weeks, a group of 66 elderly people living in a residence participated in the intervention with Tai Chi three times a week for 1 hour, obtaining improvements in the physical and mental component of the quality of life test. in the field of health (HRQOL), which measures health related quality of life compared to the control group of 73 subjects.

### Conclusions

Tai Chi is a type of exercise recommended for groups of different ages that require levels of strength muscle and joint mobility, as well as motor coordination, significant enough to have a positive effect on health and quality of life in the elderly.

There is evidence that Tai Chi can improve sleep quality, strengthen the immune system, improve physical health and reduce pain in people with osteoarthritis of the hip and knee, and also improve aspects of psychosocial factors in the elderly at cardiovascular risk.

In addition, this exercise promotes glycemic control in diabetics, reducing symptoms associated with depression and improving physical skills in elderly people with Parkinson's and dementia.

Therefore, in summary, Tai Chi is presented as an ideal treatment for promoting healthy aging, improving the quality of life related to the health of the elderly suffering from dementia.

## References

- Zhang J.G., Ishikawa-Takata K., Yamazaki H., et al., 2006, The effects of Tai Chi Chuan on physiological function and fear of falling in the less robust elderly: an intervention study for preventing falls. *Arch Gerontol Geriatr*, 2006, 42: 107–116.
- Wayne P.M., Manor B., Novak V., et al., 2013, A systems biology approach to studying Tai Chi, physiological complexity and healthy aging: design and rationale of a pragmatic randomized controlled trial. *Contemp Clin Trials*, 2013, 34: 21–34.
- Shi Z.M., Wen H.P., Liu F.R., et al., 2014, The effects of tai chi on the renal and cardiac functions of patients with chronic kidney and cardiovascular diseases. *J Phys Ther Sci*, 2014, 26: 1733–1736.
- Docu Axelerad A., Docu Axelerad D., Docu Axelerad S., Stroe A. Z., 2019, Walking in Parkinson's disease. *Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH* Vol. XIX, ISSUE 2, 2019; 19 (2 supplement): 350 – 354.
- Docu Axelerad A., Stroe A. Z., Docu Axelerad S., 2019, Combating Depression in Parkinson's Disease with Melotherapy. *Proceedings DIALOGO (The 10th Scholarly Meeting on the Dialogue between Science and Theology)*, 2019; vol. 6,issue 1,pp. 195 - 202, DOI: 10.18638/dialogo.2019.6.1.19, ISBN: 978-80-973541-1-4 (html), 978-80-973541-0-7(pdf), ISSN: 2393-1744
- Li F., Harmer P., Fisher K.J., et al., 2004, Tai Chi: improving functional balance and predicting subsequent falls in older persons. *Med Sci Sports Exerc*, 2004, 36: 2046– 2052.
- Stroe A. Z., Docu Axelerad S., Docu Axelerad D., Docu Axelerad A., 2019, Exercises in Parkinson's disease. *Ovidius University Annals, Series Physical Education and Sport / Science, Movement and Health*, Vol. XIX, ISSUE 2 Supplement, 2019; 19 (2 supplement): 344 – 349.
- Docu Axelerad A., Stroe A. Z., Docu Axelerad S., Docu Axelerad D., 2019, Divinity in dementia. *Proceedings DIALOGO (The 10th Scholarly Meeting on the Dialogue between Science and Theology)*, 2019; vol. 6,issue 1,pp. 187 – 194. DOI: 10.18638/dialogo.2019.6.1.18, ISBN: 978-80-973541-1-4 (html), 978-80-973541-0-7(pdf), ISSN: 2393-1744.
- Tsang W.W., Hui-Chan C.W., 2005, Comparison of muscle torque, balance, and confidence in older tai chi and healthy adults. *Med Sci Sports Exerc*, 2005, 37: 280–289.
- Docu Axelerad A., Stroe A. Z., Docu Axelerad S., 2019, How religiosity affects Parkinson's disease symptoms. *Proceedings DIALOGO (The 10th Scholarly Meeting on the Dialogue between Science and Theology)*, 2019; vol. 6,issue 1,pp. 203 - 211, DOI: 10.18638/dialogo.2019.6.1.20, ISBN: 978-80-973541-1-4 (html), 978-80-973541-0-7(pdf), ISSN: 2393-1744.
- Dantes E., Docu Axelerad S., Stroe A. Z., Docu Axelerad D., Docu Axelerad A., 2020, The rehabilitation of hemiparesis after stroke. *Ovidius University Annals, Series Physical Education and Sport / Science, Movement and Health*, Vol. XX, ISSUE 1, 2020; 20 (1): 5 – 9.
- Deschamps A., Onifade C., Decamps A., et al., 2009, Health-related quality of life in frail institutionalized elderly: effects of a cognition-action intervention and Tai Chi. *J Aging Phys Act*, 2009, 17: 236–248.
- Docu Axelerad A., Jurja S., Stroe A. Z., Docu Axelerad S., Docu Axelerad D., 2020, The role of physical exercise in multiple sclerosis. *Ovidius University Annals, Series Physical Education and Sport / Science, Movement and Health*, Vol. XX, ISSUE 1, 2020; 20 (1): 10 – 15.
- Docu Axelerad D., Docu Axelerad S., Dantes E., Stroe A. Z., Docu Axelerad A., 2020, Mixed dementia and physical exercise. *Ovidius University Annals, Series Physical Education and Sport / Science, Movement and Health*, Vol. XX, ISSUE 1, 2020; 20 (1): 16 – 21.
- Yao L., Giordani B., Alexander N.B., 2008, Developing a positive emotion-motivated Tai Chi (PEM-TC) exercise program for older adults with dementia. *Res Theory Nurs Pract*, 2008, 22: 241–255
- Stroe A. Z., Docu Axelerad S., Docu Axelerad D., Docu Axelerad A., 2020, Neurorehabilitation through exercise in parkinson's disease patients, *Ovidius University Annals, Series Physical Education and Sport /Science, Movement*



and Health, Vol. XX, ISSUE 1, 2020; 20  
(1): 67 – 71.

Docu-Axelerad A., Stroe Z.A., Docu-Axelerad D.,  
Docu-Axelerad S., 2020, Multiple sclerosis  
and yoga. Arch Balk Med Union.  
2020;55(1):154-158.

<https://doi.org/10.31688/ABMU.2020.55.1>  
.19

Schaller K.J., 1996, Tai Chi Chih: an exercise  
option for older adults. J Gerontol Nurs, 1996, 22:  
12–17.