

EFFECTS OF AN ADAPTED UTILITARIAN JUDO PROGRAM ON A 54-YEAR-OLD ADULT. CASE STUDY.

EFFECTOS DE UN PROGRAMA DE JUDO UTILITARIO ADAPTADO SOBRE UN ADULTO DE 54 AÑOS. ESTUDIO DE CASO

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ABSTRACT

Active and integrated ageing of the population is one of the main challenges to which administrations must respond. Dimensions such as frailty and fear of falling are associated with physical, psychological and social limitations of older adults. The aim is to find out whether the application of the JUA programme increases the quality of life by positively affecting the fear of falling and the perception of health, based on the improvement of their physical condition and the control of falls. A case study is proposed for a 54-year-old male subject. The subject's fear of falling, quality of life, health perception and physical condition were analysed. The results showed an improvement in all the dimensions studied. We conclude that the JUA programme brings benefits on physical and psychological performance in the subject of study.

KEY WORDS: older-adult, fragility, falls, physical activity, adapted utilitarian judo.

RESUMEN

El envejecimiento activo de la población es uno de los principales retos a los que las administraciones deben responder. Dimensiones como la fragilidad y el miedo a caer, se asocian a limitaciones físicas, psicológicas y sociales de los adultos mayores. Se plantea el objetivo de conocer si la aplicación del programa JUA, aumenta la calidad de vida, al incidir positivamente en el miedo a caer y la percepción de salud, en base a la mejora su condición física y el control de las caídas. Se propone un estudio de caso dirigido a un sujeto varón de 54 años. Se analizó el miedo a caer, calidad de vida, percepción de salud y condición física del sujeto. Los resultados mostraron una mejoría en todas las dimensiones estudiadas. Concluimos que el programa JUA, aporta beneficios sobre el desempeño físico y psicológico en el sujeto de estudio.

PALABRAS CLAVE: adultos-mayores, fragilidad, caídas, actividad física, judo utilitario adaptado.

INTRODUCTION

Aging is defined as a process that diminishes the individual's capacities, in degenerative changes that are neither linear nor uniform (1). The control of population aging should be based on the progress of medicine, the improvement of public health, and economic and social development. It is desirable that the control of this process should lead to a longer life expectancy of older adults (2). Different studies point to various types of aging. Of these, we are interested in highlighting healthy aging, understood as the "process of development and maintenance of functional capacity that allows wellbeing in old age", and active aging, as "the process of making the most of opportunities and having physical, psychological and social wellbeing throughout life" (3). In this context of global aging, it is estimated that by the year 2050, the number of people over 80 years of age will increase from 143 million to 426 million (4).

In Spain, the aging rate is 125.7%, which means that we must consider responses, linked to education and health, to the significant and progressive increase in the population over 65 years of age, also characterized by a considerable increase in life expectancy (5). In this sense, longer life expectancy means greater longevity. As a result, we should focus on healthy aging before the age of 60, adopting lifestyles that prevent the onset of diseases and disabilities (6). Meeting the needs of the adult-elderly population in their vital aspects is the achievement that must be pursued by today's societies and, of course, within them, the performance of regular physical activity acquires a fundamental role (7). Thus, a healthy lifestyle, linked to the continuous practice of physical activity, is associated with an improvement in the quality of life of older adults (8).

On the opposite side, there are risk factors that lead to a low quality of life, such as the development of the frailty to which the individual is heading (with alterations in balance and gait) or, for example, the risk of falling (9). Frailty is negatively linked to many aspects of quality of life, as it is associated with increased institutionalization and disability (10). Fragility is considered a geriatric clinical syndrome of multifactorial etiology characterized by a decrease in strength, endurance and physiological functions (11). In addition to related injuries, falls can lead to the development of *Fear of Falling Syndrome* (FOF). The latter term affects the physical, social and psychological health of the individual as a whole and causes loss of self-confidence, which makes it difficult for the individual to carry out daily activities due to the fear of a repetition of the event (12). The possibility of a fall increases with age, altered balance, decreased coordination or muscle strength (13), variables that are enhanced by a sedentary lifestyle (14).

Different studies agree that reducing sedentary lifestyles through multifactorial physical conditioning is effective in reducing frailty in older adults and preventing falls (15). From this point of view, each individual needs an adaptation in terms of the modality of physical activity, in its complexity, frequency and intensity, so that the interventions carried out are really effective, considering the importance of combining balance and gait training, with strength and endurance training, to improve functional capacity (16).

In response to the above, there are programs focused on the prevention of frailty and proactive treatment of falls, as is the case of the physical activity program for older adults called Adapted Utility Judo (JUA) (17-18). The JUA is defined as an integral, formative and multifunctional physical activity, by which, from the adaptation of elements of Judo Kodokan and the contents of the Kata, in addition to developing skills that contribute to well-being and personal autonomy, contribute to improving the socialization process, increasing self-esteem and personal safety of each individual (19). Likewise, this intervention program focuses on action strategies that allow the older adult to respond safely to a fall and to get back on his or her feet after the impact. Despite preventive interventions and work on the physical condition of older adults, they are still subject to falling (20).

In short, this research aims to raise the practice of the JUA as a health-promoting element in adult-elderly people, teaching the subject to act effectively in the event of a fall (working strategies for recovery of standing and mobility on the ground to reduce the risk of injury) and improving their physical condition in general, focusing on the development of strength, balance, coordination, etc.

From this perspective, the research objective is to know if the application of the JUA program in the study subject increases his quality of life, analyzing the influence of the JUA program on the subject's fear of falling, his perception of health after the intervention and to know if the JUA program, in the study subject,

improves his physical condition in terms of speed, agility, dynamic balance and flexibility of the lower body.

MATERIAL AND METHODS

Sample

The study subject is a 54-year-old man, 1.76 m tall, 80 kg and a BMI of 25.8. At 49 years of age, some herniated discs in the lumbar area caused him intense pain that limited his activities of daily living and work. Currently, he spends one day a week hiking or cycling on nature trails. His main objective is to progressively return to sports, finding different techniques with which he can feel confident in doing them.

The subject has suffered a single fall, more than 6 months ago, caused by a pinched nerve when performing a gesture to avoid losing balance on a hard, uneven and slippery floor, thus affecting the mobility of the legs and went backwards. It changed his family and work lifestyle. He remained on the ground for several minutes, but was able to get up with help, using an emergency service. The consequences were fracture and other serious consequences.

Instrument

Several instruments have been used for the assessment of falls: WHO questionnaire (21) for the functional study of falls in the elderly; To assess STAC, the 16-item version of the Falls Efficacy Scale-International (FES-I)(22) was applied to analyze confidence and ability to avoid a fall while performing routine daily activities; SF-36 health questionnaire (23), in relation to physical and social function, physical role, general and mental health, bodily pain, vitality, and emotional role; 8 foot up and go test (24), to assess the subject's speed, agility and dynamic balance; Chair sit and reach (25-26), assesses lower body flexibility.

Procedure

The aforementioned measurement instruments, in pre-test and post-test, were administered by the researcher, except for the FES-I and SF-36 and the SF-36 Health Questionnaire, which were self-administered.

We applied an intervention program based on Adapted Utilitarian Judo (JUA) (19-20) for 4 weeks, with 3 weekly sessions of 60 minutes each, a frequency considered ideal (27). Some contents of a traditional Judo class have been adapted (Fig. 1), contextualizing them to a utilitarian work directed to the specific requirements of Older Adults (28-29) and have been oriented to give a global treatment to the prevention of falls and their consequences. The proposed exercises have been introduced following a progression of increasing difficulty, which has been graduated according to the subject's achievements and progress.

The repetition of already known movements, as well as the introduction of new movements, have been carried out maintaining the principles of progression, assimilation and, above all, giving priority to the safety of the participants in the program.



Fig. 1. Technical work of rebalance on Adapted Utility Judo.

Focusing on the different types of ukemis, we worked collaboratively on yoko-ukemi (lateral falls) (Fig. 2) and ushiro-ukemi (backward falls) (Fig. 3) to allow the older person to develop and assimilate an effective and non-injurious technique for falling and rising from the ground. To teach ukemis to older adults, we proposed assimilation and assisted assimilation activities (20), linked to the safety elements necessary to prevent injury, that would allow them to automate technical movements in the most effective way. This learning process taught the older subjects to react reflexively in case of a fall.

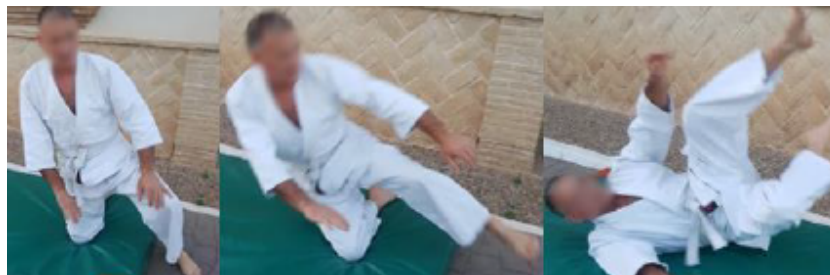


Fig. 2. Work on the assimilation of the lateral fall (yoko-ukemi).



Fig. 3. Work on the assimilation of the backward fall (ushiro-ukemi).

For this intervention, we proposed two learning sequences: one autonomous assisted by implements; and the other collaborative assisted by peers (with or without implements).

The subject was informed of the objectives of the study and agreed to participate after giving informed consent. In addition, the Andalusian Biomedical Research Ethics Committee approved this study.

RESULTS

As we can see in Table 1 with respect to the subject's fear of falling, we observe that the subject, in the initial test with a score of 27 points, was more worried about his fear of falling while performing some daily activity than, after the intervention, with 22 points, he was more worried about his fear of falling while performing some daily activity.

It is worth highlighting several items where there is a slight improvement. Among them is item 2, where the subject goes from being quite worried about bathing or showering, giving 3 points to this item before the intervention, to giving 2 points after the intervention, which reflect that he is somewhat worried. The same happens with the items of going up or down stairs, walking on a slippery surface, and walking on an uneven surface.

Another item to highlight is walking in a crowded place, where the subject scores it before the intervention with 2 points, somewhat worried, and after the intervention with 1 point, not worried at all.

Table 1: Pre and post results.

Instruments	Pre-test	Post-test	Improvement values
FES-I¹	27	22	5
Physical Role	75	80	5
Physical Role	0	25	25
Pain	45	57,5	12,5
General Health	55	60	5
SF-36²	45	50	5
Social Function	22,5	32,5	10
Emotional Role	0	33,33	33,33
Mental health	32	32	0
Health transition	50	75	25
8 foot up and go test³	8,92	7,94	0,98
Chair sit and reach⁴	- 8	-7,3	0,7
Perception of health⁵	6,5	7,5	1

*Note:*¹ points on the FES-I between 64 points and 16 points, the lower the score the subject will have less fear of falling; ² 0-100 scale, the higher the score, the more favorable the health status;³seconds;⁴ centimeters;⁵ scale from 0 to 10, being 0 very low and 10 very high.

With respect to their quality of life, we observe in Table 1 that in all the items there has been an increase in the score in relation to the results obtained before the intervention. It should be noted that items 1,2,20,21,22,22,23,26,27,30,34 and 36 have been scored inversely due to their wording, thus ensuring that the higher the values of the items, the better health the subject will have. Therefore, the increase that has occurred after the intervention means a clear improvement in all the dimensions analyzed in this questionnaire, highlighting the dimension of mental health, having obtained an increase of 62.5%.

In addition to this, the social function and emotional role dimensions have also obtained a significant increase of 44% and 33% respectively. Although in the other dimensions, and no less important, the percentage of improvement does not exceed 30%, what is relevant is that they have also experienced an increase in their score. A continuación, si nos detenemos en las puntuaciones obtenidas en la prueba de 8 Foot up and go test, el sujeto ha mejorado en un 10,98%, which means, it takes less time to perform. This reflects an improvement in agility, speed, and dynamic balance.

On the other hand, the subject shows in the Chair sit and reach test an improvement of 0.7cm in lower body flexibility after the intervention. The pret and post results obtained a negative score because the subject does not reach with his toes to the toe, however, after the intervention, he has come 0.7cm closer to the toe, so his flexibility has improved.

And, finally, the subject's perception of health increases the degree of satisfaction with it by 1 point.

DISCUSSION AND CONCLUSIONS

According to the data obtained, this case study demonstrates the improvements provided by a JUA program on the different variables taken into account and measured in a 54-year-old adult-older person.

With respect to the variable of fear of falling, the STAC, measured through the FES-I, we observed that our subject obtained an improvement of 5 points after the intervention, obtaining an initial score of 27 points and a final score of 22 points. This score indicates that the subject began the intervention presenting a moderate-high degree of fear of falling, while after the intervention, the subject's fear of falling has been reduced to moderate.

However, this study shows that all the subjects in the experimental group demonstrated that after the intervention they were able to reach a low level of fear of falling. Although our subject has not reached a low level, he is very close, since he is only 3 points away from reaching it. This may be due to the fact that the intervention developed in Toronjo-Hornillo (29) for 8 weeks is twice as long as our intervention, which is a variable to be taken into account.

However, it should be noted that in the results obtained in the FES-I, our subject obtained improvements in 5 items, 4 of them coinciding with the improvements obtained in the JUA program (29).

On the other hand, when we set out to know how the application of the JUA influences the health of our study subject, after analyzing the results obtained in the SF-36, we observed that this intervention has positively influenced the health status of our subject, mainly in the mental health dimension, which is the degree of depression, anxiety, behavioral control and general well-being of the subject (28).

This same author states in his article that after several physical exercise programs, the improvement of health, and in this case, of the mental health dimension, obtains significant improvements ranging between 19% and 39%. However, we note that in our subject this percentage rises to 62.5%, which may be due to the emotional state and personal circumstances that the subject is going through. In spite of this, it should be noted that the dimensions related to

the mental component that take center stage due to the improvements obtained are those of vitality, mental health, and social function, coinciding in these last two with the results of our study (29).

As for the subject's physical condition, he improved 0.98 seconds in the 8 foot up and go test, that is, after the intervention he performed it in 10.98% less time, improving his speed, agility and dynamic balance. Despite the fact that Kelley's (30) program for adults and seniors has a duration of 12 weeks, an average improvement in the TUG of 0.53 seconds is obtained, which does not coincide with our results. However, we think that one aspect to highlight that could have influenced this variable is the age of the subject, being younger than the subjects of the aforementioned study, carried out with people over 60 years old, whose average age was 72 years. It could also have influenced the fact that in our intervention program we work more on balance than in the yoga program used by the aforementioned author.

There are also improvements in the flexibility of the lower body of the subject, having great importance the stretching performed in the initial and final part of the sessions, which have a positive impact on the improvement of this (31). A later study (32), shows that in spite of not having obtained in its program improvements in the flexibility of the lower body, but in the upper body, there is a greater number of articles that report relevant changes in the flexibility of the lower body.

Referring to the subject's perception of his own health, his score increases by 1 point, which means that, after the intervention, he himself has been able to verify the benefits of the physical activity program. These results are in line with the study carried out by Jodra (33), which shows that the perception that physically active older adults have of their health, and of the acceptance and valuation they have of themselves, are much better than those of physically inactive people.

In addition, it should be considered that apart from the improvement obtained in different aspects, it should be noted that during the development of the sessions, his motivation was increasing as he observed his own progress in the performance of the activities and in the improvement of his mood, thus coinciding with Cruz (34), who highlights the relationship established by the adult-elderly between physical activity habits and the perception of his physical and mental health. Therefore, it can be concluded that a physical activity program based on the JUA, planned temporally and with a frequency of three days per week, could improve the general health of the individual.

With respect to possible limitations of the study, we can indicate that, at the time of planning and developing the intervention program, with respect to the study sample, due to COVID-19 it was not possible to access a larger sample. Therefore, being a case study, extrapolation of the results should be taken with

caution. In future studies, it may be useful to carry out this intervention program in different populations, maintaining the same variables as in this study and/or modifying them, in order to compare results, and to know whether those obtained in this case study can be extrapolated to the general population, in order to address the fear of falling and control over falls.

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