74 - ARE CREATIVE GAMES AND PLAY ABLE TO MOTIVATE THE ELDERLY TO PARTICIPATE IN PHYSICAL ACTIVITIES?

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Introduction

Aging, as a natural process in life, is not only "the passing of time", but the manifestation of the biological processes that occur in a person's lifetime. With advancing age, many problems can develop such as falls, depression, loss of flexibility, loss of memory and balance and so on. The benefits of regular physical activity, under professional supervision, are well recognised and contribute to a better quality of life. SMITH, SASCO et al, suggest that physical activity has a neuro-protective effect on the brain, constituting a barrier against a number of degenerative diseases.

The effects of the natural decrease in physical performance can be attenuated by the development, with the elderly, of recreational exercise programmes aimed at improving their motivity. With effect, the preservation of physical tonicity is essential to the daily well being of this population.

Aging

Definition of Aging

According to Jean-Claude HENRAD (French gerontologist), aging in the human species is a question of culture. In other words, it is a general transformation of our conditions of living. Individual aging is biological and here we speak of senescence. But aging is also related to chronology in as much as it translated the effects of the passing of time. This is also expressed in psychological, social and existential dimensions. Finally, aging is the result of the genetic inheritance or genotype, and the traces of life's journey both individual and collective, which is indicative of its complexity.

Consequences of Aging

According to Dominique POLTON, Director at the IRDES (French Institute of Research and Documentation in Health Economics), the proportion of elderly people in developed countries will grow strongly in the next decades. In France between 2000 and 2030, the percentage if people over 65 years will increase from 16% to 25%. Moreover, due to the deformation of the age pyramid, the impact of aging increased healthcare costs by 4% between 1980 and 2000 in France. In the next couple of years, this figure will have evolved to 0.7% per year increase in healthcare costs.

Depression

For HAZIF-THOMAS, C and THOMAS, PH depression in the elderly is frequent, often non-diagnosed and non-treated. It is often implicit, without expression of sadness, and with few visible signs. The consequences are serious, as much in terms of relations between the generations as in human terms: withdrawal, loss of ability to perform daily tasks, dependency, suffering silently and unspoken which can lead some elderly people to suicide.

SCAZUFCA. The decrease in physical capacity appears to lead the individual into a situation of dependency in their daily activities and can be aggravated when associated with depression. Depression is the cause of mood changes, behavioural changes and in day to day activities. More than this, it is linked to an increase in mortality and medical care.

Falls

It is true that not all falls are accompanied by serious physical traumas and frequencies of 5% for fractures and from 5% to 10% for traumatisms have been proposed. In one study in Dijon, France with a group of 800 subjects, the numbers were much higher. Close to one fall in two resulted in wounds or bruising (7% needed sutures), 17% in a sub-luxation, 18% in a fracture, 8% with a cranial traumatism of which 3% with loss of consciousness. In 1999, out of 10 520 deaths due to accidental falls recorded by the CepiDc INSERM, 89% (9 363) concerned people over 65 years of age. In more than 2 out of 3 cases, women were concerned.

Physiological Changes

According to SPIRDUSO, between physiological changes and changes in our physical capacity during the aging process, the following can be observed: Loss of strength; decrease in muscular volume; increase in non-contractile tissue (fat and connective tissue) in the muscles; decrease in the surface of the transverse section in skeletal muscle which starts around 25 and becomes pronounced in the fifth decade of life; with aging, type II muscle fibres become smaller whereas type I fibres are almost unchanged.

Osteoporosis and Osteoarthritis

For RUSSO et al. Osteoporosis is characterised by a reduction in bone mass and by a disorder in bone microarchitecture such that the skeleton becomes fragile. This disease is classified in the group of pathologies skeleto-metabolic. Osteoporosis represents the accelerated loss of bone mass, bone containing calcium crystals, phosphorus and collagen.

The loss of calcium can occur as early as 30 years and for women this process accelerates after menopause. In the elderly, bones can become so fragile that even a small fall a coughing fit or a strong muscular contraction can provoke a fracture.

Osteoarthritis or athritis (OA) is a chronic, degenerative disease of the joints evidenced by loos of joint cartilage in weight bearing joints, the knees being the most affected. This pathology is characterised by pain, morning stiffness, cracking of the bones (joints) muscular atrophy, shrinking of intra-articular space, osteophytic formations, sclerosis of sub-chondral bone and cystic formations. OA can be found in 50% of people over 65 years of age and in 80% of those over 75 years.

Cognitive Effects of Aging

According to JEANDEL the principal congnitive functions susceptible to the physiological effects of aging are: mnesic capacity (++ short term); reaction time (around 40 yrs); concentration (80 yrs); language (70-75 yrs); visuo-spatial capacity (70 yrs); mental agility (80 yrs); abstract thought (70 yrs); fluid intelligence (60 yrs); crystalised intelligence (80 yrs).

Inactivity increases the risks of sensorial alterations, difficulties in concentration, tendency to depression, temporal-spatial disorientation and agression. A longitudinal study of 1000 people indicates that it is possible to slow down the effects of aging through physical activity and intellectual, affective and emotional stimulation. An aerobic exercise programme can have beneficial effects on humour, self esteem, anxiety and depression. The hypothesis of a virtual "cognitive un-conditioning" generated by physical inactivity can thus be advanced.

Concept of Physical Activity for the Elderly

For ARAGAO the lack of physical activity during aging contributes to the loss of muscular mass and the accumulation

of fat, which constitutes a major risk factor in the development of a number of chronic diseases linked to senescence. The utilisation of an exercise programme of sufficient duration, intensity and frequence can decrease the percentage of body fat and improve the autonomy of the elderly person.

Physical exercise, in addition to combating sedentarity, contributes significantly to maintaining physical aptitude in the elderly in terms both of health and functional capacity. Nevertheless, age can impose limits in physical aptitude due to physiological modifications imposed by the aging process.

The main objectives and benefits of physical activity for the elderly are: the maintenance of muscle mass helps the elderly person to carry out daily tasks that require a higher level of strength such as climbing stairs, holding objects, sitting down/standing up to / from relatively low heights, run short distances, etc. All these tasks are much more common for elderly people than to run or swim long distances; The maintenance of a high basal metabolism, thanks to muscle mass, avoids obesity and its consequences; Prevention of degenerative diseases such as osteoporosis as physical exercise has a positive influence on bone mineralisation and microarchitecture; Increase in self esteem increasing the will to live; Balance and coordination; Concentration and short term memory; Cardiac capacity; Arterial pressure; Lung capacity.

Creativity

Plato considered creativity to be divinely inspired. According to Darwin's theory of evolution, creativity is a manifestation of the creative force inherent in living beings. Creativity is a potential, the creation a product.

In general, when we think of the word “creativity” we associate it with artistic work or paradigm breaking scientific research. The importance of creativity doesn't lie solely in moments of excellence in art or in the sciences, but is something that can occur in any human undertaking at different levels of realisation.

Problem

It is around this perspective on creativity that we focused our work. It involved studying if moments of relaxation and fun could diminish the problems encountered by the elderly. During the study, a number of factors were noted: the relatively small number of elderly people willing to exercise; lack of motivation; exercises frequently repetitive; “I've exercise all my life and now I've retired I'm tired”; Inability to perform certain movements (lack of muscular force in the arms, dizziness, inability to stay standing, lack of force in the legs, etc); difficulties in performing the exercise, lack of balance.

Our problem is, therefore, to see if it is possible to motivate an elderly person to do physical activity. One way to motivate the person is to convince them that they can and should exercise, but this is difficult to achieve. More precisely, we look to see how creative play can facilitate our objective of exercise.

Material and Method

With the aim of providing the beginnings of a response to the question that is posed in this study, we looked for an opportunity to work with a group of elderly people with whom it would be possible to initiate a physical exercise programme and develop two kinds of activity: traditional and creative.

In this study, our intention was to work with simple activities, maily using materials generally easily found in most houses. It may be necessary to buy certain objects, but in general the objective was to avoid one more pretext that the participants could use in order not to commit themselves to the programme

As for the traditional courses, variety is important, thus each course is put together according to the participants, their mood, capabilities, number, etc. Following is a description of a couple of the “creative” activities developed for this study. As usual, all classes started and finished with stretching - explicitly if these movements were not included in the first / last activity performed.

Example of a Creative Activity: Elastics

The objective of this activity is to work on the stride of the elderly person, the quadriceps, balance and concentration. Elderly people have difficulties walking normally. In general they walk without lifting the foot far from the floor which increases the risk of tripping and falling.

To start, place two lots of three to five chairs side by side, facing each other, about two metres apart, with about fify centimetres between each chair on the same side. Put elastics around the legs of the chairs, close to the floor and ask each person to walk down the “corridor” stepping over the elastics with only one step between each elastic. After each turn, increase the height of the elastics. If possible, the person should walk the elastics alone without support, but with the teacher there for support if necessary.

Example of a Creative Activity: Basketball

Have the participants sitting on chairs arranged in a circle of around six metres in diameter. The larger the circle, the more difficult the exercise. Place a basket in the middle of the circle, a wastepaper basket can be used, and give each participant a plastic ball up to 25cm in diameter. First, ask each participant to throw their ball into the basket. Those that miss must retrieve their ball. In general they play sitting down, but we noted that given the difficulty of landing the ball in the basket and given the spirit of competition that appears, the participants start to get up to throw the ball.

A variation of this game is that the participants get up to throw their ball and sit down again in the chair next to them. In this way they are obliged to move even more. One can also place the basket on a table as the height increases the difficulty and encourages the participants to a greater level of activity.

Methodology

In order to measure the evolution of the participants, three tests were used:

§The Carroll rating scale for depression to evaluate depression, known to be a problem within the aged population and linked to a lack of physical activity

§The 5 word test to evaluate the memory of the participants.

§Tinetti motor ability test to evaluate balance and physical resistance of the participants.

The tests were performed and measures taken three times: at the beginning, after 6 months and after 12 months.

Our study lasted one year with two groups: the control group with 15 participants and the study group with 18 participants. All particpants were women aged between 73 and 95 years of age, residents of a retirement home of 68 residents in total. The mean age of the control group was 85.3 versus 85.6 for the study group.

During the first 6 months, the study group participated in traditional exercise classes (adapted for the elderly) two times per week for 45 minutes. In fact, for this initial period, the stuy group had 12 participants. After the 6 months of traditional classes, the study group then changed to 6 months of “creative” classes. As soon as the creative classes started the number of participants grew rapidly to stablise at 18 after two weeks. Clearly the ideal would have been to have three groups - one control group, one doing only traditional classes and one doing only creative classes, however there were insufficient participants to allow this design.

Initial Measures

Test	Study Group	Control Group
Carroll rating scale - depression	22.2	22.3
5 word test: immediate recall	2.8	2.5
5 word test: deferred recall	2.6	2.5
Tinetti's test: static	23.3	23.1
Tinetti's test: dynamic	15.8	15.4

Table 1 : Average Initial Measures

In the initial measures we can see that the majority of the participants suffer from a certain level of depression (scores of 10 or more), based on the common interpretation of the Carroll depression scale. The level of depression increases with the score so we can conclude with average scores of 22.2 and 22.3 there is depression evident.

Evolution Within the Group

Within the control group, we saw a deterioration of the physical state of the participants which we would expect in the normal process of aging, especially with the elevated age of the group.

A deterioration was noted in all the measures (see table below), but none of these were statistically significant at the 95% confidence level. It should be noted that the study was not powered to detect the small changes that one would expect to see.

Test	Control Group: Initial	Control Group: End	Difference
Carroll rating scale - depression	22.3	23.4	+1.1
5 word test: immediate recall	2.5	2.3	-0.2
5 word test: deferred recall	2.5	2.1	-0.4
Tinetti's test: static	23.1	26.1	+3.0
Tinetti's test: dynamic	15.4	17.3	+1.9

Table 2 : Average Initial and Final Measures: Control Group

For the study group, we hoped to avoid this natural deterioration to stablise the participants or even to see an improvement. However it was probable, given the study's parameters, that this improvement would not be statistically signifcant. It was in the comparaison of the control group with the study group that we hoped to see the impact of the creative exercise programme.

Test	Study Group: Initial	Study Group: End	Difference
Carroll rating scale - depression	22.2	19.8	-2.4
5 word test: immediate recall	2.8	3.1	+0.3
5 word test: deferred recall	2.6	3.1	+0.5
Tinetti's test: static	23.3	21.6	-1.7
Tinetti's test: dynamic	15.8	14.3	-1.5

Table 3 : Average Initial and Final Measures: Study Group

Control Group Versus Study Group: Difference After 6 Months

Test	Study Group	Difference to initial	Control Group	Difference to initial
Carroll rating scale - depression	21.4	-0.8	22.1	-0.2
5 word test: immediate recall	2.6	-0.2	2.2	-0.3
5 word test: deferred recall	2.5	-0.1	2.2	-0.3
Tinetti's test: static	23.1	-0.2	24.8	+1.7
Tinetti's test: dynamic	15.2	-0.6	16.1	+0.7

Table 4 : Average Measures After 6 Months

After 6 months, our analysis looks at the study group, having done 6 months of traditional classes, versus the control group. The statistical tests used were all the t-test: two sample assuming unequal variances at the 95% confidence level.

Looking at the data we see an improvement in the Carrol depression scale of 0.7 points, and even a deterioration in the 5 word test both for immediate recall and for deferred recall. However none of these results were significant statistically.

The significant results were an improvement in Tinetti's static test of 1.7 points ($p < 0.03$) and an improvement in Tinett's dynamic test of 0.9 points ($p < 0.1$).

Control Group Versus Study Group: Difference After 12 Months

Test	Study Group	Difference to initial	Control Group	Difference to initial
Carroll rating scale - depression	19.8	-2.4	23.4	+1.1
5 word test: immediate recall	3.1	+0.3	2.3	-0.2
5 word test: deferred recall	3.1	+0.5	2.1	-0.4
Tinetti's test: static	21.6	-1.7	26.1	+3.0
Tinetti's test: dynamic	14.3	-1.5	17.3	+1.9

Table 5 : Average Measures After 12 Months

Once again, the statistical tests used were all the t-test: two sample assuming unequal variances at the 95% confidence level. Between the two groups we see an improvement in the Carroll depression scale even if the scores remain high in the study group. The study group showed an improvement of 3.6 points compared to the study group ($p < 0.002$).

In the 5 word test, both for the immediate and deferred recall, the study group had an average score 0.8 and 1.0 points higher respectively than the control group, however these differences were not statistically significant.

A striking difference was seen in Tinetti's static test with an improvement of 4.5 points in the study group versus the control group ($p < 0.001$). A visible improvement was also seen in the dynamic test, even if a little less marked, of 3 points ($p < 0.005$).

Conclusions

The creative programme put in place in the context of this study had the potential to improve all these three areas. This potential was clearly realised, at least for two out of the three, but in order to have more definitive results, it would be necessary to conduct a longer study, increasing the number of classes per week from two to three and with larger numbers of participants in three separate groups: control; traditional programme only; and creative programme only. This study allowed me to improve and consolidate my theoretical and practical knowledge. It also allowed me to be more attentive to the elderly people with whom we work to be able to better respond to their expectations and fears.

Regular physical exercise is necessary and beneficial for the development and maintenance of a healthy skeleton. Regular activity, throughout one's life, is always recommended as is increases bone mass and quality, coordination of movements and general physical aptitude, allowing a reduced risk of fractures and bone loss caused by sedentarism. The objective of this preventive strategy is to improve the biological age of the individual vis-à-vis their chronological age. Each individual can gain a benefit from creative physical exercise.

Studies show that even moderate physical activity can improve health and decrease depression. It is also worthwhile to underline the differences in rates of illness observed between sedentary people and those practicing moderate physical activity. However, the difference in rates between those moderately and intensively active are hardly significant.

Regular physcial activity is also necessary to maintin motivation, muscular force, coordination, function and flexibility of the joints. It contributes greatly to functional and cognitive capacities and, facilitating daily activities, it helps autonomy and well being. Physical activity plays a unique role in aging healthily as it acts as a central element next to other positive behaviour favourable to good health. For example, certain risk factors such as poor nutrition, loss of autonomy and a sedentary lifestyle are closely related. On the other hand, a high level of physical activity (safely practiced) can help to prevent accidents and, especiall for the elderly, falls.

It seems to me to be primordial to work on motivation to try to decrease depressionand with this objective, informing society at large of the real problems and increasing awareness amongst physical educators.

The tests of Tinetti, Carroll and the 5 words were good indicators of the risk of falls, balance, memory and depression of the elderly. The measures associated with these tests gave us the basis to show quantitative results of this work and add to the qualitative observations made during the study.

The study's objective was to evaluate the impact of the introduction of a creative element into a physical exercise programme versus a traditional exercise programme. We succeeded in demonstrating that this creative programme can bring benefits both physically and psychologically. On the physical side we showed an improvement in the results of Tinetti's static test of 4.5 points over 12 months and in the results of Tinetti's dynamic test of 3 points over the same period. On the psychological side, we showed an improvement in Carroll's depression scale of 3.6 points over the 12 month period.

We can therefore conclude, from these results and our observations that creativity in physical activity programmes increases motivation and also participation and engagement of the elderly people in our classes, giving them all the associated benefits.

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ARE CREATIVE GAMES AND PLAY ABLE TO MOTIVATE THE ELDERLY TO PARTICIPATE IN PHYSICAL ACTIVITIES?

ABSTRACT:

Many studies have been carried out showing that the proportion of elderly in the population will grow considerably in the coming years which will in consequence increase the demand for programmes aimed at improving their quality of life. With aging, there is a physiological, biological and psychological transformation. Regular physical activity is promising for those wishing to grow older in good health. Besides helping to increase autonomy in daily activities, a creative exercise programme can open new perspectives and re-awaken the interest of the participants, improving motivation, balance and decreasing their level of depression. With this in mind and by means of a study focused on this area, we seek to show how creativity can help in exercise for the elderly.

KEY WORDS: elderly, creativity, physical activity, exercise

EL JUEGO LUDICO, LA CREATIVIDAD, ¿PUEDEN ESTOS MOTIVAR A LAS PERSONAS MAYORES PARA HACER EJERCICIO FISICO?

RESUMEN:

Numerosos estudios muestran que el número de personas mayores aumentará considerablemente en los años venideros, lo que a su vez aumentará la necesidad de programas orientados a la mejora de la calidad de vida en la tercera edad. El envejecimiento conlleva transformaciones fisiológicas, biológicas y psicológicas. La práctica de una actividad física permite un envejecimiento con mejor salud y más prometedor. Esto proporciona a las personas mayores la posibilidad de ser autónomas en sus actividades cotidianas enriqueciendo de este modo su calidad de vida. La creatividad en las actividades puede abrir nuevas perspectivas de vida y volver a despertar el interés en estas personas lo que podría mejorar su motivación, su equilibrio anímico y disminuir así la depresión. Con estas mejoras en mente y a través de un estudio focalizado en el tema intentamos establecer de qué manera el juego lúdico y la creatividad pueden motivar a las personas mayores para hacer ejercicio físico.

PALABRA-LLAVE: ejercicio físico, creatividad, actividad física,

LE JEU LUDIQUE, CREATIVE, PEUT-ELLE MOTIVER LES PERSONNES AGEES A FAIRE DE L'EXERCICE?

RESUME:

Il existe beaucoup d'études qui montrent que le nombre de personnes âgées va augmenter considérablement dans les années qui viennent, ce qui va accroître à son tour le besoin de programmes orientés sur l'amélioration de la qualité de vie du troisième âge. Avec le vieillissement il y a une transformation physiologique, biologique et psychologique. La pratique d'une activité physique permet un vieillissement en meilleure santé et plus prometteur. Ceci donne la possibilité aux personnes âgées d'être autonome dans leurs activités quotidiennes, et de ce fait enrichissantes leur qualité de vie. La créativité dans les activités peut ouvrir de nouvelles perspectives de vie et réveiller à nouveau l'intérêt de ces personnes ce qui à son tour peut améliorer leur motivation, équilibre et diminuer ainsi la dépression. Avec ces améliorations à l'esprit et à travers d'une étude focalisé sur le sujet, nous cherchons à établir comment le jeu ludique, créativité peut-elle motiver a faire du l'exercice physique chez les personnes âgées.

PALAVBAS-CLAVE: personnes âgées, créativité, activité physique

O JOGO LUDICO, CRIATIVO E CAPAZ DE MOTIVAR OS IDOSOS A PRATICAR ATIVIDADE FISICA?

RESUMO:

Existem muitos estudos que mostram que o número de idosos no mundo irá crescer consideravelmente nos próximos anos, o que terá por efeito de aumentar a demanda por programas orientados à melhora da qualidade de vida da terceira idade. Com o envelhecimento, há uma transformação fisiológica, biológica e psicológica. A prática de alguma atividade física é algo prometedor para que se envelheça em boa saúde. Além de possibilitar os idosos a serem autônomos em suas atividades quotidianas. A criatividade nas atividades pode abrir novas perspectivas de vida e despertar novamente o interesse destas pessoas, que por sua vez pode melhorar a motivação, o equilíbrio e diminuir o índice de depressão destas. Tendo em vista estas melhoras e através de um estudo focado neste assunto, nós procuramos estabelecer como que o jogo ludico,criativo pode motivar a pratica de atividade física pelos idosos

PALAVRAS-CHAVES: exercícios físicos,criatividade, atividades físicas, exercicios

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